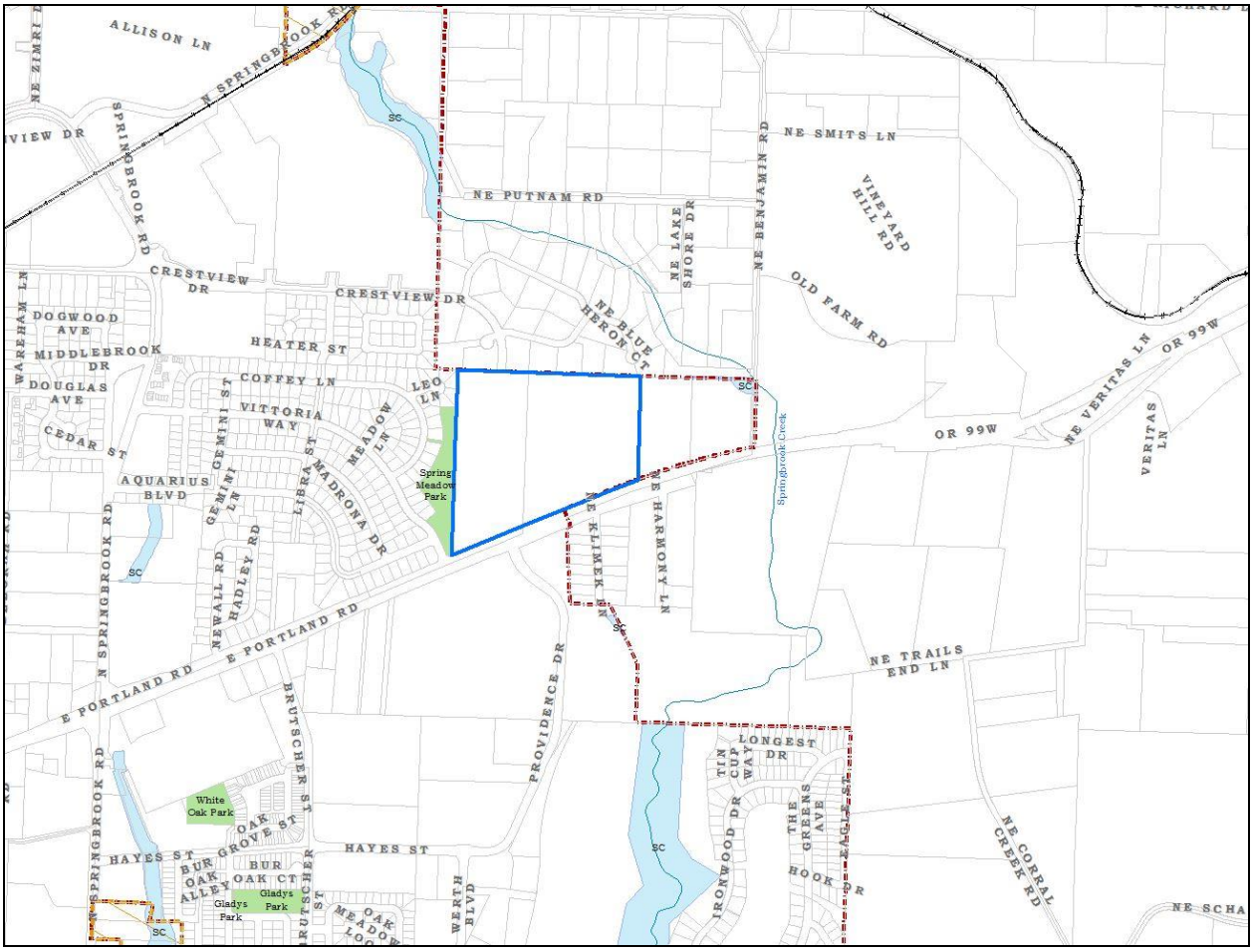
City of Newberg
Community Development Department
P.O. Box 970 ▪ 414 E First Street ▪ Newberg, Oregon 97132
503-537-1240 ▪ Fax 503-537-1272 ▪ www.newbergoregon.gov

PLANNING COMMISSION STAFF REPORT
CRESTVIEW CROSSING PLANNED UNIT DEVELOPMENT AND CONDITIONAL USE PERMIT

HEARING DATE:	September 13, 2018
FILE NO:	PUD18-0001/CUP18-0004
REQUEST:	The application proposes a mixture of commercial use, single-family homes, cottage style homes, affordable housing and multi-family homes. The proposed development on 33.13 acres of land includes 18 single-family homes, 230 cottage homes and 51 multi-family homes with modifications to the base zone's dimensional requirements as permitted through the PUD process. The conditional use permit request is for allowing residential use on C-2 Community Commercial zoned property.
LOCATION:	4505 E Portland Road and abutting property without a street address
TAX LOTS:	Yamhill County tax lots 3216-01100 and 3216AC-13800
PROPERTY SIZE:	33.13 acres
APPLICANT:	Andrew Tull of 3J Consulting, Inc.
OWNER:	GC Commercial, LLC and VPCF Crestview, LLC
ZONE:	C-2 Community Commercial, R-1 Low Density Residential and R-2 Medium Density Residential districts. Yamhill County VLDR-1 and VLDR-2.5.
PLAN DISTRICT:	COM (commercial), LDR (low density residential), MDR (medium density residential)
OVERLAYS:	Airport Conical Surface, Newberg Bypass Interchange

Attachments:

Order 2018-10 with
- Exhibit "A": Findings
- Exhibit "B": Conditions
- Attachments
  1. Application Material
  2. Agency Comments
  3. Public Comments
  4. 5-Party Agreement
  5. Kittelson and Associates Memorandum with Attachment received August 29, 2018
  6. Related Resolutions, Orders and Ordinances
  7. Joint Permit Application
  8. Supplemental Narrative received August 23, 2018



Location Map

A. DESCRIPTION OF APPLICATION:

The applicant is proposing a mixture of commercial development, single-family homes, cottage style single-family homes, affordable housing and multi-family homes. Residential use will include 18 single-family homes on large lots, 230 cottage homes, and 51multi-family homes with modifications to the dimensional requirements of the base zones dimensional requirements. One 4.4-acre lot will be created to allow for future commercial development (Attachment 1).

The applicant is proposing both active and passive opens space areas. There will be a network of open spaces, wetlands and a network of linked pedestrian paths. The paths will provide connections for the residents to open spaces, a neighborhood park and wetlands.

Both public and private streets will be utilized through the PUD process. Several off-street parking areas are proposed and on-street parking will also be provided on the public streets.

The applicant has reviewed the City of Newberg Affordable Housing Action Plan and is proposing an affordable housing component that would provide twelve single family detached homes at reduced prices and deed restrictions designed to create perpetual affordability. The twelve homes will be marketed at rates affordable to those home buyers earning less than the

median family income as described within the City's Housing Action Plan's definition of affordable housing. The City's Affordable Housing Action Plan defines affordable housing as when a family spends no more than 30% of their income for housing. The applicant has stated that "at closing, buyers will be required to sign covenants agreeing to limit the price of any future sale to a rate of appreciation which is tied to either the Area Median Family Income rate or another acceptable index of income." Further, the applicant has stated that they "plan on working with the Housing Authority of Yamhill County and the City's Affordable Housing Ad Hoc Committee to refine the covenants which will be recorded with the sale of these units and to eventually find parties which may qualify for the purchase of affordable houses. The proposed affordable homes will require owner occupation and will be constructed at various locations throughout the development." It should be noted that the applicant has not stated which lots will be designated as affordable housing units or in what phase of development these units will be built.

The applicant is proposing two plats. The first plat proposes attached, duplex styled housing on some of the lots. The alternative plat illustrates exclusively detached housing units. The applicant is asking for flexibility in preparing the final plats for the various phases within the development to meet market demand by platting either detached or attached homes. The applicant has stated that there will be no additions or deletions of lots, the 250 lots will remain the same regardless of housing unit type.

B. SITE INFORMATION:

1. Location: 4505 E Portland Road and abutting tax lot 3216AC-13800

2. Size: 33.13 Acres

3. Topography: Sloping topography, generally slopes downward from the northwest to the southeast.

4. Current Land Uses: vacant, single family house, a barn and several small structures (animal coops/pens or storage sheds) buildings and unmaintained orchards

5. Natural Features: wetlands

6. Adjacent Land Uses:

    a. North: Unincorporated Yamhill County, Oxberg Lake Estates with lots 1 acre and larger

    b. East: Single family house, vacant

    c. South: E Portland Road, Klimek Homes subdivision, Providence Newberg Medical Center

    d. West: Spring Meadow Park, Spring Meadow Subdivision

7. Access and Transportation: Access will be provided from the south by E Portland Road and E Crestview Drive from the north.

8. Utilities:

a. Wastewater: The City's GIS shows there is a 24-inch public sewer line which is available for extension to the north to serve the Crestview Crossing PUD. The line is located approximately 700-feet south of E Portland Road at the south end of NE Klimek Lane.

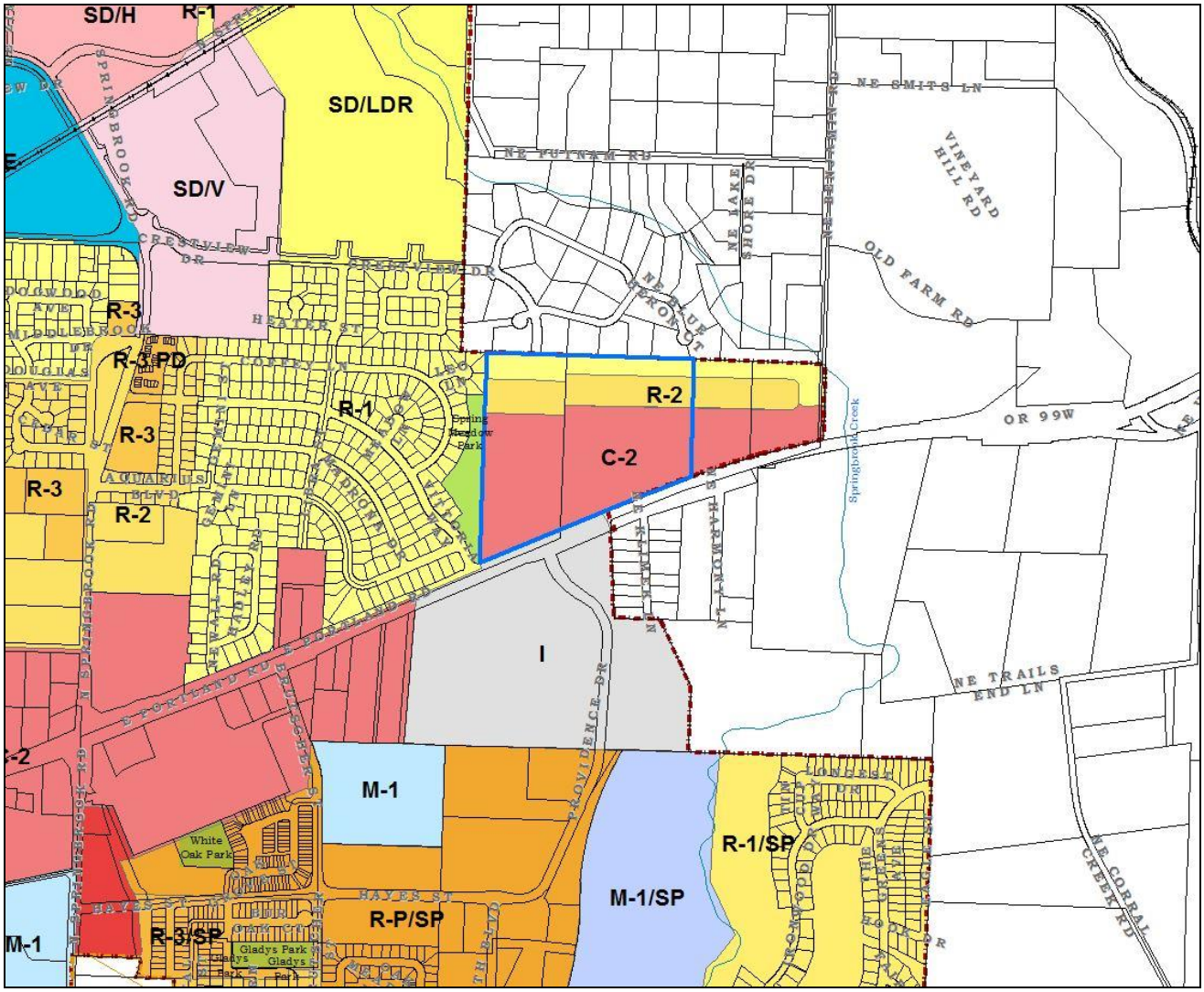
b. Water: The City's GIS shows there is a 10-inch public water line in E Portland Road which is available for extension to the north, and an 8-inch public water line in E Crestview Drive which is available for extension to the south.

The City's GIS also shows an 8-inch non-potable water line along E Portland Road that terminates just east of the property near NE Harmony Lane.

c. Storm: The City's GIS shows there is a 15-inch public stormwater line available for connection to the northern terminus of E Crestview Drive, and a 24-inch public stormwater line culvert under E Portland Road.

d. Overhead lines: There are no existing overhead lines. All new service lines are required to be undergrounded.

e. Wetlands: There are existing wetlands within the boundary of the Crestview Crossing PUD. The applicant will be required to follow state/federal processes to delineate wetlands and apply for a joint permit application (JPA).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R-1
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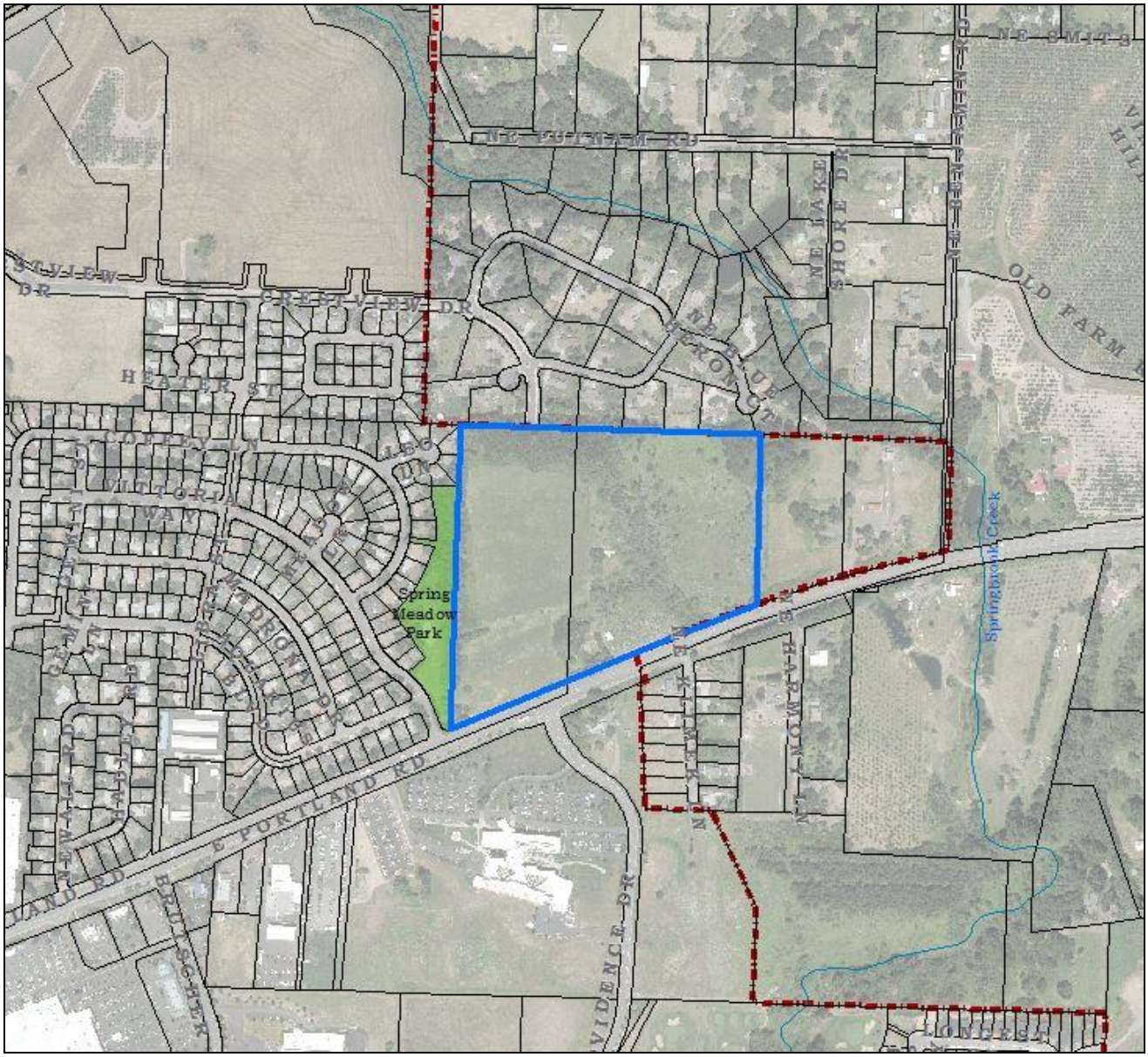
M-1
C-2
White Oak Park
Gladys Park
OR 99W
NE SMITS LN
VINEYARD HILL RD
OLD FARM RD
NE TURNER RD
NE LAKE SHORE DR
NE TRAILS END LN
NE CORRAL CREEK RD
Springbrook Creek

Zoning Map



Aerial Photo

C. PROCESS: The planned unit development request is a Type III application and follows the procedures in Newberg Development Code 15.100.050. The Planning Commission will hold a quasi-judicial hearing on the application. The Commission is to make a decision on the application based on the criteria listed in the attached findings. The Planning Commission's decision is final unless appealed. Important dates related to this application are as follows:

1. 07/05/18: The Community Development Director deemed the application complete.

2. 07/12/18: The applicant mailed notice to the property owners within 500 feet of the site.

3. 07/12/18: The applicant posted notice on the site.

4.	07/18/18:	The *Oregonian* newspaper published notice of the Planning Commission hearing for the August 9, 2018 meeting.
5.	07/16/18	City staff posted notice of the Planning Commission hearing in 4 public places.
6.	08/09/18:	After proper notice the Planning Commission opened the public hearing, kept the record open and continued the hearing until 9/13/18.a quasi-judicial hearing to consider the application.
7.	08/09/18	The applicant requested a thirty six (36) day extension to the required 120 day time limit for processing their application.
8.	08/17/18	The applicant resubmitted their application material
9.	08/29/18	City staff posted notice of the Planning Commission hearing in 4 public places.
10.	08/29/18	The *Newberg Graphic* published notice of the Planning Commission hearing for the September 13, 2018 meeting.
11.	09/13/18	The Planning Commission continued the hearing from 08/09/18, took public comments and deliberated.

D. AGENCY COMMENTS: The application was routed to several public agencies for review and comment. Comments and recommendations from city departments have been incorporated into the findings and conditions. As of the writing of this report, the city received the following external agency comments (Attachment 2):

1. PGE
2. ODOT Rail and Public Transit – no conflict

E. PUBLIC COMMENTS: As of the writing of this report, the city has received eleven public comments. One comment was received in support of the proposed Crestview Crossing development if the rules established in 2006-2008 are followed. The supporting comment states the development is appropriate with effective water management to protect the aquifer from which the Oxberg community gets their water, use of proper traffic calming maintaining the collector-route properties and use of a sound wall to separate the existing developments from the proposed. Two of the comments expressed concern for the number of trees proposed for removal. The other eight generally expressed concern regarding degradation of livability due to noise, not wanting a Lake Oswego based Developer building the development, trespassing, traffic, movement of the planned roundabout further south, violation of the 5 party agreement with Oxberg Lake Estates, need for a barrier between Oxberg Lake Estates and the large lots proposed by the Crestview Crossing PUD, wanting to utilize all the wetlands as a park, filling of wetlands and maintaining the water quality of the Oxberg Lake Estates aquifer which the Oxberg Lake Estates draws potable water from for their homes. All public comments received in time are included in Attachment 3.

F. ANALYSIS:

Five Party Agreement

In 2006, the Five Party Agreement, also referred to as the Six Party Agreement, was signed by the City of Newberg, Yamhill County, Oxberg Lake Homeowners Association, Ken and Joan Austin, JT Smith Companies and MeadowWood Development (Attachment 4). The agreement focused on transportation issues in the area of the proposed Crestview Crossing development and surrounding properties. In general, the purpose of the agreement was to establish the northern arterial roadway that would connect E Crestview Drive to E Portland Road. Jeffrey Kleinman, attorney representing the Oxberg Lake Homeowners Association, raised concerns that the proposed Crestview Crossing development was not meeting the intent of the signed agreement (Attachment 3). Exhibit "A" of the agreement illustrates the proposed location of a traffic roundabout. The current Crestview Crossing proposal illustrates a roundabout south from where it was illustrated in Exhibit "A" of the agreement. The applicant has provided a memorandum from traffic consultants Kittelson and Associates, dated August 15, 2018, as part of their August 17, 2018 application resubmittal (Attachment 5). This memorandum concluded that "the proposed Crestview Drive alignment, intersection treatments, and cross-sectional elements are consistent with the guiding principles established in the Agreement, and as such, provides functionally equivalent transportation infrastructure as that identified in the Agreement.

Of concern is whether the alignment, intersection treatments, and cross-sectional elements being proposed in the Crestview Crossing PUD are consistent with the Five Party Agreement. The conceptual alignment from the original Five Party Agreement shows a roundabout approximately 380 feet north of E Portland Road with a traffic circle approximately 850-feet north of the roundabout, just south of Robin Ct.

After the Five Party agreement was executed, traffic circles were installed at Birdhaven Loop and Robin Court.

The proposed alignment shows a roundabout approximately 590-feet north of E Portland Road with the existing traffic circle at Robin Court located approximately 910-feet north of the roundabout.

The difference between the roundabout and traffic circle spacing between the Five Party Agreement conceptual alignment, and the proposed PUD alignment is approximately 60-feet (850-feet vs. 910-feet) and will not impact travel speeds between the two traffic control devices.

Additionally it should be noted that a two-way side-street stop controlled intersection is being proposed between the roundabout and the existing traffic circle on Crestview Drive.

The City has determined that the information provided in the memo dated August 15, 2018, shows the proposed street alignments in the Crestview Crossing PUD is in compliance with the Five Party Agreement.

Oxberg Lake Estates Potable Water

Jeffrey Kleinman, attorney representing the Oxberg Lake Homeowners Association, has submitted information bringing into question the potential impact to the Oxberg Lake potable groundwater well that serves the residents of the subdivision. In response to these concerns, the applicant has submitted a "Revised Geologic and Hydrogeologic Technical Memorandum" from professional Geologist Jonathon S. Travis who works for GeoEngineers. This memorandum stated the following conclusions:

"Based on the hydrogeologic information reviewed for the Site and adjacent property where the Oxberg well is located, we conclude that there is little to no potential for the Crestview development to:
1. Impair groundwater recharge to the nearby Oxberg wells.
2. Effect groundwater quality in the Oxberg wells.

Both of these conclusions are based on the following observations:

■ The Oxberg wells are in a confined aquifer that has limited to no hydraulic connection to the Site.
■ In the unlikely event that there was a hydraulic connection between the confined aquifer the Oxberg wells pump water from, measured surface infiltration (recharge) rates are extremely low to non-existent, indicating little or no local recharge to the underlying confined aquifer."

Newberg Urban Area Management Commission (NUAMC) Resolutions 2006-15 and 2006-18 (Attachment 6)

NUAMC Resolutions 2006-15 and 2006-18 pertain to tax lots 13800 and 1100 respectively. These resolutions dealt with amending the urban growth boundary and accompanying comprehensive plan amendment. Resolution 2006-18 lists the following pertinent conditions:

1. "Require that, upon future development of the property, the development contribute its share, based on traffic volume, of the future cost of capacity improvements to the Springbrook/99W intersections.
2. Require the tree buffer along the north property line as described in the application.
3. Require a wetland determination prior to any development on the site."

Resolution 2006-18 lists the following pertinent conditions:

1. "Require that, upon future development of the property, the development contribute its share, based on traffic volume, of the future cost of capacity improvements to the Springbrook/99W intersections.
2. A wetland determination and delineation report, following state and federal standards, shall be prepared prior to development on the site. Development shall comply with applicable state and federal wetland standards.
3. Require a 30 foot setback from the northern property line of these parcels for all future buildings on the site.
4. Require a 20 foot wide dense buffer along the Benjamin Road commercial frontage on the site to block light, noise and sight. The buffer could include vegetative elements, a

wall, and a berm(*Not applicable to lots 13800 and 1100).*

5. Require that development follow best management practices for storm drainage as outlined in the letter from James Bennett to Yamhill County Board of Commissioners dated 1/30/06.
6. Upon development, verify the capacity of the Fernwood Road sanitary sewer pump station and upsize if necessary. All public sewer lines must be gravity flow. Coordinate with DSL and the US Army Corps of Engineers regarding changes to the existing on-site stormwater drainage ways. Complete street frontage improvements along Hwy 99W. The Crestview Drive extension from Oxberg Lakes to 99W must be in place at the time of the development."

Order 2007-0002 and Ordinance 2007-2664, Order 2008-013 and Ordinance 2008-2700 (Attachment 6)

There are several orders and ordinances with conditions of approval that pertain to the subject properties. A discussion of each order and pertinent conditions of approval are listed below:

Order 2007-0002/Ordinance 2007-2664 and Order2008-013/Ordinance 2008-2700: These Orders and Ordinances pertain to the annexation and zoning change for tax lots 13800 and 1100. The following conditions of approval apply to the current application:

1. "Upon future development of this property the development shall contribute its share, based on traffic volume, of the future cost of capacity improvements to the Springbrook Rd/Hwy99W intersection.
2. A 30 ft building setback along the north property line will be required upon development of the site.
3. A wetland determination is required prior to any development on the site.
4. Future development of the property shall follow best management practices for storm drainage as outline in the letter from James Bennett to the Yamhill County Board of Commissioners dated 1/30/06."

Wetlands: There are five wetlands located within the confines of the subject property. Subject property means both Yamhill County tax lot 01100 and 13800. The applicant did not provide detailed information pertaining to the wetlands. This information was obtained from the Oregon Department of State Lands website. In an email dated July 26, 2018, Ms. Jevra Brown, Aquatic Resource Planner for Oregon Department of State Lands (Attachment 2) notified City staff that two wetland delineation applications had expired and one application, Joint Permit Application (JPA) No.WD2013-0148, administratively closed application 57027-RF, 58464-RF application on extension through August 31, 2018. The aforementioned application was for a different layout that had a larger commercial component proposed as part of the development. On July 30, 2018, an email was received from Mr. Dan Cary, Aquatic Resource Coordinator Columbia and Clatsop Counties for the Oregon Department of State Lands which stated "I am told by the applicant that there is a new revised application coming but I have not seen it. I am not reviewing any application at this time. They are in an extension of my permit decision deadline until August 31, 2018. They will likely need to request another extension to

maintain this file number since I still haven't received a new application. From the informal plans I have seen the project has changed significantly and it will go back out for public review and restart the clock for the whole process when I get a complete application. That is all I have."

The following is a description of the existing wetlands taken directly from the Joint Permit Application NO. WD2013-0148 (Attachment 7).

- Wetland A (A1, A2) (288,785sf) was primarily a PEM/slope wetland with areas of PSS and PFO. A 1, 4471f perennial drainage was located within and directly adjacent to the wetland with an area of 6, 589sf. combined wetland/ water area was 6. 7 acres (295,374sf).
- Wetland B, at 189sf (0. 004 acre) was a PFO/depressional wetland located in the northwest corner of the site.
- The other two wetlands are isolated and located in the eastern portion of the property which is planted to small trees for a tree farm. These wetlands were delineated in 2007 and although no hydrology was indicated in 2013 their presence was based on vegetation and soils criteria. Wetland C is 13, 147sf (0. 3 acres) and classified as palustrine emergent slope wetland. The dominant vegetation in the emergent portion is meadow foxtail (Alopecurus pratensis) and bentgrass (Agrostis stolonifera). Wetland D is another isolated wetland (469sf) immediately below the first.

Public Utility Easements (PUEs): The applicant is proposing 8 foot wide PUEs along the private street frontages. PGE has stated that they will not accept the use of PUEs under 10 feet wide.

G. PRELIMINARY STAFF RECOMMENDATION: The preliminary staff recommendation is made in the absence of public hearing testimony, and may be modified subsequent to the close of the public hearing. At this writing, staff recommends the following motion:

Move to adopt Planning Commission Order 2018-10, which approves the requested Planned Unit Development, tentative plat and phasing plan with the attached conditions.

PLANNING COMMISSION ORDER 2018-10

AN ORDER APPROVING PUD18-0001/CUP18-0004 FOR THE CRESTVIEW CROSSING PUD AND CONDITIONAL USE PERMIT TO ALLOW RESIDENTIAL USE IN THE C-2 COMMERCIAL ZONING DISTRICT AND CREATE 250 LOTS FOR SINGLE FAMILY, MULTI-FAMILY AND COMMERCIAL USE AT 4505 E PORTLAND ROAD (YAMHILL COUNTY TAX LOT 3216-01100) AND ON YAMHILL COUNTY TAX LOT 3216AC-13800.

RECITALS

1. CG Commercial LLC and VPCF Crestview LLC submitted an application for preliminary plan approval of a planned unit development for 250 lots and conditional use permit to allow residential use on C-2 commercially zoned property at 4505 E Portland Road (Yamhill County Tax Lot 3216-01100) and Yamhill County Tax Lot 3216AC-13800.

2. After proper notice, the Newberg Planning Commission held a hearing on August 9, 2018 to consider the application. The Commission considered public testimony, kept the hearing open and continued the hearing to September 13, 2018 based on a lack of information needed to assess the proposed PUD and conditional use permit.

3. On August 29, 2018, The Newberg Graphic published a public hearing notice and city staff placed notices in 4 public places advertising the September 13, 2018 Planning Commission public hearing.

4. On September 13, 2018, the Newberg Planning Commission continued the August 9, 2018, public hearing, took public testimony and deliberated.

5. The Newberg Planning Commission finds that the application meets the applicable criteria as shown in the findings shown in Exhibit "A".

The Newberg Planning Commission orders as follows:

1. Conditional Use Permit Application CUP18-0004 is hereby approved, subject to the conditions contained in Exhibit "B". Exhibit "B" is hereby adopted and by this reference incorporated.

2. The planned unit development preliminary plan application PUD18-0001 is hereby approved, subject to the conditions contained in Exhibit "B". Exhibit "B" is hereby adopted and by this reference incorporated.

3. The findings shown in Exhibit "A" are hereby adopted. Exhibit "A" is hereby adopted and by this reference incorporated.

4. This order shall be effective September 28, 2018 unless appealed prior to that date.

5. This order shall expire one year after the effective date above if the applicant does not apply for final plan approval by that time, unless an extension is granted per Newberg Development Code 15.240.020.

6. The conditional use permit shall expire one year after the effective date above if the applicant does not gain final plan (Step 2 of the PUD process) approval for Phase 1A of the phasing plan by that time, unless an extension is granted per Newberg Development Code 15.225.100.

7. The phasing plan shall expire ten years after the effective date above with the possibility of five one year extensions as granted per 15.240.020(C).

8. When commercial use lot 250 is developed the application shall be reviewed through a Type II Design Review process.

Adopted by the Newberg Planning Commission this 13th day of September, 2018.

ATTEST:

Planning Commission Chair

Planning Commission Secretary

List of Exhibits:

Exhibit "A": Findings
Exhibit "B": Conditions

Exhibit "A" to Planning Commission Order 2018-10
Findings –File PUD18-0001/CUP18-0004
Crestview Crossing PUD

I. Applicable Planned Unit Development Criteria: Newberg Development Code 15.240

Requested Conditional Use Permit: The applicant is requesting that C-2 zoned property be used for single family and multifamily residential uses.

> ***15.225.060 General conditional use permit criteria – Type III.***
> ***A conditional use permit may be granted through a Type III procedure only if the proposal conforms to all the following criteria:***

A. The location, size, design and operating characteristics of the proposed development are such that it can be made reasonably compatible with and have minimal impact on the livability or appropriate development of abutting properties and the surrounding neighborhood, with consideration to be given to harmony in scale, bulk, coverage and density; to the availability of public facilities and utilities; to the generation of traffic and the capacity of surrounding streets, and to any other relevant impact of the development.

Finding: The proposal is within the Newberg Urban Growth Boundary where urban density is encouraged. Oxberg Lake Estates subdivision is located to the north in unincorporated Yamhill County with lot sizes of 1 acre and larger. Along the northern property line the applicant has proposed 18 larger lots ranging from 8,105 square feet to 10,492 square feet as a buffer to the Oxberg Lake Estates subdivision. In compliance with a condition listed in Order 2007-002 and Ordinance 2007-2664, development plan sheet C150 shows a 30 foot setback from the northern property line. To the west is Spring Meadow Park and Spring Meadow subdivision with lots approximating 8,000 square feet. The applicant has proposed smaller lots ranging from 1,543 square feet to 3,792 square feet along the western property line. One larger lot in the Spring Meadow subdivision, 1812 Leo Lane, will directly abut smaller lots 245 through 248 in the proposed development. The bulk of the smaller lots, 215 through 249, will abut Spring Meadow Park, which will provide a natural buffer for the larger lots to the west located in Spring Meadow subdivision located west of Spring Meadow Park. Two other lots in Spring Meadow subdivision will abut proposed larger lot 1 and public Street "C". To the south is E Portland Road, smaller lots 203 through 214, commercial lot 250 and multiple family lot 249. To the west there is one existing single family home that is located approximately 263 feet from the east property line of the proposed development. The site plan shows one large lot (lot 18), smaller lots 19 through 30, proposed Public Streets "B" and "C" and two multifamily buildings located in the southeastern portion of the site.

The height of the proposed buildings meets the requirements of the NDC and should relate well to human scale. The bulk of the proposed development is greater than surrounding development within the city due to the reduced size of the proposed lots and reduced setbacks. However, as discussed in

other sections of this report, the applicant has not maxed out their density allowance so even though the proposed density is greater than surrounding older subdivisions additional units could be proposed and could cause even more of an impact. However, the current application does not max out the density allowance The applicant has requested an increase in maximum lot and parking coverage from 60% in the R-2 zone to 70% coverage. The proposed coverage is greater than the surrounding development, however, no adverse impacts to the surrounding properties is anticipated. This is mitigated by larger lots north abutting Oxberg Lake Estates and to the west by Spring Meadow Park. Although not illustrated on the development plan sheets, on page 8 of the narrative the applicant has stated "they intend to provide landscape plantings along the boundary of lots 245 to 248 to provide a vegetative buffer between the lower density Spring Meadow Subdivision and the higher density lots proposed along the project's boundary". The vegetative buffer would be established between 1812 Leo Lane and proposed lots 245 through 248. Prior to proposed lots 245 through 248 receiving a certificate of occupancy from the building department, a vegetative buffer must be established along the rear property line of said lots because of the smaller lots and higher density in the proposed Crestview Crossing development than is found in Spring Meadow subdivision and the applicant has expressed a willingness to provide additional buffering to lessen the impact to 1812 Leo Lane. It should be pointed out that the surrounding subdivisions were developed before the adoption of the current development code, when larger lots and lower density was common.

The proposed development would remove 923 of 1,045 total trees within the site. In NUAMC Resolution 2006-15 the Newberg Urban Area Management Commission lists a condition of approval that states a tree buffer along the north property line would be required (Attachment 6). The applicants' submittal does not show any trees along the north property line being preserved or any new trees planned to be planted. In compliance with Resolution 2006-15, the applicant shall retain as many mature trees as possible along the northern border of Yamhill County Tax lots 13800 and 1100 and supplement the tree buffer with new trees where necessary to provide a contiguous vegetative buffer. The conditions of approval listed in the NUAMC Resolution 2006-15 are still enforceable, therefore a tree buffer is appropriate for the northern border of tax lots 13800 and 1100. In order to verify that an adequate buffer will be established, the applicant must provide an updated tree removal, tree preservation and tree planting plan that clearly illustrates the type, number and location of new trees, numbers of trees being preserved and the number of trees being removed. Said plan sheet will be required to be submitted before step two (Final Plans) Section 15.240.020(B)(2) commences.

Adequate public facilities and utilities are available to serve the development. The applicant has provided a Transportation Impact Analysis (TIA) dated June 2018 and a memorandum dated August 15, 2018, which addresses the 5-Party Agreement (referred to as the 6-Party Agreement in memorandum). The TIA makes several recommendations pertaining to N Providence Drive/E Crestview Drive/E Portland Road intersection and site circulation/site access operations that have been incorporated into the findings in Exhibit "A" and conditions of approval in Exhibit "B".

City staff engineers have reviewed the proposed development for the availability of sanitary sewer, water and stormwater facilities and services. Sanitary sewer, water and stormwater services are available to serve the development. Conditions of approval have been drafted by City staff, which ensure that if any upgrades or additional services are needed then the applicant will construct them per City requirements. Sanitary sewer, water and stormwater requirements are discussed in other sections of this report to further support the availability of facilities, services and any needed upgrades as stated in the conditions of approval.

In 2006, the City of Newberg, Yamhill County, Oxberg Lake Homeowners Association, JT Smith Companies, Ken and Joan Austin and Meadowood Development, LLC., entered into an agreement commonly known as the "Five Party Agreement" (Attachment 4). This agreement pertains to transportation issues within and surrounding area of the Crestview Crossing project area and needed improvements agreed upon by those signatories of the agreement. Kittelson and Associates memorandum, dated August 15, 2018, states that the "proposed Crestview Drive alignment, intersection treatments, and cross-sectional elements area consistent with the guiding principles established in the Agreement, and as such, provides functionally equivalent transportation infrastructure as that identified in the Agreement" (Attachment 1). City staff engineers have reviewed the memorandum dated August 15, 2018 and have found the findings listed to be accurate and adequately addresses concerns raised by residents and attorney Jeffrey Kleinman.

In a memorandum from Jeffrey Kleinman, attorney representing the Oxberg Lake Homeowners Association, he raised questions of a potential impact to the Oxberg Lake potable groundwater well that serves the residents of the subdivision. In response to these concerns, the applicant has submitted a "Revised Geologic and Hydrogeologic Technical Memorandum" from professional Geologist Jonathon S. Travis who works for GeoEngineers. This memorandum was discussed in more detail in a previous section of this report. The applicants' consultant stated that there was little chance that the aquifer, which is utilized for the Oxberg Lake subdivisions drinking water, would be negatively impacted by the proposed Crestview Crossing development.

This criterion will be met with the adherence to the aforementioned condition of approval.

B. The location, design, and site planning of the proposed development will provide a convenient and functional living, working, shopping or civic environment, and will be as attractive as the nature of the use and its location and setting warrants.

Finding: The proposed development will be accessed via E Portland Road from the south and E Crestview Drive from the northwest. With direct access to E Portland Road, the proposed development will have easy access to the Portland Metro area, Downtown Newberg, grocery stores, recreational uses, medical facilities, offices and industrial uses. When the proposed commercial lot is developed there will be direct access for residents within the development and for those within the surrounding area. The possible additional population will potentially spend additional dollars within the community and have the opportunity to work and live within the City of Newberg. The property owner is utilizing planners, engineers, architects and landscape architects to design the project. These professionals have produced designs and site planning for the subject property. Lot 250 is

proposed for commercial use to be developed at a later date. Per sheet C220 of the development plan sheets, lot 250 would have two vehicle access points, one providing a right turn in and right turn out from E Crestview Drive and another vehicle access point from proposed public street "B". Pedestrian access is also provided from sidewalks. Because of the access from the proposed development to potential employers, shopping, downtown and other community amenities and the property owner using professionals to design and provide site planning for the subject property, this criterion is met.

C. The proposed development will be consistent with this code. [Ord. 2451, 12-2-96. Code 2001 § 151.210.]

Finding: The applicant has provided responses to Newberg Development Code sections, a set of land use plans, various technical reports and public notification of the public hearing. City staff have reviewed the applicants' submitted materials and have determined with adherence to the conditions of approval, the proposed development meets required conditional use criteria and this section of the NDC.

Recommendation: Because the proposed development meets NDC 15.225.060 A, B, C and with the recommended conditions of approval, City staff recommends approval of the Conditional Use Permit to allow residential use on C-2 zoned property.

II. Chapter 15.240 PD PLANNED UNIT DEVELOPMENT REGULATIONS

15.240.020 General provisions.

A. Ownership. Except as provided herein, the area included in a proposed planned unit development must be in single ownership or under the development control of a joint application of owners or option holders of the property involved.

Finding: The applicants' narrative states that the subject property is under single ownership. In fact, the subject properties are owned by two separate LLCs. Yamhill County tax lot 13800 is owned by GC Commercial, LLC. and tax lot 01100 is owned by VPCF Crestview, LLC. The person signing the City's Application for the two LLCs is Jeff Smith. This criterion is met.

B. Processing Steps – Type III. Prior to issuance of a building permit, planned unit development applications must be approved through a Type III procedure and using the following steps:

> ***1. Step One – Preliminary Plans. Consideration of applications in terms of on-site and off-site factors to assure the flexibility afforded by planned unit development regulations is used to preserve natural amenities; create an attractive, safe, efficient, and stable environment; and assure reasonable compatibility with the surrounding area. Preliminary review necessarily involves consideration of the off-site impact of the proposed design, including building height and location.***

Finding: On July 5, 2018, the applicants' submittal was deemed complete by City staff. The applicant re-submitted updated materials on August 17, 2018 in an effort to address deficiencies in their first submittal. The applicant has provided technical reports evaluating the on-site and off-site impacts of the proposed development. The proposed development would remove 923 of 1,045 total trees within the site. In NUAMC Resolution 2006-15 the Newberg Urban Area Management Commission lists a condition of approval that states a tree buffer along the north property line would be required (Attachment 6). The applicants' submittal does not show any trees along the north property line being preserved or any new trees planned to be planted. In compliance with Resolution 2006-15, the applicant shall retain as many mature trees as possible along the northern border of Yamhill County Tax lots 13800 and 1100 and supplement the tree buffer with new trees where necessary to provide a contiguous vegetative buffer. The conditions of approval listed in the NUAMC Resolution 2006-15 are still enforceable, therefore a tree buffer is appropriate for the northern border of tax lots 13800 and 1100. In order to verify that an adequate buffer will be established, the applicant must provide an updated tree removal, tree preservation and tree planting plan that clearly illustrates the type, number and location of new trees, numbers of trees being preserved and the number of trees being removed. Said plan sheet will be required to be submitted before step two (Final Plans) Section 15.240.020(B)(2) commences.

The City of Newberg does not have an urban forestry program and the development code only provides for tree preservation within Stream Corridor overlay areas. There are no noted Stream Corridor areas within the confines of the subject property.

The applicant has provided elevation drawings illustrating the proposed façades of buildings, which appear to be aesthetically pleasing.

The applicant submitted a TIA to assess impacts and proposed recommendations to mitigate the additional number of automobile trips projected to be generated by the development of the subject property.

A landscaping plan has been submitted that meets the requirements of the NDC.

The applicant has made an effort to locate larger lots on the northern border of the subject property where they will abut larger lots of the Oxberg Lake Estates subdivision that is located in unincorporated Yamhill County. Most of the smaller lot higher density area along the western boundary of the subject property will abut Spring Meadow Park. There is one lot, 1812 Leo Lane, in Spring Meadow subdivision that will abut proposed smaller lots 245-248. A condition of approval has been added in a previous section of these findings and is listed in Exhibit "B" to address buffering between the larger lot in Spring Meadow subdivision and the smaller lots. The multifamily buildings will be located north of E Portland Road and approximately 263 feet from the closest house to the east. A network of paths and sidewalks provide pedestrians safe access throughout the development and the proposed park and preserved wetland area.

With the adherence to the conditions of approval, this criterion will be met.

2. Step Two – Final Plans. Consideration of detailed plans to assure substantial conformance with preliminary plans as approved or conditionally approved. Final plans need not include detailed construction drawings as subsequently required for a building permit.

Finding: Not applicable for the first step in the PUD review process.

C. Phasing. If approved at the time of preliminary plan consideration, final plan applications may be submitted in phases. If preliminary plans encompassing only a portion of a site under single ownership are submitted, they must be accompanied by a statement and be sufficiently detailed to prove that the entire area can be developed and used in accordance with city standards, policies, plans and ordinances.

Finding: On August 17, 2018, the applicant submitted a phasing plan with the re-submitted application materials.

The applicant is proposing the following phasing:

- Phase 1: This phase will include improvements to the site's frontage along E Portland Road and the installation of underground utility connections necessary to provide service to the site.

- Phase 1a: This phase will include the extension of E Crestview Drive through the site and the construction of roadways and lots located east of the E Crestview Drive extension to public road D. This phase will also include the stormwater facility located south of public road B.

- Phase 2: This phase will include the installation of the roadways, infrastructure and lots which are to be located west of the E Crestview extension. Crestview Crossing – Alternate Plat and Phasing July 24, 2018

- Phase 3: This phase will include the lots located east of public road D to the property's eastern property boundary.

- Phases B and C will be constructed after the construction of Phases 1 and 1A and may be constructed independently of the subdivision lots and by other entities or assigns.

Due to the size of the plan and the complexity of the various components within the development, the Applicant has requested that the City grant the developer a ten (10) year window for the construction of the infrastructure shown within the plan's phases with opportunities for up to five (5) one (1) year extensions following the approval of the preliminary plat. While the Applicant does not intend to wait for ten (10) years to allow for the construction of the proposed improvements, the flexibility afforded by the ten (10) year schedule with the requested extensions will allow for the project's various components to be sensitive to changing market conditions."

Because the applicant has provided a phasing plan as permitted under NDC 15.240.020.C., final plan applications may be submitted in phases. If the Planning Commission approves the proposed PUD then the applicant may submit final plans in phases. This criterion is met.

F. Density. Except as provided in NMC 15.302.040 relating to subdistricts, dwelling unit density provisions for residential planned unit developments shall be as follows:

1. Maximum Density.

a. Except as provided in adopted refinement plans, the maximum allowable density for any project shall be as follows:

District	*Density Points*
R-1	*175 density points per gross acre, as calculated in subsection (F)(1)(b) of this section*
R-2	*310 density points per gross acre, as calculated in subsection (F)(1)(b) of this section*
R-3	*640 density points per gross acre, as calculated in subsection (F)(1)(b) of this section*
RP	*310 density points per gross acre, as calculated in subsection (F)(1)(b) of this section*
C-1	*As per required findings*
C-2	*As per required findings*
C-3	*As per required findings*

b. Density point calculations in the following table are correlated to dwellings based on the number of bedrooms, which for these purposes is defined as an enclosed room which is commonly used or capable of conversion to use as sleeping quarters. Accordingly, family rooms, dens, libraries, studies, studios, and other similar rooms shall be considered bedrooms if they meet the above definitions, are separated by walls or doors from other areas of the dwelling and are accessible to a bathroom without passing through another bedroom. Density points may be reduced at the applicant's discretion by 25 percent for deed-restricted affordable dwelling units as follows:

Density Point Table		
Dwelling Type	*Density Points: Standard Dwelling*	*Density Points: Income Restricted Affordable Dwelling Unit*
Studio and efficiency	*12*	*9*
One-bedroom	*14*	*11*
Two-bedroom	*21*	*16*
Three-bedroom	*28*	*21*
Four or more bedrooms	*35*	*26*

The density points in the right-hand column are applicable to income-restricted affordable dwelling units, provided the dwelling units meet the affordability criteria under NMC 15.242.030 regarding affordable housing requirements for developments using the flexible development standards.

2. Approved Density. The number of dwelling units allowable shall be determined by the hearing authority in accordance with the standards set forth in these regulations. The hearing authority may change density subsequent to preliminary plan approval only if the reduction is necessary to comply with required findings for preliminary plan approval or if conditions of preliminary plan approval cannot otherwise be satisfied.

3. Easement Calculations. Density calculations may include areas in easements if the applicant clearly demonstrates that such areas will benefit residents of the proposed planned unit development.

4. Dedications. Density calculations may include areas dedicated to the public for recreation or open space.

5. Cumulative Density. When approved in phases, cumulative density shall not exceed the overall density per acre established at the time of preliminary plan approval.

Finding: The applicant has provided density calculations based on zoning and land area within a zone district to calculate the maximum allowable density. The R-1 total acreage of 4.31 acres yields 754.25 density points at 175 points per acres. The R-2 total acreage of 6.58 acres yields 4,211.2 density points at 640 points per acres. The C-2 total acreage of 22.24 acres yields 6,894.4 density

points at 310 points per acres. The total maximum density points earned based on zoning and land area is 11,859.85 points.

There will be 27 one bedroom units, multiplied by 14 density points, which yields 378 points. There will be 24 two bedroom units, multiplied by 21 density points, which yields 504 points. There will be 80 three bedroom units, multiplied by 28 density points, which yields 2,240 points. There will be 168 four or more bedroom units (single family units), multiplied by 35 density points, which yields 5,880 points. Adding the total number of points produced by the number of bedrooms yields 9,314 points.

The applicants' narrative or other submitted material did not provide data for assessing the applicability of NMC 15.242.030 so the flexible development standards are not part of these findings. These standards are optional and the applicant has made no request to utilize the aforementioned section of the development code.

The applicant has not made any request that the affordable units be utilized as part of the density calculation as provided above under subsection 15.240.020.F.1.b.

Because the maximum allowable density, based on land area, yielded 11,859 density points and the applicants proposed density, based on number of bedrooms, yields 9,314 this section of the NDC is met.

G. Buildings and Uses Permitted. Buildings and uses in planned unit developments are permitted as follows:

1. R-1, R-2, R-3 and RP Zones.

a. Buildings and uses permitted outright or conditionally in the use district in which the proposed planned unit development is located.

b. Accessory buildings and uses.

c. Duplexes.

d. Dwellings, single, manufactured, and multifamily.

e. Convenience commercial services which the applicant proves will be patronized mainly by the residents of the proposed planned unit development.

Finding: The applicant is proposing single family detached residential uses within the R-1 and R-2 portions of the subject property. This criterion is met because single-family and multifamily uses are permitted within the R-1 and R-2 zone districts.

2. C-1, C-2 and C-3 Zones.

a. When proposed as a combination residential-commercial planned unit development, uses and buildings as listed in subsection (G)(1) of this section and those listed as permitted outright or conditionally in the use district wherein the development will be located.

Finding: The applicant is proposing a combination residential-commercial planned unit development. All uses within the C-2 zoned property are permitted either conditionally for residential or as a permitted use for future commercial use. This criterion is met because all proposed uses are permitted either conditionally or by right as a permitted uses.

H. Professional Coordinator and Design Team. Professional coordinators and design teams shall comply with the following:

1. Services. A professional coordinator, licensed in the State of Oregon to practice architecture, landscape architecture or engineering, shall ensure that the required plans are prepared. Plans and services provided for the city and between the applicant and the coordinator shall include:

a. Preliminary design;

b. Design development;

c. Construction documents, except for single-family detached dwellings and duplexes in subdivisions; and

d. Administration of the construction contract, including, but not limited to, inspection and verification of compliance with approved plans.

2. Address and Attendance. The coordinator or the coordinator's professional representative shall maintain an Oregon address, unless this requirement is waived by the director. The coordinator or other member of the design team shall attend all public meetings at which the proposed planned unit development is discussed.

3. Design Team Designation. Except as provided herein, a design team, which includes an architect, a landscape architect, engineer, and land surveyor, shall be designated by the professional coordinator to prepare appropriate plans. Each team member must be licensed to practice the team member's profession in the State of Oregon.

4. Design Team Participation and Waiver. Unless waived by the director upon proof by the coordinator that the scope of the proposal does not require the services of all members at one or more steps, the full design team shall participate in the preparation of plans at all three steps.

5. Design Team Change. Written notice of any change in design team personnel must be submitted to the director within three working days of the change.

6. Plan Certification. Certification of the services of the professionals responsible for particular drawings shall appear on drawings submitted for consideration and shall be signed and stamped with the registration seal issued by the State of Oregon for each professional so involved. To assure comprehensive review by the design team of all plans for compliance with these regulations, the dated cover sheet shall contain a statement of review endorsed with the signatures of all designated members of the design team.

Finding: The applicant narrative states that a professional engineer licensed by the State of Oregon has produced all required plans. Additionally, the land use plan sheets list a landscape architecture firm. A completeness check was conducted to verify that all required documents and plans were submitted. These criteria have been met.

I. Modification of Certain Regulations. Except as otherwise stated in these regulations, fence and wall provisions, general provisions pertaining to height, yards, area, lot width, frontage, depth and coverage, number of off-street parking spaces required, and regulations pertaining to setbacks specified in this code may be modified by the hearing authority, provided the proposed development will be in accordance with the purposes of this code and those regulations. Departures from the hearing authority upon a finding by the engineering director that the departures will not create hazardous conditions for vehicular or pedestrian traffic. Nothing contained in this subsection shall be interpreted as providing flexibility to regulations other than those specifically encompassed in this code.

Finding: The applicants' narrative requests modification for lot sizes, minimum lot dimensions, minimum lot frontages, maximum lot and parking area coverage and minimum setback standards for the R-1, R-2 and C-2 zoning districts. Lot coverage is discussed below under "J". The following table details the requirements listed in the NDC and the dimensional modifications that the applicant is requesting.

	Min. front yard setback per NDC to house not garage	**Proposed front yard setback by applicant**	**Minimum interior setback per NDC**	**Proposed minimum interior setback proposed by applicant**	**Minimum lot size per NDC**	**Proposed minimum lot size**	**Minimum lot width per the NDC**	**Proposed minimum lot width**
R-1	15 feet	10 feet	5 feet	5 feet	5,000 sq.ft.	5,000 sq.ft.	35 feet	35 feet
R-2	15 feet	10 feet	5 feet	2.5 feet	3,000 sq.ft.	1,440 sq.ft.	25 feet	21.5 feet
C-2	10 feet	10 feet	10 feet	2.5 feet	5,000 sq.ft.	1,440 sq.ft.	n/a	21.5 feet

In Order number 2007-2664, which pertained to the annexation of the subject property, a condition of approval required 30 foot building setback along the north property line. A 30 foot setback along the north property line is illustrated on sheet C-150 of the applicants' plan set. In Order 2008-0013, Attachment 6, a condition of approval stated "upon development of the property, construct a sound wall along the northern property line to be of similar design and coordinated with the sound wall on the adjacent Gueldner property to the west". The applicant did not illustrate or provide a detail of a wall within their development plan set. Additionally, their narrative did not address the wall. Because Order 2008-0013 stated upon development of the property, construct a sound wall along the northern property line to be of similar design and coordinated with the sound wall on the adjacent Gueldner property to the west the applicant must provide a wall that meets the intent of Order 2008-

0013. Plan sheets and a description must be submitted to the City for review prior to "Step Two" of the review process taking place.

The current NDC states that "each lot or development site shall have either frontage on a public street for a distance of at least 25 fee or have access to a public street through an easement that is at least 25 feet wide." For the R-1 zone the minimum frontage required by the NDC is 25 feet. The larger lots developed within the R-1 zoned area have lot frontage of between 58 to 79 feet, which exceeds the requirement listed in the NDC. A number of higher density or smaller lots do not meet the 25 foot minimum frontage requirement. If approved, the planning commission would be granting a relaxation of 3.5 feet from the required 25 foot minimum frontage requirements.

Each lot or development site shall have either frontage on a public street for a distance of at least 25 feet or have access to a public street through an easement that is at least 25 feet wide. No new private streets, as defined in NMC 15.05.030, shall be created to provide frontage or access except as allowed by NMC 15.240.020(L)(2).

The applicant has requested a modification to the maximum lot and parking coverage, which is discussed in the next section "J" of this report.

City of Newberg Staff Engineers have reviewed the development proposal and have not found hazardous conditions created for vehicular or pedestrian traffic if all conditions of approval are adhered to. This criterion is met because the proposed modifications to the Newberg Development Code do not create hazardous conditions for vehicular or pedestrian traffic.

J. Lot Coverage. Maximum permitted lot and parking area coverage as provided in this code shall not be exceeded unless specifically permitted by the hearing authority in accordance with these regulations.

Finding: The applicant has requested the following modifications to lot and parking coverage.

	Maximum Lot Coverage listed in the NDC	Maximum parking coverage	Maximum combined parking and lot coverage	Proposed maximum lot coverage listed on sheet C150	Proposed maximum lot coverage stated in narrative
R-1	40% or 50% if all structures on the lot are one story.	30%	60%	None requested	None listed
R-2	50%	30%	60%	60%	70%
C-2	n/a	n/a	n/a	n/a	n/a

The lot coverage listed above is from the NDC and was current at the time the applicant made their submittal. The applicants' narrative and sheet C150 listed different requested maximum lot coverages. The PUD process allows for adjustments to the strict adherence to requirements listed in the development code. The applicant has stated in their narrative that "the anticipated coverage for these lots [R-1] will be less than the stated maximum" lot coverage listed in the table above. The applicant states that smaller lots sizes of 1,474 to 2,010 square feet would have a maximum combined lot and parking coverage of 56.6% in the R-2 zone. Additionally, the applicants' narrative states for lots within the R-2 that are 2,010 square feet the combined lot coverage would be 63.7%. Finally, for lots within the R-2 with an area 1,742 square feet the narrative states the lot coverage would be approximately 65.9%. The applicant is requesting a combined lot and parking coverage of 70% within the R-2 zone. No adverse impacts have been identified with a greater lot and parking coverage and having more units or higher density within a subdivision can be considered a more efficient use of land.

The current NDC does not have a maximum lot coverage for C-2 zoned property. The applicant is proposing a number of residential lots within the C-2, which allows for residential land use with a conditional use permit.

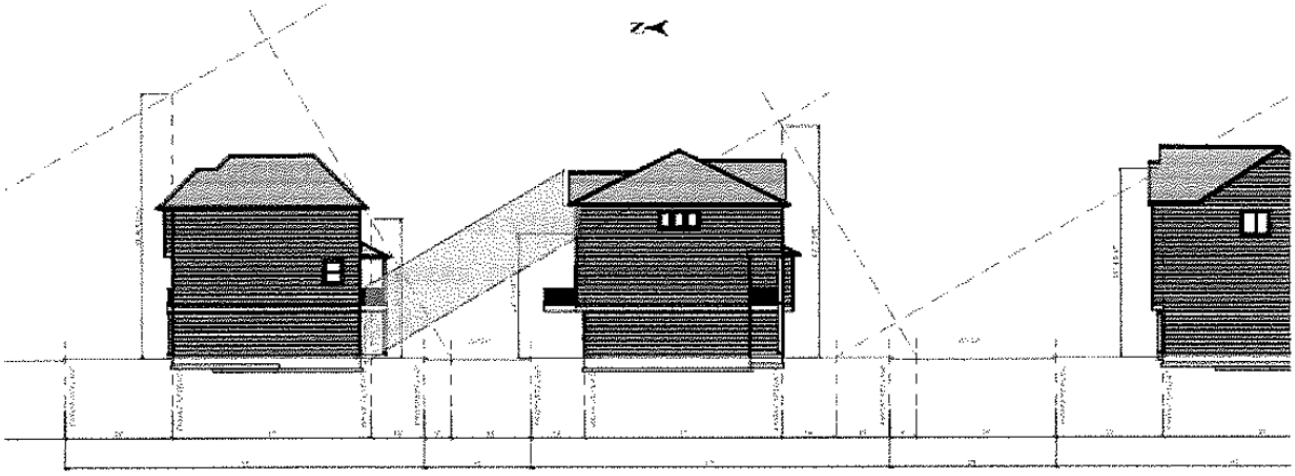
In summary, the applicant is requesting a 10% increase in combined lot and parking coverage over the current maximum of 60% combined lot coverage allowed for in the R-2 zone.

Because there are no adverse impacts anticipated to units within the proposed development and to existing surrounding properties, it is appropriate to allow an increase of a combined lot and parking coverage of 70% within the R-2 zone. This criterion along with section 15.240.020.I. have been met.

K. Height. Unless determined by the hearing authority that intrusion of structures into the sun exposure plane will not adversely affect the occupants or potential occupants of adjacent properties, all buildings and structures shall be constructed within the area contained between lines illustrating the sun exposure plane (see Appendix A, Figure 8 and the definition of "sun exposure plane" in NMC 15.05.030). The hearing authority may further modify heights to:

1. ***Protect lines of sight and scenic vistas from greater encroachment than would occur as a result of conventional development.***
2. ***Protect lines of sight and scenic vistas.***
3. ***Enable the project to satisfy required findings for approval.***

Finding: The applicant has provided a sun exposure diagram and analysis with the updated submittal. The applicant is proposing some 3-story units that may impact sun exposure. The narrative states that "some of the north/south oriented lots may have slight impacts on the first floor of the proposed homes". The first floor of lots that would be impacted are 36-66, 81 and 82. The east/west oriented lots do not appear to be impacted by the smaller lots and higher density of units. The following diagram is provided in the applicants' narrative.



The applicants' narrative has made several arguments in support of what they call a "limited impact" and that housing configured in this manner provides numerous benefits to the future residents and provides opportunities for the creation of a highly efficient and well-designed developments. It is true that the urban growth boundary limits the amount of land developed at urban densities. The residents will have access to the network of pathways, sidewalks and parks so they will still have access to the sun. The applicants' narrative did not discuss impacts to Oxberg Lake or Spring Meadow subdivisions. It is up to the hearing authority, in this case the planning commission, to determine if lack of sun exposure will or will not adversely affect the occupants or potential occupants of adjacent properties. Even houses in existing subdivisions that have not been granted relaxations of dimensional requirements, such as lot width and setback, block the sun to some extent of neighboring houses. Because existing neighboring houses in previously developed subdivisions block sun exposure to some extent and a limited number of proposed units, 32, would have impacts to sun exposure on only the first floor of their homes and not the entire house these criteria are met.

L. Dedication, Improvement and Maintenance of Public Thoroughfares. Public thoroughfares shall be dedicated, improved and maintained as follows:

1. Streets and Walkways. Including, but not limited to, those necessary for proper development of adjacent properties. Construction standards that minimize maintenance and protect the public health and safety, and setbacks as specified in NMC 15.410.050, pertaining to special setback requirements to planned rights-of-way, shall be required.

2. Notwithstanding subsection (L)(1) of this section, a private street may be approved if the following standards are satisfied.

a. An application for approval of a PUD with at least 50 dwelling units may include a private street and the request for a private street shall be supported by the evidence required by this section. The planning commission may approve a private street if it finds the applicant has demonstrated that the purpose statements in NMC 15.240.010(A) through (D) are satisfied by the evidence in subsections (L)(2)(a)(i) through (v) of this section.

i. A plan for managing on-street parking, maintenance and financing of maintenance of the private street, including a draft reserve study showing that the future homeowners association can financially maintain the private street;
ii. A plan demonstrating that on- and off-street parking shall be sufficient for the expected parking needs and applicable codes;
iii. Proposed conditions, covenants and restrictions that include a requirement that the homeowners association shall be established in perpetuity and shall continually employ a community management association whose duties shall include assisting the homeowners association with the private street parking management and maintenance, including the enforcement of parking restrictions;
iv. Evidence that the private street is of sufficient width and construction to satisfy requirements of the fire marshal and city engineer; and
v. The PUD shall be a Class I planned community as defined in ORS Chapter 94.

Finding: The applicant is proposing a mixture of private and public streets. The NDC states that "at least 50 dwelling units may include a private street and the request for a private street shall be supported by the evidence required by this section". The applicant has stated they have met the requirements listed in NDC Section 15.240.020(L)(2)(a)(i, ii, iii, iv and v) as well as Section 15.240.010(A, B, C and D). The applicant has provided documentation that the development proposal meets the requirements listed in Section 15.240.020(L)(a)(i, ii, iii, iv and v) including:

- "a PUD proposes at least 50 dwelling units,
- has provided a plan for on-street parking, maintenance and financing of maintenance of the private street,
- demonstrates sufficient parking,
- includes CC&Rs addressing the private street (alternative submittal discussed below),
- is constructed to proper standards, and
- the PUD is a Class I planned community as defined in ORS Ch. 94."

The applicant has proposed 299 dwelling units, which exceeds the required minimum units for a PUD of 50 dwelling units. The applicant has provided a Declaration of Private Street Maintenance Covenant and Agreement, Stormwater Facility Easement and Maintenance Agreement and a Reserve Study and Maintenance Plan for financing of maintenance of the private streets and stormwater facilities. The letter submitted by the applicants' legal representative states that the stormwater and private street maintenance covenant and agreements have been submitted in lieu of CC&Rs. The applicant is providing 1,087 parking spots while the NDC requires 570 parking spots, so this proposal demonstrates there is sufficient parking. With the adherence to all conditions of approval the proposed Crestview Crossing development will be constructed to meet proper City standards. In order for a PUD to meet ORS Chapter 94 of a Class I planned community the following must be true: "Class I planned community" means a planned community as defined in ORS 94.550 that: (a) Contains at least 13 lots or in which the declarant has reserved the right to increase the total number of lots beyond 12; and (b) Has

an estimated annual assessment, including an amount required for reserves under ORS 94.595, exceeding $10,000 for all lots or $100 per lot, whichever is greater, based on: (A) For a planned community created on or after January 1, 2002, the initial estimated annual assessment, including a constructive assessment based on a subsidy of the association through a contribution of funds, goods or services by the declarant;" The applicants proposed PUD meets the requirements of ORS 94 as it pertains to planned communities.

The applicant further states their application meets the following purpose statements in NDC 15.240.010(A) through (D), which include:

- "encourage comprehensive planning in areas of sufficient size…
- provide flexibility in architectural design, placement and clustering of buildings, use of open space and outdoor living areas, and provision of circulation facilities, parking, storage and related site and design considerations
- promote an attractive, safe, efficient and stable environment…and
- provide for economy of shared services and facilities."

The subject property is 33.13 acres in area, which is large enough for comprehensive planning. As proposed by the applicant, the development has provided a network of paths and a park centered around a wetland, parking for visitors is spread throughout the development and has utilized a team of professionals including planners, engineers and landscape architects in their planning process. The applicant has provided a few typical single family and multifamily home elevation drawings utilizing peaked roofs and other architectural features. Clustering of lots has been somewhat utilized as evident from the preservation of some of the wetlands. The applicant has indicated in their narrative that they have provided enough open and outdoor living space for each unit, which has been conditioned for verification during the building permit review process. The applicant has provided a plan showing site circulation for pedestrians and vehicles. One intersection of private street "G" and public street "C" has been determined to not meet the required distance from Crestview Drive (Major Collector), which is discussed and conditioned later in this report. The applicant has provided plans for shared waste water disposal, stormwater and public water facilities and services.

The City Engineer is requiring sidewalks along private streets to be a minimum of five feet wide. The applicant is proposing a PUD which includes both public and private streets. The applicant is proposing private streets A-L with the following cross-section:

- 5-foot sidewalk*
- 0.5-foot rolled curb
- 24-26-foot travel lanes
- 0.5-foot rolled curb
- 5-foot sidewalk*

* Per private road cross-section shown on sheet C300.

The applicant has indicated in parts of the narrative that private walkways are to be 4-feet wide, but the cross-section of C300 show sidewalks along private streets as 5-feet wide. Information regarding travel lane widths for private streets was updated by the applicant per an email sent on Friday July 27, 2018 by Andrew Tull. The email indicates that all private streets will have at least 26-feet of access. In some cases, access drives will be 24-feet in width with mountable curbs and sidewalks built to withstand wheel-loads. Private streets without walkways will have 26-feet of pavement.

Because the applicant has been unclear on the intended width of walkways along private streets, the applicant shall follow City Engineer requirements for sidewalks along private streets to be 5-feet wide matching the applicant's cross-section detail on sheet C300. The design of weep holes in the proposed rolled curb will be reviewed as part of the Public Improvement Permit, direct connection to the stormwater system may be required.

Because the applicant has been unclear about their intended parking locations on private streets, the applicant shall follow requirements outlined in a letter TVF&R provided on June 5, 2018 which indicated the following:

- 20-26 feet road width – no parking on either side of roadway

Through their submitted materials, the applicant has demonstrated compliance with Section 15.240.010 (A) through (D) of the NDC.

Private streets are acceptable with the adherence to the conditions of approval because the applicant plans, narrative and other supporting documents meet the requirements of this section of the NDC or conditions of approval address and correct any deficiencies. These criteria have been met. Additional requirements for public improvements are addressed later in this report.

b. If the PUD is established, the homeowners association shall provide an annual written report on the anniversary date of the final approval of the PUD approval to the community development director that includes the following:

i. The most recent reserve study.

ii. The name and contact information for the retained community management association.

iii. A report on the condition of the private street and any plans for maintenance of the private street.

Finding: The applicant has provided a copy of the Crestview Crossing Homeowners Association Reserve Study and Maintenance Plan 2020 as required by this section of the NDC. The reserve study utilizes a mix of information provided by the developer, various construction estimating and scheduling manuals/programs, and will incorporate information from the eventually established

Crestview Crossing Homeowners Association (HOA) in order to determine the useful life and replacement cost of each common item such as the proposed private streets. This documents states that it will be updated annually. Blue Mountain Community Management will be utilized by the Crestview Crossing HOA to conduct the reserve study, which will be implemented for the budget year beginning on January 1, 2020 with the budget year ending on December 31, 2020. As described in this study, a reserve study is best described as an assessment of current assets, their approximate value and their future value at the time of replacement. Page 10 of the Maintenance Plan 2020 projects that all lots would be required to pay a monthly fee of $5.52 providing an annual total program contribution of $16,425.00. The aforementioned total assumes contributions by all 250 lots. It is unknown when all 250 lots will be constructed and the developer has proposed phasing of the development over ten years with the possibility of an additional five one year extensions. Because the NDC requires an annual written report on the anniversary date of the final approval of the PUD and the project is proposed to be phased, which final approval could take 10 years with additional five one year extensions, the Crestview HOA must provide and annual report that meets the requirements of NDC 15.240.020.L.2.b. to the Newberg Community Development Direction each year on the anniversary date of the final approval for each phase of the PUD approval. These criteria will be met with the adherence to the aforementioned condition of approval.

3. Easements. As are necessary for the orderly extension of public utilities and bicycle and pedestrian access.

Finding: Easements are needed for the extension of public utilities and bicycle and pedestrian access. The applicant is showing 8-foot public utility easements along private street frontages. The applicant provided email correspondence with Portland General Electric (PGE) dated August 8, 2018 which indicated that PGE would like 10-foot public utility easements along all public road frontages, and 8-foot public utility easements along private street frontages with the goal to have 8-feet clear space (no sidewalks). Because the applicant's narrative and plans do not clearly show the different necessary easements, the applicant is required to provide 10-foot public utility easements on public street frontages per PGEs review dated August 24, 2018. Public utility easements shall not be collocated/overlapped (running parallel) with public infrastructure easements on private streets i.e. storm, sewer, water, or non-potable water lines.

M. Underground Utilities. Unless waived by the hearing authority, the developer shall locate all on-site utilities serving the proposed planned unit development underground in accordance with the policies, practices and rules of the serving utilities and the Public Utilities Commission.

Finding: On page 20 of the narrative the applicant has stated that all utilities will be placed underground. This criterion is met.

N. Usable Outdoor Living Area. All dwelling units shall be served by outdoor living areas as defined in this code. Unless waived by the hearing authority, the outdoor living area must equal at least 10 percent of the gross floor area of each unit. So long as outdoor living area is available to each dwelling unit, other outdoor living space may be offered for dedication to the city, in fee

or easement, to be incorporated in a city-approved recreational facility. A portion or all of a dedicated area may be included in calculating density if permitted under these regulations.

Finding: Page 21 of the applicants' supplemental narrative provided on August 8, 2018, states all dwelling units are served by outdoor living areas equal to at least 10 percent of the gross floor area of each unit (Attachment 8). The single-family units will have outdoor living on individual lots. The multifamily units will utilize a combination of balconies and porches as well as common outdoor living areas located throughout the overall planned unit development. All proposed dwelling units will be able to provide at least 10% of the gross floor area in outdoor living space. Outdoor living spaces for each unit can be verified at the time of the building permit." Because the applicants' narrative states they will verify that all units have at least 10% outdoor living area, the applicant shall clearly list all outdoor living area calculations on all single-family and multifamily building plans. If a single family or multifamily building plan does not meet said requirement then no building permit shall be granted until plans are revised to meet this section 15.240.020(N) of NDC. This criterion will be verified to have been met during the building permit review process.

O. Site Modification. Unless otherwise provided in preliminary plan approval, vegetation, topography and other natural features of parcels proposed for development shall remain substantially unaltered pending final plan approval.

Finding: The applicant has submitted grading plans that have been reviewed by City staff engineers. The applicant is proposing to remove 923 of 1,042 trees, which is allowed under the current Newberg Development Code due to there not being an Urban Forestry Program in the City. However, Resolution 2006-15 the Newberg Urban Area Management Commission lists a condition of approval that states a tree buffer along the north property line would be required (Attachment 6). The applicants' submittal does not show any trees along the north property line or any new trees planned to be planted. The applicant has provided no information pertaining to a tree buffer and is proposing to remove all existing mature trees along the northern border abutting the Oxberg Lake Estates subdivision. A condition of approval has been added to a separate section of this report to address the absence of a tree buffer along the northern property line. In order to meet the requirements of this section of the NDC, prior to modification of any site features or beginning "Step Two" of the review process (NDC Section 15.240.020.B.2.) the applicant shall provide a list of site features to be modified and supporting drawings illustrating before and after conditions for review by City Staff. "Step two" shall not commence until the applicant and city staff can agree what site modifications are permissible under this section of the NDC.

The applicant has stated that the permitting for wetland filling and mitigation is being conducted separately from this PUD application and have provided little information regarding their progress with the Joint Permit Application (JPA) process. On August 20, 2018, a review referral form was sent to Mr. Dan Cary of Aquatic Resource Management Program, Oregon Department of State Lands, who sent an email dated July 30, 2018, providing comments pertaining to currently proposed Crestview Crossing development. The applicant is proposing significant modifications to wetlands including preservation, removal and mitigation. In an email dated July 26, 2018 (Attachment 2) and

received after 6:30 pm, Ms. Jevra Brown, Aquatic Resource Planner for Department of State Lands stated the following:

"Expired delineation WD2000-0260 for tax lot 1100
Expired delineation WD2006-0698 associated with administratively closed permits 40337-RF and 48735-RF for Crestview Crossing – Part I.
Crestview Crossing – Part 2 WD2013-0148, administratively closed application 57027-RF, 58464-RF application on extension."

The applicant was informed of the expired wetlands permit issue on July 27, 2018.

With adherence to the aforementioned condition of approval this criterion is met.

P. Completion of Required Landscaping. If required landscaping cannot be completed prior to occupancy, or as otherwise required by a condition of approval, the director may require the applicant to post a performance bond of a sufficient amount and time to assure timely completion.

Finding: On page 21 of the applicants' narrative it states that "the applicant acknowledges the possibility of a performance bond being required to assure timely completion of any delayed landscaping." Because the applicant has acknowledged this section of the NDC this criterion is met.

Q. Design Standards. The proposed development shall meet the design requirements for multifamily residential projects identified in NMC 15.220.060. A minimum of 40 percent of the required points shall be obtained in each of the design categories. [Ord. 2822 § 1 (Exh. A), 2-5-18; Ord. 2763 § 1 (Exh. A §§ 9, 10), 9-16-13; Ord. 2730 § 1 (Exh. A § 9), 10-18-10; Ord. 2720 § 1(4), 11-2-09; Ord. 2505, 2-1-99; Ord. 2451, 12-2-96. Code 2001 § 151.226.]

Finding: This section of the NDC is discussed later in this staff report under Section 15.220.060.

15.240.030 Preliminary plan consideration – Step one.
B. Application. An application, with the required fee, for preliminary plan approval shall be made by the owner of the affected property, or the owner's authorized agent, on a form prescribed by and submitted to the director. Applications, accompanied by such additional copies as requested by the director for purposes of referral, shall contain or have attached sufficient information as prescribed by the director to allow processing and review in accordance with these regulations. As part of the application, the property owner requesting the planned development shall file a waiver stating that the owner will not file any demand against the city under Ballot Measure 49, approved November 6, 2007, that amended ORS Chapters 195 and 197 based on the city's decision on the planned development.

Finding: All required fees for the preliminary plan approval have been paid. Additionally, the applicant has provided a Measure 49 waiver. This criterion is met because required fees have been paid and a Measure 49 waiver has been submitted.

C. Type III Review and Decision Criteria. Preliminary plan consideration shall be reviewed through the Type III procedure. Decisions shall include review and recognition of the potential impact of the entire development, and preliminary approval shall include written affirmative findings that:

1. The proposed development is consistent with standards, plans, policies and ordinances adopted by the city; and

Finding: This application is being reviewed under a Type III process and the findings review and recognize potential impacts of the entire development. The proposed development has gone through a full review of City standards, plans, policies, order and ordinances to determine compliance. Conditions of approval (Exhibit "B") are provided later in this report and require the developer to address any issues that the preliminary PUD has that cause a shortfall in meeting City requirements. This criterion will be met with the adherence to all conditions of approval.

2. The proposed development's general design and character, including but not limited to anticipated building locations, bulk and height, location and distribution of recreation space, parking, roads, access and other uses, will be reasonably compatible with appropriate development of abutting properties and the surrounding neighborhood; and

Finding: The applicant is proposing larger lot single-family detached homes along the northern property line, providing a buffer from the smaller lots proposed as part of the development from the larger lots located in the Oxberg Lake Estates subdivision. To the west is Spring Meadow Subdivision and Spring Meadow Park, where smaller lot higher density single family development is proposed. The higher density single family area near the west property line is buffered from Spring Meadow subdivision by Spring Meadow Park. The multifamily and smaller lots bordering the eastern property line of the subject property are approximately 263 feet from the single family home on the abutting lot to the east. Along the southern property line smaller single family lots and multifamily buildings abut E Portland Road. The proposed development provides a network of pathways and a centrally located park. Parking is provided on the single family lots, a parking lot for the multifamily buildings, on street parking on the public streets and visitor parking lots are located throughout the higher density single family areas. Both public and private streets are being proposed as part of the development.

The height of the proposed buildings meets the requirements of the NDC and should relate well to human scale. The bulk of the proposed development is greater than surrounding development within the city due to the reduced size of the proposed lots and reduced setbacks. However, as discussed in other sections of this report, the applicant has not maxed out their density allowance so even though the proposed density is greater than surrounding older subdivisions additional units could be proposed and could cause even more of an impact. However, the current application does not max

out the density allowance. The landscaping and screening is adequate for most of the surrounding lots with the exception of 1812 Leo Lane, tax lot 12100, located in Spring Meadow subdivision. The property in Spring Meadow subdivision will abut proposed lots 245 through 248. As conditioned elsewhere in this report, a vegetative buffer will be required along the entire property line of 1812 Leo Lane because lots 245 through 248 are a smaller or more dense and out of character with the lots within the Spring Meadow subdivision. As conditioned elsewhere in this report, a tree buffer will be required to lessen the impact to the Oxberg Lake Estate subdivision. It should be pointed out that the surrounding subdivisions were developed before the adoption of the current development code, when larger lots and lower density was common. In NUAMC Resolution 2006-15 the Newberg Urban Area Management Commission lists a condition of approval that states a tree buffer along the north property line would be required (Attachment 6). The applicants' submittal does not show any trees along the north property line being preserved or any new trees planned to be planted. As conditioned earlier in the report and in compliance with Resolution 2006-15, the applicant shall retain as many mature trees as possible along the northern border of Yamhill County Tax lots 13800 and 1100 and supplement the tree buffer with new trees where necessary to provide a contiguous vegetative buffer. The applicant has provided site development plans that illustrate the location and distribution of recreation space, parking, roads, access and other uses such as a centrally located park as part of a preserved wetland. The proposed plans provide adequate recreation space, the required 10% outdoor living space per Section 15.240.020 (N) will also be checked during the building permit review process. As discussed in other sections of this report, the applicant has provided a sufficient number of parking spaces. Staff engineers have reviewed all private and public roads and access and have found all to meet City requirements and standards except where conditioned. Conditions of approval have been provided to assure compliance with the NDC.

This criterion will be met with the adherence to the conditions of approval.

3. Public services and facilities are available to serve the proposed development. If such public services and facilities are not at present available, an affirmative finding may be made under this criterion if the evidence indicates that the public services and facilities will be available prior to need by reason of:

a. Public facility planning by the appropriate agencies; or

b. A commitment by the applicant to provide private services and facilities adequate to accommodate the projected demands of the project; or

c. Commitment by the applicant to provide for offsetting all added public costs or early commitment of public funds made necessary by the development; and

4. The provisions and conditions of this code have been met; and

Finding: City staff engineers have evaluated pubic services and facilities available to the subject property, have found that adequate public services and facilities exists or upgrades can be made in order to meet this section of the NDC. The conditions of approval identified in Exhibit "B" cover needed upgrades to public services and facilities. Adequate services, police, fire (TVF&R) and

access to the library are available and the proposed developments property tax dollars will help fund these services. With implementation of the conditions of approval found throughout this report, these criteria will be met.

5. Proposed buildings, roads, and other uses are designed and sited to ensure preservation of features, and other unique or worthwhile natural features and to prevent soil erosion or flood hazard; and

Finding: The design and location of the buildings, roads and other uses has been done in a way to preserve a portion of wetlands located on the property. The applicant has provided a grading plan showing soil erosion mitigation measures that will be taken. According to the City's GIS, there are no flood hazards within the confines of the subject property. In compliance with Resolution 2006-15, discussed earlier in this report, a condition of approval has been added requiring trees along the northern boundary to be preserved where possible to maintain a buffer between the proposed development and the Oxberg Lake subdivision. It is unclear if the Oregon Department of State Lands and Army Corps of Engineers have received or reviewed a new Joint Permit Application (JPA) for the current version of Crestview Crossing. The JPA is intended for filling and mitigating impacts to the wetlands. A referral for review of the current proposal was sent to the DSL but as of the date this report was drafted there has been no response. The City has no documentation of any State Planning Goal 5 resources located within the confines of the subject property including wildlife habitats, historic places, and aggregate (gravel) within the confines of the subject property.

This criterion is met.

6. There will be adequate on-site provisions for utility services, emergency vehicular access, and, where appropriate, public transportation facilities; and

Finding: City Staff Engineers have evaluated the application for adequate utility services and have found existing services to be adequate. The applicant has indicated they've worked with Tualatin Valley Fire & Rescue (TVF&R) and a letter was submitted as part of their application. TVF&R stated that no on-street parking is permitted on the private streets, it doesn't appear that the applicant is proposing parallel parking on the private streets but they are illustrating several parking lots showing 90 degree parking. Sheet C230 of the plan set illustrates a fire access plan. No transportation facilities are located onsite or planned per the page 24 of the narrative submitted on August 23, 2018. The applicant stated that "if the opportunity arises in the future, public transportation facilities" could be provided. This criterion will be met with the adherence to the aforementioned condition of approval.

7. Sufficient usable recreation facilities, outdoor living area, open space, and parking areas will be conveniently and safely accessible for use by residents of the proposed development; and

Finding: The applicant is proposing both active and passive open space recreational areas for use by the residents. The applicant has stated in their findings that "the proposed design includes a civic use park which has been envisioned to provide space for community events as well as a space for featured local vendors. A smaller neighborhood park is connected to the proposed development through a network of multi-use pathways, which provide pedestrian circulation and recreation throughout the site. The proposal includes multiple open spaces, most of which include a trail system. The multi-family housing has common outdoor living areas, as well as balconies and patios for some individual units. The single-family housing has outdoor living areas adjacent to the homes." The single family homes will have onsite parking, the multifamily buildings have direct access to a parking lot, on-street parking is provided on the public streets and visitor parking lots off of the private streets are provided in several areas throughout the development. City staff concur with the applicants narrative and plans, which have shown that the proposed parking spaces, discussed in detail in a separate section of this report meets the city requirements. The applicants' plan set illustrates a centrally located open space/park that will provide access via pathways. The required outdoor living area per unit of 10% will be reviewed for conformance with the NDC at the time of building permit review. A condition of approval has been added in a separate section, which requires units to be modified if they do not provide the minimum of 10% outdoor living area. This criterion will be met with the adherence to the conditions of approval.

8. Proposed buildings, structures, and uses will be arranged, designed, and constructed so as to take into consideration the surrounding area in terms of access, building scale, bulk, design, setbacks, heights, coverage, landscaping and screening, and to assure reasonable privacy for residents of the development and surrounding properties.

Finding: The applicant has stated that the "…site has been designed to reflect the surrounding area and to provide a reasonable level of privacy for residents of the development and surrounding properties. Large lot single-family detached dwellings are proposed along the northern property line, separating this development from another large lot residential development, easing the transition from lower density to higher. The site is buffered from the residential developments to the west by the park that is adjacent to the site. The site as a whole is designed to provide safe and convenient access." The proposed building elevation drawings illustrate peaked roofs and architectural feature not unlike the surrounding homes in abutting subdivisions. There are no structures proposed at this time. Engineers, planners, architects and landscape architects have worked as a development team to arrange units, provide landscaping and arrange streets in a pattern that considers the surrounding area. There will be sufficient buffering, with conditions of approval, for the surrounding neighborhoods either through like sized lots, additional vegetative buffers or separation by distance from the smaller lots and multifamily lot. The access to the site will be from E Crestview Drive from the north and E Portland Road from the south. Building scale refers to building elements and details as they proportionally relate to each other and to humans. The height of the proposed buildings meets the requirements of the NDC and should relate well to human scale. The bulk of the proposed development is greater than surrounding developments within the city due to the reduced size of the proposed lots and reduced setbacks. However, as discussed in other sections of this report, the

applicant has not maxed out their density allowance so even though the proposed density is greater than surrounding older subdivisions additional units could have been proposed causing an even greater impact to surrounding properties. The landscaping and screening is adequate for most of the surrounding lots with the exception of 1812 Leo Lane, tax lot 12100, located in Spring Meadow subdivision. The property in Spring Meadow subdivision will abut proposed lots 245 through 248. As conditioned elsewhere in this report, a vegetative buffer will be required along the entire property line of 1812 Leo Lane because lots 245 through 248 are a great deal smaller or more dense and out of character with the lots within the Spring Meadow subdivision. It should be pointed out that the surrounding subdivisions were developed before the adoption of the current development code, when larger lots and lower density was common. In NUAMC Resolution 2006-15 the Newberg Urban Area Management Commission lists a condition of approval that states a tree buffer along the north property line would be required (Attachment 6). The applicants' submittal does not show any trees along the north property line being preserved or any new trees planned to be planted. As conditioned earlier in the report and in compliance with Resolution 2006-15, the applicant shall retain as many mature trees as possible along the northern border of Yamhill County Tax lots 13800 and 1100 and supplement the tree buffer with new trees where necessary to provide a contiguous vegetative buffer. The applicant has provided site development plans that illustrate the location and distribution of recreation space, parking, roads, access and other uses such as a centrally located park as part of a preserved wetland. The proposed plans provide adequate recreation space, the required 10% outdoor living space per Section 15.240.020 (N) will also be checked during the building permit review process. As discussed in other sections of this report, the applicant has provided a sufficient number of parking spaces. Staff engineers have reviewed all private and public roads and access. City engineers have found the roads and access meets City requirements and standards except where conditioned. Conditions of approval have been provided to assure compliance with the NDC. Through the PUD process the applicant is asking for an increase in combined lot and parking coverage of 70% in the R-2 zone district. The current NDC does not have a maximum lot coverage for C-2 zoned property. The applicant is proposing a number of residential lot within the C-2 zone, which allows for residential land use with a conditional use permit. The applicant has applied for a conditional use permit for constructing residential uses within the C-2 zone. Lot and parking coverage is checked during the building permit review process. The applicant has stated that they are confident that the 70% coverage allowance will be adequate for meeting the requirements of the NDC. –

This criterion will be met with the adherence to the conditions of approval in Exhibit "B".

D. Conditions. Applications may be approved subject to conditions necessary to fulfill the purpose and provisions of these regulations. [Ord. 2822 § 1 (Exh. A), 2-5-18; Ord. 2693 § 1 (Exh. A(6)), 3-3-08; Ord. 2612, 12-6-04; Ord. 2451, 12-2-96. Code 2001 § 151.227.]

Finding: Exhibit "B" lists conditions of approval that are necessary in order fulfill the purpose and provisions of these regulations within the NDC. If the applicant adheres to all conditions of approval this criterion will be met.

III. 15.220.060 Additional requirements for multifamily residential projects.

The purpose of this section is to ensure that residential projects containing three or more units meet minimum standards for good design, provide a healthy and attractive environment for those who live there, and are compatible with surrounding development. As part of the site design review process, an applicant for a new multifamily residential project must demonstrate that some of the following site and building design elements, each of which has a point value, have been incorporated into the design of the project. At least 14 points are required for attached single-family projects of any size and smaller multifamily projects with six or fewer units and at least 20 points are required for multifamily projects with seven or more units. For more information and illustrations of each element, refer to the Newberg Residential Development Design Guidelines (July 1997).

A. Site Design Elements.

1. Consolidate green space to increase visual impact and functional utility. This applies to larger projects which collectively have a significant amount of open space areas which can be consolidated into children's play areas, gardens, and/or dog-walking areas (three points).
2. Preserve existing natural features, including topography, water features, and/or native vegetation (three points).
3. Use the front setback to build a street edge by orienting building(s) toward the street with a relatively shallow front yard (12 to 15 feet for two-story buildings) to create a more "pedestrian-friendly" environment (three points).
4. Place parking lots to the sides and/or back of projects so that front yard areas can be used for landscaping and other "pedestrian-friendly" amenities (three points).
5. Create "outdoor" rooms in larger projects by grouping buildings to create well-defined outdoor spaces (two points).
6. Provide good-quality landscaping. Provide coordinated site landscaping sufficient to give the site its own distinctive character, including the preservation of existing landscaping and use of native species (two points).
7. Landscape at the edges of parking lots to minimize visual impacts upon the street and surrounding properties (two points).
8. Use street trees and vegetative screens at the front property line to soften visual impacts from the street and provide shade (one point).
9. Use site furnishings to enhance open space. Provide communal amenities such as benches, playground equipment, and fountains to enhance the outdoor environment (one point).
10. Keep fences neighborly by keeping them low, placing them back from the sidewalk, and using compatible building materials (one point).
11. Use entry accents such as distinctive building or paving materials to mark major entries to multifamily buildings or to individual units (one point).
12. Use appropriate outdoor lighting which enhances the nighttime safety and security of pedestrians without causing glare in nearby buildings (one point).

B. Building Design Elements.

1. Orient buildings toward the street. For attached single-family and smaller multifamily projects, this means orienting individual entries and porches to the street. In larger projects with internal circulation and grounds, this means that at least 10 percent of the units should have main entries which face the street rather than be oriented toward the interior (three points).
2. Respect the scale and patterns of nearby buildings by reflecting the architectural styles, building details, materials, and scale of existing buildings (three points).
3. Break up large buildings into bays by varying planes at least every 50 feet (three points).
4. Provide variation in repeated units in both single-family attached and large multifamily projects so that these projects have recognizable identities. Elements such as color; porches, balconies, and windows; railings; and building materials and form, either alone or in combination, can be used to create this variety (three points).
5. Building Materials. Use some or all of the following materials in new buildings: wood or wood-like siding applied horizontally or vertically as board and batten; shingles, as roofing, or on upper portions of exterior walls and gable ends; brick at the base of walls and chimneys; wood or wood-like sash windows; and wood or wood-like trim (one point for each material described above).
6. Incorporate architectural elements of one of the city's historical styles (Queen Anne, Dutch colonial revival, colonial revival, or bungalow style) into the design to reinforce the city's cultural identity. Typical design elements which should be considered include, but are not limited to, "crippled hip" roofs, Palladian-style windows, roof eave brackets, dormer windows, and decorative trim boards (two points).
7. Keep car shelters secondary to the building by placing them to the side or back of units and/or using architectural designs, materials, and landscaping to buffer visual impacts from the street (two points).
8. Provide a front porch at every main entry as this is both compatible with the city's historic building pattern and helps to create an attractive, "pedestrian-friendly" streetscape (two points).
9. Use sloped roofs at a pitch of 3:12 or steeper. Gable and hip roof forms are preferable (two points). [Ord. 2763 § 1 (Exh. A § 8), 9-16-13; Ord. 2505, 2-1-99. Code 2001 § 151.195.]

Finding: The table below illustrates the possible points and points earned for site design and building design elements. This section of the NDC states that at least 14 points are required for attached single-family projects of any size and smaller multifamily projects with six or fewer units and at least 20 points are required for multifamily projects with seven or more units. This multifamily design criteria listed in the NDC is met because the applicant has demonstrated they have obtained at least 33 combined points for site design and building design.

Design Review	Possible Points	Points Earned
Site Design Elements		
Consolidate green space	**3**	**3**
Preserve existing natural features	**3**	**0**
Use front setback to build a street edge	**3**	**0**
Place parking lots on sides or back of projects	**3**	**3**
Create "outdoor rooms"	**2**	**02**
Provide good quality landscaping	**2**	**2**
Landscape at edges of parking lots	**2**	**2**
Use street trees and vegetative screens	**1**	**1**
Use site furnishings to enhance open space	**1**	**0**
Keep fences "neighborly"	**1**	**0**
Use entry accents	**1**	**1**
Use appropriate outdoor lighting	**1**	**1**
Building Design Elements		
Orient buildings toward the street	**3**	**3**
Respect the scale and patterns of nearby buildings	**3**	**3**
Break up large building planes into bays	**3**	**3**
Provide variation in repeated units	**3**	**3**
Building materials: **a) wood or wood-like siding** **b) shingles on roof or upper portions** **c) brick at base of walls or chimneys** **d) wood or wood-like sash windows** **e) wood or wood-like trim**	**1 each**	**4 (a, b, d and e)**
Incorporate historical architectural elements	**2**	**0**
Keep car shelters accessory to building	**2**	**0**
Provide a front porch at every main entry	**2**	**2**
Use slope roofs at a pitch of 3:12 or steeper	**2**	**0**
Total Earned		**33**

15.220.030 Site design review requirements.

14. Traffic Study. A traffic study shall be submitted for any project that generates in excess of 40 trips per p.m. peak hour. This requirement may be waived by the director when a determination is made that a previous traffic study adequately addresses the proposal and/or when off-site and frontage improvements have already been completed which adequately mitigate any traffic impacts and/or the proposed use is not in a location which is adjacent to an intersection which is functioning at a poor level of service. A traffic study may be required by the director for projects below 40 trips per p.m. peak hour where the use is located immediately adjacent to an intersection functioning at a poor level of service. The traffic study shall be conducted according to the City of Newberg design standards. [Ord. 2619, 5-16-05; Ord. 2451, 12-2-96. Code 2001 § 151.192.]

Finding: A traffic study was submitted with the land use application for the Crestview Crossing PUD dated August 2018. Based on the analysis, the 260 single-family homes and 48 apartment units within the Crestview Crossing PUD were evaluated and it was estimated to create 2,826 additional trips each day; 213 will occur in the AM peak hour (7am-9am) and 285 trips will occur in the PM peak hour (4pm-6pm). It should be noted that the applicant's narrative uses a different number of homes, as it states 18 single-family homes, 230 cottage homes, and 51 multi-family homes. This means that the traffic analysis over stated the number of single family homes (260 homes in TIA vs. 248 homes in the applicant's narrative) and understated the number of apartments (48 apartments in the TIA vs. 51 apartments in the applicant's narrative). Eight study intersections were evaluated to determine the impact on the adjacent transportation system.

The study identified the following recommendations to mitigate traffic impacts at the Providence Drive/E Crestview Drive/E Portland Road intersection from the development. No other traffic impacts were identified.

- The new north leg of the Providence Drive/E Crestview Drive/E Portland Road intersection should be configured as a four-lane section with one northbound lane and three southbound lanes (left turn lane, through movement, and right turn lane). At least 250-feet of southbound left-turn lane storage and 150-feet of southbound right-turn lane storage should be provided to accommodate the 95th percentile queue lengths.
- The existing south leg of the Providence Drive/E Crestview Drive/E Portland Road intersection should be restriped to a four-lane section with one southbound lane, and three northbound lanes (left turn lane, through movement, and right turn lane).
    - Based on the 95th percentile queuing analysis:
        - A westbound right turn lane should be constructed with at least 300-feet of storage
        - A eastbound left turn lane should be striped to provide at least 150-feet of storage
    - The signal phasing of the Providence Drive/E Crestview Drive/E Portland Road intersection should be operated with permissive left turn movements on the north and south approaches with fully protected left turn movements on the east and west approaches.

The applicant submitted a supplemental traffic memo which is titled the "Five Party Agreement Transportation Considerations," dated August 15, 2018. This document outlines the transportation elements of the original Five Party Agreement from 2006, and addresses concerns raised by residents about the agreement.

Of concern is whether the alignment, intersection treatments, and cross-sectional elements being proposed in the Crestview Crossing PUD are consistent with the Five Party Agreement. The conceptual alignment from the original Five Party Agreement shows a roundabout approximately 380 feet north of E Portland Road with a traffic circle approximately 850-feet north of the

roundabout, just south of Robin Ct.

After the Five Party agreement was executed, traffic circles were installed at Birdhaven Loop and Robin Court.

The proposed alignment shows a roundabout approximately 590-feet north of E Portland Road with the existing traffic circle at Robin Court located approximately 910-feet north of the roundabout.

The difference between the roundabout and traffic circle spacing between the Five Party Agreement conceptual alignment, and the proposed PUD alignment is approximately 60-feet (850-feet vs. 910-feet) and will not impact travel speeds between the two traffic control devices.

Additionally it should be noted that a two-way side-street stop controlled intersection is being proposed between the roundabout and the existing traffic circle on Crestview Drive.

The City has determined that the information provided in the memo dated August 15, 2018, shows the proposed street alignments in the Crestview Crossing PUD is in compliance with the Five Party Agreement.

Because the applicant has submitted a TIA that meets City requirements and City Staff have found the supplemental memorandum adequately addressing the Five Party Agreement this criterion is met.

15.305.020 Zoning use table – Use districts.

Finding: The applicant is proposing single family and multifamily residential development within the R-1, R-2 and C-2 zone districts. The single family units are proposed for the R-1 and R-2 zoned areas, these uses are permitted within said zoning districts. The multifamily units will be developed within the C-2 area, which are permitted as a conditional use. The applicant has requested a conditional use for development of multifamily units within the C-2 zone district. Additionally, proposed lot 250 will be developed with commercial uses, which are permitted within the C-2 zone district. City staff has recommended approval of the conditional use permit for development of multifamily units within the C-2 District. Because the proposed uses are permitted either by right or allowed with a conditional use permit, Section 15.305.020 has been met.

15.356 Bypass Interchange (BI) Overlay

15.356.030 Permitted uses.

All uses of land and water that are permitted in the underlying zoning district(s) are also permitted in the bypass interchange overlay, with the exception of the special limitations on commercial uses in the industrial districts as outlined in NMC 15.356.050. [Ord. 2734 § 1 (Exh. B), 3-7-11; Ord. 2708 § 2, 12-1-08; Ord. 2602, 9-20-04. Code 2001 § 151.531.2.]

15.356.040 Conditional uses.

A. Uses of land and water that are listed as conditional uses in the underlying zoning district(s) may also be allowed in the bypass interchange overlay, with the exception of uses included in the list of prohibited uses in NMC 15.356.050.

B. Proposed conditional uses in the bypass interchange overlay are subject to the standard conditional use criteria and procedures of this code.

Finding: The subject properties are within the Bypass Interchange Overlay. However, the proposed path of the Bypass has since been revised and is proposed to be located adjacent to the frontage of the subject property. The applicant is proposing a mixture of single family, multifamily and commercial development on residentially and commercially zoned property. The applicant has applied for Conditional Use approval for the residential development in the C-2 zone that was evaluated earlier per the Conditional Use criteria in this report and is recommended to be approved. Because the uses proposed by the applicant are permitted either by right or as a conditional use, these criteria are met.

15.440.010 Required off-street parking.
A. Off-street parking shall be provided on the development site for all R-1, C-1, M-1, M-2 and M-3 zones. In all other zones, the required parking shall be on the development site or within 400 feet of the development site which the parking is required to serve. All required parking must be under the same ownership as the development site served except through special covenant agreements as approved by the city attorney, which bind the parking to the development site.

Finding: The applicant is proposing adequate parking for the R-1 zone district (lots 1-18) that will be located within the confines of lots along the northern property line of the subject property. This criterion is met.

D. All commercial, office, or industrial developments that have more than 20 off-street parking spaces and that have designated employee parking must provide at least one preferential carpool/vanpool parking space. The preferential carpool/vanpool parking space(s) must be located close to a building entrance. [Ord. 2810 § 2 (Exhs. B, C), 12-19-16; Ord. 2763 § 1 (Exh. A § 15), 9-16-13; Ord. 2564, 4-15-02; Ord. 2561, 4-1-02; Ord. 2451, 12-2-96. Code 2001 § 151.610.] Penalty: See NMC 15.05.120.

Finding: The current PUD application will subdivide lots, lot 250 is proposed for commercial use. It is anticipated that uses on this lot will require more than 20 off-street parking spaces and have designated employee parking. When development plans are submitted for commercial lot 250 a staff review will verify that at least one preferential carpool/vanpool parking space(s) will be provided and located close to the building entrance. Lot 250 will still have to be reviewed through the Design Review process to verify that the proposed parking meets the requirements of the NDC. This criterion will be verified to have been met through the Design Review process after the applicant submits an application for review.

15.440.020 Parking area and service drive design.

A. All public or private parking areas, parking spaces, or garages shall be designed, laid out and constructed in accordance with the minimum standards as set forth in NMC 15.440.070.

Finding: It has been determined that all proposed public and private parking areas and parking space have been laid out and constructed in compliance with the illustrations and footnotes listed Section 15.440.070 of the NDC.

B. Groups of three or more parking spaces, except those in conjunction with single-family or two-family dwellings on a single lot, shall be served by a service drive so that no backward movement or other maneuvering of a vehicle within a street, other than an alley, will be required. Service drives shall be designed and constructed to facilitate the flow of traffic, provide maximum safety in traffic access and egress and maximum safety of pedestrian and vehicular traffic on the site, but in no case shall two-way and one-way service drives be less than 20 feet and 12 feet, respectively. Service drives shall be improved in accordance with the minimum standards as set forth in NMC 15.440.060.
C. Gates. A private drive or private street serving as primary access to more than one dwelling unit shall not be gated to limit access, except as approved by variance.

Findings: The applicant has proposed groups of three or more parking spaces within the subject property. The applicant has indicated that both front loading and back loading spaces are proposed for the development. There are several parking areas that may require backward movement onto the private streets. Private streets are not public streets. The applicant is not proposing any gates as part of the project. Sheet C215 illustrates services drives of 24 to 26 feet in width for multifamily 249.

This criterion is met because the applicant has demonstrated compliance with Section 15.440.020(B and C).

15.440.030 Parking spaces required.

A.	Use	**B.**	Minimum Parking Spaces Required
	Residential Types		
	Dwelling, multifamily and multiple single-family dwellings on a single lot		
	Studio or one-bedroom unit Two-bedroom unit Three- and four-bedroom unit Five- or more bedroom unit		1 per dwelling unit 1.5 per dwelling unit 2 per dwelling unit 0.75 spaces per bedroom
	• Unassigned spaces		If a development is required to have more than 10 spaces on a lot, then it must provide some

A. Use	**B.** Minimum Parking Spaces Required
	unassigned spaces. At least 15 percent of the total required parking spaces must be unassigned and be located for convenient use by all occupants of the development. The location shall be approved by the director.
• Visitor spaces	If a development is required to have more than 10 spaces on a lot, then it must provide at least 0.2 visitor spaces per dwelling unit.
• On-street parking credit	On-street parking spaces may be counted toward the minimum number of required spaces for developments required to have more than 10 spaces on a lot. The on-street spaces must be directly adjoining and on the same side of the street as the subject property, must be legal spaces that meet all city standards, and cannot be counted if they could be removed by planned future street widening or a bike lane on the street.
• Available transit service	At the review body's discretion, affordable housing projects may reduce the required off-street parking by 10 percent if there is an adequate continuous pedestrian route no more than 1,500 feet in length from the development to transit service with an average of less than one hour regular service intervals during commuting periods or where the development provides its own transit. A developer may qualify for this parking reduction if improvements on a proposed pedestrian route are made by the developer, thereby rendering it an adequate continuous route.
Commercial neighborhood district (C-1)	1 for each dwelling
Dwelling, single-family or two-family	2 for each dwelling unit on a single lot
Fraternities, sororities, cooperatives and dormitories	1 for each three occupants for which sleeping facilities are provided
Hotels, motels, motor hotels, etc.	1 for each guest room

A.	Use	**B.**	Minimum Parking Spaces Required
	Rooming or boarding houses		1 for each guest room
	Special needs housing		1 space per 3 beds or actual parking needs as demonstrated through a parking analysis.
	Institutional Types		
Churches, clubs, lodges			1 for every 4 fixed seats or every 8 feet of bench length or every 28 sq. ft. where no permanent seats or benches are maintained – in main auditorium (sanctuary or place of worship)
	Continuing care retirement community not including nursing care		1 space per living unit
	Day care facility		5 spaces per each 1,000 gross sq. ft.
	Hospitals (including accessory retail wholly contained within a hospital building)	2 spaces for each 1,000 gross sq. ft.	
	Libraries, museums, art galleries		1 for each 250 sq. ft. of gross floorarea
	Medical/dental offices and laboratories		3.5 spaces for each 1,000 gross sq. ft.
	Nursing homes, homes for the aged, group care homes, asylums, etc.		1 for each 3 beds
	Schools		Colleges – "commuter" type, 1 for every full-time equivalent student (plus 1/2 of the requirements for accessory buildings, i.e., 1.-E* and 3.-G(1))**
	Schools		Colleges – "resident" type, 1 for every 3 full-time equivalent students (plus 1/2 of the requirements for accessory buildings, i.e., 1.-E* and 3.-G(1))**
	Schools		Elementary or junior high, 1-1/2 for each teaching station plus 4 for every classroom, or 1 for every 42 sq. ft. of seating area where there are no fixed seats in an auditorium or assembly area
	Schools		High schools, 1-1/2 for each teaching station, plus 8 for every classroom, or 1 for every 28 sq.

A. Use	**B.** Minimum Parking Spaces Required
	ft. of seating area where there are no fixed seats in an auditorium or assembly area
Schools	Colleges – commercial or business, 1 for every 3 classroom seats (plus 1/2 of the requirements for accessory buildings, i.e., 1.-E* and 3.-G(1))**
Welfare or correctional institutions	1 for each 5 beds
Commercial Types	
Barber and beauty shops	1 for each 75 sq. ft. of gross floor area
Bowling alleys	6 for each bowling lane
Establishments or enterprises of a recreational or an entertainment nature:	
Establishments for the sale and consumption on the premises of food and beverages with a drive-up window	1 for each 75 sq. ft. of gross floor area
Establishments for the sale and consumption on the premises of food and beverages without a drive-up window	1 for each 100 sq. ft. of gross floor area
Participating type, e.g., skating rinks, dance halls	1 for each 75 sq. ft. of gross floor area
Spectator type, e.g., auditoriums, assembly halls, theaters, stadiums, places of public assembly	1 parking space for each 4 seats
Office buildings, business and professional offices	1 for every 400 sq. ft. of gross floor area
Pharmacies	1 for each 150 sq. ft. of gross floor area
Retail establishments, except as otherwise specified herein	1 for each 300 sq. ft. of gross floor area
Retail stores handling bulky merchandise, household furniture, or appliance repair	1 for each 600 sq. ft. of gross floor area
Industrial Types	
Except as specifically mentioned	1 for each 500 sq. ft. of gross floor area

A.	Use	B.	Minimum Parking Spaces Required
	herein, industrial uses listed as permitted in the M districts: M-1, M-2, M-3, and M-4		
	Aircraft storage hangars up to 3,600 sq. ft. each enclosed hangar area		None (parking occurs in hangar)
	Aircraft storage hangars over 3,600 sq. ft. each enclosed hangar area		1 for every 700 sq. ft. of hangar area over 3,600 sq. ft.
	Aircraft hangars intended for repair and maintenance operations		1 for each 5,000 sq. ft. of hangar, plus 1 for each 500 sq. ft. of shop area, plus 1 for each 400 sq. ft. of office area
	Laboratories and research facilities		1 for each 300 sq. ft. of gross floor area
	Machinery or equipment		1 for each 400 sq. ft. of gross sales floor area
	Wholesale and storage operations		1 for each 700 sq. ft. of gross floor area

Notes:

**** "1-E" refers to fraternities, sororities, cooperatives and dormitories that require one parking space for each three occupants for whom sleeping facilities are provided.***

***** "3.-G(1)" refers to establishments or enterprises of a recreational or an entertainment nature (spectator type, e.g., auditoriums, assembly halls, theaters, stadiums, places of public assembly) that require one parking space for each four seats.***

1. [Ord. 2763 § 1 (Exh. A § 16), 9-16-13; Ord. 2730[1] § 1 (Exh. A (13)), 10-18-10; Ord. 2720 § 1(19), 11-2-09; Ord. 2710 § 1, 3-2-09; Ord. 2647, 6-5-06; Ord. 2550, 5-21-01; Ord. 2451, 12-2-96. Code 2001 § 151.612.]

Penalty: See NMC 15.05.120.

Findings: The applicant has stated "all single family development will have parking on the individual lots with at least 2 parking spaces provided on each lot, one within the garage and one within the driveway provided for each single family lot. The 248 single family lots will require a total of 496 spaces based on 2 spaces required per single family unit. " For the 51 multifamily units the applicant is proposing 27 one bedroom and 24 two bedroom units. The required parking for the one bedroom units is 27 spaces, two bedroom 36 spaces and 11 visitor spaces for a total of 74 parking spaces. The applicant is proposing the following parking spaces:

Multifamily – 87 spaces, 4 ADA
Public Street – 73 parallel on street spaces
Private Street lots – 85 spaces

R-1 onsite parking – 72 spaces
17’ Front load parking – 46 spaces
17’ rear load parking - 219 spaces
21’ front load spaces – 111 spaces
21’ rear load spaces – 268 spaces
25’ front load spaces – 52 spaces
25’ rear load spaces – 68 spaces

The parking space requirements for commercial lot 250 will be evaluated when a development application submitted.

Because the applicant is proposing 1,085 parking spaces and the NDC requires 570 parking spaces, the parking space requirements are met.

15.440.060 Parking area and service drive improvements.
All public or private parking areas, outdoor vehicle sales areas, and service drives shall be improved according to the following:

A. All parking areas and service drives shall have surfacing of asphaltic concrete or Portland cement concrete or other hard surfacing such as brick or concrete pavers. Other durable and dust-free surfacing materials may be approved by the director for infrequently used parking areas. All parking areas and service drives shall be graded so as not to drain stormwater over the public sidewalk or onto any abutting public or private property.

B. All parking areas shall be designed not to encroach on public streets, alleys, and other rights-of-way. Parking areas shall not be placed in the area between the curb and sidewalk or, if there is no sidewalk, in the public right-of-way between the curb and the property line. The director may issue a permit for exceptions for unusual circumstances where the design maintains safety and aesthetics.

C. All parking areas, except those required in conjunction with a single-family or two-family dwelling, shall provide a substantial bumper which will prevent cars from encroachment on abutting private and public property.

D. All parking areas, including service drives, except those required in conjunction with single-family or two-family dwellings, shall be screened in accordance with NMC 15.420.010(B).

E. Any lights provided to illuminate any public or private parking area or vehicle sales area shall be so arranged as to reflect the light away from any abutting or adjacent residential district.

F. All service drives and parking spaces shall be substantially marked and comply with NMC 15.440.070.

G. Parking areas for residential uses shall not be located in a required front yard, except as follows:

> ***1. Attached or detached single-family or two-family: parking is authorized in a front yard on a service drive which provides access to an improved parking area outside the front yard.***
>
> ***2. Three- or four-family: parking is authorized in a front yard on a service drive which is adjacent to a door at least seven feet wide intended and used for entrance of a vehicle (see Appendix A, Figure 12).***

H. A reduction in size of the parking stall may be allowed for up to a maximum of 30 percent of the total number of spaces to allow for compact cars. For high turnover uses, such as convenience stores or fast-food restaurants, at the discretion of the director, all stalls will be required to be full-sized.

I. Affordable housing projects may use a tandem parking design, subject to approval of the community development director.

J. Portions of off-street parking areas may be developed or redeveloped for transit-related facilities and uses such as transit shelters or park-and-ride lots, subject to meeting all other applicable standards, including retaining the required minimum number of parking spaces. [Ord. 2810 § 2 (Exhs. B, C), 12-19-16; Ord. 2730 § 1 (Exh. A (14)), 10-18-10; Ord. 2628, 1-3-06; Ord. 2505, 2-1-99; Ord. 2451, 12-2-96. Code 2001 § 151.615.]

Findings: Both the narrative and site plans submitted by the applicant indicate that the development will be constructed in compliance with City of Newberg requirements. The parking lot areas do not encroach on public streets, with the exception of on-street parallel parking, which has been designed to meet City requirements. The applicant has stated they will provide parking bumpers for the multifamily lot but it's not clear from the plans, Sheet 215, where parking bumpers will be located. Because it is not clear from the applicants' drawings where the parking bumpers for the parking lots will be located, the applicant must submit drawings that clearly illustrate parking bumper locations during "Step Two" of the Planned Unit Development review process. There are several parking lots located throughout the development that illustrate more than 7 contiguous parking spots in a row without a landscape island breaking up the contiguous parking. Because Section 15.420.010 (B) (h) requires a landscaping island for every seven (7) parking spots, the applicant shall provide landscaping islands that meet requirements of said section of the NDC. All parking areas will be required to be landscaped in an effort to provide screening. The single family homes will provide parking within garages, outside of the front yard setback, and on the driveway approach. The applicant has not proposed any reduced sized parking stalls. Although the applicant is providing 12 units of affordable housing units, the affordable housing component is a small part of the project and there has been no information submitted stating during which phase these units will be developed. No transit facilities are proposed as part of this project. These criteria are met.

15.440.090 Purpose.
Cycling is a healthy activity for travel and recreation. In addition, by maximizing bicycle travel, the community can reduce negative effects of automobile travel, such as congestion and pollution. To maximize bicycle travel, developments must provide effective support facilities. At a minimum, developments need to provide a secure place for employees, customers, and residents to park their bicycles. [Ord. 2564, 4-15-02; Ord. 2518, 9-21-99. Code 2001 § 151.625.1.]

15.440.100 Facility requirements.
Bicycle parking facilities shall be provided for the uses shown in the following table. Fractional space requirements shall be rounded up to the next whole number.

Use	*Minimum Number of Bicycle Parking Spaces Required*
New multiple dwellings, including additions creating additional dwelling units	***One bicycle parking space for every four dwelling units***
New commercial, industrial, office, and institutional developments, including additions that total 4,000 square feet or more	***One bicycle parking space for every 10,000 square feet of gross floor area. In C-4 districts, two bicycle parking spaces, or one per 5,000 square feet of building area, must be provided, whichever is greater***
Transit transfer stations and park and ride lots	***One bicycle parking space for every 20 vehicle parking spaces***
Parks	***Two bicycle parking spaces within 50 feet of each developed play-ground, ball field, or shelter***

Finding: The applicant is proposing 51 multifamily units as part of the project, which requires 13 bicycle parking spaces. Site development sheet C215 illustrates 14 bicycle parking spots and bicycle parking loops will accommodate two bikes. Lot 249 has been planned for multifamily units. Lot 249 must go through the Design Review process as required by the NDC.

This section of the NDC is met because the applicant is proposing 14 bicycle parking spaces.

15.440.110 Design.
A. Bicycle parking facilities shall consist of one or more of the following:

A. 1. A firmly secured loop, bar, rack, or similar facility that accommodates locking the bicycle frame and both wheels using a cable or U-shaped lock.

2. An enclosed locker.

3. A designated area within the ground floor of a building, garage, or storage area. Such area shall be clearly designated for bicycle parking.

4. Other facility designs approved by the director.

B. All bicycle parking spaces shall be at least six feet long and two and one-half feet wide. Spaces shall not obstruct pedestrian travel.

C. All spaces shall be located within 50 feet of a building entrance of the development.

D. Required bicycle parking facilities may be located in the public right-of-way adjacent to a development subject to approval of the authority responsible for maintenance of that right-of-way. [Ord. 2518, 9-21-99. Code 2001 § 151.625.3.]

Finding: The applicant is proposing to provide secured loop like bicycle parking spots. Sheet C215 of the plan set illustrates loops that are approximately 3 feet in lengths. However, subsection "B" requires spaces to be 6 feet long and two and one-half feet wide. It was unclear from the drawings if the aforementioned dimensional requirements were met. The bicycle parking spots are located in front of the apartment buildings within the required 50 feet of a building entrance. The bicycle parking spaces will be located on private property within lot 249. The applicant shall install bicycle parking loops and spaces that are at least six feet long and two and one-half feet wide.

With the adherence to the aforementioned condition of approval these criteria will be met.

15.440.140 Private walkway design.

A. All required private walkways shall meet the applicable building code and Americans with Disabilities Act requirements.
B. Required private walkways shall be a minimum of four feet wide.
C. Required private walkways shall be constructed of portland cement concrete or brick.
D. Crosswalks crossing service drives shall, at a minimum, be painted on the asphalt or clearly marked with contrasting paving materials or humps/raised crossings. If painted striping is used, it should consist of thermoplastic striping or similar type of durable application.
E. At a minimum, required private walkways shall connect each main pedestrian building entrance to each abutting public street and to each other.
F. The review body may require on-site walks to connect to development on adjoining sites.
G. The review body may modify these requirements where, in its opinion, the development provides adequate on-site pedestrian circulation, or where lot dimensions, existing building layout, or topography preclude compliance with these standards. [Ord. 2619, 5-16-05; Ord. 2513, 8-2-99. Code 2001 § 151.620.3.]

Finding: The applicant is proposing private walkways throughout the PUD, which connect multi-family residential units to E Portland Road, are located throughout the wetland/natural areas, and

connect to Spring Meadow Park to the west. In the narrative the applicant has indicated that "walkways will be a minimum of 4-feet in width and will be constructed of Portland cement concrete. Crosswalks will be provided on the site to delineate the shift from public streets to private streets. Crosswalks will be painted/clearly striped in conformance with these requirements." The applicant did not indicate in the narrative that private walkways will meet the applicable building code and Americans with Disabilities Act requirements, or that private walkways are connecting each main pedestrian building entrance to each abutting public street and to each other. Because the applicant is not addressing all private walkway design requirements, the applicant will be required to meet the applicable building code and Americans with Disabilities Act requirements for private walkways, and develop a plan where private walkways are connecting each main pedestrian building entrance to each abutting public street and to each other.

These criteria will be met if the aforementioned conditions of approval are met.

IV. Chapter 15.505 PUBLIC IMPROVEMENTS STANDARDS

5.505.010 Purpose.

This chapter provides standards for public infrastructure and utilities installed with new development, consistent with the policies of the City of Newberg comprehensive plan and adopted city master plans. The standards are intended to minimize disturbance to natural features, promote energy conservation and efficiency, minimize and maintain development impacts on surrounding properties and neighborhoods, and ensure timely completion of adequate public facilities to serve new development. [Ord. 2810 § 2 (Exhs. B, C), 12-19-16.]

15.505.020 Applicability.

The provision and utilization of public facilities and services within the City of Newberg shall apply to all land developments in accordance with this chapter. No development shall be approved unless the following improvements are provided for prior to occupancy or operation, unless future provision is assured in accordance with NMC 15.505.030(E).

A. Public Works Design and Construction Standards. The design and construction of all improvements within existing and proposed rights-of-way and easements, all improvements to be maintained by the city, and all improvements for which cityapproval is required shall comply with the requirements of the most recently adopted Newberg public works design and construction standards.

Finding: The preliminary plans show an extension of E Crestview Drive (Major Collector) to the south connecting to E Portland Road (Major Arterial). Frontage improvements along E Portland Road are also shown. Internal to the PUD, Public Street B is designated as a minor collector, and Public Street C and Public Street D are designated as local streets. Additionally, Private Streets A-L provide circulation and property access throughout the PUD. Other public improvements not limited to water, non-potable water, wastewater and stormwater infrastructure are also included in the

applicant's plans. These improvements requiring city approval shall comply with the City's Public Works Design and Construction Standards. A number of these improvements also require approval from other agencies. Because permitting was not discussed in detail in the applicants' narrative, public utility infrastructure improvements not limited to street improvements, public walkways, water, non-potable water, wastewater, and stormwater will require completed permits from partner agencies to authorize different work tasks. Issuance of required permits for wetland delineation/mitigation, construction, etc. not limited to the agencies of Yamhill County, the State of Oregon, and the Federal Government will be required prior to the City of Newberg issuing a Public Improvement Permit.

This criterion will be met if the conditions of approval are adhered to.

B. Street Improvements. All projects subject to a Type II design review, partition, or subdivision approval must construct street improvements necessary to serve the development.

Finding: The preliminary plans show an extension of E Crestview Drive to the south connecting to E Portland Road. Frontage improvements along E Portland Road are also shown. Internal to the PUD, Public Street B is designated as a minor collector, and Public Street C and Public Street D are designated as local streets. Additionally, Private Streets A-L provide circulation and property access throughout the PUD.

This criteria will be met if all street improvements necessary to serve the development are constructed.

C. Water. All developments, lots, and parcels within the City of Newberg shall be served by the municipal water system as specified in Chapter 13.15 NMC.

Finding: There is an existing 10-inch public water line on E Portland Road which is available for extension to the north to serve the development. There is an existing 8-inch public water line on E Crestview Drive which is available for extension to the south to serve the development.

There is an existing 8-inch non-potable water line on E Portland Road east of the development near NE Harmony Lane that is available for extension to the north to serve the development.

Preliminary plans show both public and private streets having water lines, and public streets having non-potable water lines. This criterion is met.

D. Wastewater. All developments, lots, and parcels within the City of Newberg shall be served by the municipal wastewater system as specified in Chapter 13.10 NMC.

Finding: There is an existing 24-inch public wastewater line approximately 700-feet south of E Portland Road which is available for extension to the north to serve the Crestview Crossing PUD. Preliminary plans show both public and private streets having wastewater lines. This criterion is met.

E. Stormwater. All developments, lots, and parcels within the City of Newberg shall manage stormwater runoff as specified in Chapters 13.20 and 13.25 NMC.

Finding: Preliminary plans show stormwater drainage for the development connecting to proposed Tract B, Tract C, and Tract E stormwater facilities. Additionally, plans show connection to the existing 15-inch stormwater pipe to the north and the 24-inch public stormwater line that connections under E Portland Road. This criterion is met.
This criterion is met.

F. Utility Easements. Utility easements shall be provided as necessary and required by the review body to provide needed facilities for present or future development of the area.

Finding: The applicant has submitted preliminary plans that indicate some utility easements. All public utilities shall be located within a public utility easement or right-of-way. The applicant has not submitted construction plans, but it's anticipated that they should be able to meet City requirements in regards to utility easements.

This criterion is met.

G. City Approval of Public Improvements Required. No building permit may be issued until all required public facility improvements are in place and approved by the director, or are otherwise bonded for in a manner approved by the review authority, in conformance with the provisions of this code and the Newberg Public Works Design and Construction Standards. [Ord. 2810 § 2 (Exhs. B, C), 12-19-16.]

15.505.030 Street standards.

A. Purpose. The purpose of this section is to:

1. Provide for safe, efficient, and convenient multi-modal transportation within the City of Newberg.

2. Provide adequate access to all proposed and anticipated developments in the City of Newberg. For purposes of this section, "adequate access" means direct routes of travel between destinations; such destinations may include residential neighborhoods, parks, schools, shopping areas, and employment centers.

3. Provide adequate area in all public rights-of-way for sidewalks, wastewater and water lines, stormwater facilities, natural gas lines, power lines, and other utilities commonly and appropriately placed in such rights-of-way. For purposes of this section, "adequate area" means space sufficient to provide all required public services to standards defined in this code and in the Newberg public works design and construction standards.

B. Applicability. The provisions of this section apply to:

1. The creation, dedication, and/or construction of all public streets, bike facilities, or pedestrian facilities in all subdivisions, partitions, or other developments in the City of Newberg.
2. The extension or widening of existing public street rights-of-way, easements, or street improvements including those which may be proposed by an individual or the city, or which may be required by the city in association with other development approvals.
3. The construction or modification of any utilities, pedestrian facilities, or bike facilities in public rights-of-way or easements.
4. The designation of planter strips. Street trees are required subject to Chapter 15.420 NMC.
5. Developments outside the city that tie into or take access from city streets.

C. Layout of Streets, Alleys, Bikeways, and Walkways. Streets, alleys, bikeways, and walkways shall be laid out and constructed as shown in the Newberg transportation system plan. In areas where the transportation system plan or future street plans do not show specific transportation improvements, roads and streets shall be laid out so as to conform to previously approved subdivisions, partitions, and other developments for adjoining properties, unless it is found in the public interest to modify these patterns. Transportation improvements shall conform to the standards within the Newberg Municipal Code, the Newberg public works design and construction standards, the Newberg transportation system plan, and other adopted city plans.

D. Construction of New Streets. Where new streets are necessary to serve a new development, subdivision, or partition, right-of-way dedication and full street improvements shall be required. Three-quarter streets may be approved in lieu of full street improvements when the city finds it to be practical to require the completion of the other one-quarter street improvement when the adjoining property is developed; in such cases, three-quarter street improvements may be allowed by the city only where all of the following criteria are met:
1. The land abutting the opposite side of the new street is undeveloped and not part of the new development; and
2. The adjoining land abutting the opposite side of the street is within the city limits and the urban growth boundary.

Finding: The applicant is proposing to extend E Crestview Drive, a major collector, from its northwestern terminus to E Portland Road. The applicant has proposed a cross-section on sheet C200 that varies and does not match the City's cross-section for a major collector roadway which requires a minimum of 60-feet of right of way:

- 1-foot from back of walk to right-of-way
- 5-foot sidewalk
- 5.5-foot planter*
- 0.5-foot curb
- 6-foot bike lane
- 12-foot travel lane

- 12-foot travel lane
- 6-foot bike lane
- 0.5-foot curb
- 5.5-foot planter
- 5-foot sidewalk
- 1-foot from back of walk to right-of-way

* A 5.0-foot planter will be constructed between the E Crestview Drive/Public Street B intersection and the E Crestview Drive/E Portland Road intersection to allow for a proposed retaining wall on the west side of E Crestview Drive to be located outside of the public right-of-way.

Because the applicant has not shown E Crestview Drive matching a major collector standard, the E Crestview Drive roadway is to consist of the following: 1-foot from back of walk to right-of-way, 5-foot sidewalk, 5.5-foot planter*, 0.5-foot curb, 6-foot bike lane, 12-foot travel lane, 12-foot travel lane, 6-foot bike lane, 0.5-foot curb, 5.5-foot planter, 5-foot sidewalk, 1-foot from back of walk to right-of-way. The applicant is required to dedicate sufficient right-of-way (minimum of 60-feet) to construct E Crestview Drive, to construct a roundabout meeting FHWA Standards at the E Crestview Drive/Public Street B intersection, and to construct improvements related to modifying the traffic signal at the E Crestview Drive/Providence Drive/E Portland Road intersection meeting City of Newberg, Yamhill County, and Oregon Department of Transportation requirements.

* A 5.0-foot planter will be constructed between the E Crestview Drive/Public Street B intersection and the E Crestview Drive/E Portland Road intersection to allow for a proposed retaining wall on the west side of E Crestview Drive to be located outside of the public right-of-way.

The applicant is showing Public Street B designated as a minor collector running east-west through the PUD. The applicant has proposed a cross-section on sheet C200 that does not clearly articulate the dedication of roadway space. The following cross-section meets the City's standard for a minor collector and requires 64-feet of right of way:

- 1-foot from back of walk to right-of-way
- 5-foot sidewalk
- 5.5-foot planter
- 0.5-foot curb
- 8-foot parking lane
- 12-foot travel lane with sharrow
- 12-foot travel lane with sharrow
- 8-foot parking lane
- 0.5-foot curb

- 5.5-foot planter
- 5-foot sidewalk
- 1-foot from back of walk to right-of-way

Because the applicant has not clearly indicated that allocation of space in the public right-of-way for Public Street B, the Public Street B is to consist of the following: 1-foot from back of walk to right-of-way, 5-foot sidewalk, 5.5-foot planter, 0.5-foot curb, 8-foot parking lane, 12-foot travel lane with sharrow, 12-foot travel lane with sharrow, 8-foot parking lane, 0.5-foot curb, 5.5-foot planter, 5-foot sidewalk, 1-foot from back of walk to right-of-way. The applicant is required to dedicate sufficient right-of-way (minimum of 64-feet) to construct Public Street B.

The applicant is showing Public Street C and Public Street D designated as local residential streets. The applicant has proposed a cross-section on sheet C200 that does not match the City's Transportation System Plan based on a local road functional classification. The following cross-section meets the City's standard for a local residential street and requires 56-feet of right of way:

- 1-foot from back of walk to right-of-way
- 5-foot sidewalk
- 5.5-foot planter
- 0.5-foot curb
- 7-foot parking lane
- 9-foot travel lane
- 9-foot travel lane
- 7-foot parking lane
- 0.5-foot curb
- 5.5-foot planter
- 5-foot sidewalk
- 1-foot from back of walk to right-of-way

Because that applicant has proposed a roadway cross-section that does not match the City's Transportation System Plan for a local road, the applicant shall revise plans to show Public Street C and Public Street D consisting of the following: 1-foot from back of walk to right-of-way, 5-foot sidewalk, 5.5-foot planter, 0.5-foot curb, 7-foot parking lane, 9-foot travel lane, 9-foot travel lane, 7-foot parking lane, 0.5-foot curb, 5.5-foot planter, 5-foot sidewalk, 1-foot from back of walk to right-of-way. The applicant is required to dedicate sufficient right-of-way (minimum of 56-feet) to construct the listed streets.

The criterion will be met if the aforementioned conditions of approval are adhered to.

E. Improvements to Existing Streets.

1. All projects subject to partition, subdivision, or Type II design review approval shall dedicate right-of-way sufficient to improve the street to the width specified in subsection (G) of this section.

Finding: E Portland Road is designated as a major arterial and is an ODOT owned facility that boarders the southern edge of the property. The applicant is proposing to construct frontage improvements along their property frontage and is showing a dedication 4.5-feet of right-of-way just east of the E Crestview Drive/E Portland Road intersection in order to construct a right-turn lane. The following cross-section meets the City's standard for a major arterial street and requires 98-feet of right of way:

- 1-foot from back of walk to right-of-way
- 5-foot sidewalk
- 5.5-foot planter
- 0.5-foot curb
- 6-foot bike lane
- 12-foot travel lane
- 12-foot travel lane
- 14-foot TWLTL travel lane
- 12-foot travel lane
- 12-foot travel lane
- 6-foot bike lane
- 0.5-foot curb
- 5.5-foot planter
- 5-foot sidewalk
- 1-foot from back of walk to right-of-way

As noted in the applicants traffic study a westbound right-turn lane is needed at the E Crestview Drive/E Portland Road intersection. Based on the submitted plans, it is unclear if 4.5-feet is all of the right-of-way that will be required by the Oregon Department of Transportation for the right turn lane construction. Because right-of-way dedication will need to be verified through the detailed design process which is unknown at this time, the applicant will be required to dedicated additional right-of-way on E Portland Road necessary to meet requirements set forth by the Oregon Department of Transportation to meet Highway Design Manual standards to construct the westbound right-turn lane.

This criterion will be met with the adherence to the aforementioned condition of approval.

2. All projects subject to partition, subdivision, or Type II design review approval must construct a minimum of a three-quarter street improvement to all existing streets adjacent to, within, or necessary to serve the development. The director may waive or modify this requirement where the applicant demonstrates that the condition of existing streets to serve

the development meets city standards and is in satisfactory condition to handle the projected traffic loads from the development. Where a development has frontage on both sides of an existing street, full street improvements are required.
3. In lieu of the street improvement requirements outlined in NMC 15.505.040(B), the review authority may elect to accept from the applicant monies to be placed in a fund dedicated to the future reconstruction of the subject street(s). The amount of money deposited with the city shall be 100 percent of the estimated cost of the required street improvements (including any associated utility improvements), and 10 percent of the estimated cost for inflation. Cost estimates used for this purpose shall be based on preliminary design of the constructed street provided by the applicant's engineer and shall be approved by the director.

F. Improvements Relating to Impacts. Improvements required as a condition of development approval shall be roughly proportional to the impact of the development on public facilities and services. The review body must make findings in the development approval that indicate how the required improvements are roughly proportional to the impact. Development may not occur until required transportation facilities are in place or guaranteed, in conformance with the provisions of this code. If required transportation facilities cannot be put in place or be guaranteed, then the review body shall deny the requested land use application.

Finding: A traffic study was submitted with the land use application for the Crestview Crossing PUD dated June 2018. Based on the analysis, the 260 single-family homes and 48 apartment units within the Crestview Crossing PUD were evaluated and it was estimated to create 2,826 additional trips each day; 213 will occur in the AM peak hour (7am-9am) and 285 trips will occur in the PM peak hour (4pm-6pm). This means that the traffic analysis over stated the number of single family homes (260 homes in TIA vs. 248 homes in the applicant's narrative) and understated the number of apartments (48 apartments in the TIA vs. 51 apartments in the applicant's narrative). Eight study intersections were evaluated to determine the impact on the adjacent transportation system.

The traffic study identified the following recommendations to mitigate traffic impacts of the proposed development at the Providence Drive/E Crestview Drive/E Portland Road intersection, and the applicant shall construct and be fiscally responsible for these roadway improvements:

- The new north leg of the intersection should be configured as a four-lane section with one northbound lane and three southbound lanes (left turn lane, through movement, and right turn lane). At lease 250-feet of southbound left-turn lane storage and 150-feet of southbound right-turn lane storage should be provided to accommodate the 95th percentile queue lengths.
- The existing south leg of the intersection should be restriped to a four-lane section with one southbound lane, and three northbound lanes (left turn lane, through movement, and right turn lane).
- Based on the 95th percentile queuing analysis:
    - A westbound right turn lane should be constructed with at least 300-feet of storage
    - A eastbound left turn lane should be striped to provide at least 150-feet of storage

- The signal phasing of the intersection should be operated with permissive left turn movements on the north and south approaches with fully protected left turn movements on the east and west approaches.

Oregon Department of Transportation

The Oregon Department of Transportation (ODOT) has reviewed the traffic study and provided comments. Because it has not been determined if the applicant has addressed all of ODOT's traffic study requirements, the comments on the traffic study identified by ODOT shall be adequately addressed and approved by ODOT as noted in the memo dated July 19, 2018 signed by Dan Fricke, Region 2 Senior Planner.

ODOT has identified the following Roadway Improvements and Signal Modifications at the Providence Drive/Crestview Drive/OR 99W intersection:

Roadway Improvements:

The following roadway improvements have been identified

- Installation of a westbound right-turn deceleration lane on OR 99W approaching Crestview Drive
- At the northeast corner of the OR 99W/Crestview Drive intersection, the sidewalk will need to connect to the highway shoulder with an "End of Walk" ADA compliant connection (ODOT Standard Drawing RD 754).
- The crosswalk on the east leg of the intersection (across OR 99W) must be reinstalled along with appropriate modifications to the traffic signal (signal modifications are addressed in more detail below)
- The required roadway and signal improvements will trigger the need to assess all curb ramps and push buttons at OR 99W/Crestview Drive. Any non-compliant curb ramps shall be remediated to meet State ADA standards.

Prior to the issuance of the first grading or building permit, the applicant shall submit plans and specifications for all improvements/construction within ODOT right-of-way for review and approval by ODOT District 3 and issuance of a permit to construct within ODOT right-of-way. ODOT shall certify that all construction activities have been completed pursuant to the approved plans and specifications prior to the issuance of the first certificate of use and occupancy, or the city's equivalent.Signal Modifications:

It is likely that the entire signal installation will need to be replaced to accommodate the Crestview Drive leg being added to the existing intersection. The following is a list of the minimum modifications that are anticipated to be necessary:

- The existing signal poles on the north side of the intersection will need to be replaced to accommodate the new Crestview Drive
- A new mast arm will be needed in the southwest quadrant of the intersection to signalize the new Crestview Drive leg.
- New pedestrian signal and push-button pedestal for the pedestrian crossing on the east leg of the intersection.
- New detection will be needed depending on how new ADA ramps affect crosswalk locations (note that Region 2 is using radar detection)

Prior to issuance of the first grading or building permit, the applicant shall submit signal modification plans for the review of the ODOT Region 2 Traffic Engineer and the review and approval of the State Traffic Engineer. ODOT shall certify that all required signal modifications have been completed and the signal operational prior to the issuance of the first certificate of use and occupancy, or the city's equivalent.

Annexation Orders & Conditions of Approvals

Order No. 2007-0002 Tax Lot 3216AC-13800 (west – "Gueldner Property") and Order No. 2008-0013 Tax Lot 3216-1100 (east – "Gish Property") were both annexed into the City of Newberg and represent properties that are now being developed as part of the Crestview Crossing PUD. As part of the annexation process for the two properties, conditions of approval were established. Each property had the following condition of approval issued in regards to transportation improvements:

- *Upon future development of the property, the development shall contribute its share, based on traffic volume, of the future cost of capacity improvements to the Springbrook Rd/Hwy 99W intersection.*

The findings leading up to the condition state that "*The City of Newberg has already identified this intersection [Springbrook Rd/Hwy 99W] as one that needs improvement, however, and has charged recent developments in the area with impact fees based on the number of trips they added to the intersection. The fees could be used for street improvements that would improve the performance of the intersection, whether those improvements were directly at the intersection or were for a nearby street (such as the future completion of Hayes Street) that would reduce the number of trips at the Springbrook 99W intersection.*"

It should be noted that the intersection of Springbrook Road/Hwy 99W was improved as part of the recent Newberg-Dundee Bypass Phase 1 Project. Since the Bypass preceded the development of Tax Lot 3216AC-13800 and Tax Lot 3216-1100, no monies/impact fees were paid into the improvement of the Springbrook Rd/Hwy 99W intersection.

However, the City's Transportation System Plan does identify the need to signalize the intersection of N Springbrook Road/Haworth Avenue and to add left turn lanes on Haworth. This project is directly adjacent to the intersection of Springbrook Road/Hwy 99W, and would help to improve the

performance of both the N Springbrook Road/Haworth Avenue intersection and the Springbrook Road/Hwy 99W intersection.

The City has developed a Traffic Impact Fee to be consistent with the Conditions of Approval for the annexation of Tax Lot 3216AC-13800 and Tax Lot 3216-1100. Project I09 in the City's Transportation System Plan identifies the need to install a traffic signal at the N Springbrook Road/Haworth Avenue intersection at the cost of $400,000. The applicant was required to do a traffic study for their development which was dated August 2018, and indicates that trips added to the project intersection as a direct result of the development are as follows: 21 AM peak hour trips and 12 PM peak hour trips (Figure 9). The total trips through the intersection during the peak hours are as follows: 774 AM peak hour trips and 1253 PM peak hour trips (Figure 10).

The greatest volume impact at the N Springbrook Road/Haworth Avenue intersection occurs during the AM peak period. Because the applicant has not satisfied the conditions of approval for the annexation of Tax Lot 3216AC-13800 and Tax Lot 3216-1100, the applicant is required to pay the following Traffic Impact Fee to the City of Newberg to meet Order No. 2007-0002 and Order No. 2008-0013 conditions of approval:

(21 AM Peak Hour Trips resulting from the development)/(774 AM Peak Hour Total Trips through the intersection) = 0.0271 proportional trips through the intersection

(0.0271 proportional trips through the intersection)*($400,000 intersection project cost estimate) = ***$10,840 Traffic Impact Fee – AM Peak Hour***

This criterion will be met if the conditions of approval are adhered to.

G. Street Width and Design Standards.

1. Design Standards. All streets shall conform with the standards contained in Table 15.505.030(G). Where a range of values is listed, the director shall determine the width based on a consideration of the total street section width needed, existing street widths, and existing development patterns. Preference shall be given to the higher value. Where values may be modified by the director, the overall width shall be determined using the standards under subsections (G)(2) through (10) of this section.

Table 15.505.030(G) Street Design Standards

Type of Street	*Right-of-Way Width*	*Curb-to-Curb Pavement Width*	*Motor Vehicle Travel Lanes*	*Median Type*	*Striped Bike Lane (Both Sides)*	*On-Street Parking*
Arterial Streets						
Expressway*	***ODOT***	***ODOT***	***ODOT***	***ODOT***	***ODOT***	***ODOT***
Major arterial	***95 – 100 feet***	***74 feet***	***4 lanes***	***TWLTL or***	***Yes***	***No****

Table 15.505.030(G) Street Design Standards

Type of Street	*Right-of-Way Width*	*Curb-to-Curb Pavement Width*	*Motor Vehicle Travel Lanes*	*Median Type*	*Striped Bike Lane (Both Sides)*	*On-Street Parking*
				*median**		
Minor arterial	*69 – 80 feet*	*48 feet*	*2 lanes*	*TWLTL or median**	*Yes*	*No**
Collectors						
Major	*57 – 80 feet*	*36 feet*	*2 lanes*	*None**	*Yes*	*No**
Minor	*61 – 65 feet*	*40 feet*	*2 lanes*	*None**	*Yes**	*Yes**
Local Streets						
Local residential	*54 – 60 feet*	*32 feet*	*2 lanes*	*None*	*No*	*Yes*
Limited residential, parking both sides	*44 – 50 feet*	*28 feet*	*2 lanes*	*None*	*No*	*Yes*
Limited residential, parking one side	*40 – 46 feet*	*26 feet*	*2 lanes*	*None*	*No*	*One side*
Local commercial/ industrial	*55 – 65 feet*	*34 feet*	*2 lanes*	*None**	*No**	*Yes**

** May be modified with approval of the director. Modification will change overall curb-to-curb and right-of-way width. Where a center turn lane is not required, a landscaped median shall be provided instead, with turning pockets as necessary to preserve roadway functions.*

*** All standards shall be per ODOT expressway standards.*

2. Motor Vehicle Travel Lanes. Collector and arterial streets shall have a minimum width of 12 feet.

Finding: The submitted plans show 12-foot travel lanes on E Portland Road (major arterial), E Crestview Drive (major collector), and Public Street B (minor collector). This criterion is met.

3. Bike Lanes. Striped bike lanes shall be a minimum of six feet wide. Bike lanes shall be provided where shown in the Newberg transportation system plan.

Finding: The submitted plans show space available for a 6-foot bike lane on E Crestview Drive, and Public Street B. The applicant is showing the westbound bike lane on E Portland Road as 5-feet wide, this does not meet the City's standard. Because the applicant's proposal does not meet the City's standard, the applicant is required to install a 6-foot bike lane along E Portland Road to match the City's Transportation System Plan cross-section.

This criterion will be met with the adherence to the aforementioned condition of approval.

4. Parking Lanes. Where on-street parking is allowed on collector and arterial streets, the parking lane shall be a minimum of eight feet wide.

Finding: The submitted plans show space for an 8-foot on-street parking lane on Public Street B, which is classified as a minor collector. The applicant is not proposing on-street parking along E Crestview Drive. This criterion is met.

5. Center Turn Lanes. Where a center turn lane is provided, it shall be a minimum of 12 feet wide.

Finding: The applicant's preliminary plans show a southbound and northbound left turn lane at the E Crestview Drive/E Portland Road intersection. Because the applicant's submitted plans do not indicate the width of center turn lanes, the City will require the southbound and northbound center turn lanes at the E Crestview Drive/E Portland Road intersection to be a minimum of 12-feet wide.

This criterion will be met if the conditions of approval are adhered to.

7. Sidewalks. Sidewalks shall be provided on both sides of all public streets. Minimum width is five feet.

Finding: The submitted plans show 5-foot sidewalks along both sides of E Crestview Drive, Public Street B, Public Street C, and Public Street D. The City requires 5-foot sidewalks along all public streets where a planter strip is utilized, and 6-foot sidewalks in areas utilizing a curb-tight sidewalk. ODOT has different sidewalk width requirements and the applicant is showing a 6-foot sidewalk along E Portland Road. Because the applicant's plans do not clearly show directional ADA curb ramps which are integral to the sidewalk, the applicant will be required to install directional ADA curb ramps at the corners of all public street/public street intersection locations, and at public street/private street intersection locations. The final design of all roads within the PUD will be reviewed and approved as part of the Public Improvement Permit.

This criterion will be met with the adherence to the aforementioned condition of approval.

8. Planter Strips. Except where infeasible, a planter strip shall be provided between the sidewalk and the curb line, with a minimum width of five feet. This strip shall be

landscaped in accordance with the standards in NMC 15.420.020. Curb-side sidewalks may be allowed on limited residential streets. Where curb-side sidewalks are allowed, the following shall be provided:

a. Additional reinforcement is done to the sidewalk section at corners.

b. Sidewalk width is six feet.

Finding: The submitted plans show planter strips on E Portland Road, E Crestview Drive, Public Street B, Public Street C, and Public Street D. Planter strips are not provided on private streets. The planter strips on public streets are required to be 5.5-feet wide except where noted on the west side of E Crestview Drive between the E Crestview Drive/Public Street B intersection and the E Crestview Drive/E Portland Road intersection. Where a planter strip is not provided, the public sidewalk is required to be 6-feet wide.

These criteria will be met if the conditions of approval are adhered to.

10. Intersections and Street Design. The street design standards in the Newberg public works design and construction standards shall apply to all public streets, alleys, bike facilities, and sidewalks in the city.

Finding: Preliminary plans indicate that the applicant will be able to meet requirements of the Public Works Design and Construction Standards. Because final plans have not been developed to review if all the City's Public Works Design and Construction Standards have been met, the final design of E Portland Road, E Crestview Drive, Public Street B, Public Street C, and Public Street D will need to comply with City's Public Works Design and Construction Standards and applicable ODOT standards. The applicant will be required to obtain a Public Improvement Permit and meet the City's Transportation System Plan and Public Works Design and Construction Standards for the proposed roadway improvements.

This condition of approval will be verified to have been met with the adherence to the aforementioned condition of approval.

K. Future Extension of Streets. All new streets required for a subdivision, partition, or a project requiring site design review shall be constructed to be "to and through": through the development and to the edges of the project site to serve adjacent properties for future development.

Finding: Preliminary plans show Public Street B and Public Street C with east-west alignments with the potential to extend further to the east. This criterion is met.

M. Street Names and Street Signs. Streets that are in alignment with existing named streets shall bear the names of such existing streets. Names for new streets not in alignment with existing streets are subject to approval by the director and the fire chief and shall not

unnecessarily duplicate or resemble the name of any existing or platted street in the city. It shall be the responsibility of the land divider to provide street signs.

Finding: The applicant's plans do not show details for street name signs. Because the applicant has not shown street names and street name signs in the plans or indicated that they will be installed, the applicant is required to install street name signs at all intersections within the development including those intersections with private streets.

This criterion will be met with the adherence to the aforementioned condition of approval.

N. Platting Standards for Alleys.

1. An alley may be required to be dedicated and constructed to provide adequate access for a development, as deemed necessary by the director.

2. The right-of-way width and paving design for alleys shall be not less than 20 feet wide. Slope easements shall be dedicated in accordance with specifications adopted by the city council under NMC 15.505.010 et seq.

3. Where two alleys intersect, 10-foot corner cut-offs shall be provided.

4. Unless otherwise approved by the city engineer where topographical conditions will not reasonably permit, grades shall not exceed 12 percent on alleys, and centerline radii on curves shall be not less than 100 feet.

5. All provisions and requirements with respect to streets identified in this code shall apply to alleys the same in all respects as if the word "street" or "streets" therein appeared as the word "alley" or "alleys" respectively.

O. Platting Standards for Blocks.

1. Purpose. Streets and walkways can provide convenient travel within a neighborhood and can serve to connect people and land uses. Large, uninterrupted blocks can serve as a barrier to travel, especially walking and biking. Large blocks also can divide rather than unite neighborhoods. To promote connected neighborhoods and to shorten travel distances, the following minimum standards for block lengths are established.

2. Maximum Block Length and Perimeter. The maximum length and perimeters of blocks in the zones listed below shall be according to the following table. The review body for a subdivision, partition, conditional use permit, or a Type II design review may require installation of streets or walkways as necessary to meet the standards below.

Zone(s)	*Maximum Block Length*	*Maximum Block Perimeter*
R-1	*800 feet*	*2,000 feet*
R-2, R-3, RP, I	*1,200 feet*	*3,000 feet*

3. Exceptions.

a. If a public walkway is installed mid-block, the maximum block length and perimeter may be increased by 25 percent.
b. Where a proposed street divides a block, one of the resulting blocks may exceed the maximum block length and perimeter standards provided the average block length and perimeter of the two resulting blocks do not exceed these standards.
c. Blocks in excess of the above standards are allowed where access controlled streets, street access spacing standards, railroads, steep slopes, wetlands, water bodies, preexisting development, ownership patterns or similar circumstances restrict street and walkway location and design. In these cases, block length and perimeter shall be as small as practical. Where a street cannot be provided because of these circumstances but a public walkway is still feasible, a public walkway shall be provided.
d. Institutional campuses located in an R-1 zone may apply the standards for the institutional zone.
e. Where a block is in more than one zone, the standards of the majority of land in the proposed block shall apply.
f. Where a local street plan, concept master site development plan, or specific plan has been approved for an area, the block standards shall follow those approved in the plan. In approving such a plan, the review body shall follow the block standards listed above to the extent appropriate for the plan area.

Finding: The applicants' plans illustrate block lengths and perimeters that conform to this section of the NDC.

These criteria have been met.

P. Private Streets. New private streets, as defined in NMC 15.05.030, shall not be created, except as allowed by NMC 15.240.020(L)(2).

Finding: Preliminary plans show public and private streets as part of a Planned Unit Development. See finding under NMC 15.240 (L)(2) for additional findings and conditions. Preliminary plans show concrete aprons/driveways providing a visual separation of private streets from public streets. This requirement is met.

R. Vehicular Access Standards.

1. Purpose. The purpose of these standards is to manage vehicle access to maintain traffic flow, safety, roadway capacity, and efficiency. They help to maintain an adequate level of service consistent with the functional classification of the street. Major roadways, including arterials and collectors, serve as the primary system for moving people and goods

within and through the city. Access is limited and managed on these roads to promote efficient through movement. Local streets and alleys provide access to individual properties. Access is managed on these roads to maintain safe maneuvering of vehicles in and out of properties and to allow safe through movements. If vehicular access and circulation are not properly designed, these roadways will be unable to accommodate the needs of development and serve their transportation function.

2. Access Spacing Standards. Public street intersection and driveway spacing shall follow the standards in Table 15.505.R below. The Oregon Department of Transportation (ODOT) has jurisdiction of some roadways within the Newberg city limits, and ODOT access standards will apply on those roadways.

Table 15.505.R. Access Spacing Standards

Roadway Functional Classification	*Area*[1]	*Minimum Public Street Intersection Spacing (Feet)*[2]	*Driveway Setback from Intersecting Street*[3]
Expressway	*All*	*Refer to ODOT Access Spacing Standards*	*NA*
Major arterial	*Urban* *CBD*	*Refer to ODOT Access Spacing Standards*	
Minor arterial	*Urban* *CBD*	*500* *200*	*150* *100*
Major collector	*All*	*400*	*150*
Minor collector	*All*	*300*	*100*

[1] ***"Urban" refers to intersections inside the city urban growth boundary outside the central business district (C-3 zone).***

"CBD" refers to intersections within the central business district (C-3 zone).

"All" refers to all intersections within the Newberg urban growth boundary.

[2] ***Measured centerline to centerline.***

[3] ***The setback is based on the higher classification of the intersecting streets. Measured from the curb line of the intersecting street to the beginning of the driveway, excluding flares. If the driveway setback listed above would preclude a lot from having at least one driveway, including shared driveways or driveways on adjoining streets, one driveway is allowed as far from the intersection as possible.***

Finding: The applicant's plans show a driveway for Private Street G east of E Crestview Drive (major collector). The plans provided show that Private Street G does not meet spacing requirements from a Public Street intersection. Because the applicant is not meeting street spacing

standards, the Private Street G driveway setback is to be a minimum of 150-feet from E Crestview Drive per Table 15.505.R Access Spacing Standards. Setbacks are measured from the curb line of the intersecting street to the beginning of the driveway, excluding flares. If the applicant can provide supplemental materials that meet the exception requirements in 15.505(R)(10) and 15.505(R)(11), the City could determine that a proposed alternative design is acceptable.

3. Properties with Multiple Frontages. Where a property has frontage on more than one street, access shall be limited to the street with the lesser classification.

Finding: Several lots within the applicant's Planned Unit Development have frontages along more than one public/private street, driveway locations are not being shown. Because it's unclear where property access is being taken from, access shall be taken from the street with the lesser functional classification, and private streets are designated as having the lowest functional classification.

This criterion will be met with the adherence to the aforementioned condition of approval.

4. Driveways. More than one driveway is permitted on a lot accessed from either a minor collector or local street as long as there is at least 40 feet of lot frontage separating each driveway approach. More than one driveway is permitted on a lot accessed from a major collector as long as there is at least 100 feet of lot frontage separating each driveway approach.

Finding: The applicant's plans show that Lot 249 has just over 400-feet of frontage along Public Street B (minor collector). Lot 249 has two driveways shown and the distance between the driveways is at least 100-feet.

This criterion is met.

5. Alley Access. Where a property has frontage on an alley and the only other frontages are on collector or arterial streets, access shall be taken from the alley only. The review body may allow creation of an alley for access to lots that do not otherwise have frontage on a public street provided all of the following are met:

a. The review body finds that creating a public street frontage is not feasible.
b. The alley access is for no more than six dwellings and no more than six lots.
c. The alley has through access to streets on both ends.
d. One additional parking space over those otherwise required is provided for each dwelling. Where feasible, this shall be provided as a public use parking space adjacent to the alley.

Finding: The applicant is proposing private streets and has not identified private access locations. Because access locations have not been identified, if a property has frontage on a private street and other frontages are on collector or arterial streets, access shall be taken from the private street only.

This criterion will be met with the adherence to the aforementioned condition of approval.

6. Closure of Existing Accesses. Existing accesses that are not used as part of development or redevelopment of a property shall be closed and replaced with curbing, sidewalks, and landscaping, as appropriate.

7. Shared Driveways.

a. The number of driveways onto arterial streets shall be minimized by the use of shared driveways with adjoining lots where feasible. The city shall require shared driveways as a condition of land division or site design review, as applicable, for traffic safety and access management purposes. Where there is an abutting developable property, a shared driveway shall be provided as appropriate. When shared driveways are required, they shall be stubbed to adjacent developable parcels to indicate future extension. "Stub" means that a driveway temporarily ends at the property line, but may be accessed or extended in the future as the adjacent parcel develops. "Developable" means that a parcel is either vacant or it is likely to receive additional development (i.e., due to infill or redevelopment potential).

b. Access easements (i.e., for the benefit of affected properties) and maintenance agreements shall be recorded for all shared driveways, including pathways, at the time of final plat approval or as a condition of site development approval.

c. No more than four lots may access one shared driveway.

d. Shared driveways shall be posted as no parking fire lanes where required by the fire marshal.

e. Where three lots or three dwellings share one driveway, one additional parking space over those otherwise required shall be provided for each dwelling. Where feasible, this shall be provided as a common use parking space adjacent to the driveway.

Finding: The applicant is not proposing shared driveways as part of this development. This requirement is not applicable.

9. ODOT or Yamhill County Right-of-Way. Where a property abuts an ODOT or Yamhill County right-of-way, the applicant for any development project shall obtain an access permit from ODOT or Yamhill County.

10. Exceptions. The director may allow exceptions to the access standards above in any of the following circumstances:

a. Where existing and planned future development patterns or physical constraints, such as topography, parcel configuration, and similar conditions, prevent access in accordance with the above standards.

b. Where the proposal is to relocate an existing access for existing development, where the relocated access is closer to conformance with the standards above and does not increase the type or volume of access.

c. Where the proposed access results in safer access, less congestion, a better level of service, and more functional circulation, both on street and on site, than access otherwise allowed under these standards.

Finding: The applicant's narrative briefly discusses topographic site constrains due to wetlands and the block platting pattern in regards to access spacing standards for Private Street G. Because enough information has not been presented to determine if a access spacing standard exception is met, the applicant shall provide additional information to demonstrate the need for the Private Street G access spacing standard exception addressing applicable criteria in sections 15.505(R)(10) and 15.505(R)(11).

The criterion will be verified to have met with the adherence to the condition of approval.

11. Where an exception is approved, the access shall be as safe and functional as practical in the particular circumstance. The director may require that the applicant submit a traffic study by a registered engineer to show the proposed access meets these criteria.

T. Street Trees. Street trees shall be provided for all projects subject to Type II design review, partition, or subdivision. Street trees shall be installed in accordance with the provisions of NMC 15.420.010(B)(4).

Finding: Preliminary plans show street trees along public streets within the development. E Crestview Drive is classified a major collector, Public Street B is a minor collector, and Public Street C and Public Street D are local streets. It is unclear from the applicant's submittal if they are meeting the street tree requirement. Because it's unclear that the applicant is meeting the street tree requirement, the applicant will be required to provide street trees along all public streets that are compliant with 15.420.010(B)(4)(a).

The criterion will be met with the adherence to the aforementioned condition of approval.

U. Street Lights. All developments shall include underground electric service, light standards, wiring and lamps for street lights according to the specifications and standards of the Newberg public works design and construction standards. The developer shall install all such facilities and make the necessary arrangements with the serving electric utility as approved by the city. Upon the city's acceptance of the public improvements associated with the development,

the street lighting system, exclusive of utility-owned service lines, shall be and become property of the city unless otherwise designated by the city through agreement with a private utility.

Finding: Preliminary plans show street lighting on both public and private streets. Because it's unclear if the applicant is meeting street lighting standards, the applicant will be required to submit construction plans that include street lighting needed to meet the specifications and standards of the City's Public Works Design and Construction Standards.

This condition of approval will be met with the adherence to the aforementioned condition of approval.

15.505.040 Public utility standards.

C. General Standards.

1. The design and construction of all improvements within existing and proposed rights-of-way and easements, all improvements to be maintained by the city, and all improvements for which city approval is required shall conform to the Newberg public works design and construction standards and require a public improvements permit.

2. The location, design, installation and maintenance of all utility lines and facilities shall be carried out with minimum feasible disturbances of soil and site. Installation of all proposed public and private utilities shall be coordinated by the developer and be approved by the city to ensure the orderly extension of such utilities within public right-of-way and easements.

Finding: The applicant's narrative indicates that they plan to follow the City of Newberg Design and Construction Standards and ODOT construction standards for all public improvements depending on jurisdiction and will acquire the necessary permits to build those improvements. Because the applicant has not obtained all necessary permits for construction, the issuance of required permits not limited to the agencies of Yamhill County, the State of Oregon, and the Federal Government will be required prior to the City of Newberg issuing a Public Improvement Permit. Permits not limited to a Joint Permit Application (JPA) for wetland mitigation will be required. These criteria will be met with the adherence to the aforementioned condition of approval.

D. Standards for Water Improvements. All development that has a need for water service shall install the facilities pursuant to the requirements of the city and all of the following standards. Installation of such facilities shall be coordinated with the extension or improvement of necessary wastewater and stormwater facilities, as applicable.

1. All developments shall be required to be linked to existing water facilities adequately sized to serve their intended area by the construction of water distribution lines, reservoirs and pumping stations which connect to such water service facilities. All necessary easements required for the construction of these facilities shall be obtained by the developer and granted to the city pursuant to the requirements of the city.

2. Specific location, size and capacity of such facilities will be subject to the approval of the director with reference to the applicable water master plan. All water facilities shall conform with city pressure zones and shall be looped where necessary to provide adequate pressure and fire flows during peak demand at every point within the system in the development to which the water facilities will be connected. Installation costs shall remain entirely the developer's responsibility.

Finding: The applicant will be utilizing the existing water lines in E Crestview Drive and E Portland Road to provide public water lines through the PUD. The applicant will be utilizing the existing non-potable water line in E Portland Road to provide non-potable water lines through the PUD. The applicant has not submitted fire flow calculations. Because the applicant has not submitted fire flow calculations, the applicant will be required to submit fire flow calculations to show that the existing and proposed service is adequate prior to the issuance of the Public Improvement Permit.

This criterion will be verified to have met with the adherence to the conditions of approval.

3. The design of the water facilities shall take into account provisions for the future extension beyond the development to serve adjacent properties, which, in the judgment of the city, cannot be feasibly served otherwise.

Finding: Preliminary plans indicate that Public Street B and Public Street C will continue east beyond the proposed development in the future. The applicant's plans do not take into account future extension beyond the development to serve adjacent properties. Because the applicant's plans do not take into account future street extensions beyond the development, a blow off assembly on the water lines at the eastern end of Street B and Street C will be required which allows for future extension beyond the development site. This criterion will be met with the adherence to the aforementioned condition of approval.

4. Design, construction and material standards shall be as specified by the director for the construction of such public water facilities in the city.

Finding: Preliminary plans indicate that the applicant will be able to meet requirements of the Public Works Design and Construction Standards. Submitted plans show water mains in both public and private streets, but do not show a water main size, the City's standard is an 8-inch minimum water main. The applicant is also showing non-potable water lines in public streets. Fire hydrants will need to be located to meet the Fire Code requirements.

Because construction plans have not yet been submitted and reviewed to determine if this requirement is met, the applicant will need to submit construction plans and obtain a Public Improvement Permit to install the water system and non-potable water system pursuant to the requirements of the City's Public Works Design and Construction Standards. Utility designs and alignments will be reviewed as part of the Public Improvement Permit. Non-potable water lines are

required in public streets and may be required in private streets to provide non-potable water to any landscaping area maintained by the PUD.

This criterion will be met with the adherence to the aforementioned condition of approval.

E. Standards for Wastewater Improvements. All development that has a need for wastewater services shall install the facilities pursuant to the requirements of the city and all of the following standards. Installation of such facilities shall be coordinated with the extension or improvement of necessary water services and stormwater facilities, as applicable.

1. All septic tank systems and on-site sewage systems are prohibited. Existing septic systems must be abandoned or removed in accordance with Yamhill County standards.

Finding: Preliminary plans show an existing home located on the property and the applicant did not address if a septic system exists. Because it's possible that a septic system is present on the property and the applicant has not addressed this issue, the applicant is required to abandon or remove the septic system in accordance with Yamhill County Standards. The applicant will need to provide a certification from Yamhill County of the septic system abandonment/removal. This criterion will be met with the adherence to the aforementioned condition of approval.

2. All properties shall be provided with gravity service to the city wastewater system, except for lots that have unique topographic or other natural features that make gravity wastewater extension impractical as determined by the director. Where gravity service is impractical, the developer shall provide all necessary pumps/lift stations and other improvements, as determined by the director.

3. All developments shall be required to be linked to existing wastewater collection facilities adequately sized to serve their intended area by the construction of wastewater lines which connect to existing adequately sized wastewater facilities. All necessary easements required for the construction of these facilities shall be obtained by the developer and granted to the city pursuant to the requirements of the city.

4. Specific location, size and capacity of wastewater facilities will be subject to the approval of the director with reference to the applicable wastewater master plan. All wastewater facilities shall be sized to provide adequate capacity during peak flows from the entire area potentially served by such facilities. Installation costs shall remain entirely the developer's responsibility.

Finding: Preliminary plans indicate that the applicant will be able to meet requirements of the Public Works Design and Construction Standards. Submitted plans show sewer mains in both public and private streets, but do not show a sewer main size, the City's standard is a minimum 8-inch sewer main. Service laterals for waste water service is to be provided to each lot; single residential service laterals require a 4-inch pipe with cleanout, and split residential service laterals require a 6-inch pipe with cleanout. Plans also show a connection to the existing sewer main approximately 700-

feet south of E Portland Road. The applicant has not adequately addressed capacity of the proposed wastewater line extension for the purpose of the development.

Order No. 2008-0013 Tax Lot 3216-1100 was annexed into the City of Newberg and represents a property that is now being developed as part of the Crestview Crossing PUD. As part of the annexation process, conditions of approval were established. The following condition of approval was issued in regards to sewer capacity improvements:

- *Upon development, verify the capacity of the Fernwood Road sanitary sewer pump station and upsize if necessary. All public sewer lines must be gravity flow*.

Because the applicant has not adequately addressed capacity needs of the proposed wastewater line extension, the applicant will be required to conduct a sewer sizing analysis that includes the upstream basin, verify the capacity of the Fernwood Road sanitary sewer pump and upsize if necessary, evaluate downstream impacts, submit construction plans, and obtain a Public Improvement Permit to install the wastewater system pursuant to the requirements of the City's Design and Construction Standards. Utility designs and alignments will be reviewed as part of the Public Improvement Permit.

The criterion will be met with the adherence to the aforementioned condition of approval.

6. The design of the wastewater facilities shall take into account provisions for the future extension beyond the development to serve upstream properties, which, in the judgment of the city, cannot be feasibly served otherwise.

Finding: Preliminary plans indicate Public Street B and Public Street C will continue east beyond the proposed development in the future. The applicant's plans do not address future street extensions. Because the applicant's plans do not take into account future street extensions beyond the development, a manhole will be required at the eastern end of the wastewater lines in both street B and street C which will allow for future extension beyond the development site.

This criterion will be met with the adherence to the aforementioned condition of approval.

7. Design, construction and material standards shall be as specified by the director for the construction of such wastewater facilities in the city.

Finding: Preliminary plans indicate that the applicant will be able to meet requirements of the Public Works Design and Standards. Submitted plans show new sewer mains in both public and private streets throughout the PUD, minimum sewer mains are required to be 8-inches. Service laterals for waste water service is to be provided to each lot; single residential service laterals require a 4-inch pipe with cleanout, and split residential service laterals require a 6-inch pipe with cleanout. Because construction plans have not yet been submitted and reviewed to determine if this

requirement is met, the applicant will be required to submit construction plans and obtain a Public Improvement Permit to install the wastewater system pursuant to the requirements of the City's Public Works Design and Construction Standards. Utility designs and alignments will be reviewed as part of the Public Improvement Permit.

This criterion will be met with the adherence to the aforementioned condition of approval.

F. Easements. Easements for public and private utilities shall be provided as deemed necessary by the city, special districts, and utility companies. Easements for special purpose uses shall be of a width deemed appropriate by the responsible agency. Such easements shall be recorded on easement forms approved by the city and designated on the final plat of all subdivisions and partitions. Minimum required easement width and locations are as provided in the Newberg public works design and construction standards. [Ord. 2810 § 2 (Exhs. B, C), 12-19-16.]

Finding: The applicant has submitted preliminary plans that indicate some utility easements, however not all easements have been identified. Because the applicant has not indicated all utility easements, the applicant will be required to submit construction plans that include necessary utility easements meeting the specifications and standards of the City's Public Works Design and Construction Standards, but not necessarily limited to:

1) 10-foot utility easements along all street frontages, unless determined by the City Engineer as part of the Public Improvement Permit plan review to be not needed or not feasible due to site conditions.
2) 15-foot utility easements along all public stormwater, sewer, water, and non-potable water lines where not located within the existing roadway right-of-way.
3) Public access easements for any private streets that are required to be used to access public infrastructure.
4) Public access easements for all private walkaways within the PUD.

This criterion will be met with the adherence to all the conditions of approval.

15.505.050 Stormwater system standards.
C. General Requirement. All stormwater runoff shall be conveyed to a public storm wastewater or natural drainage channel having adequate capacity to carry the flow without overflowing or otherwise causing damage to public and/or private property. The developer shall pay all costs associated with designing and constructing the facilities necessary to meet this requirement.

Finding: Preliminary plans show that all on-site stormwater is collected into a storm main and conveyed into stormwater facilities located in Tract B, Tract C, and Tract E. The applicant's materials indicate that stormwater tracts/facilities will be privately maintained, but is it unclear if the facilities can be adequately accessed. Stormwater tracts located in areas of wetlands are to be mitigated, and the City will not accept wetlands in stormwater tracts. Construction plans have not yet been submitted and reviewed to determine if the requirement is met.

Because the applicant has not submitted constriction plans, the applicant will be required to submit construction plans and obtain a Public Improvement Permit to install the stormwater system improvements pursuant to the requirements of the City's Public Works Design and Construction Standards which should include the following:

- Turn templates for maintenance vehicles accessing stormwater facilities shall be provided to verify that adequate site access exists.
- Permanent maintenance access via a paved road within 10-feet of stormwater facility structures within the stormwater tracts is required.
- Any stormwater tract/facility treating private stormwater shall be owned and maintained by the PUD. Any stormwater tract/facility treating both public and private stormwater shall be owned and maintained by the PUD. Any stormwater tract/facility treating only public stormwater shall be owned and maintained by the City of Newberg.
- Preliminary plans show wetlands inside of stormwater tracts, because the City does not accept wetlands in stormwater tracks, the applicant will be required to remove any wetlands from stormwater tracts dedicated to the City.
- Public/private walkways when located adjacent to stormwater facilities must be located outside of the fenced stormwater facility and outside of maintenance access drives.
- A downstream analysis shall be completed, where the design Engineer visually investigates the downstream system for at least one-quarter mile downstream and report any observed deficiencies per Public Works Design and Construction Standards.
- All stormwater mains are required to cross streets at right angles perpendicular to the street**.**

This criterion will be met with the adherence to the aforementioned conditions of approval.

D. Plan for Stormwater and Erosion Control. No construction of any facilities in a development included in subsection (B) of this section shall be permitted until an engineer registered in the State of Oregon prepares a stormwater report and erosion control plan for the project. This plan shall contain at a minimum:

1. The methods to be used to minimize the amount of runoff, sedimentation, and pollution created from the development both during and after construction.

2. Plans for the construction of stormwater facilities and any other facilities that depict line sizes, profiles, construction specifications, and other such information as is necessary for the city to review the adequacy of the stormwater plans.

3. Design calculations shall be submitted for all drainage facilities. These drainage calculations shall be included in the stormwater report and shall be stamped by a licensed professional engineer in the State of Oregon. Peak design discharges shall be computed based upon the design criteria outlined in the public works design and construction standards for the city.

Finding: Preliminary plans and a preliminary stormwater report for the proposed development have been submitted. This site is not currently paved. New impervious surfaces will be created and stormwater quality and quantity facilities will be required and the applicant has not obtained appropriate erosion control permitting. Because this project will disturb more than one acre and permitting has not been obtain, a 1200-C permit from DEQ will be required. The applicant will be required to submit a copy of the 1200-C permit from DEQ prior to issuance of a grading or public improvement permit.

This criterion will be met with the adherence to the aforementioned condition of approval.

E. Development Standards. Development subject to this section shall be planned, designed, constructed, and maintained in compliance with the Newberg public works design and construction standards. [Ord. 2810 § 2 (Exhs. B, C), 12-19-16.]

Finding: Preliminary plans show that all on-site stormwater is collected and conveyed to on-site stormwater facilities. Construction plans for this stormwater systems have not yet been submitted. A stormwater final report will need to be submitted with the Public Improvement Permit and will be completely reviewed at that time. Because construction plans have not yet been submitted and reviewed to determine if this requirement has been met, the applicant will need to submit a stormwater report and construction plans meeting the City's Public Works Design and Construction Standards and obtain a Public Improvement Permit to install the stormwater system improvements. Utility designs and alignments will be reviewed as part of the Public Improvement Permit.

This criterion will be met with the adherence to the aforementioned condition of approval.

Conclusion: Based on the above-mentioned findings, the application meets the required criteria within the Newberg Development Code, subject to completion of the attached conditions found in Exhibit "B".

Exhibit "B" to Planning Commission Order 2018-10
Conditions –File PUD18-0001/CUP18-0004
Crestview Crossing PUD

A. Conditional Use Conditions of Approval

1. Prior to proposed lots 245 through 248 receiving a certificate of occupancy from the building department, a vegetative buffer must be established along the rear property line of said lot

2. In compliance with Resolution 2006-15, the applicant shall retain as many mature trees as possible along the northern border of Yamhill County Tax lots 13800 and 1100 and supplement the tree buffer with new trees where necessary to provide a contiguous vegetative buffer.

3. The applicant must provide an updated tree removal, tree preservation and tree planting plan that clearly illustrates the type, number and location of new trees, numbers of trees being preserved and the number of trees being removed. Said plan sheet will be required to be submitted before step two (Final Plans) Section 15.240.020(B)(2) commences.

B. The applicant must provide the following information for review and approval <u>prior</u> to construction of any improvements:

Streets, Vehicle and Bicycle Parking, Sidewalks, Walkways and Street Trees

1. The applicant shall follow the city engineer requirement for sidewalks along private streets to be 5-feet wide matching the applicant's cross-section detail on sheet C300. The design of weep holes in the proposed rolled curb will be reviewed as part of the Public Improvement Permit, direct connection to the stormwater system may be required.

2. The applicant shall follow requirements outlined in a letter TVF&R provided on June 5, 2018 which indicated the following:

    - 20-26 feet road width – no parking on either side of roadway

3. The applicant must submit drawings that clearly illustrate parking bumper locations during "Step Two" of the Planned Unit Development review process.

4. Section 15.420.010 (B) (h) requires a landscaping island for every seven (7) parking spots, the applicant shall provide landscaping islands that meet requirements of said section of the NDC.

5. The applicant shall install bicycle parking loops and spaces that are at least six feet long and two and one-half feet wide.

6. The applicant will be required to meet the applicable building code and Americans with Disabilities Act requirements for private walkways, and develop a plan where private

walkways are connecting each main pedestrian building entrance to each abutting public street and to each other.

7. The E Crestview Drive roadway is to consist of the following: 1-foot from back of walk to right-of-way, 5-foot sidewalk, 5.5-foot planter*, 0.5-foot curb, 6-foot bike lane, 12-foot travel lane, 12-foot travel lane, 6-foot bike lane, 0.5-foot curb, 5.5-foot planter, 5-foot sidewalk, 1-foot from back of walk to right-of-way. The applicant is required to dedicate sufficient right-of-way (minimum of 60-feet) to construct E Crestview Drive, to construct a roundabout meeting FHWA Standards at the E Crestview Drive/Public Street B intersection, and to construct improvements related to modifying the traffic signal at the E Crestview Drive/Providence Drive/E Portland Road intersection meeting City of Newberg, Yamhill County, and Oregon Department of Transportation requirements.

8. A 5.0-foot planter will be constructed between the E Crestview Drive/Public Street B intersection and the E Crestview Drive/E Portland Road intersection to allow for a proposed retaining wall on the west side of E Crestview Drive to be located outside of the public right-of-way.

9. The Public Street B is to consist of the following: 1-foot from back of walk to right-of-way, 5-foot sidewalk, 5.5-foot planter, 0.5-foot curb, 8-foot parking lane, 12-foot travel lane with sharrow, 12-foot travel lane with sharrow, 8-foot parking lane, 0.5-foot curb, 5.5-foot planter, 5-foot sidewalk, 1-foot from back of walk to right-of-way. The applicant is required to dedicate sufficient right-of-way (minimum of 64-feet) to construct Public Street B.

10. The applicant shall revise plans to show Public Street C and Public Street D consisting of the following: 1-foot from back of walk to right-of-way, 5-foot sidewalk, 5.5-foot planter, 0.5-foot curb, 7-foot parking lane, 9-foot travel lane, 9-foot travel lane, 7-foot parking lane, 0.5-foot curb, 5.5-foot planter, 5-foot sidewalk, 1-foot from back of walk to right-of-way. The applicant is required to dedicate sufficient right-of-way (minimum of 56-feet) to construct the listed streets.

11. The applicant will be required to dedicated additional right-of-way on E Portland Road necessary to meet requirements set forth by the Oregon Department of Transportation to meet Highway Design Manual standards to construct the westbound right-turn lane.

12. The comments on the traffic study identified by ODOT shall be adequately addressed and approved by ODOT as noted in the memo dated July 19, 2018 signed by Dan Fricke, Region 2 Senior Planner.

13. Prior to the issuance of the first grading or building permit, the applicant shall submit plans and specifications for all improvements/construction within ODOT right-of-way for review and approval by ODOT District 3 and issuance of a permit to construct within ODOT right-of-way. ODOT shall certify that all construction activities have been completed pursuant to the approved plans and specifications prior to the issuance of the first certificate of use and occupancy, or the city's equivalent.

14. Prior to issuance of the first grading or building permit, the applicant shall submit signal modification plans for the review of the ODOT Region 2 Traffic Engineer and the review and approval of the State Traffic Engineer. ODOT shall certify that all required signal modifications have been completed and the signal operational prior to the issuance of the first certificate of use and occupancy, or the city's equivalent.

15. the applicant is required to pay the following Traffic Impact Fee to the City of Newberg to meet Order No. 2007-0002 and Order No. 2008-0013 conditions of approval:

    (21 AM Peak Hour Trips resulting from the development)/(774 AM Peak Hour Total Trips through the intersection) = 0.0271 proportional trips through the intersection

    (0.0271 proportional trips through the intersection)*($400,000 intersection project cost estimate) = $10,840 Traffic Impact Fee – AM Peak Hour

16. The applicant is required to install a 6-foot bike lane along E Portland Road to match the City's Transportation System Plan cross-section.

17. The City will require the southbound and northbound center turn lanes at the E Crestview Drive/E Portland Drive intersection to be a minimum of 12-feet wide.

18. The applicant will be required to install directional ADA curb ramps at the corners of all public street/public street intersection locations, and at public street/private street intersection locations. The final design of all roads within the PUD will be reviewed and approved as part of the Public Improvement Permit.

19. The planter strips on public streets are required to be 5.5-feet wide except where noted on the west side of E Crestview Drive between the E Crestview Drive/Public Street B intersection and the E Crestview Drive/E Portland Road intersection. Where a planter strip is not provided, the public sidewalk is required to be 6-feet wide.

20. The final design of E Portland Road, E Crestview Drive, Public Street B, Public Street C, and Public Street D will need to comply with City's Public Works Design and Construction Standards and applicable ODOT standards. The applicant will be required to obtain a Public Improvement Permit and meet the City's Transportation System Plan and Public Works Design and Construction Standards for the proposed roadway improvements.

21. The applicant is required to install street name signs at all intersections within the development including those intersections with private streets.

22. The Private Street G driveway setback is to be a minimum of 150-feet from E Crestview Drive per Table 15.505.R Access Spacing Standards. Setbacks are measured from the curb line of the intersecting street to the beginning of the driveway, excluding flares. If the applicant can provide supplemental materials that meet the exception requirements in 15.505(R)(10) and 15.505(R)(11), the City could determine that a proposed alternative design is acceptable.

23. Access shall be taken from the street with the lesser functional classification, and private streets are designated as having the lowest functional classification.

24. If a property has frontage on a private street and other frontages are on collector or arterial streets, access shall be taken from the private street only.

25. The applicant shall provide additional information to demonstrate the need for the Private Street G access spacing standard exception addressing applicable criteria in sections 15.505(R)(10) and 15.505(R)(11).

26. The applicant will be required to provide street trees along all public streets that are compliant with 15.420.010(B)(4)(a).

27. The applicant will be required to submit construction plans that include street lighting needed to meet the specifications and standards of the City's Public Works Design and Construction Standards.

Water

28. A blow off assembly on the water lines at the eastern end of Street B and Street C will be required which allows for future extension beyond the development site.

29. The applicant will need to submit construction plans and obtain a Public Improvement Permit to install the water system and non-potable water system pursuant to the requirements of the City's Public Works Design and Construction Standards. Utility designs and alignments will be reviewed as part of the Public Improvement Permit. Non-potable water lines are required in public streets and may be required in private streets to provide non-potable water to any landscaping area maintained by the PUD.

Wastewater

30. The applicant is required to abandon or remove the septic system in accordance with Yamhill County Standards. The applicant will need to provide a certification from Yamhill County of the septic system abandonment/removal.

31. The applicant will be required to conduct a sewer sizing analysis that includes the upstream basin, verify the capacity of the Fernwood Road sanitary sewer pump and upsize if necessary, evaluate downstream impacts, submit construction plans, and obtain a Public Improvement Permit to install the wastewater system pursuant to the requirements of the City's Design and Construction Standards. Utility designs and alignments will be reviewed as part of the Public Improvement Permit.

32. A manhole will be required at the eastern end of the wastewater lines in both street B and street C which will allow for future extension beyond the development site.

33. The applicant will be required to submit construction plans and obtain a Public Improvement Permit to install the wastewater system pursuant to the requirements of the City's Public

Works Design and Construction Standards. Utility designs and alignments will be reviewed as part of the Public Improvement Permit.

Easements

34. The applicant will be required to submit construction plans that include necessary utility easements meeting the specifications and standards of the City's Public Works Design and Construction Standards, but not necessarily limited to:

    a. 10-foot utility easements along all street frontages, unless determined by the City Engineer as part of the Public Improvement Permit plan review to be not needed or not feasible due to site conditions.
    b. 15-foot utility easements along all public stormwater, sewer, water, and non-potable water lines where not located within the existing roadway right-of-way.
    c. Public access easements for any private streets that are required to be used to access public infrastructure.
    d. Public access easements for all private walkaways within the PUD.

35. The applicant is required to provide 10-foot public utility easements on public street frontages per PGEs review dated August 24, 2018. Public utility easements shall not be collocated/overlapped (running parallel) with public infrastructure easements on private streets i.e. storm, sewer, water, or non-potable water lines.

Stormwater

36. The applicant will be required to submit construction plans and obtain a Public Improvement Permit to install the stormwater system improvements pursuant to the requirements of the City's Public Works Design and Construction Standards which should include the following:

37. Turn templates for maintenance vehicles accessing stormwater facilities shall be provided to verify that adequate site access exists.

38. Permanent maintenance access via a paved road within 10-feet of stormwater facility structures within the stormwater tracts is required.

39. Any stormwater tract/facility treating private stormwater shall be owned and maintained by the PUD. Any stormwater tract/facility treating both public and private stormwater shall be owned and maintained by the PUD. Any stormwater tract/facility treating only public stormwater shall be owned and maintained by the City of Newberg.

40. The applicant will be required to remove any wetlands from stormwater tracts dedicated to the City.

41. Public/private walkways when located adjacent to stormwater facilities must be located outside of the fenced stormwater facility and outside of maintenance access drives.

42. A downstream analysis shall be completed, where the design Engineer visually investigates the downstream system for at least one-quarter mile downstream and report any observed deficiencies per Public Works Design and Construction Standards.

43. All stormwater mains are required to cross streets at right angles perpendicular to the street.

44. The applicant will need to submit a stormwater report and construction plans meeting the City's Public Works Design and Construction Standards and obtain a Public Improvement Permit to install the stormwater system improvements. Utility designs and alignments will be reviewed as part of the Public Improvement Permit.

Permits Issuance and Timing

45. Public utility infrastructure improvements not limited to street improvements, public walkways, water, non-potable water, wastewater, and stormwater will require completed permits from partner agencies to authorize different work tasks. Issuance of required permits for wetland delineation/mitigation, construction, etc. not limited to the agencies of Yamhill County, the State of Oregon, and the Federal Government will be required prior to the City of Newberg issuing a Public Improvement Permit.

46. The issuance of required permits not limited to the agencies of Yamhill County, the State of Oregon, and the Federal Government will be required prior to the City of Newberg issuing a Public Improvement Permit. Permits not limited to a Joint Permit Application (JPA) for wetland mitigation will be required.

47. The applicant will be required to submit fire flow calculations to show that the existing and proposed service is adequate prior to the issuance of the Public Improvement Permit.

48. A 1200-C permit from DEQ will be required. The applicant will be required to submit a copy of the 1200-C permit from DEQ prior to issuance of a grading or public improvement permit.

Building Designs

49. The applicant shall clearly list all outdoor living area calculations on all single-family and multifamily building plans. If a single family or multifamily building plan does not meet said requirement then no building permit shall be granted until plans are revised to meet this section 15.240.020(N) of NDC**.**

Home Owners Association

50. The Crestview HOA must provide and annual report that meets the requirements of NDC 15.240.020.L.2.b. to the Newberg Community Development Direction each year on the anniversary date of the final approval for each phase of the PUD approval.

Additional Buffering

51. The applicant must provide a wall that meets the intent of Order 2008-0013. Plan sheets and a description must be submitted to the City for review prior to "Step Two" of the review process taking place.

Intermediate Step between "Step 1" and "Step 2" of the PUD Process

52. Prior to modification of any site features or beginning "Step Two" of the review process (NDC Section 15.240.020.B.2.) the applicant shall provide a list of site features to be modified and supporting drawings illustrating before and after conditions for review by City Staff. "Step two" shall not commence until the applicant and city staff can agree on what site modifications are permissible under this section of the NDC.

Construction Plans:

53. Submit engineered construction plans for review and approval of all utilities and public street improvements meeting City of Newberg requirements.

54. Grading: Obtain a city grading permit prior to grading.

C. The applicant must complete the following <u>prior</u> to final plat approval.

55. **Substantially Complete the Construction Improvements:** Prior to final plan approval for a given phase, the applicant must substantially complete the construction improvements and secure for them in accordance with city policy. Complete construction and call for a walk-through inspection with the Engineering Division (503-537-1273).

D. Final Plat Application: In accordance with NDC 15.240.040, submit the following for City review of the final plan application. Construction improvements should be substantially complete at this point.

1. **Lapse of Approval**. If the applicant fails to submit material required for consideration at the next step in accordance with the schedule approved at the previous step or, in the absence of a specified schedule, **within one year** of such approval, the application as approved at the previous step expires. If the applicant fails to obtain a building permit for construction in accordance with the schedule as previously approved, or in the absence of a specified schedule, within three years of a preliminary plan approval, preliminary and final plan approvals expire. Prior to expiration of plan approval at any step, the hearing authority responsible for approval may, if requested, extend or modify the schedule, providing it is not detrimental to the public interest or contrary to the findings and provisions specified herein for planned unit developments. Unless the preliminary plan hearing authority provides to the contrary, expiration of final plan approval of any phase automatically renders all phases void that are not yet finally approved or upon which construction has not begun.

2. **Application Materials:**

   a. Type I application form (found either at City Hall or on the website – www.newbergoregon.gov in the Planning Forms section) with the appropriate fees.

   b. A current title report (within 6 months old) for the property. Include copies of all existing easements and CC&Rs that pertain to the property.

   c. A written response to these Conditions of Approval that specifies how each condition has been met.

   d. Two blue-line copies of the final partition plats for preliminary review by the City Engineering Division. Engineering will make red-line comments on these sheets for your surveyor/engineer to correct prior to printing final Mylar copies.

   e. Any other documents required for review.

3. **Documents Required:** Provide the following documents for review and approval:

   a. A bond for street tree planting in an amount to be approved by the Planning Division.

4. **Final Mylar Copies of the Partition Plats:** Submit final mylar copies of the corrected final partition plats (after red-line corrections have been made).

   a. Three sets (one original and two copies), 18 inches by 24 inches in size, of the final partition plans drawn in black India ink in clear and legible form. Original plats shall be in substantial conformity to the approved tentative plan and shall conform to the Yamhill County Surveyor's specifications and requirements.

5. **Required Signatures:** According to NDC 15.235.180, approval of a final plat must be acknowledged and signed by the following:

   a. Planning and Building Director
   b. The County Assessor
   c. The County Surveyor
   d. The City Recorder

6. **Recording:** Deliver the approved plat to the office of the County Clerk for recording. The County Clerk's office is located at 414 NE Evans St, McMinnville, OR 97128.

7. **Copy returned to the City:** Return an exact mylar copy of the recorded plat to the Director to complete the plat process. The land division will not be considered final until the copy is returned to the Director. No permits will be issued for any development on the property after the plat is signed until the copy is returned.

E. Development Notes:

1. **Postal Service:** The applicant shall submit plans to the Newberg Postmaster for approval of proposed mailbox delivery locations. Contact the Newberg Post Office for assistance at 503-554-8014.

2. **PGE:** PGE can provide electrical service to this project under terms of the current tariff which will involve developer expense and easements. Contact the Service & Design Supervisor, PGE, at 503-463-4348.

3. **Frontier:** The developer must coordinate trench/conduit requirements with Frontier. Contact the Engineering Division, Frontier, at 541-269-3375.

4. **Addresses:** The Planning Division will assign addresses for the new lots. Planning Division staff will send out notice of the new addresses after they receive a mylar copy of the recorded final plat.

Attachment 1: Application Material

JORDAN RAMIS PC
ATTORNEYS AT LAW

Lake Oswego
Two Centerpointe Dr., 6th Floor
Lake Oswego, OR 97035
503-598-7070
www.jordanramis.com

Vancouver
1499 SE Tech Center Pl., #380
Vancouver, WA 98683
360-567-3900

Bend
360 SW Bond St., Suite 510
Bend, OR 97702
541-550-7900

August 17, 2018

Via E-Mail
Doug.rux@newbergoregon.gov

Doug Rux, AICP
Community Development Director
City of Newberg
414 E First Street
Newberg, OR 97123

Re: **Crestview Crossing Submittal – PUD 18-0001/CUP 18-0004**

Dear Doug:

Thanks for your assistance with scheduling the follow up submittals and the next Planning Commission hearing on September 13th. Pursuant to your request, the applicant team is providing several additional and revised submittals to address concerns raised by staff, neighbors and the Planning Commission.

Today's submittals include:

- An exhibit showing typical parking configurations;
- Draft Maintenance Agreements for the Private Street and Stormwater Tracts. These items have been provided in lieu of CC&R's;
- A draft reserve study for the Private Street Tracts;
- An updated Phasing Plan;
- Two alternative plats;
- Rendering of Highway 99 frontage and the Crestview entrance;
- A Kittelson memorandum addressing the roundabout location and the 5/6 party agreement;
- A geology report addressing the wells at Oxberg Lake Estates and Hydrogeology;
- An updated Traffic Report;
- An updated land use narrative.

Specifically we want to take this opportunity to discuss a few of the submittal items and point out how they address some of the concerns raised. First the draft maintenance agreement for the private streets will ensure that the maintenance of those streets and stormwater tracts will be privately maintained in perpetuity. Our office has drafted numerous maintenance agreements and for the sake of clarity, ease of use, and convenience to the City they are usually called out in separate agreements that are eventually incorporated into the CCRs as exhibits. Along with this we have provided you the draft reserve study which demonstrates that the private streets can easily be maintained in perpetuity.

Secondly, we would like to have you pay close attention to the Kittelson memorandum which addresses concerns raised in correspondence from interested parties related to the 5/6 party agreement. The memorandum is self-explanatory, but concludes that the design of the project is consistent with the agreement.

Third we have provided the City a geology report addressing concerns raised by interested parties in relation to the wells at Oxberg Lake Estates. The report concludes that those wells will not be impacted by Crestview Crossing.

Finally, we did hear a concern both at a staff and planning commission level about the need for an amplified narrative in certain areas. We trust that our updated narrative and supplemental information should address the concerns that staff had about not having the requisite information prior to issuing the staff report.

In conclusion, we hope that by getting these today ahead of the September 11 hearing that it will allow ample time for review by city staff, outside agencies, and the Planning Commission prior to that hearing. In the interim, let us know if there is additional information that you think might be helpful.

Very truly yours,

JORDAN RAMIS PC

James D. Howsley
Admitted in Oregon and Washington
james.howsleyt@jordanramis.com
WA Direct Dial (360) 567-3913

Enclosures

cc: Jesse Nemec
John Wyland
Andrew Tull

TYPE III APPLICATION - 2018
(QUASI-JUDICIAL REVIEW)

File #: CUP 18-0004

TYPES – PLEASE CHECK ONE:

___ **Annexation**
___ **Comprehensive Plan Amendment (site specific)**
___ **Zoning Amendment (site specific)**
___ **Historic Landmark Modification/alteration**
___ **Conditional Use Permit**
___ **Type III Major Modification**
X **Planned Unit Development**
___ **Other: (Explain)**

APPLICANT INFORMATION:

APPLICANT: Andrew Tull, 3J Consulting, Inc.
ADDRESS: 5075 SW Griffith Drive, Suite 150 Beaverton, Or 97005
EMAIL ADDRESS: Andrew.tull@3j-consulting.com
PHONE: 503-545-1907 MOBILE: _____ FAX: _____
OWNER (if different from above): CG Commercial LLC & VPCF Crestview LLC PHONE: 503-730-8620
ADDRESS: 5285 Meadows Drive, Suite 171 Lake Oswego, Oregon 97035
ENGINEER/SURVEYOR: Aaron Murphy, PE, 3J Consulting, Inc. PHONE: 720-220-3915
ADDRESS: 5075 SW Griffith Drive, Suite 150 Beaverton, Or 97005

GENERAL INFORMATION:

PROJECT NAME: Crestview Crossing PROJECT LOCATION: 4505 E Portland Road
PROJECT DESCRIPTION/USE: Planned Unit Development and Conditional Use Permit
MAP/TAX LOT NO. (i.e.3200AB-400): ~~3s2w16 lots~~ 3s2w16 13800 & 1100 ZONE: R1,R2,C2 SITE SIZE: 33.13 SQ. FT. ☐ ACRE ☐
COMP PLAN DESIGNATION: COM, MDR, LDR TOPOGRAPHY: Gentle
CURRENT USE: Vacant
SURROUNDING USES:
NORTH: Residential County Subdivision SOUTH: Providence Hospital
EAST: Undeveloped Land WEST: Residential Subdivision

RECEIVED
JUN 06 2018
Initial:

SPECIFIC PROJECT CRITERIA AND REQUIREMENTS ARE ATTACHED

General Checklist: ☐ Fees ☐ Public Notice Information ☐ Current Title Report ☐ Written Criteria Response ☐ Owner Signature

For detailed checklists, applicable criteria for the written criteria response, and number of copies per application type, turn to:

The above statements and information herein contained are in all respects true, complete, and correct to the best of my knowledge and belief. Tentative plans must substantially conform to all standards, regulations, and procedures officially adopted by the City of Newberg. All owners must sign the application or submit letters of consent. Incomplete or missing information may delay the approval process.

Applicant Signature 6/6/18 Date

Andrew Tull
Print Name

Owner Signature 5/29/2018 Date

Jeff Smith
Print Name

Attachments: General Information, Fee Schedule, Noticing Procedures, Planning Commission Schedule, Criteria, Checklists

TYPE III APPLICATION - 2018
(QUASI-JUDICIAL REVIEW)

File #: PUD18-0001

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___ **Zoning Amendment (site specific)**
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Print Name

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Table of Contents

Attachments
Appendix A – Land Use Application
Appendix B – Pre-Application Notes
Appendix C – Notification Materials
Appendix D – Technical Reports
Appendix E – Land Use Plans

GENERAL INFORMATION

Property Owner and Applicant:	CG Commercial, LLC & VPCF Crestview, LLC 5285 Meadows Road, Suite 171 Lake Oswego, OR 97035 Contact: Jesse Nemec Phone: (503)-730-8620 Email: jnemec@jtsmithco.com
Applicant's Representative:	3J Consulting, Inc. 5075 SW Griffith Drive, Suite 150 Beaverton, OR 97005 Contact: Andrew Tull Phone: (503)-545-1907 Email: andrew.tull@3j-consulting.com
Legal Representative:	Jordan Ramis, PC 2 Centerpointe Drive, Suite 600 Lake Oswego, Oregon 97035 Contact: James Howsley Phone: (503) 598-7070 Email: jamie.howsley@jordanramis.com

SITE INFORMATION

Parcel Number:	3216AC 13800 &1100
Address:	OR 99W and Crestview Drive
Size:	33.13 acres
Zoning Designations:	R-1, R-2, C-2
Existing Use:	Vacant
Street Functional Classification:	OR-99W is classified as a Major Arterial and is an ODOT facility. Crestview Drive is classified as a Minor Arterial and is within the City's jurisdiction.
Surrounding Zoning:	The properties to the west are located within the City of Newberg and are zoned Low Density Residential (R-1). The properties to the south are zoned City Institutional (I) and County VLDR-2.5. The properties to the north are located within Yamhill county and are zoned VLDR-1. The properties to the east are located within Yamhill County and are zoned EF-20.

INTRODUCTION

APPLICANT'S REQUEST

The Applicant seeks approval of an application for a Type III Planned Unit Development (PUD) and Conditional Use Permit (CUP). This narrative has been prepared to describe the proposed development and to document compliance with the relevant sections of Newberg's Development Code.

SITE DESCRIPTION/SURROUNDING LAND USE

The subject site is 33.13 acres in size and is located north of OR-99W, south of Crestview Drive. The property is located within the City and is Zoned C-2, R-2, and R-1. The site has sloping topography which generally slopes towards the southeastern end of the property. The site currently contains numerous wetlands that will be preserved or mitigated, in compliance with Department of State Lands and Army Corps of Engineers standards.

PROPOSAL

The proposed Planned Community will create a mixture of commercial development, single-family homes, cottage style single-family homes, affordable housing and multi-family homes. The proposed development includes 18 single-family homes on large lots, 230 cottage homes, and 51 multi-family homes with modifications to the base zone's dimensions as permitted through the PUD process. The project will include a 4.4-acre parcel which has been created to allow for future commercial development.

The proposed neighborhood will feature active and passive open space areas for use by the residents. The proposed design includes a network of open spaces and wetlands, a thoughtfully linked pedestrian circulation system, and several pedestrian amenities. A neighborhood park is connected to the proposed development through a network of multi-use pathways which provide pedestrian circulation and recreation throughout the site. The development will utilize a network of public and private streets, as well as alleyways which will provide for additional on-street parking. Additional parking for residents has been provided in several off-street parking areas.

The project will include an affordable housing component. While affordable housing is not a required component of a submission for a Planned Unit Development or a Conditional Use Permit, the City does have an Affordable Housing Action Plan which identifies a significant shortage of affordably priced homes within the City and the Applicant said it would include this element. In recognition of the City's needs for affordable housing options, the Applicant proposes to create five percent of the single family detached homes with price reductions and deed restrictions designed to create perpetual affordability.

Affordable Housing is defined within the City's Affordable Housing Action Plan as when a family spends no more than 30% of its income for housing. The twelve single family homes created as part of this program will initially be marketed at rates which make them eligible for families earning less than the median family incomes as described within the Housing Action Plan's definitions of affordable housing. At closing, buyers will be required to sign covenants agreeing to limit the price of any future sale to a rate of appreciation which is tied to either the Area Median Family Income rate or another acceptable index of income. The Applicant plans to work with the Housing Authority of Yamhill County and the City's Affordable Housing Ad Hoc Committee to refine the covenants which will be recorded with the sale of these units and to eventually find parties which may qualify for the purchase of affordable houses. The proposed affordable homes will require owner occupation and will be constructed at various locations throughout the development.

As proposed, the Applicant has included two alternative plats for the property, one of which shows attached, duplex styled housing on some of the lots. The alternative plat also shows a scenario with exclusively detached products. As the project moves through construction and as sales data is received, the applicant specifically requests flexibility in preparing the final plats for the various phases within the development to allow for the platting of either detached or attached homes. The adjustments necessary to the final plat to process these changes will not require significant modifications to lots and will not result in the addition or deletion of any lots within the plan.

APPLICABLE CRITERIA

The following sections of Newberg's and Development Code have been extracted as they have been deemed to be applicable to the proposal. Following each bold applicable criteria or design standard, the Applicant has provided a series of draft findings. The intent of providing code and detailed responses and findings is to document, with absolute certainty, that the proposed development has satisfied the approval criteria for a Planned Unit Development and a Conditional Use Permit.

TITLE 15 DEVELOPMENT CODE

Division 15.200 Land Use Applications

15.225 Conditional Use Procedures
15.225.010 Description and purpose.
A. It is recognized that certain types of uses require special consideration prior to their being permitted in a particular district. The reasons for requiring such special consideration involves, among other things, the size of the area required for the full development of such uses, the nature of the traffic problems incidental to operation of the use, the effect such uses have on any adjoining land uses and on the growth and development of the community as a whole.

Applicant's Facts and Findings: The proposal includes residential development in a commercial zoning district, requiring a conditional use permit. The applicable conditional use permit standards are addressed below.

This standard is met.

B. All uses permitted conditionally are declared to be possessing such unique and special characteristics as to make impractical their being included as outright uses in any of the various districts herein defined. The authority for the location and operation of the uses shall be subject to review and the issuance of a conditional use permit. The purpose of review shall be to determine that the characteristics of any such use shall be reasonably compatible with the type of uses permitted in surrounding areas, and for the further purpose of stipulating such conditions as may be reasonable so that the basic purposes of this code shall be served. Nothing construed herein shall be deemed to require the hearing body to grant a conditional use permit.

Applicant's Facts and Findings: The development of residential housing in the C-2 (Commercial) zoning district requires a conditional use permit. The Conditional Use Permit is used in this scenario to ensure that density, lot coverage, parking, vehicular access, pedestrian and bicycle connectivity, and other residential characteristics are developed to be compatible with surrounding land uses.

This standard is met.

15.225.020 Conditional use permit prerequisite to building.
No building permit shall be issued when a conditional use permit is required by the terms of this code unless a permit has been granted by the hearing body and then only in accordance with the terms and conditions of the conditional use permit. Conditional use permits may be

temporary or permanent for any use or purpose for which such permits are required or permitted by provisions of this code.

Applicant's Facts and Findings: This land use application proposes a permanent conditional use permit for residential development in the C-2 zoning district. Building permits have not been issued for this development.

This standard is met.

15.225.030 Application.

Application for a conditional use permit shall be accompanied by such information including, but not limited to, site and building plans, drawings and elevations, and operational data, as may be required by the director to allow proper evaluation of the proposal. The plan submittal requirements identified in NMC 15.220.030 and 15.445.190 shall be used as a guide. All proposals for conditional use permit shall be accompanied by a detailed project description which includes information such as the use, information relating to utilities, the number of employees, the hours of operation, traffic information, odor impacts, and other information needed to adequately describe the project.

Applicant's Facts and Findings: The proposed Conditional Use Permit includes all information necessary for a complete and thorough review.

This standard is met.

15.225.040 Concurrent design review.

If new buildings or structures are to be included as part of the application, the planning commission shall concurrently review the application for site design review in order to streamline the review process.

Applicant's Facts and Findings: The proposed Conditional Use Permit includes a proposed Planned Unit Development on the site with both single-family detached and multi-family housing. The review of the CUP is proposed concurrent with the PUD.

This standard is met.

15.225.050 Additional information.

In order to fully evaluate the proposal, additional information may be required. This includes but is not limited to traffic studies, noise studies, visual analysis, and other site impact studies as determined by the director or planning commission.

Applicant's Facts and Findings: The proposal includes a traffic study and materials display boards. Noise studies are not necessary based on the residential proposal.

This standard is met.

15.225.060 General conditional use permit criteria – Type III.

A conditional use permit may be granted through a Type III procedure only if the proposal conforms to all the following criteria:

A. The location, size, design and operating characteristics of the proposed development are such that it can be made reasonably compatible with and have minimal impact on the livability or appropriate development of abutting properties and the surrounding neighborhood, with consideration to be given to harmony in scale, bulk, coverage and density; to the availability of public facilities and utilities; to the generation of traffic and the capacity of surrounding streets, and to any other relevant impact of the development.
B. The location, design, and site planning of the proposed development will provide a convenient and functional living, working, shopping or civic environment, and will be as attractive as the nature of the use and its location and setting warrants.
C. The proposed development will be consistent with this code.

Applicant's Facts and Findings:

The proposed residential development on this site will allow a gradual transition from the residentially-developed properties to the north and west toward the 4.4-acre retail commercial designated pad adjacent to Highway 99W. The large-lot single-family detached properties immediately adjacent to the site will be buffered by large-lot single-family detached homes. Higher-density single-family detached housing will be located central to the site and adjacent to the park on the western property boundary. The two proposed multi-family buildings are in the southeast corner of the site, adjacent to Highway 99W and near the proposed retail commercial area to be developed at a later date.

This "stair step" approach to lot size and density will serve to ensure harmony in scale, bulk, coverage and density while the multi-family near commercial will provide a convenient and functional living, working and shopping environment. All homes in the site have access via sidewalk to Spring Meadow Park and further into the City of Newberg, satisfying the requirement that the conditional use permit provide a convenient and functional civic environment.

As shown on the included design and materials boards, the proposed development includes a high level of residential design to reflect the location of the development at the eastern entry to the City of Newberg. Materials such as wood, stone, brick and northwest-style siding are all utilized to blend the site to both the natural and built surrounding areas.

Findings are made regarding all applicable sections of the Newberg Development Code throughout this narrative. As identified the findings of each individual code section, the proposed Planned Unit Development and Conditional Use Permit meet all applicable sections of the Newberg Development Code.

This standard has been met.

15.225.080 Conditions.
The hearing body shall designate conditions in connection with the conditional use permit deemed necessary to secure the purpose of this chapter and the general conditional use permit criteria and require the guarantees and evidence that such conditions will be complied with. Such conditions may include:
A. Regulation of uses.
B. Special yards, spaces
C. Fences and walls.
D. Surfacing of parking areas to city specifications.

E. Street dedications and improvements (or bonds).
F. Regulation of points of vehicular ingress and egress.
G. Regulation of signs.
H. Landscaping and maintenance of landscaping.
I. Maintenance of the grounds.
J. Regulation of noise, vibration, odors or other similar nuisances.
K. Regulation of time for certain activities.
L. Time period within which the proposed use shall be developed.
M. Duration of use.
N. Such other conditions as will make possible the development of the city in an orderly and efficient manner in conformity with the Newberg comprehensive plan and the Newberg development code.

Applicant's Facts and Findings: The Conditional Use Permit is required for residential development within the C-2 (Commercial) zoned portion of this site. The proposed residential development includes appropriate yards and spaces, parking areas, ingress and egress, landscaping, vehicular, pedestrian and bicycle connectivity and maintenance plans to ensure compliance with this Section of the Code. Additional conditions are not warranted to secure the purpose of the Conditional Use Permit chapter.

This standard is met.

15.225.090 Development in accord with plans.
Construction, site development, and landscaping shall be carried out in substantial accord with the plans, drawings, conditions, sketches, and other documents approved as part of a final decision on a conditional use permit.

Applicant's Facts and Findings: It is feasible for the Applicant to carry out development of the site in substantial accord with the plans, drawings, sketches and other documents approved as part of this final decision on the Conditional Use Permit.

This standard is met.

15.225.100 Conditional use permit must be exercised to be effective.
A. A conditional use permit granted under this code shall be effective only when the exercise of the right granted thereunder shall be commenced within one year from the effective date of the decision. The director under a Type I procedure may grant an extension for up to six months if the applicant files a request in writing prior to the expiration of the approval and demonstrates compliance with the following:

1. **The land use designation of the property has not been changed since the initial use permit approval; and**
2. **The applicable standards in this code which applied to the project have not changed.**

B. In case such right is not exercised, or extension obtained, the conditional use permit decision shall be void. Any conditional use permit granted pursuant to this code is transferable to subsequent owners or contract purchasers of the property unless otherwise provided at the time of granting such permit.

Applicant's Facts and Findings: The Applicant acknowledges that the Conditional Use Permit approval is valid for one year if an extension is not requested. The Applicant intends to begin construction of the residential development on this site within one year of the approval date. If unforeseen delay is encountered, an extension request will be filed in writing prior to the expiration date.

This standard is met.

15.225.110 Preexisting uses now listed as a conditional use.

Where a use is legally established and continuing, but that use currently would require a conditional use permit, the use shall be considered as having a conditional use permit under the terms of the prior permit approval. Any nonconforming site development shall be subject to the provisions of Chapter 15.205 NMC.

Applicant's Facts and Findings: This proposal does not include a preexisting use now listed as a conditional use and, as such, this standard is not applicable.

15.240 PD Planned Unit Development Regulations

15.240.010 Purpose.

The city's planned unit development regulations are intended to:

A. Encourage comprehensive planning in areas of sufficient size to provide developments at least equal in the quality of their environment to traditional lot-by-lot development and that are reasonably compatible with the surrounding area; and

B. Provide flexibility in architectural design, placement and clustering of buildings, use of open space and outdoor living areas, and provision of circulation facilities, parking, storage and related site and design considerations; and

C. Promote an attractive, safe, efficient and stable environment which incorporates a compatible variety and mix of uses and dwelling types; and

D. Provide for economy of shared services and facilities; and

E. Implement the density requirements of the comprehensive plan and zoning districts through the allocation of the number of permitted dwelling units based on the number of bedrooms provided.

Applicant's Facts and Findings: The Applicant proposes a residential Planned Unit Development (PUD) meeting the stated purposes of the PUD regulations. This site is of sufficient size as to warrant comprehensive planning rather than traditional lot-by-lot development. The Applicant proposes flexibility in placement and clustering of buildings, use of open space, circulation, parking and density to promote a safe, attractive, efficient and stable residential environment adjacent to a highway facility and a future commercial development.

This standard is met.

15.240.020 General provisions.

A. Ownership. Except as provided herein, the area included in a proposed planned unit development must be in single ownership or under the development control of a joint application of owners or option holders of the property involved.

Applicant's Facts and Findings: The area included in the planned unit development is in single ownership.

This standard is met.

B. Processing Steps – Type III. Prior to issuance of a building permit, planned unit development applications must be approved through a Type III procedure and using the following steps:

1. **Step One – Preliminary Plans. Consideration of applications in terms of on-site and off-site factors to assure the flexibility afforded by planned unit development regulations is used to preserve natural amenities; create an attractive, safe, efficient, and stable environment; and assure reasonable compatibility with the surrounding area. Preliminary review necessarily involves consideration of the off-site impact of the proposed design, including building height and location.**
2. **Step Two – Final Plans. Consideration of detailed plans to assure substantial conformance with preliminary plans as approved or conditionally approved. Final plans need not include detailed construction drawings as subsequently required for a building permit.**

Applicant's Facts and Findings: The Applicant acknowledges the two-step process to PUD approval and submits materials in support of Step One- Preliminary Plans.

This standard is met.

C. Phasing. If approved at the time of preliminary plan consideration, final plan applications may be submitted in phases. If preliminary plans encompassing only a portion of a site under single ownership are submitted, they must be accompanied by a statement and be sufficiently detailed to prove that the entire area can be developed and used in accordance with city standards, policies, plans and ordinances.

Applicant's Facts and Findings: The applicant is proposing the following phasing:

Phase 1: This phase will include improvements to the site's frontage along E Portland Road and the installation of underground utility connections necessary to provide service to the site.

Phase 1a: This phase will include the extension of E Crestview Drive through the site and the construction of roadways and lots located east of the E Crestview Drive extension to public road D. This phase will also include the stormwater facility located south of public road B.

Phase 2: This phase will include the installation of the roadways, infrastructure and lots which are to be located west of the E Crestview extension.

Phase 3: This phase will include the lots located east of public road D to the property's eastern property boundary.

Phases B and C will be constructed after the construction of Phases 1 and 1A and may be constructed independently of the subdivision lots and by other entities or assigns.

Due to the size of the plan and the complexity of the various components within the development, the Applicant has requested that the City grant the developer a ten (10) year window for the construction of the infrastructure shown within the plan's phases with opportunities for up to five (5) one (1) year extensions following the approval of the preliminary plat. While the Applicant does not intend to wait for ten (10) years to allow for the construction of the proposed improvements, the flexibility afforded by the ten (10) year schedule with the requested extensions will allow for the project's various components to be sensitive to changing market conditions.

This standard is met.

D. Lapse of Approval. If the applicant fails to submit material required for consideration at the next step in accordance with the schedule approved at the previous step or, in the absence of a specified schedule, within one year of such approval, the application as approved at the previous step expires. If the applicant fails to obtain a building permit for construction in accordance with the schedule as previously approved, or in the absence of a specified schedule, within three years of a preliminary plan approval, preliminary and final plan approvals expire. Prior to expiration of plan approval at any step, the hearing authority responsible for approval may, if requested, extend or modify the schedule, providing it is not detrimental to the public interest or contrary to the findings and provisions specified herein for planned unit developments. Unless the preliminary plan hearing authority provides to the contrary, expiration of final plan approval of any phase automatically renders all phases void that are not yet finally approved or upon which construction has not begun.

Applicant's Facts and Findings: The Applicant acknowledges the process for lapse of PUD approval and intends to follow through with development of the site based on the original approval timeline.

This standard is met.

E. Resubmittal Following Expiration. Upon expiration of preliminary or final plan approval, a new application and fee must be submitted prior to reconsideration. Reconsideration shall be subject to the same procedures as an original application.

Applicant's Facts and Findings: The Applicant acknowledges the process for resubmittal following expiration.

This standard is met.

F. Density. Except as provided in NMC 15.302.040 relating to subdistricts, dwelling unit density provisions for residential planned unit developments shall be as follows:

1. **Maximum Density.**
    a. **Except as provided in adopted refinement plans, the maximum allowable density for any project shall be as follows:**

District	Density Points
R-1	175 density points per gross acre, as calculated in subsection (F)(1)(b) of this section
R-2	310 density points per gross acre, as calculated in subsection (F)(1)(b) of this section
R-3	640 density points per gross acre, as calculated in subsection (F)(1)(b) of this section
RP	310 density points per gross acre, as calculated in subsection (F)(1)(b) of this section
C-1	As per required findings
C-2	As per required findings
C-3	As per required findings

b. Density point calculations in the following table are correlated to dwellings based on the number of bedrooms, which for these purposes is defined as an enclosed room which is commonly used or capable of conversion to use as sleeping quarters. Accordingly, family rooms, dens, libraries, studies, studios, and other similar rooms shall be considered bedrooms if they meet the above definitions, are separated by walls or doors from other areas of the dwelling and are accessible to a bathroom without passing through another bedroom. Density points may be reduced at the applicant's discretion by 25 percent for deed-restricted affordable dwelling units as follows:

Density Point Table

Dwelling Type	Density Points: Standard Dwelling	Density Points: Income-Restricted Affordable Dwelling Units
Studio and Efficiency	12	9
One-bedroom	14	11
Two-bedroom	21	16
Three-bedroom	28	21
Four or more bedroom	35	26

The density points in the right-hand column are applicable to income-restricted affordable dwelling units, provided the dwelling units meet the affordability criteria under NMC 15.242.030 regarding affordable housing requirements for developments using the flexible development standards.

2. Approved Density. The number of dwelling units allowable shall be determined by the hearing authority in accordance with the standards set forth in these regulations. The hearing authority may change density subsequent to preliminary plan approval only if the reduction is necessary to comply with required findings for preliminary plan approval or if conditions of preliminary plan approval cannot otherwise be satisfied.

3. **Easement Calculations. Density calculations may include areas in easements if the applicant clearly demonstrates that such areas will benefit residents of the proposed planned unit development.**
4. **Dedications. Density calculations may include areas dedicated to the public for recreation or open space.**
5. **Cumulative Density. When approved in phases, cumulative density shall not exceed the overall density per acre established at the time of preliminary plan approval.**

Applicant's Facts and Findings: This narrative includes a Density Matrix, identifying the total number of density points available to this site vs. the total number of density points necessary to develop the site as proposed. The C-2 zoning district is proposed at the same maximum allowable density as the R-3 zoning district, or 640 points per acre. The total number of density points available to this site, as detailed on the Density Matrix, is 11,859.85. The total number and type of residential dwelling units proposed requires 9,085 density points, which is less than the number of points available to this site.

This standard is met.

G. Buildings and Uses Permitted. Buildings and uses in planned unit developments are permitted as follows:

1. **R-1, R-2, R-3 and RP Zones.**
   a. **Buildings and uses permitted outright or conditionally in the use district in which the proposed planned unit development is located.**
   b. **Accessory buildings and uses.**
   c. **Duplexes.**
   d. **Dwellings, single, manufactured, and multifamily.**
   e. **Convenience commercial services which the applicant proves will be patronized mainly by the residents of the proposed planned unit development.**

Applicant's Facts and Findings: The proposal includes single-family detached and multi-family residential uses within the R-1 and R-2 portions of this site, both of which are permitted by subsection d. above.

This standard is met.

2. **C-1, C-2 and C-3 Zones.**
   a. **When proposed as a combination residential-commercial planned unit development, uses and buildings as listed in subsection (G)(1) of this section and those listed as permitted outright or conditionally in the use district wherein the development will be located.**
   b. **When proposed as a residential or commercial planned unit development, uses and buildings as permitted outright or conditionally in the use district wherein the development will be located.**

Applicant's Facts and Findings: The proposed Planned Community will create a mixture of commercial development, single-family homes, cottage style single-family homes, affordable housing and multi-family homes. All uses proposed are permitted either outright

or conditionally for the C-2 portion of this property, in compliance with subsections a. and b. above.

This standard is met.

3. **M-1, M-2 and M-3 Zones. Uses and buildings as permitted outright or conditionally in the use district wherein the development will be located.**

4. **M-4 Zone. Uses and buildings as permitted outright or conditionally in the use district wherein the development will be located. Proposed sites, structures and uses must work together to support a common theme, product or industry. Applicants for an industrial planned development in M-4 must demonstrate conformance with any adopted master plan for the subject area and provide a plan describing how the proposed structures and uses will work together to support a common theme, product or industry. Prior to subdivision, covenants must limit occupancy to the types of industrial and related uses identified in the development plan.**

Applicant's Facts and Findings: No part of this site is located within the M-1, M-2, M-3 or M-4 zoning district and, as such, this standard is not applicable.

H. Professional Coordinator and Design Team. Professional coordinators and design teams shall comply with the following:

1. **Services. A professional coordinator, licensed in the State of Oregon to practice architecture, landscape architecture or engineering, shall ensure that the required plans are prepared. Plans and services provided for the city and between the applicant and the coordinator shall include:**
   a. **Preliminary design;**
   b. **Design development;**
   c. **Construction documents, except for single-family detached dwellings and duplexes in subdivisions; and**
   d. **Administration of the construction contract, including, but not limited to, inspection and verification of compliance with approved plans.**
2. **Address and Attendance. The coordinator or the coordinator's professional representative shall maintain an Oregon address, unless this requirement is waived by the director. The coordinator or other member of the design team shall attend all public meetings at which the proposed planned unit development is discussed.**
3. **Design Team Designation. Except as provided herein, a design team, which includes an architect, a landscape architect, engineer, and land surveyor, shall be designated by the professional coordinator to prepare appropriate plans. Each team member must be licensed to practice the team member's profession in the State of Oregon.**
4. **Design Team Participation and Waiver. Unless waived by the director upon proof by the coordinator that the scope of the proposal does not require the services of all members at one or more steps, the full design team shall participate in the preparation of plans at all three steps.**
5. **Design Team Change. Written notice of any change in design team personnel must be submitted to the director within three working days of the change.**

6. **Plan Certification. Certification of the services of the professionals responsible for particular drawings shall appear on drawings submitted for consideration and shall be signed and stamped with the registration seal issued by the State of Oregon for each professional so involved. To assure comprehensive review by the design team of all plans for compliance with these regulations, the dated cover sheet shall contain a statement of review endorsed with the signatures of all designated members of the design team.**

Applicant's Facts and Findings: This Planned Unit Development application includes all of the required plans and documents. A professional engineer in the State of Oregon has ensured that all required plans are prepared, certified as necessary and submitted. The Applicant acknowledges the process for a design team change.

This standard is met.

I. Modification of Certain Regulations. Except as otherwise stated in these regulations, fence and wall provisions, general provisions pertaining to height, yards, area, lot width, frontage, depth and coverage, number of off-street parking spaces required, and regulations pertaining to setbacks specified in this code may be modified by the hearing authority, provided the proposed development will be in accordance with the purposes of this code and those regulations. Departures from the hearing authority upon a finding by the engineering director that the departures will not create hazardous conditions for vehicular or pedestrian traffic. Nothing contained in this subsection shall be interpreted as providing flexibility to regulations other than those specifically encompassed in this code.

Applicant's Facts and Findings: This Planned Unit Development proposal seeks to modify the lot size standards of the R-1, R-2 and C-2 zoning districts. The PUD further seeks to modify the minimum lot sizes, minimum lot dimensions, minimum lot frontages, maximum lot and parking area coverage and minimum setback standards. The proposed modifications are shown on the attached preliminary site plan and plat and are intended to allow for the development of smaller residential lots, allowing a lower price-point than homes built in similar zoning districts. The creativity in site design also allows for the provision of parks and open space facilities exceeding those of a typical subdivision. And finally, varying the standards allows for the construction of a street network exceeding that of a typical residential subdivision.

The proposed modifications are in accordance with the purposes of this code as they support the efficient development of land within the City Limits, provide functional, attractive housing for the residents of the City and include safe, convenient, efficient transportation design.

This standard is met.

J. Lot Coverage. Maximum permitted lot and parking area coverage as provided in this code shall not be exceeded unless specifically permitted by the hearing authority in accordance with these regulations.

Applicant's Facts and Findings: The maximum permitted lot coverage shall be maintained within the proposed development. For the R-1 lots along the northern boundary, these lots are

approximately 8,165 sf. The driveways on these lots will be approximately 20x20 feet or 400 sf. The homes within these areas will likely be two stories with first floor footprints within the 1,200-1,700 range. The maximum permitted lot coverage within the R-1 zoning district is 30% for two story homes or 40% for single story homes. Building footprints and overall lot coverage can be verified at the time of building permit issuance The anticipated coverage for these lots will be less than the stated maximum.

The Applicant proposes a coverage of up to 70% throughout the R-2 single family portions of the plan area. The smaller lot sizes allow for the provision of a more affordable housing stock and the increased parking ensures an adequate supply for residents and visitors. The lots within the R-2 zoned portions of the plan range in size from 1,474 to 2,010 depending upon product size and lot width. The first floors of most of the plans proposed for the lots will range between 520 sf to 881 sf, depending upon the width of the lot. For a 1,474 sf lot, a 17 foot wide home will likely be provided. These homes will have a first floor area of approximately 595 sf. The parking area for these lots will be approximately 12x20 feet, or 240 sf. The overall lot coverage for these lots, with parking and the anticipated first floor area will be approximately 835 sf or 56.6%.

For a 2,010 sf lot within the R-2 zone, a 25 foot wide house will likely be located on a 30 foot wide lot. The typical anticipated footprint for these lots will be approximately 881 sf. The parking area for these houses will consist of a 20x20 foot wide driveway, or 400 sf. The total anticipated lot coverage and parking total would be approximately 1,281 sf or 63.7%.

For a 1,742 sf lot within the R-2 zone, a 21 foot wide house will likely be located on a 26 foot wide lot. The typical anticipated footprint for these lots will be approximately 748 sf. The parking area for these houses will consist of a 20x20 foot wide driveway, or 400 sf. The total anticipated lot coverage and parking total would be approximately 1,148 sf or 65.9%.

While there may be some variation in the amount of coverage provided per lot, the Applicant's request for a blanket 70% allowance for lot coverage should be sufficient to allow for adequate area for parking and building areas. The lot coverage for each individual lot can be verified at the time of building permit submission. The Applicant requests these exceptions be specifically permitted by the Planning Commission in reviewing the Planned Unit Development and Conditional Use Permit request.

This standard is met.

K. Height. Unless determined by the hearing authority that intrusion of structures into the sun exposure plane will not adversely affect the occupants or potential occupants of adjacent properties, all buildings and structures shall be constructed within the area contained between lines illustrating the sun exposure plane (see Appendix A, Figure 8 and the definition of "sun exposure plane" in NMC 15.05.030). The hearing authority may further modify heights to:

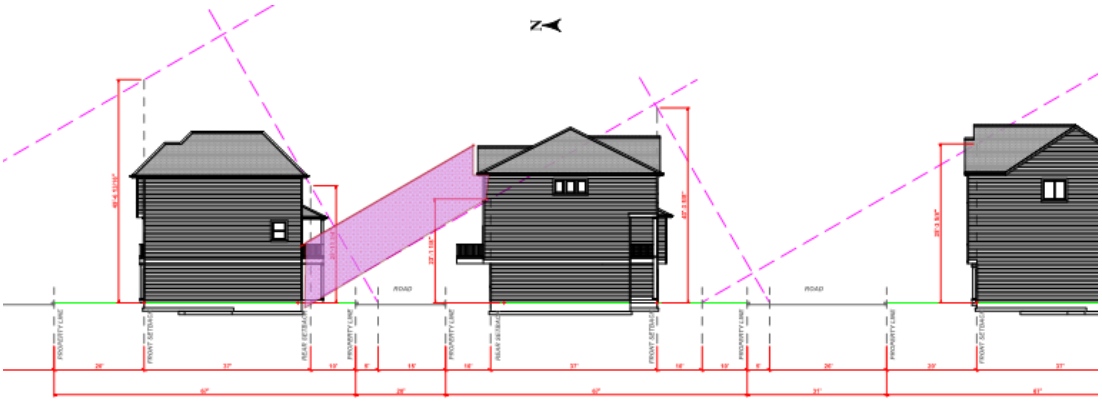
1. **Protect lines of sight and scenic vistas from greater encroachment than would occur as a result of conventional development.**

2. **Protect lines of sight and scenic vistas.**
3. **Enable the project to satisfy required findings for approval.**

Applicant's Facts and Findings: This proposed residential Planned Unit Development includes three story single-family residential structures with reduced setbacks. This development type allows the developer to provide the housing at an approachable price point, complete the much-needed transportation system for the area and provide parks and open spaces for the residents of this and neighboring developments.

The Applicant has prepared a sun exposure diagram showing that some of the north/south oriented lots may have slight impacts on the first floors of the proposed homes. Impacts due to shade along the north/south oriented lots are anticipated to be slightly experienced on lots 36-66 and on lots 81&82. The east/west oriented lots appear to be exempt from these requirements as the sun should have full access from the south on both these lots front and rear yards.

The slight impacts to the lots identified herein are illustrated within the diagram below however the impacts to the homes is limited to first floors, in areas where garages will be located.



As described elsewhere within this narrative, the benefits of housing configured within this manner provides numerous benefits to the future residents and provides opportunities for the creation of a highly efficient and well-designed community. The Applicant's proposal for closely located buildings offers numerous benefits to the community as a whole and allows the site to meet the City's other code requirements for density, site configuration, parking, and access. Because the impacts of the shade will be limited to only the ground floors of a few properties within the plan and because the Applicant has compensated for these impacts with the provision of a significant amount of open space area, parks, and site amenities, the residents of this community will not experience any adverse effects.

L. Dedication, Improvement and Maintenance of Public Thoroughfares. Public thoroughfares shall be dedicated, improved and maintained as follows:

1. **Streets and Walkways. Including, but not limited to, those necessary for proper development of adjacent properties. Construction standards that minimize maintenance and protect the public health and safety, and setbacks as specified in NMC**

15.410.050, pertaining to special setback requirements to planned rights-of-way, shall be required.

2. **Notwithstanding subsection (L)(1) of this section, a private street may be approved if the following standards are satisfied.**

   a. An application for approval of a PUD with at least 50 dwelling units may include a private street and the request for a private street shall be supported by the evidence required by this section. The planning commission may approve a private street if it finds the applicant has demonstrated that the purpose statements in NMC 15.240.010(A) through (D) are satisfied by the evidence in subsections (L)(2)(a)(i) through (v) of this section.

      i. A plan for managing on-street parking, maintenance and financing of maintenance of the private street, including a draft reserve study showing that the future homeowners association can financially maintain the private street;

      ii. A plan demonstrating that on- and off-street parking shall be sufficient for the expected parking needs and applicable codes;

      iii. Proposed conditions, covenants and restrictions that include a requirement that the homeowners association shall be established in perpetuity and shall continually employ a community management association whose duties shall include assisting the homeowners association with the private street parking management and maintenance, including the enforcement of parking restrictions;

      iv. Evidence that the private street is of sufficient width and construction to satisfy requirements of the fire marshal and cityengineer; and

      v. The PUD shall be a Class I planned community as defined in ORS Chapter 94.

   b. If the PUD is established, the homeowners association shall provide an annual written report on the anniversary date of the final approval of the PUD approval to the community development director that includes the following:

      i. The most recent reserve study.

      ii. The name and contact information for the retained community management association.

      iii. A report on the condition of the private street and any plans for maintenance of the private street.

3. **Easements. As are necessary for the orderly extension of public utilities and bicycle and pedestrian access.**

Applicant's Facts and Findings:

This proposed PUD includes a mixture of public and private streets. As identified in subsection L.2 above, private streets may be approved if:

- a PUD proposes at least 50 dwelling units,
- has provided a plan for on-street parking, maintenance and financing of maintenance of the private street,
- demonstrates sufficient parking,
- includes CCRs addressing the private street,
- is constructed to proper standards, and
- the PUD is a Class I planned community as defined in ORS Ch. 94.

The proposal meets all of the criteria for private streets identified above. The purpose statements in NMC 15.240.010(A) through (D) include:

- encourage comprehensive planning in areas of sufficient size…

- provide flexibility in architectural design, placement and clustering of buildings, use of open space and outdoor living areas, and provision of circulation facilities, parking, storage and related site and design considerations
- promote an attractive, safe, efficient and stable environment…and
- provide for economy of shared services and facilities.

The proposed PUD is of a sufficient size to warrant comprehensive planning that is similar to traditional lot-by-lot developments in the same zoning and compatible with the surrounding environment. The inclusion of private streets makes it feasible to preserve more of the natural areas on the site. The housing design and placement, open space and outdoor living areas, circulation, parking and storage on this site are all designed to work together to form a cohesive neighborhood feel. The shared services and facilities within the development include the private streets, parking areas and open spaces. The adjacent commercial development that will be added in the future will allow for shared services as well.

All public streets are designed to City standards and proposed to be dedicated to the City.

The proposal includes all of the necessary materials to approve both the public and private streets.

This standard is met.

M. Underground Utilities. Unless waived by the hearing authority, the developer shall locate all on-site utilities serving the proposed planned unit development underground in accordance with the policies, practices and rules of the serving utilities and the Public Utilities Commission.

Applicant's Facts and Findings: The proposal includes all on-site utilities located underground.

This standard is met.

N. Usable Outdoor Living Area. All dwelling units shall be served by outdoor living areas as defined in this code. Unless waived by the hearing authority, the outdoor living area must equal at least 10 percent of the gross floor area of each unit. So long as outdoor living area is available to each dwelling unit, other outdoor living space may be offered for dedication to the city, in fee or easement, to be incorporated in a city-approved recreational facility. A portion or all of a dedicated area may be included in calculating density if permitted under these regulations.

Applicant's Facts and Findings: All dwelling units are served by outdoor living areas equal to at least 10 percent of the gross floor area of each unit. The single-family units will have outdoor living on individual lots. The multi-family will utilize a combination of balconies and porches as well as common outdoor living areas located throughout the overall planned unit development. All proposed dwelling units will be able to provide at least 10% of the gross floor area in outdoor living space. Outdoor living spaces for each unit can be verified at the time of building permit issuance.

This standard is met.

O. Site Modification. Unless otherwise provided in preliminary plan approval, vegetation, topography and other natural features of parcels proposed for development shall remain substantially unaltered pending final plan approval.

Applicant's Facts and Findings: This site contains several wetlands which will be a combination of preserved on site and mitigated off-site. The permitting for this is occurring separate from the land use review. This is the only substantial change to the natural features of the site.

This standard is met.

P. Completion of Required Landscaping. If required landscaping cannot be completed prior to occupancy, or as otherwise required by a condition of approval, the director may require the applicant to post a performance bond of a sufficient amount and time to assure timely completion.

Applicant's Facts and Findings: The Applicant acknowledges the possibility of a performance bond being required to assure timely completion of any delayed landscaping.

This standard is met.

Q. Design Standards. The proposed development shall meet the design requirements for multifamily residential projects identified in NMC 15.220.060. A minimum of 40 percent of the required points shall be obtained in each of the design categories.

Applicant's Facts and Findings: There are 23 possible site design points and 23 possible building design points, therefore, this project must obtain 9 each site design and building design points (40% of each).

Site Design:
Consolidated green space: 3 points
Parking lot to the back of project when viewed from 99W: 3 points
Good-quality coordinated site landscaping: 2 points
Landscaped Edges of Parking Lots: 2 points
Street trees: 1 point
Entry Accents to mark major entries to multi-family buildings: 1 point
Appropriate Outdoor Lighting: 1 point
Total Site Design Points: 13

Building Design:
Respect scale and patterns of nearby buildings by reflecting architectural styles, building details, materials and scale of existing buildings: 3 points
Break up large buildings into bays/vary planes at least every 50 feet: 3 points
Provide variation in repeated units using color, porches, balconies, windows, railings, building materials and form, alone or in combination: 3 points
Building materials: Wood or wood-like siding applied horizontally or vertically as board and batten at entry ways; shingles, as roofing; wood or wood-like sash windows; and wood or wood-like trim: 4 points
A porch at every main entry: 2 points

Total Building Design Points: 15

This standard is met as described above.

15.240.030 Preliminary plan consideration – Step one.

A. Preapplication Conference. Prior to filing an application for preliminary plan consideration, the applicant or coordinator may request through the director a preapplication conference to discuss the feasibility of the proposed planned unit development and determine the processing requirements.

Applicant's Facts and Findings: The Applicant attended a pre-application conference with the City on March 14, 2018.

This standard is met.

B. Application. An application, with the required fee, for preliminary plan approval shall be made by the owner of the affected property, or the owner's authorized agent, on a form prescribed by and submitted to the director. Applications, accompanied by such additional copies as requested by the director for purposes of referral, shall contain or have attached sufficient information as prescribed by the director to allow processing and review in accordance with these regulations. As part of the application, the property owner requesting the planned development shall file a waiver stating that the owner will not file any demand against the city under Ballot Measure 49, approved November 6, 2007, that amended ORS Chapters 195 and 197 based on the city's decision on the planned development.

Applicant's Facts and Findings: This land use application includes all required fees, forms and documentation for review of the Planned Unit Development and Conditional Use requests.

This standard is met.

C. Type III Review and Decision Criteria. Preliminary plan consideration shall be reviewed through the Type III procedure. Decisions shall include review and recognition of the potential impact of the entire development, and preliminary approval shall include written affirmative findings that:

1. **The proposed development is consistent with standards, plans, policies and ordinances adopted by the city; and**

Applicant's Facts and Findings: As described in this narrative, the proposed development is consistent with standards, plans, policies and ordinances adopted by the City.

This standard is met.

2. **The proposed development's general design and character, including but not limited to anticipated building locations, bulk and height, location and distribution of recreation space, parking, roads, access and other uses, will be reasonably compatible with**

appropriate development of abutting properties and the surrounding neighborhood; and

Applicant's Facts and Findings: As discussed previously, the proposed PUD includes larger lot single-family detached homes along the northern property line, separating this development from a single-family detached development. Lot sizes will then decrease as one heads south into the site, with two multi-family residential buildings constructed in the southeast corner of the site. The homes on the site will all be designed and constructed so as to provide a cohesive design and character to the entire development. The distribution of recreation space, parking, roads, access and other uses is reasonably compatible with the appropriate development of abutting properties and the surrounding neighborhood.

This standard is met.

3. **Public services and facilities are available to serve the proposed development. If such public services and facilities are not at present available, an affirmative finding may be made under this criterion if the evidence indicates that the public services and facilities will be available prior to need by reason of:**
   a. **Public facility planning by the appropriate agencies; or**
   b. **A commitment by the applicant to provide private services and facilities adequate to accommodate the projected demands of the project; or**
   c. **Commitment by the applicant to provide for offsetting all added public costs or early commitment of public funds made necessary by the development; and**

Applicant's Facts and Findings: Public services and facilities are either available to serve the proposed development or can be reasonably conditioned to be installed and provided. The public improvement plans included with the land use submittal demonstrate full public facilities will be provided, including water, sanitary sewer, storm sewer, electricity and natural gas. Public services are currently available to serve this site, including police, fire, garbage/recycling and US Mail.

This standard is met.

4. **The provisions and conditions of this code have been met; and**

Applicant's Facts and Findings: As discussed in detail in this narrative, the provisions and conditions of this code have been met.

This standard is met.

5. **Proposed buildings, roads, and other uses are designed and sited to ensure preservation of features, and other unique or worthwhile natural features and to prevent soil erosion or flood hazard; and**

Applicant's Facts and Findings: The buildings, roads and other site features are located so as to preserve several wetlands and natural features and to prevent soil erosion or flood hazard.

This standard is met.

6. **There will be adequate on-site provisions for utility services, emergency vehicular access, and, where appropriate, public transportation facilities; and**

Applicant's Facts and Findings: The site is well provisioned for utility services, emergency vehicular access and, if the opportunity arises in the future, public transportation facilities. The public roadways are designed to public street standards and the private streets are designed to provide vehicular access. The application includes a letter from Tualatin Valley Fire & Rescue indicating that the private streets are adequate for emergency vehicle access.

This standard is met.

7. **Sufficient usable recreation facilities, outdoor living area, open space, and parking areas will be conveniently and safely accessible for use by residents of the proposed development; and**

Applicant's Facts and Findings: The proposed neighborhood will feature active and passive open space areas for use by the residents. The proposed design includes a civic use park which has been envisioned to provide space for community events as well as a space for featured local vendors. A smaller neighborhood park is connected to the proposed development through a network of multi-use pathways which provide pedestrian circulation and recreation throughout the site. The proposal includes multiple open spaces, most of which include a trail system within. The multi-family housing has common outdoor living areas, as well as balconies and patios for some individual units. The single-family housing has outdoor living areas adjacent to the homes.

This standard is met.

8. **Proposed buildings, structures, and uses will be arranged, designed, and constructed so as to take into consideration the surrounding area in terms of access, building scale, bulk, design, setbacks, heights, coverage, landscaping and screening, and to assure reasonable privacy for residents of the development and surrounding properties.**

Applicant's Facts and Findings: This site has been designed reflect the surrounding area and to provide a reasonable level of privacy for residents of the development and surrounding properties. Large lot single-family detached dwellings are proposed along the northern property line, separating this development from another large lot residential development, easing the transition from lower density to higher. The site is buffered from the residential developments to the west by the park that is adjacent to the site. The site as a whole is designed to provide safe and convenient access. The building scale, bulk, design, setbacks, heights, coverage, landscaping and screening are designed to provide harmony within the site while respecting and reflecting design patterns utilized in other nearby developments.

This standard is met.

D. Conditions. Applications may be approved subject to conditions necessary to fulfill the purpose and provisions of these regulations.

Applicant's Facts and Findings: The Applicant acknowledges the possibility of conditions imposed to fulfill the purpose and provisions of the PUD regulations. However, based on the findings identified in this narrative, the Applicant finds the proposal in full compliance with the PUD standards.

This standard is met.

15.240.040 Final plan consideration – Step two.

A. Application. An application, with the required fee, for final plan approval shall be submitted in accordance with the provisions of this code, and must be in compliance with all conditions imposed and schedules previously prescribed.

B. Referral. Referral of final plans and supportive material shall be provided to appropriate agencies and departments.

C. Decision Type I Procedure. The final plan consideration shall be reviewed through the Type I procedure. Upon receipt of the application and fee, final plans and required supportive material, the director shall approve, conditionally approve or deny the application for final plan approval. The decision of the director to approve or deny the application shall be based on written findings of compliance or noncompliance with approved preliminary plans and city standards, plans, policies and ordinances. Minor variations from approved preliminary plans may be permitted if consistent with the general character of the approved preliminary plans.

D. Conditions. Applications may be approved subject to such conditions as are necessary to fulfill the purpose and provisions of this code.

1. **Preparation and Signatures. A duly notarized performance agreement binding the applicant, and the applicant's successors in interest, assuring construction and performance in accordance with the approved final plans shall be prepared by the city and executed by the applicant and city prior to issuance of a building permit.**
2. **Return. Unless an executed copy of the agreement is returned to the director within 60 days of its delivery to the applicant, final plan approval shall expire, necessitating the reapplication for final plan reapproval.**
3. **Filing. The director shall file a memorandum of the performance agreement with the Yamhill County recorder.**
4. **Improvement Petitions and Dedications. Improvement petitions and all documents required with respect to dedications and easements shall be submitted prior to completion of the agreement.**
5. **Project Changes. The director may permit project changes subsequent to execution of the agreement upon finding the changes substantially conform to final approved plans and comply with city standards, plans, policies and ordinances. Other modifications are subject to reapplication at the appropriate step.**
6. **Compliance. Compliance with this section is a prerequisite to the issuance of a building permit.**

Applicant's Facts and Findings: The Applicant acknowledges the process for Step Two of a PUD review.

This standard is met.

Division 15.300 Zoning Districts

15.305 Zoning Use Table

Use	R-1	R-2	C-2
Residential Uses			
Dwelling, single-family detached	**P(2)**	**P**	**C(4)**
Dwelling, multifamily	**C**	**P**	**C(4)**
Parks and Open Spaces			
Open Space	**P**	**P**	**P**
Park	**P**	**P**	**P**

Notes.
(2) Limited to one per lot as a permitted use. More than one per lot allowed only through a conditional use permit or planned unit development, subject to density limits of NMC 15.405.010(B).
(4) The permitted density shall be stated on the conditional use permit.

Applicant's Facts and Findings: The proposed residential development requires a conditional use permit because a part of the site, including the area proposed for multi-family residential, is within the C-2 zoning district. Single-family residential development is permitted in the R-1 and R-2 zones. The Planned Unit Development proposes residential development, both single-family and multi-family, on all areas of the site (zoned R-1, R-2 and C-2).

As this application includes a conditional use permit application, this standard is met.

15.356 Bypass Interchange (BI) Overlay

Applicant's Facts and Findings: The frontage of this site is adjacent to the Bypass Interchange (BI) Overlay. While the provisions of the BI Overlay may apply to this site, the provisions only speak to permitted, conditional and prohibited uses. Residential development is a permitted use in the R-1 and R-2 zoning districts and a conditional use in the C-2 zoning district. Residential development is not prohibited in the BI Overlay.

This standard is met.

Division 15.400 Development Standards
15.405 Lot Requirements
15.405.010 Lot area – Lot areas per dwelling unit.
A. In the following districts, each lot or development site shall have an area as shown below except as otherwise permitted by this code:

1. **In the R-1 district, each lot or development site shall have a minimum area of 5,000 square feet or as may be established by a subdistrict. The average size of lots in a subdivision intended for single-family development shall not exceed 10,000 square feet.**
2. **In the R-2, R-3, and RP districts, each lot or development site shall have a minimum area of 3,000 square feet or as may be established by a subdistrict. In the R-2 and R-P districts, the average size of lots in a subdivision intended for single-family development shall not exceed 5,000 square feet.**
3. **In the AI, AR, C-1, C-2, and C-3 districts, each lot or development site shall have a minimum area of 5,000 square feet or as may be established by a subdistrict.**
4. **In the M-1, M-2 and M-3 districts, each lot or development site shall have a minimum area of 20,000 square feet.**
5. **Institutional districts shall have a minimum size of five contiguous acres in order to create a large enough campus to support institutional uses; however, additions to the district may be made in increments of any size.**
6. **Within the commercial zoning district(s) of the riverfront overlay subdistrict, there is no minimum lot size required, provided the other standards of this code can be met.**

Applicant's Facts and Findings: This application includes a Planned Unit Development (PUD) that proposes reduced lot sizes and an increase in the allowable lot coverage standard for the R-2 zoned portions of the site. The standards for a PUD are discussed previously in this narrative.

This standard is met.

B. Lot or Development Site Area per Dwelling Unit.

1. **In the R-1 district, there shall be a minimum of 5,000 square feet per dwelling unit.**
2. **In the R-2, AR, and R-P districts, there shall be a minimum of 3,000 square feet of lot or development site area per dwelling unit. In the R-2 and R-P districts, lots or development sites in excess of 15,000 square feet used for multiple single-family, duplex or multifamily dwellings shall be developed at a minimum of one dwelling per 5,000 square feet lot area.**
3. **In the R-3 district, there shall be a minimum of 1,500 square feet of lot or development site area per dwelling unit. Lots or development sites in excess of 15,000 square feet used for multiple single-family, duplex or multifamily dwellings shall be developed at a minimum of one dwelling per 2,500 square feet lot area.**

C. In calculating lot area for this section, lot area does not include land within public or private streets. In calculating lot area for maximum lot area/minimum density requirements, lot area does not include land within stream corridors, land reserved for public parks or open spaces, commons buildings, land for preservation of natural, scenic, or historic resources, land on slopes exceeding 15 percent or for avoidance of identified natural hazards, land in shared access easements, public walkways, or entirely used for utilities, land held in reserve in accordance with a future development plan, or land for uses not appurtenant to the residence.

D. Lot size averaging is allowed for any subdivision. Some lots may be under the minimum lot size required in the zone where the subdivision is located, as long as the average size of all lots is at least the minimum lot size.

Applicant's Facts and Findings: This application includes a Planned Unit Development (PUD) that proposes reduced lots (development site areas) and an increase in the amount of lot coverage for the R-2 zoned portions of the plan. The standards for a PUD are discussed previously in this narrative.

This standard is met.

15.405.020 Lot area exceptions.
The following shall be exceptions to the required lot areas:
A. Lots of record with less than the area required by this code.
B. Lots or development sites which, as a process of their creation, were approved in accordance with this code.
C. Planned unit developments, provided they conform to requirements for planned unit development approval.

Applicant's Facts and Findings: This proposal complies with subsection C. of this criterion as a Planned Unit Development is proposed with conformity to all PUD requirements.

This standard is met.

15.405.030 Lot dimensions and frontage.
A. Width. Widths of lots shall conform to the standards of this code.
B. Depth to Width Ratio. Each lot and parcel shall have an average depth between the front and rear lines of not more than two and one-half times the average width between the side lines. Depths of lots shall conform to the standards of this code. Development of lots under 15,000 square feet are exempt from the lot depth to width ratio requirement.
C. Area. Lot sizes shall conform to standards set forth in this code. Lot area calculations shall not include area contained in public or private streets as defined by this code.
D. Frontage.

1. **No lot or development site shall have less than the following lot frontage standards:**
    a. **Each lot or development site shall have either frontage on a public street for a distance of at least 25 feet or have access to a public street through an easement that is at least 25 feet wide. No new private streets, as defined in NMC 15.05.030, shall be created to provide frontage or access.**
    b. **Each lot in an R-2 and R-3 zone shall have a minimum width of 30 feet at the front building line.**
    c. **Each lot in an R-1, AI, or RP zone shall have a minimum width of 50 feet at the front building line.**
    d. **Each lot in an AR zone shall have a minimum width of 45 feet at the front building line.**
2. **The above standards apply with the following exceptions:**
    a. **Legally created lots of record in existence prior to the effective date of the ordinance codified in this code.**
    b. **Lots or development sites which, as a process of their creation, were approved with sub-standard widths in accordance with provisions of this code.**
    c. **Existing private streets may not be used for new dwelling units, except private streets that were created prior to March 1, 1999, including paving to fire access**

roads standards and installation of necessary utilities, and private streets allowed in the airport residential and airport industrial districts.

Applicant's Facts and Findings: This application includes a Planned Unit Development (PUD) that proposes reduced lot dimensions, increased lot coverage, and reduced frontage requirements. Private streets are proposed to provide access to many of the lots in this development. Private streets are permitted as discussed previously in this narrative. The standards for a PUD are discussed previously in this narrative.

This standard is met.

15.405.040 Lot coverage and parking coverage requirements.

A. Purpose. The lot coverage and parking coverage requirements below are intended to:

1. **Limit the amount of impervious surface and storm drain runoff on residential lots.**
2. **Provide open space and recreational space on the same lot for occupants of that lot.**
3. **Limit the bulk of residential development to that appropriate in the applicable zone.**

B. Residential uses in residential zones shall meet the following maximum lot coverage and parking coverage standards. See the definitions in NMC 15.05.030 and Appendix A, Figure 4.

1. **Maximum Lot Coverage.**
    a. **R-1: 30 percent, or 40 percent if all structures on the lot are one-story.**
    b. **R-2 and RP: 50 percent.**
    c. **AR and R-3: 50 percent.**
2. **Maximum Parking Coverage. R-1, R-2, R-3, and RP: 30 percent.**
3. **Combined Maximum Lot and Parking Coverage.**
    a. **R-1, R-2 and RP: 60 percent.**
    b. **R-3: 70 percent.**

C. All other districts and uses not listed in subsection (B) of this section shall not be limited as to lot coverage and parking coverage except as otherwise required by this code.

Applicant's Facts and Findings: This application includes a Planned Unit Development (PUD) that proposes an increase to the maximum lot coverage standards to 70% within the R-2 zoned portions of the site to match the R-3 standard of 70%. This increase to the maximum is proposed to provide more housing options at an approachable price point, including some affordable housing. The standards for a PUD are discussed previously in this narrative.

This standard is met.

15.410 Yard Setback Requirements

15.410.010 General yard regulations.

A. No yard or open space provided around any building for the purpose of complying with the provisions of this code shall be considered as providing a yard or open space for any other building.

B. No yard or open space on adjoining property shall be considered as providing required yard or open space for another lot or development site under the provisions of this code.

C. No front yards provided around any building for the purpose of complying with the regulations of this code shall be used for public or private parking areas or garages, or other accessory buildings, except as specifically provided elsewhere in this code.

D. When the common property line separating two or more contiguous lots is covered by a building or a permitted group of buildings with respect to such common property line or lines does not fully conform to the required yard spaces on each side of such common property line or lines, such lots shall constitute a single development site and the yards as required by this code shall then not apply to such common property lines.

E. Dwellings Where Permitted above Nonresidential Buildings. The front and interior yard requirements for residential uses shall not be applicable; provided, that all yard requirements for the district in which such building is located are complied with.

F. In the AI airport industrial district, clear areas, safety areas, object-free areas, taxiways, parking aprons, and runways may be counted as required yards for a building, even if located upon an adjacent parcel.

G. In the AR airport residential district, clear areas, safety areas, object-free areas, taxiways, parking aprons, and runways may be counted as required yards for a building, if located upon an adjacent parcel.

15.410.020 Front yard setback.

A. Residential (see Appendix A, Figure 10).

1. **AR, R-1 and R-2 districts shall have a front yard of not less than 15 feet. Said yard shall be landscaped and maintained.**
2. **R-3 and RP districts shall have a front yard of not less than 12 feet. Said yard shall be landscaped and maintained.**
3. **The entrance to a garage or carport, whether or not attached to a dwelling, shall be set back at least 20 feet from the nearest property line of the street to which access will be provided. However, the foregoing setback requirement shall not apply where the garage or carport will be provided with access to an alley only.**

B. Commercial.

1. **All lots or development sites in the C-1 district shall have a front yard of not less than 10 feet. Said yard shall be landscaped and maintained.**
2. **All lots or development sites in the C-2 district shall have a front yard of not less than 10 feet. No parking shall be allowed in said yard. Said yard shall be landscaped and maintained.**
3. **All lots or development sites in the C-3 district shall have no minimum front yard requirements. The maximum allowable front yard shall be 20 feet. In the case of a through lot with two front yards, at least one front yard must meet the maximum setback requirement. In the case of three or more front yards, at least two front yards must meet the maximum setback requirements. No parking shall be allowed in said yard. Said yard shall be landscaped and maintained.**
4. **All lots or development sites in the C-4 district will comply with the front yard requirements described in NMC 15.352.040(E).**

15.410.030 Interior yard setback.

A. Residential.

1. **All lots or development sites in the AR, R-1, R-2 and R-3 districts shall have interior yards of not less than five feet, except that where a utility easement is recorded adjacent to a side lot line, there shall be a side yard no less than the width of the easement.**
2. **All lots or development sites in the RP district shall have interior yards of not less than eight feet.**

B. Commercial.

1. **All lots or development sites in the C-1 and C-2 districts have no interior yards required where said lots or development sites abut property lines of commercially or industrially zoned property. When interior lot lines of said districts are common with property zoned residentially, interior yards of not less than 10 feet shall be required opposite the residential districts.**
2. **All lots or development sites in the C-3 district shall have no interior yard requirements.**
3. **All lots or development sites in the C-4 district will comply with the interior yard requirements described in NMC 15.352.040(E).**

Applicant's Facts and Findings: This application includes a Planned Unit Development (PUD) that proposes reduced yard setbacks of 2.5 feet within the R-2 zoned portions of the site plan. The reduced yard setbacks allow innovation in design and density of this site that promotes the purpose of the PUD to provide an approachable price point for housing, including some affordable housing. The standards for a PUD are discussed previously in this narrative.

This standard is met.

15.410.060 Vision clearance setback.

The following vision clearance standards shall apply in all zones (see Appendix A, Figure 9).

A. At the intersection of two streets, including private streets, a triangle formed by the intersection of the curb lines, each leg of the vision clearance triangle shall be a minimum of 50 feet in length.

B. At the intersection of a private drive and a street, a triangle formed by the intersection of the curb lines, each leg of the vision clearance triangle shall be a minimum of 25 feet in length.

C. Vision clearance triangles shall be kept free of all visual obstructions from two and one-half feet to nine feet above the curb line. Where curbs are absent, the edge of the asphalt or future curb location shall be used as a guide, whichever provides the greatest amount of vision clearance.

D. There is no vision clearance requirement within the commercial zoning district(s) located within the riverfront (RF) overlay subdistrict.

Applicant's Facts and Findings: The proposed development maintains all required vision clearance setbacks, as demonstrated on the submitted plans.

This standard is met.

15.410.070 Yard exceptions and permitted intrusions into required yard setbacks.

The following intrusions may project into required yards to the extent and under the conditions and limitations indicated:

A. Depressed Areas. In any district, open work fences, hedges, guard railings or other landscaping or architectural devices for safety protection around depressed ramps, stairs or retaining walls may be located in required yards; provided, that such devices are not more than three and one-half feet in height.

B. Accessory Buildings. In front yards on through lots, where a through lot has a depth of not more than 140 feet, accessory buildings may be located in one of the required front yards; provided, that every portion of such accessory building is not less than 10 feet from the nearest street line.

C. Projecting Building Features. The following building features may project into the required front yard no more than five feet and into the required interior yards no more than two feet; provided, that such projections are no closer than three feet to any interior lot line:

1. **Eaves, cornices, belt courses, sills, awnings, buttresses or other similar features.**
2. **Chimneys and fireplaces, provided they do not exceed eight feet in width.**
3. **Porches, platforms or landings which do not extend above the level of the first floor of the building.**
4. **Mechanical structures (heat pumps, air conditioners, emergency generators and pumps).**

D. Fences and Walls.

1. **In the residential district, a fence or wall shall be permitted to be placed at the property line or within a yard setback as follows:**
    a. **Not to exceed six feet in height. Located or maintained within the required interior yards. For purposes of fencing only, lots that are corner lots or through lots may select one of the street frontages as a front yard and all other yards shall be considered as interior yards, allowing the placement of a six-foot fence on the property line. In no case may a fence extend into the clear vision zone as defined in NMC 15.410.060.**
    b. **Not to exceed four feet in height. Located or maintained within all other front yards.**
2. **In any commercial or industrial district, a fence or wall shall be permitted to be placed at the property line or within a yard setback as follows:**
    a. **Not to exceed eight feet in height. Located or maintained in any interior yard except where the requirements of vision clearance apply. For purposes of fencing only, lots that are corner lots or through lots may select one of the street frontages as a front yard and all other yards shall be considered as interior yards, allowing the placement of an eight-foot fence on the property line.**
    b. **Not to exceed four feet in height. Located or maintained within all other front yards.**
3. **If chain link (wire-woven) fences are used, they are manufactured of corrosion-proof materials of at least 11-1/2 gauge.**
4. **The requirements of vision clearance shall apply to the placement of fences.**

Applicant's Facts and Findings: The Applicant acknowledges permitted intrusions into required yard setbacks. The fences surrounding the single-family residential in the R-1 and R-2 zoning areas will not exceed 6-feet in height. The fencing in the C-2 zoning areas will not exceed 8-feet in height. No fence exceeding 4-feet in height will be placed in a front yard setback.

This standard is met.

E. Parking and Service Drives (Also Refer to NMC 15.440.010 through 15.440.080).

1. **In any district, service drives or accessways providing ingress and egress shall be permitted, together with any appropriate traffic control devices in any required yard.**
2. **In any residential district, public or private parking areas and parking spaces shall not be permitted in any required yard except as provided herein:**
   a. **Required parking spaces shall be permitted on service drives in the required front yard in conjunction with any single-family or two-family dwelling on a single lot.**
   b. **Recreational vehicles, boat trailers, camperettes and all other vehicles not in daily use are restricted to parking in the front yard setback for not more than 48 hours; and recreational vehicles, boat trailers, camperettes and all other vehicles not in daily use are permitted to be located in the required interior yards.**
   c. **Public or private parking areas, parking spaces or any building or portion of any building intended for parking which have been identified as a use permitted in any residential district shall be permitted in any interior yard that abuts an alley, provided said parking areas, structures or spaces shall comply with NMC 15.440.070, Parking tables and diagrams (Diagrams 1 through 3).**
   d. **Public or private parking areas, service drives or parking spaces which have been identified as a use permitted in any residential district shall be permitted in interior yards; provided, that said parking areas, service drives or parking spaces shall comply with other requirements of this code.**
3. **In any commercial or industrial district, except C-1, C-4 and M-1, public or private parking areas or parking spaces shall be permitted in any required yard (see NMC 15.410.030). Parking requirements in the C-4 district are described in NMC 15.352.040(H).**
4. **In the I district, public or private parking areas or parking spaces may be no closer to a front property line than 20 feet, and no closer to an interior property line than five feet.**

F. Public Telephone Booths and Public Transit Shelters. Public telephone booths and public transit shelters shall be permitted; provided, that vision clearance is maintained for vehicle requirements for vision clearance.

G. Hangars within the AR airport residential district may be constructed with no yard setbacks to property lines adjacent to other properties within the airport residential or airport industrial districts

Applicant's Facts and Findings:	Parking is proposed on private lots in driveways, on-street parallel, on-street in perpendicular "bays", and in designated parking lots. There are a total of 246 parking spaces proposed to serve the residential development plus either two or four parking spaces per unit within the garages of the single family homes. The location of the proposed parking areas meets the requirements of this standard. This standard is met.

15.415 Building and Site Design Standards

15.415.010 Main buildings and uses as accessory buildings.

A. Hereinafter, any building which is the only building on a lot is a main building.

B. In any residential district except RP, there shall be only one main use per lot or development site; provided, that home occupations shall be allowed where permitted.
C. In any residential district, there shall be no more than two accessory buildings on any lot or development site.

Applicant's Facts and Findings: The proposed residential development includes only main residential-use buildings at this time. The Applicant acknowledges that no more than two accessory buildings will be permitted on any lot in the R-zoned portions of the development.

This standard is met.

15.415.020 Building height limitation.
A. Residential.

1. **In the R-1, R-2, AR, and RP districts, no main building shall exceed 30 feet in height. Accessory buildings in the R-1, R-2, R-3, AR, and RP districts are limited to 16 feet in height, except as follows:**
   a. **Up to 800 square feet of an accessory building may have a height of up to 24 feet.**
   b. **Aircraft hangars in the AR district may be the same height as the main building.**
2. **In the R-3 district, no main building shall exceed 45 feet in height, except, where an R-3 district abuts upon an R-1 district, the maximum permitted building height shall be limited to 30 feet for a distance of 50 feet from the abutting boundary of the aforementioned district.**
3. **Single-family dwellings permitted in commercial or industrial districts shall not exceed 30 feet in height.**

Applicant's Facts and Findings: The proposed a combination of single-family three story attached and detached structures proposed will exceed the 30 foot height limits. The proposed buildings will be approximately 35 feet in height. The applicant has proposed a height allowance which exceeds the limitations of this section as part of an overall plan to create a planned unit development.

This standard is met.

B. Commercial and Industrial.

1. **In the C-1 district no main building or accessory building shall exceed 30 feet in height.**
2. **In the AI, C-2, C-3, M-1, M-2, and M-3 districts there is no building height limitation, except, where said districts abut upon a residential district, the maximum permitted building height shall not exceed the maximum building height permitted in the abutting residential district for a distance of 50 feet from the abutting boundary.**
3. **In the C-4 district, building height limitation is described in NMC 15.352.040(J)(1).**

Applicant's Facts and Findings: The multi-family buildings proposed in the C-2 zoned portion of this site require a conditional use permit. As such, the maximum height of buildings in the C-2 zoning district will be stated in the Conditional Use Permit, as required by subsection C., below.

This standard is not applicable as a Conditional Use Permit is requested and will state the maximum height of buildings.

C. The maximum height of buildings and uses permitted conditionally shall be stated in the conditional use permits.

Applicant's Facts and Findings: The Applicant proposes a maximum building height of 48 feet for the multi-family residential structures. This maximum height shall be stated on the Conditional Use Permit.

This standard is met.

15.415.040 Public access required.

No building or structure shall be erected or altered except on a lot fronting or abutting on a public street or having access to a public street over a private street or easement of record approved in accordance with provisions contained in this code. New private streets may not be created to provide access except as allowed under NMC 15.332.020(B)(24), 15.336.020(B)(8), and in the M-4 zone. Existing private streets may not be used for access for new dwelling units, except as allowed under NMC 15.405.030. No building or structure shall be erected or altered without provisions for access roadways as required in the Oregon Fire Code, as adopted by the city.

Applicant's Facts and Findings: All proposed residential structures will have access to a public street either directly or via a connection from a private street, as permitted by the Planned Unit Development (PUD) criteria and as previously discussed in this narrative.

This standard is met.

15.420 Landscaping and Outdoor Areas

15.420.010 Required minimum standards.

A. Private and Shared Outdoor Recreation Areas in Residential Developments.

1. **Private Areas. Each ground-level living unit in a residential development subject to a design review plan approval shall have an accessible outdoor private space of not less than 48 square feet in area. The area shall be enclosed, screened or otherwise designed to provide increased privacy for unit residents, their guests and neighbors.**
2. **Individual and Shared Areas. Usable outdoor recreation space shall be provided for the individual and/or shared use of residents and their guests in any duplex or multifamily residential development, as follows:**
   a. **One- or two-bedroom units: 200 square feet per unit.**
   b. **Three- or more bedroom units: 300 square feet per unit.**
   c. **Storage areas are required in residential developments. Convenient areas shall be provided in residential developments for the storage of articles such as bicycles, barbecues, luggage, outdoor furniture, and the like. These shall be entirely enclosed.**
3. **In the AR airport residential district a five percent landscaping standard is required with the goal of "softening" the buildings and making the development "green" with plants, where possible. The existence of the runway, taxiway, and approach open areas already provide generally for the 15 percent requirement.**

Applicant's Facts and Findings: Each ground-level home within the community will have a minimum of 48 square feet of private outdoor open space. The multi-family housing area provides the required shared usable outdoor recreation space. Enclosed storage areas are provided attached to the outdoor private areas in the multi-family residential and in the garages of the single-family residential.

This standard is met.

B. Required Landscaped Area. The following landscape requirements are established for all developments except single-family dwellings:

1. **A minimum of 15 percent of the lot area shall be landscaped; provided, however, that computation of this minimum may include areas landscaped under subsection (B)(3) of this section. Development in the C-3 (central business district) zoning district and M-4 (large lot industrial) zoning district is exempt from the 15 percent landscape area requirement of this section. Additional landscaping requirements in the C-4 district are described in NMC 15.352.040(K). In the AI airport industrial district, only a five percent landscaping standard is required with the goal of "softening" the buildings and making the development "green" with plants, where possible. The existence of the runway, taxiway, and approach open areas already provide generally for the 15 percent requirement. Developments in the AI airport industrial district with a public street frontage shall have said minimum landscaping between the front property line and the front of the building.**

Applicant's Facts and Findings: A minimum of fifteen percent (15%) of the area surrounding the multi-family development will be landscaped.

This standard is met.

2. **All areas subject to the final design review plan and not otherwise improved shall be landscaped.**

Applicant's Facts and Findings: All areas included with the final design review plan and not otherwise improved will be landscaped.

This standard is met.

3. **The following landscape requirements shall apply to the parking and loading areas:**
    a. **A parking or loading area providing 10 or more spaces shall be improved with defined landscaped areas totaling no less than 25 square feet per parking space.**
    b. **A parking, loading area, or drive aisle which runs adjacent to a property line shall be separate from any lot line adjacent to a street by a landscaped strip at least 10 feet in interior width or the width of the required yard, whichever is greater, and any other lot line by a landscaped strip of at least five feet in interior width. See subsections (B)(3)(c) and (d) of this section for material to plant within landscape strips.**
    c. **A landscaped strip separating a parking area, loading area, or drive aisle from a street shall contain street trees spaced as appropriate to the species, not to exceed 50 feet apart on average, and a combination of shrubs and ground cover,**

or lawn. This landscaping shall provide partial screening of these areas from the street.

d. A landscaped strip separating a parking area, loading area, or drive aisle from an interior lot line shall contain any combination of trees, shrubs, ground cover or lawn. Plant material shall be selected from at least two different plant material groups (example: trees and shrubs, or lawn and shrubs, or lawn and trees and shrubs).

e. Landscaping in a parking or loading area shall be located in defined landscaped areas which are uniformly distributed throughout the parking or loading area.

f. Landscaping areas in a parking lot, service drive or loading area shall have an interior width of not less than five feet.

g. All multifamily, institutional, commercial, or industrial parking areas, service drives, or loading zones which abut a residential district shall be enclosed with a 75 percent opaque, site-obscuring fence, wall or evergreen hedge along and immediately adjacent to any interior property line which abuts the residential district. Landscape plantings must be large enough to provide the required minimum screening requirement within 12 months after initial installation. Adequate provisions shall be maintained to protect walls, fences or plant materials from being damaged by vehicles using said parking areas.

h. An island of landscaped area shall be located to separate blocks of parking spaces. At a minimum, one deciduous shade tree per seven parking spaces shall be planted to create a partial tree canopy over and around the parking area. No more than seven parking spaces may be grouped together without an island separation unless otherwise approved by the director based on the following alternative standards:

i. Provision of a continuous landscaped strip, with a five-foot minimum width, which runs perpendicular to the row of parking spaces (see Appendix A, Figure 13).

ii. Provision of tree planting landscape islands, each of which is at least 16 square feet in size, and spaced no more than 50 feet apart on average, within areas proposed for back-to-back parking (see Appendix A, Figure 14).

Applicant's Facts and Findings: As identified on the included site plan, the parking areas providing 10 or more spaces all meet the minimum landscaping requirements. All landscaped areas in parking areas provide a minimum of two different plant material groups, including trees, shrubs, ground cover or lawn. Fencing will be provided in compliance with this Section.

This standard is met.

4. Trees, Shrubs and Ground Covers. The species of street trees required under this section shall conform to those authorized by the city council through resolution. The director shall have the responsibility for preparing and updating the street tree species list which shall be adopted in resolution form by the city council.

a. Arterial and minor arterial street trees shall have spacing of approximately 50 feet on center. These trees shall have a minimum two-inch caliper tree trunk or

stalk at a measurement of two feet up from the base and shall be balled and burlapped or boxed.

b. **Collector and local street trees shall be spaced approximately 35 to 40 feet on center. These trees shall have a minimum of a one and one-half or one and three-fourths inch tree trunk or stalk and shall be balled and burlapped or boxed.**
c. **Accent Trees. Accent trees are trees such as flowering cherry, flowering plum, crab-apple, Hawthorne and the like. These trees shall have a minimum one and one-half inch caliper tree trunk or stalk and shall be at least eight to 10 feet in height. These trees may be planted bare root or balled and burlapped. The spacing of these trees should be approximately 25 to 30 feet on center.**
d. **All broad-leafed evergreen shrubs and deciduous shrubs shall have a minimum height of 12 to 15 inches and shall be balled and burlapped or come from a two-gallon can. Gallon-can size shrubs will not be allowed except in ground covers. Larger sizes of shrubs may be required in special areas and locations as specified by the design review board. Spacing of these shrubs shall be typical for the variety, three to eight feet, and shall be identified on the landscape planting plan.**
e. **Ground Cover Plant Material. Ground cover plant material such as greening juniper, cotoneaster, minor Bowles, English ivy, hypericum and the like shall be one of the following sizes in specified spacing for that size:**

Gallon cans	**3 feet on center**
4" containers	**2 feet on center**
2-1/4" containers	**18" on center**
Rooted cuttings	**12" on center**

Applicant's Facts and Findings: As identified on the submitted landscaping plan, all street trees and ground cover provided in this development will meet city standards.

This standard is met.

5. **Automatic, underground irrigation systems shall be provided for all areas required to be planted by this section. The director shall retain the flexibility to allow a combination of irrigated and nonirrigated areas. Landscaping material used within nonirrigated areas must consist of drought- resistant varieties. Provision must be made for alternative irrigation during the first year after initial installation to provide sufficient moisture for plant establishment.**
6. **Required landscaping shall be continuously maintained.**
7. **Maximum height of tree species shall be considered when planting under overhead utility lines.**
8. **Landscaping requirements and standards for parking and loading areas (subsection (B)(3) of this section) will apply to development proposals unless the institution has addressed the requirements and standards by an approved site development master**

plan. With an approved site development master plan, the landscape requirements will be reviewed through an administrative Type I review process.

9. **In the M-4 zone, landscaping requirements and standards for parking and loading areas (subsection (B)(3) of this section) do not apply unless within 50 feet of a residential district.**

Applicant's Facts and Findings: Automatic, underground irrigation systems will be provided for all landscaped areas. Landscaping will be continuously maintained by the project's Homeowner's Association. As identified in the included landscaping plan, the trees and shrubs have been chosen for their appropriateness for the location in which they are to be planted.

This standard is met.

C. Installation of Landscaping. All landscaping required by these provisions shall be installed prior to the issuance of occupancy permits, unless security equal to 110 percent of the cost of the landscaping as determined by the director is filed with the city, insuring such installation within six months of occupancy. A security – cash, certified check, time certificates of deposit, assignment of a savings account, bond or such other assurance of completion as shall meet with the approval of the city attorney – shall satisfy the security requirements. If the installation of the landscaping is not completed within the six-month period, or within an extension of time authorized by the director, the security may be used by the city to complete the installation. Upon completion of the installation, any portion of the remaining security deposited with the city shall be returned to the applicant.

Applicant's Facts and Findings: Landscaping will be installed or assured according to City requirements prior to the issuance of occupancy permits.

This standard is met.

15.420.020 Landscaping and amenities in public rights-of-way.

The following standards are intended to create attractive streetscapes and inviting pedestrian spaces. A review body may require any of the following landscaping and amenities to be placed in abutting public rights-of-way as part of multifamily, commercial, industrial, or institutional design reviews, or for subdivisions and planned unit developments. In addition, any entity improving existing rights-of-way should consider including these elements in the project. A decision to include any amenity shall be based on comprehensive plan guidelines, pedestrian volumes in the area, and the nature of surrounding development.

A. Pedestrian Space Landscaping. Pedestrian spaces shall include all sidewalks and medians used for pedestrian refuge. Spaces near sidewalks shall provide plant material for cooling and dust control, and street furniture for comfort and safety, such as benches, waste receptacles and pedestrian-scale lighting. These spaces should be designed for short-term as well as long-term use. Elements of pedestrian spaces shall not obstruct sightlines and shall adhere to any other required city safety measures. Medians used for pedestrian refuge shall be designed for short-term use only with plant material for cooling and dust control, and pedestrian-scale lighting. The design of these spaces shall facilitate safe pedestrian crossing with lighting and

accent paving to delineate a safe crossing zone visually clear to motorists and pedestrians alike.

1. **Street trees planted in pedestrian spaces shall be planted according to NMC 15.420.010(B)(4).**
2. **Pedestrian spaces shall have low (two and one-half feet) shrubs and ground covers for safety purposes, enhancing visibility and discouraging criminal activity.**
   a. **Plantings shall be 90 percent evergreen year-round, provide seasonal interest with fall color or blooms, and at maturity maintain growth within the planting area (refer to plant material matrix below).**
   b. **Plant placement shall also adhere to clear sight line requirements as well as any other relevant city safety measures**
3. **Pedestrian-scale lighting shall be installed along sidewalks and in medians used for pedestrian refuge.**
   a. **Pole lights as well as bollard lighting may be specified; however, the amount and type of pedestrian activity during evening hours, e.g., transit stops, nighttime service districts, shall ultimately determine the type of fixture chosen.**
   b. **Luminaire styles shall match the area/district theme of existing luminaires and shall not conflict with existing building or roadway lights causing glare.**
   c. **Lighting heights and styles shall be chosen to prevent glare and to designate a clear and safe path and limit opportunities for vandalism (see Appendix A, Figure 17, Typical Pedestrian Space Layouts).**
   d. **Lighting shall be placed near the curb to provide maximum illumination for spaces furthest from building illumination. Spacing shall correspond to that of the street trees to prevent tree foliage from blocking light.**
4. **Street furniture such as benches and waste receptacles shall be provided for spaces near sidewalks only.**
   a. **Furniture should be sited in areas with the heaviest pedestrian activity, such as downtown, shopping districts, and shopping centers.**
   b. **Benches should be arranged to facilitate conversation between individuals with L-shaped arrangements and should face the area focal point, such as shops, fountains, plazas, and should divert attention away from nearby traffic.**
5. **Paving and curb cuts shall facilitate safe pedestrian crossing and meet all ADA requirements for accessibility.**

Applicant's Facts and Findings: The submitted landscaping plan identifies landscaping and amenities proposed for the public right-of-way. Due to the residential nature of the site and the amenities to be provided within the project's open spaces, the public rights-of-way have been provided with mainly plantings. Once the commercial component of this site develops, we would anticipate the need for more benches, trash receptacles and other pedestrian amenities, potentially within the rights-of-way.

This standard is met.

B. Planting Strip Landscaping. All planting strips shall be landscaped. Planting strips provide a physical and psychological buffer for pedestrians from traffic with plant material that reduces heat and dust, creating a more comfortable pedestrian environment. Planting strips

shall have different arrangements and combinations of plant materials according to the frequency of on-street parking (see Appendix A, Figures 18 and 19).

1. **Planting strips which do not have adjacent parking shall have a combination of ground covers, low (two and one-half feet) shrubs and trees. Planting strips adjacent to frequently used on-street parking, as defined by city staff, shall only have trees protected by tree grates, and planting strips adjacent to infrequently used on-street parking shall be planted with ground cover as well as trees (see Appendix A, Figures 18 and 19, Typical Planting Strip Layouts). District themes or corridor themes linking individual districts should be followed utilizing a unifying plant characteristic, e.g., bloom color, habit, or fall color. When specifying thematic plant material, monocultures should be avoided, particularly those species susceptible to disease.**
2. **Street trees shall be provided in all planting strips as provided in NMC 15.420.010(B)(4).**
    a. **Planting strips without adjacent parking or with infrequent adjacent parking shall have street trees in conjunction with ground covers and/or shrubs.**
    b. **Planting strips with adjacent parking used frequently shall have only street trees protected by tree grates.**
3. **Shrubs and ground covers shall be provided in planting strips without adjacent parking with low (two and one-half feet) planting masses to enhance visibility, discourage criminal activity, and provide a physical as well as psychological buffer from passing traffic.**
    a. **Plantings shall be 90 percent evergreen year-round, provide seasonal interest with fall color or blooms and at maturity maintain growth within the planting area.**
    b. **Ground cover able to endure infrequent foot traffic shall be used in combination with street trees for planting strips with adjacent occasional parking (refer to plant material matrix below).**
    c. **All plant placement shall adhere to clear sight line requirements as well as any other relevant city safety measures.**

C. Maintenance. All landscapes shall be maintained for the duration of the planting to encourage health of plant material as well as public health and safety. All street trees and shrubs shall be pruned to maintain health and structure of the plant material for public safety purposes.

Applicant's Facts and Findings: As identified in the included landscaping plan, all planting strips will be landscaped with a combination of ground covers, shrubs and trees. All landscaping will be maintained for the duration of the planting and all street trees and shrubs will be pruned to maintain the health and structure of the plants.

This standard is met.

D. Exception. In the AI airport industrial district and AR airport residential district, no landscape or amenities except for grass are required for any area within 50 feet of aircraft operation areas including aircraft parking areas, taxiways, clear areas, safety areas, object-free areas, and the runway.

Applicant's Facts and Findings: This standard is not in the AI or AR zone and, as such, this standard is not applicable.

15.425 Exterior Lighting

15.425.010 Purpose.

The purpose of this chapter is to regulate the placement, orientation, distribution patterns, and fixture types of on-site outdoor lighting. The intent of this section is to provide minimum lighting standards that promote safety, utility, and security, prevent glare on public roadways, and protect the privacy of residents.

15.425.020 Applicability and exemptions.

A. Applicability. Outdoor lighting shall be required for safety and personal security in areas of assembly, parking, and traverse, as part of multifamily residential, commercial, industrial, public, recreational and institutional uses. The applicant for any Type I or Type II development permit shall submit, as part of the site plan, evidence that the proposed outdoor lighting plan will comply with this section. This information shall contain but not be limited to the following:

1. **The location, height, make, model, lamp type, wattage, and proposed cutoff angle of each outdoor lighting fixture.**
2. **Additional information the director may determine is necessary, including but not limited to illuminance level profiles, hours of business operation, and percentage of site dedicated to parking and access.**
3. **If any portion of the site is used after dark for outdoor parking, assembly or traverse, an illumination plan for these areas is required. The plan must address safety and personal security.**

B. Exemptions. The following uses shall be exempt from the provisions of this section:

1. **Public street and airport lighting.**
2. **Circus, fair, carnival, or outdoor governmentally sponsored event or festival lighting.**
3. **Construction or emergency lighting, provided such lighting is discontinued immediately upon completion of the construction work or abatement of the emergency necessitating said lighting.**
4. **Temporary Lighting. In addition to the lighting otherwise permitted in this code, a lot may contain temporary lighting during events as listed below:**
    a. **Grand Opening Event. A grand opening is an event of up to 30 days in duration within 30 days of issuance of a certificate of occupancy for a new or remodeled structure, or within 30 days of change of business or ownership. No lot may have more than one grand opening event per calendar year. The applicant shall notify the city in writing of the beginning and ending dates prior to the grand opening event.**
    b. **Other Events. A lot may have two other events per calendar year. The events may not be more than eight consecutive days in duration, nor less than 30 days apart.**
5. **Lighting activated by motion sensor devices.**
6. **Nonconforming lighting in place as of September 5, 2000. Replacement of nonconforming lighting is subject to the requirements of NMC 15.205.010 through 15.205.100.**

7. **Light Trespass onto Industrial Properties. The lighting trespass standards of NMC 15.425.040 do not apply where the light trespass would be onto an industrially zoned property.**

Applicant's Facts and Findings: The land use submittal includes a lighting plan identifying the location, height, make, model, lamp type, wattage, and proposed cutoff angle of each outdoor lighting fixture. Lighting is provided in the parking areas and the multi-family residential buildings.

This standard is met.

15.425.030 Alternative materials and methods of construction, installation, or operation.
The provisions of this section are not intended to prevent the use of any design, material, or methods of installation or operation not specifically prescribed by this section, provided any such alternate has been approved by the director. Alternatives must be an approximate equivalent to the applicable specific requirement of this section and must comply with all other applicable standards in this section.

Applicant's Facts and Findings: This land use submittal does not include a request for alternative materials and methods of construction, installation or operation.

This standard is met.

15.425.040 Requirements.
A. General Requirements – All Zoning Districts.

1. **Low-level light fixtures include exterior lights which are installed between ground level and six feet tall. Low-level light fixtures are considered nonintrusive and are unrestricted by this code.**
2. **Medium-level light fixtures include exterior lights which are installed between six feet and 15 feet above ground level. Medium-level light fixtures must either comply with the shielding requirements of subsection (B) of this section, or the applicant shall show that light trespass from a property has been designed not to exceed one-half foot-candle at the property line.**
3. **High-level light fixtures include exterior lights which are installed 15 feet or more above ground level. High-level light fixtures must comply with the shielding requirements of subsection (B) of this section, and light trespass from a property may not exceed one-half foot-candle at the property line.**

B. Table of Shielding Requirements.

Fixture Lamp Type	Shielded
Low/high pressure sodium, mercury vapor, metal halide and fluorescent over 50 watts	Fully
Incandescent over 160 watts	Fully
Incandescent 160 watts or less	None
Fossil fuel	None

Any light source of 50 watts or less	**None**
Other sources	**As approved by NMC 15.425.030**

Applicant's Facts and Findings: The land use submittal includes a lighting plan identifying the location, height, make, model, lamp type, wattage, and proposed cutoff angle of each outdoor lighting fixture. Lighting is provided in the parking areas and the multi-family residential buildings. All medium- and high-level lighting is designed to meet this section.

This standard is met.

15.430 Underground Utility Installation

15.430.010 Underground utility installation.

A. All new utility lines, including but not limited to electric, communication, natural gas, and cable television transmission lines, shall be placed underground. This does not include surface-mounted transformers, connections boxes, meter cabinets, service cabinets, temporary facilities during construction, and high-capacity electric lines operating at 50,000 volts or above.

B. Existing utility lines shall be placed underground when they are relocated, or when an addition or remodel requiring a Type II design review is proposed, or when a developed area is annexed to the city.

C. The director may make exceptions to the requirement to underground utilities based on one or more of the following criteria:

1. **The cost of undergrounding the utility is extraordinarily expensive.**
2. **There are physical factors that make undergrounding extraordinarily difficult.**
3. **Existing utility facilities in the area are primarily overhead and are unlikely to be changed.**

Applicant's Facts and Findings: All new utility lines will be located underground.

This standard is met.

15.440 Off-Street Parking, Bicycle Parking, and Private Walkways

Article I. Off-Street Parking Requirements

15.440.010 Required off-street parking.

A. Off-street parking shall be provided on the development site for all R-1, C-1, M-1, M-2 and M-3 zones. In all other zones, the required parking shall be on the development site or within 400 feet of the development site which the parking is required to serve. All required parking must be under the same ownership as the development site served except through special covenant agreements as approved by the city attorney, which bind the parking to the development site.

B. Off-street parking is not required in the C-3 district, except for:

1. **Dwelling units meeting the requirements noted in NMC 15.305.020.**
2. **New development which is either immediately adjacent to a residential district or separated by nothing but an alley.**

C. Within the C-4 district, the minimum number of required off-street parking spaces shall be 50 percent of the number required by NMC 15.440.030, except that no reduction is permitted for residential uses.
D. All commercial, office, or industrial developments that have more than 20 off-street parking spaces and that have designated employee parking must provide at least one preferential carpool/vanpool parking space. The preferential carpool/vanpool parking space(s) must be located close to a building entrance.

Applicant's Facts and Findings: The proposed parking for the single-family homes will be on the same lot as the use. Additional on-street parking and "guest parking" areas are proposed and will be owned and maintained according by the project's Homeowner's Association. The proposed parking for the multi-family buildings will also be on the same development site as the buildings, in a parking lot adjacent to the buildings. There are no commercial, office or industrial developments proposed at this time and, as such, no carpool/vanpool parking spaces are required.

This standard is met.

15.440.020 Parking area and service drive design.
A. All public or private parking areas, parking spaces, or garages shall be designed, laid out and constructed in accordance with the minimum standards as set forth in NMC 15.440.070.
B. Groups of three or more parking spaces, except those in conjunction with single-family or two-family dwellings on a single lot, shall be served by a service drive so that no backward movement or other maneuvering of a vehicle within a street, other than an alley, will be required. Service drives shall be designed and constructed to facilitate the flow of traffic, provide maximum safety in traffic access and egress and maximum safety of pedestrian and vehicular traffic on the site, but in no case shall two-way and one-way service drives be less than 20 feet and 12 feet, respectively. Service drives shall be improved in accordance with the minimum standards as set forth in NMC 15.440.060.
C. Gates. A private drive or private street serving as primary access to more than one dwelling unit shall not be gated to limit access, except as approved by variance.
D. In the AI airport industrial district and AR airport residential district, taxiways may be used as part of the service drive design where an overall site plan is submitted that shows how the circulation of aircraft and vehicles are safely accommodated, where security fences are located, if required, and is approved by the fire marshal, planning director, and public works director. The following submittal must be made:

1. **A drawing of the area to be developed, including the probable location, height, and description of structures to be constructed; the location and description of a security fence or gate to secure the aircraft operations areas of off-airport property from the other nonsecured pedestrian/auto/truck areas of on-airport property; the proposed location of the proposed taxiway access in accordance with FAA specifications (refer to Federal Aviation Administration Advisory Circular No. 150/5300-13 regarding airport design, and AC/5370-10B regarding construction standards for specifications that should be used as a guideline); and the identification of the vehicular traffic pattern area clearly separated from aircraft traffic. Once specific buildings have been designed, FAA Form 7460-1, Notice of Proposed Construction or Alteration, must be**

submitted to the City of Newberg, the private airport owner, and the FAA for airspace review.

15.440.030 Parking spaces required.

Use	Minimum Parking Spaces Required
Residential Types	
Dwelling, multifamily and multiple single-family dwellings on a single lot	**1 per dwelling unit**
Studio or one-bedroom unit	**1.5 per dwelling unit**
Two-bedroom unit	**2 per dwelling unit**
Three- and four-bedroom unit	**0.75 spaces per bedroom**
Five- or more bedroom unit	
• Unassigned spaces	**If a development is required to have more than 10 spaces on a lot, then it must provide some unassigned spaces. At least 15 percent of the total required parking spaces must be unassigned and be located for convenient use by all occupants of the development. The location shall be approved by the director.**
• Visitor spaces	**If a development is required to have more than 10 spaces on a lot, then it must provide at least 0.2 visitor spaces per dwelling unit.**
• On-street parking credit	**On-street parking spaces may be counted toward the minimum number of required spaces for developments required to have more than 10 spaces on a lot. The on-street spaces must be directly adjoining and on the same side of the street as the subject property, must be legal spaces that meet all city standards, and cannot be counted if they could be removed by planned future street widening or a bike lane on the street.**
• Available transit service	**At the review body's discretion, affordable housing projects may reduce the required off-street parking by 10 percent if there is an adequate continuous pedestrian route no more than 1,500 feet in length from the development to transit service with an average of less than one hour regular service intervals during commuting periods or where the development provides its own transit. A developer may qualify for this parking reduction if improvements on a proposed pedestrian route are made by the developer, thereby rendering it an adequate continuous route.**
Dwelling, single-family or two-family	**2 for each dwelling unit on a single lot**

Applicant's Facts and Findings:

All single-family development will have parking on the individual lots with at least 2 parking spaces provided on each lot, one within the garage and one within the driveway provided for each single family lot. Many of the single family homes will be provided with up to 4 parking spaces on each lot as two car garages and two car driveways will be developed on the majority of the lots within the development. The multi-family development proposes to create 51 units with 27 one bedroom homes and 24 two bedroom homes. The required parking for the one bedroom units is 27 spaces, the two bedroom units require 36 parking spaces and a total of 10 visitor parking spaces are required for a total of 74 parking spaces. As proposed, 92 spaces are provided which are on the same site as the multi-family buildings. An additional 7 on-street parking spaces are provided adjacent to the multi-family lot.

In total, the project will provide the following parking space configuration:

Apartment Parking – 91 Spaces
Public Street Parking – 73 Spaces
Private Street Parking – 85 Spaces
R-1 Lot Parking – 72 Spaces
17' Front Load Parking – 46 Spaces
17' Rear Load Parking – 219 Spaces
21' Front Load Spaces – 111 Spaces
21' Rear Load Spaces – 268 Spaces
25' Front Load Spaces – 52 Spaces
25' Rear Load Spaces – 68 Spaces

The total number of spaces may vary based upon the revisions necessary to satisfy any conditions of approval or as a result of changes to the final plat and product configuration but the current design, showing detached units, currently provides 1,085 parking spaces.

This standard is met.

15.440.060 Parking area and service drive improvements.

All public or private parking areas, outdoor vehicle sales areas, and service drives shall be improved according to the following:

A. All parking areas and service drives shall have surfacing of asphaltic concrete or Portland cement concrete or other hard surfacing such as brick or concrete pavers. Other durable and dust-free surfacing materials may be approved by the director for infrequently used parking areas. All parking areas and service drives shall be graded so as not to drain stormwater over the public sidewalk or onto any abutting public or private property.

B. All parking areas shall be designed not to encroach on public streets, alleys, and other rights-of-way. Parking areas shall not be placed in the area between the curb and sidewalk or, if there is no sidewalk, in the public right-of-way between the curb and the property line. The director may issue a permit for exceptions for unusual circumstances where the design maintains safety and aesthetics.

C. All parking areas, except those required in conjunction with a single-family or two-family dwelling, shall provide a substantial bumper which will prevent cars from encroachment on abutting private and public property.

D. All parking areas, including service drives, except those required in conjunction with single-family or two-family dwellings, shall be screened in accordance with NMC 15.420.010(B).

E. Any lights provided to illuminate any public or private parking area or vehicle sales area shall be so arranged as to reflect the light away from any abutting or adjacent residential district.

F. All service drives and parking spaces shall be substantially marked and comply with NMC 15.440.070.

G. Parking areas for residential uses shall not be located in a required front yard, except as follows:

1. **Attached or detached single-family or two-family: parking is authorized in a front yard on a service drive which provides access to an improved parking area outside the front yard.**
2. **Three- or four-family: parking is authorized in a front yard on a service drive which is adjacent to a door at least seven feet wide intended and used for entrance of a vehicle (see Appendix A, Figure 12).**

H. A reduction in size of the parking stall may be allowed for up to a maximum of 30 percent of the total number of spaces to allow for compact cars. For high turnover uses, such as convenience stores or fast-food restaurants, at the discretion of the director, all stalls will be required to be full-sized.

I. Affordable housing projects may use a tandem parking design, subject to approval of the community development director.

J. Portions of off-street parking areas may be developed or redeveloped for transit-related facilities and uses such as transit shelters or park-and-ride lots, subject to meeting all other applicable standards, including retaining the required minimum number of parking spaces.

Applicant's Facts and Findings: As identified on the submitted site plan and utility plans, all parking areas and service drives will be constructed to City standards. Parking areas do not encroach on public streets. Substantial parking bumpers are provided for the multi-family parking area. All parking area lighting will be designed to reduce light spill and glare away from any proposed or existing neighboring developments.

This standard is met.

Article II. Bicycle Parking

15.440.090 Purpose.

Cycling is a healthy activity for travel and recreation. In addition, by maximizing bicycle travel, the community can reduce negative effects of automobile travel, such as congestion and pollution. To maximize bicycle travel, developments must provide effective support facilities. At a minimum, developments need to provide a secure place for employees, customers, and residents to park their bicycles. [Ord. 2564, 4-15-02; Ord. 2518, 9-21-99. Code 2001 § 151.625.1.]

15.440.100 Facility requirements.

Bicycle parking facilities shall be provided for the uses shown in the following table. Fractional space requirements shall be rounded up to the next whole number.

Use	Minimum Number of Bicycle Parking Spaces Required
New multiple dwellings, including additions creating additional dwelling units	One bicycle parking space for every four dwelling units

Applicant's Facts and Findings: The proposed 51 multi-family dwelling units requires 13 bicycle parking spaces. This proposal includes the provision of 13 bicycle parking spaces.

This standard is met.

15.440.110 Design.

A. Bicycle parking facilities shall consist of one or more of the following:

1. **A firmly secured loop, bar, rack, or similar facility that accommodates locking the bicycle frame and both wheels using a cable or U-shaped lock.**
2. **An enclosed locker.**
3. **A designated area within the ground floor of a building, garage, or storage area. Such area shall be clearly designated for bicycle parking.**
4. **Other facility designs approved by the director.**

B. All bicycle parking spaces shall be at least six feet long and two and one-half feet wide. Spaces shall not obstruct pedestrian travel.

C. All spaces shall be located within 50 feet of a building entrance of the development.

D. Required bicycle parking facilities may be located in the public right-of-way adjacent to a development subject to approval of the authority resp

Applicant's Facts and Findings: As shown on the included site development plans, the bicycle parking facility is designed to meet these requirements.

This standard is met.

Article III. Private Walkways

15.440.120 Purpose.

Sidewalks and private walkways are part of the city's transportation system. Requiring their construction is part of the city's plan to encourage multimodal travel and to reduce reliance on the automobile. Considerable funds have and will be expended to install sidewalks along the streets in the city. Yet there is little point to this expense if it is not possible for people to walk from the sidewalk to the developments along each side. The following requirements are intended to provide safe and convenient paths for employees, customers, and residents to walk from public sidewalks to development entrances, and to walk between buildings on larger sites.

15.440.130 Where required.

Private walkways shall be constructed as part of any development requiring Type II design review, including mobile home parks. In addition, they may be required as part of conditional

use permits or planned unit developments. In the airport industrial (AI) district and residential (AR) district, on-site walks are not required in aircraft operations areas, such as parking aprons, taxiways, and runways.

Applicant's Facts and Findings: As this application includes a Planned Unit Development and Conditional Use Permit, walkways and sidewalks are required.

This standard is met.

15.440.140 Private walkway design.
A. All required private walkways shall meet the applicable building code and Americans with Disabilities Act requirements.
B. Required private walkways shall be a minimum of four feet wide.
C. Required private walkways shall be constructed of portland cement concrete or brick.
D. Crosswalks crossing service drives shall, at a minimum, be painted on the asphalt or clearly marked with contrasting paving materials or humps/raised crossings. If painted striping is used, it should consist of thermoplastic striping or similar type of durable application.
E. At a minimum, required private walkways shall connect each main pedestrian building entrance to each abutting public street and to each other.
F. The review body may require on-site walks to connect to development on adjoining sites.
G. The review body may modify these requirements where, in its opinion, the development provides adequate on-site pedestrian circulation, or where lot dimensions, existing building layout, or topography preclude compliance with these standards.

Applicant's Facts and Findings: The proposal includes private walkways connecting the multi-family units to Highway 99W and connecting the western portion of the site to Spring Meadow Park. These walkways will be a minimum of 4-feet in width and will be constructed of Portland cement concrete. Crosswalks will be provided on the site to delineate the shift from public streets to private streets. Crosswalks will be painted/clearly striped in conformance with these requirements.

This standard is met.

Division 15.500 Public Improvement Standards
15.505 Public Improvements Standards
15.505.010 Purpose.
This chapter provides standards for public infrastructure and utilities installed with new development, consistent with the policies of the City of Newberg comprehensive plan and adopted city master plans. The standards are intended to minimize disturbance to natural features, promote energy conservation and efficiency, minimize and maintain development impacts on surrounding properties and neighborhoods, and ensure timely completion of adequate public facilities to serve new development.

15.505.020 Applicability.
The provision and utilization of public facilities and services within the City of Newberg shall apply to all land developments in accordance with this chapter. No development shall be

approved unless the following improvements are provided for prior to occupancy or operation, unless future provision is assured in accordance with NMC 15.505.030(E).

A. Public Works Design and Construction Standards. The design and construction of all improvements within existing and proposed rights-of-way and easements, all improvements to be maintained by the city, and all improvements for which city approval is required shall comply with the requirements of the most recently adopted Newberg public works design and construction standards.
B. Street Improvements. All projects subject to a Type II design review, partition, or subdivision approval must construct street improvements necessary to serve the development.
C. Water. All developments, lots, and parcels within the City of Newberg shall be served by the municipal water system as specified in Chapter 13.15 NMC.
D. Wastewater. All developments, lots, and parcels within the City of Newberg shall be served by the municipal wastewater system as specified in Chapter 13.10 NMC.
E. Stormwater. All developments, lots, and parcels within the City of Newberg shall manage stormwater runoff as specified in Chapters 13.20 and 13.25 NMC.
F. Utility Easements. Utility easements shall be provided as necessary and required by the review body to provide needed facilities for present or future development of the area.
G. City Approval of Public Improvements Required. No building permit may be issued until all required public facility improvements are in place and approved by the director, or are otherwise bonded for in a manner approved by the review authority, in conformance with the provisions of this code and the Newberg Public Works Design and Construction Standards.

Applicant's Facts and Findings: As identified on the included public improvement plans, the design and construction of all improvements within existing and proposed public rights-of-way and easements and all improvements to be maintained by the city are designed to comply with the requirements of the most recently adopted Newberg public works design and construction standards. All improvements for which city approval is required are proposed to the most recently adopted Newberg public works design and construction standards or, in the case of private streets, as reviewed and approved by the Newberg Engineering Department. The site development plan includes private and public streets, utility easements where necessary, connection to public water and sanitary sewer services and management of stormwater runoff.

This standard is met.

15.505.030 Street standards.
A. Purpose. The purpose of this section is to:

1. **Provide for safe, efficient, and convenient multi-modal transportation within the City of Newberg.**
2. **Provide adequate access to all proposed and anticipated developments in the City of Newberg. For purposes of this section, "adequate access" means direct routes of travel between destinations; such destinations may include residential neighborhoods, parks, schools, shopping areas, and employment centers.**
3. **Provide adequate area in all public rights-of-way for sidewalks, wastewater and water lines, stormwater facilities, natural gas lines, power lines, and other utilities commonly**

and appropriately placed in such rights-of-way. For purposes of this section, "adequate area" means space sufficient to provide all required public services to standards defined in this code and in the Newberg public works design and construction standards.

B. Applicability. The provisions of this section apply to:

1. **The creation, dedication, and/or construction of all public streets, bike facilities, or pedestrian facilities in all subdivisions, partitions, or other developments in the City of Newberg.**
2. **The extension or widening of existing public street rights-of-way, easements, or street improvements including those which may be proposed by an individual or the city, or which may be required by the city in association with other development approvals.**
3. **The construction or modification of any utilities, pedestrian facilities, or bike facilities in public rights-of-way or easements.**
4. **The designation of planter strips. Street trees are required subject to Chapter 15.420 NMC.**
5. **Developments outside the city that tie into or take access from city streets.**

Applicant's Facts and Findings: As demonstrated in the public improvement plans, this development includes public and private streets designed to provide safe and convenient vehicular and pedestrian access. Proposed improvements include paved streets, curbs (rolled curb on private streets), sidewalks, crosswalks, planter strips with street trees and appropriate groundcover, and utility easements where necessary.

This standard is met.

C. Layout of Streets, Alleys, Bikeways, and Walkways. Streets, alleys, bikeways, and walkways shall be laid out and constructed as shown in the Newberg transportation system plan. In areas where the transportation system plan or future street plans do not show specific transportation improvements, roads and streets shall be laid out so as to conform to previously approved subdivisions, partitions, and other developments for adjoining properties, unless it is found in the public interest to modify these patterns. Transportation improvements shall conform to the standards within the Newberg Municipal Code, the Newberg public works design and construction standards, the Newberg transportation system plan, and other adopted city plans.

Applicant's Facts and Findings: While no bikeways are proposed, the streets, alleys and walkways are designed to comply with the Newberg Transportation System Plan. Streets are planned to meet with adjoining roadways and to provide for future connectivity to the east.

This standard is met.

D. Construction of New Streets. Where new streets are necessary to serve a new development, subdivision, or partition, right-of-way dedication and full street improvements shall be required. Three-quarter streets may be approved in lieu of full street improvements when the city finds it to be practical to require the completion of the other one-quarter street improvement when the adjoining property is developed; in such cases, three-quarter street improvements may be allowed by the city only where all of the following criteria are met:

1. **The land abutting the opposite side of the new street is undeveloped and not part of the new development; and**
2. **The adjoining land abutting the opposite side of the street is within the city limits and the urban growth boundary.**

Applicant's Facts and Findings: Full street improvements are proposed throughout the site.

This standard is met.

E. Improvements to Existing Streets.

1. **All projects subject to partition, subdivision, or Type II design review approval shall dedicate right-of-way sufficient to improve the street to the width specified in subsection (G) of this section.**
2. **All projects subject to partition, subdivision, or Type II design review approval must construct a minimum of a three-quarter street improvement to all existing streets adjacent to, within, or necessary to serve the development. The director may waive or modify this requirement where the applicant demonstrates that the condition of existing streets to serve the development meets city standards and is in satisfactory condition to handle the projected traffic loads from the development. Where a development has frontage on both sides of an existing street, full street improvements are required.**
3. **In lieu of the street improvement requirements outlined in NMC 15.505.040(B), the review authority may elect to accept from the applicant monies to be placed in a fund dedicated to the future reconstruction of the subject street(s). The amount of money deposited with the city shall be 100 percent of the estimated cost of the required street improvements (including any associated utility improvements), and 10 percent of the estimated cost for inflation. Cost estimates used for this purpose shall be based on preliminary design of the constructed street provided by the applicant's engineer and shall be approved by the director.**

Applicant's Facts and Findings: The proposal includes development of full street improvements throughout the site. The public streets will be constructed to public street standards and dedicated to the City of Newberg. The private streets will be full street improvements and will be owned and maintained by the future Homeowner's Association subject to the CC&Rs (a draft of which is submitted with this proposal).

This standard is met.

F. Improvements Relating to Impacts. Improvements required as a condition of development approval shall be roughly proportional to the impact of the development on public facilities and services. The review body must make findings in the development approval that indicate how the required improvements are roughly proportional to the impact. Development may not occur until required transportation facilities are in place or guaranteed, in conformance with the provisions of this code. If required transportation facilities cannot be put in place or be guaranteed, then the review body shall deny the requested land use application.

Applicant's Facts and Findings: Development of the proposed street network and utilities within the development and connecting to the neighboring properties is roughly proportional to the transportation and development impacts from the development. Transportation facilities will be in place or guaranteed prior to development of the site.

This standard is met.

G. Street Width and Design Standards.

1. **Design Standards. All streets shall conform with the standards contained in Table 15.505.030(G). Where a range of values is listed, the director shall determine the width based on a consideration of the total street section width needed, existing street widths, and existing development patterns. Preference shall be given to the higher value. Where values may be modified by the director, the overall width shall be determined using the standards under subsections (G)(2) through (10) of this section.**

Table 15.505.030(G) Street Design Standards

Type of Street	Right-of-Way Width	Curb-to-Curb Pavement Width	Motor Vehicle Travel Lanes	Median Type	Striped Bike Lane (Both Sides)	On-Street Parking
Arterial Streets						
Expressway**	ODOT	ODOT	ODOT	ODOT	ODOT	ODOT
Minor arterial	69 – 80 feet	48 feet	2 lanes	TWLTL or median*	Yes	No*
Collectors						
Minor	61 – 65 feet	40 feet	2 lanes	None*	Yes*	Yes*
Local Streets						
Local residential	54-60 feet	32 feet	2 lanes	None	No	Yes

2. **Motor Vehicle Travel Lanes. Collector and arterial streets shall have a minimum width of 12 feet.**
3. **Bike Lanes. Striped bike lanes shall be a minimum of six feet wide. Bike lanes shall be provided where shown in the Newberg transportation system plan.**
4. **Parking Lanes. Where on-street parking is allowed on collector and arterial streets, the parking lane shall be a minimum of eight feet wide.**
5. **Center Turn Lanes. Where a center turn lane is provided, it shall be a minimum of 12 feet wide.**
6. **Limited Residential Streets. Limited residential streets shall be allowed only at the discretion of the review authority, and only in consideration of the following factors:**
   a. **The requirements of the fire chief shall be followed.**
   b. **The estimated traffic volume on the street is low, and in no case more than 600 average daily trips.**
   c. **Use for through streets or looped streets is preferred over cul-de-sac streets.**
   d. **Use for short blocks (under 400 feet) is preferred over longer blocks.**

e. **The total number of residences or other uses accessing the street in that block is small, and in no case more than 30 residences.**
f. **On-street parking usage is limited, such as by providing ample off-street parking, or by staggering driveways so there are few areas where parking is allowable on both sides.**

7. **Sidewalks. Sidewalks shall be provided on both sides of all public streets. Minimum width is five feet.**
8. **Planter Strips. Except where infeasible, a planter strip shall be provided between the sidewalk and the curb line, with a minimum width of five feet. This strip shall be landscaped in accordance with the standards in NMC 15.420.020. Curb-side sidewalks may be allowed on limited residential streets. Where curb-side sidewalks are allowed, the following shall be provided:**
    a. **Additional reinforcement is done to the sidewalk section at corners.**
    b. **Sidewalk width is six feet.**
9. **Slope Easements. Slope easements shall be provided adjacent to the street where required to maintain the stability of the street.**
10. **Intersections and Street Design. The street design standards in the Newberg public works design and construction standards shall apply to all public streets, alleys, bike facilities, and sidewalks in the city.**
11. **The planning commission may approve modifications to street standards for the purpose of ingress or egress to a minimum of three and a maximum of six lots through a conditional use permit.**

Applicant's Facts and Findings: Streets, sidewalks and planter strips, as identified on the proposed public improvement plans, are designed to meet the standards of the Newberg Transportation System Plan and this section.

This standard is met.

H. Modification of Street Right-of-Way and Improvement Width. The director, pursuant to the Type II review procedures of Chapter 15.220 NMC, may allow modification to the public street standards of subsection (G) of this section, when the criteria in both subsections (H)(1) and (2) of this section are satisfied:

1. **The modification is necessary to provide design flexibility in instances where:**
    a. **Unusual topographic conditions require a reduced width or grade separation of improved surfaces; or**
    b. **Lot shape or configuration precludes accessing a proposed development with a street which meets the full standards of this section; or**
    c. **A modification is necessary to preserve trees or other natural features determined by the city to be significant to the aesthetic character of the area; or**
    d. **A planned unit development is proposed and the modification of street standards is necessary to provide greater privacy or aesthetic quality to the development.**
2. **Modification of the standards of this section shall only be approved if the director finds that the specific design proposed provides adequate vehicular access based on anticipated traffic volumes.**

Applicant's Facts and Findings: Street modifications are not proposed as part of this development and, as such, this standard is not applicable.

I. Temporary Turnarounds. Where a street will be extended as part of a future phase of a development, or as part of development of an abutting property, the street may be terminated with a temporary turnaround in lieu of a standard street connection or circular cul-de-sac bulb. The director and fire chief shall approve the temporary turnaround. It shall have an all-weather surface, and may include a hammerhead-type turnaround meeting fire apparatus access road standards, a paved or graveled circular turnaround, or a paved or graveled temporary access road. For streets extending less than 150 feet and/or with no significant access, the director may approve the street without a temporary turnaround. Easements or right-of-way may be required as necessary to preserve access to the turnaround.

Applicant's Facts and Findings: The east-west minor collector dead-ends at the eastern property line for connection to future development. The easternmost north-south private street creates a hammerhead-type turnaround with the minor collector.

This standard is met.

J. Topography. The layout of streets shall give suitable recognition to surrounding topographical conditions in accordance with the purpose of this code.

Applicant's Facts and Findings: The layout of the streets takes into consideration the surrounding topography.

This standard is met.

K. Future Extension of Streets. All new streets required for a subdivision, partition, or a project requiring site design review shall be constructed to be "to and through": through the development and to the edges of the project site to serve adjacent properties for future development.

Applicant's Facts and Findings: The street network connects to the existing street to the north and future street development to the east. Connection to the west is not possible because the entire property line is adjacent to Spring Meadow Park. The connection to the south is the access from Highway 99W.

This standard is met.

L. Cul-de-Sacs.

1. **Cul-de-sacs shall only be permitted when one or more of the circumstances listed in this section exist. When cul-de-sacs are justified, public walkway connections shall be provided wherever practical to connect with another street, walkway, school, or similar destination.**
    a. **Physical or topographic conditions make a street connection impracticable. These conditions include but are not limited to controlled access streets, railroads, steep slopes, wetlands, or water bodies where a connection could not be reasonably made.**

b. **Buildings or other existing development on adjacent lands physically preclude a connection now or in the future, considering the potential for redevelopment.**
c. **Where streets or accessways would violate provisions of leases, easements, or similar restrictions.**
d. **Where the streets or accessways abut the urban growth boundary and rural resource land in farm or forest use, except where the adjoining land is designated as an urban reserve area.**

2. **Cul-de-sacs shall be no more than 400 feet long (measured from the centerline of the intersection to the radius point of the bulb).**
3. **Cul-de-sacs shall not serve more than 18 single-family dwellings.**
   Each cul-de-sac shall have a circular end with a minimum diameter of 96 feet, curb-to-curb, within a 109-foot minimum diameter right-of-way. For residential uses, a 35-foot radius may be allowed if the street has no parking, a mountable curb, curbside sidewalks, and sprinkler systems in every building along the street.

Applicant's Facts and Findings: No cul-de-sacs are proposed as part of this development and, as such, this standard is not applicable.

M. Street Names and Street Signs. Streets that are in alignment with existing named streets shall bear the names of such existing streets. Names for new streets not in alignment with existing streets are subject to approval by the director and the fire chief and shall not unnecessarily duplicate or resemble the name of any existing or platted street in the city. It shall be the responsibility of the land divider to provide street signs.

Applicant's Facts and Findings: The north-south major collector will be named Crestview Street as that is the name of the connection to the north. Other streets in the development are new and will be established with this development.

This standard is met.

N. Platting Standards for Alleys.

1. **An alley may be required to be dedicated and constructed to provide adequate access for a development, as deemed necessary by the director.**
2. **The right-of-way width and paving design for alleys shall be not less than 20 feet wide. Slope easements shall be dedicated in accordance with specifications adopted by the city council under NMC 15.505.010 et seq.**
3. **Where two alleys intersect, 10-foot corner cut-offs shall be provided.**
4. **Unless otherwise approved by the city engineer where topographical conditions will not reasonably permit, grades shall not exceed 12 percent on alleys, and centerline radii on curves shall be not less than 100 feet.**
5. **All provisions and requirements with respect to streets identified in this code shall apply to alleys the same in all respects as if the word "street" or "streets" therein appeared as the word "alley" or "alleys" respectively.**

Applicant's Facts and Findings: The alleys included with this proposal are all proposed as private streets owned and maintained by the Homeowner's Association.

This standard is met.

O. Platting Standards for Blocks.

1. **Purpose. Streets and walkways can provide convenient travel within a neighborhood and can serve to connect people and land uses. Large, uninterrupted blocks can serve as a barrier to travel, especially walking and biking. Large blocks also can divide rather than unite neighborhoods. To promote connected neighborhoods and to shorten travel distances, the following minimum standards for block lengths are established.**
2. **Maximum Block Length and Perimeter. The maximum length and perimeters of blocks in the zones listed below shall be according to the following table. The review body for a subdivision, partition, conditional use permit, or a Type II design review may require installation of streets or walkways as necessary to meet the standards below.**

Zones(s)	Maximum Block Length	Maximum Block Perimeter
R-1	800 feet	2,000 feet
R-2, R-3, RP, I	1,200 feet	3,000 feet

3. **Exceptions.**

a. **If a public walkway is installed mid-block, the maximum block length and perimeter may be increased by 25 percent.**
b. **Where a proposed street divides a block, one of the resulting blocks may exceed the maximum block length and perimeter standards provided the average block length and perimeter of the two resulting blocks do not exceed these standards.**
c. **Blocks in excess of the above standards are allowed where access controlled streets, street access spacing standards, railroads, steep slopes, wetlands, water bodies, preexisting development, ownership patterns or similar circumstances restrict street and walkway location and design. In these cases, block length and perimeter shall be as small as practical. Where a street cannot be provided because of these circumstances but a public walkway is still feasible, a public walkway shall be provided.**
d. **Institutional campuses located in an R-1 zone may apply the standards for the institutional zone.**
e. **Where a block is in more than one zone, the standards of the majority of land in the proposed block shall apply.**
f. **Where a local street plan, concept master site development plan, or specific plan has been approved for an area, the block standards shall follow those approved in the plan. In approving such a plan, the review body shall follow the block standards listed above to the extent appropriate for the plan area.**

Applicant's Facts and Findings: The proposed development would create several blocks and new blocks however the patterns of natural resources present on the site and the existing development surrounding the property make a traditional subdivision with blocks meeting the standards listed above impractical. Instead of a traditional block layout, the applicant has proposed a series of blocks which are porous and interconnected with private streets, walkways, and alleys.

This standard is met.

P. Private Streets. New private streets, as defined in NMC 15.05.030, shall not be created, except as allowed by NMC 15.240.020(L)(2).

Applicant's Facts and Findings: Private streets are proposed in compliance with NMC 15.240.020(L)(2), as addressed previously in this narrative.

This standard is met.

Q. Traffic Calming.

1. **The following roadway design features may be required in new street construction where traffic calming needs are anticipated:**
   a. **Serpentine alignment.**
   b. **Curb extensions.**
   c. **Traffic diverters/circles.**
   d. **Raised medians and landscaping.**
   e. **Other methods shown effective through engineering studies.**
2. **Traffic-calming measures such as speed humps should be applied to mitigate traffic operations and/or safety problems on existing streets. They should not be applied with new street constructions.**

Applicant's Facts and Findings: Traffic calming measures are not proposed as the submitted Transportation Impact Analysis demonstrates that the proposed street network is safe and effective.

This standard is met.

R. Vehicular Access Standards.

1. **Purpose. The purpose of these standards is to manage vehicle access to maintain traffic flow, safety, roadway capacity, and efficiency. They help to maintain an adequate level of service consistent with the functional classification of the street. Major roadways, including arterials and collectors, serve as the primary system for moving people and goods within and through the city. Access is limited and managed on these roads to promote efficient through movement. Local streets and alleys provide access to individual properties. Access is managed on these roads to maintain safe maneuvering of vehicles in and out of properties and to allow safe through movements. If vehicular access and circulation are not properly designed, these roadways will be unable to accommodate the needs of development and serve their transportation function.**
2. **Access Spacing Standards. Public street intersection and driveway spacing shall follow the standards in Table 15.505.R below. The Oregon Department of Transportation (ODOT) has jurisdiction of some roadways within the Newberg city limits, and ODOT access standards will apply on those roadways.**

Table 15.505.R. <u>Access</u> Spacing Standards

Roadway Functional Classification	Area[1]	Minimum Public Street Intersection Spacing (Feet)[2]	Driveway Setback from Intersecting Street[3]
Expressway	All	Refer to ODOT Access Spacing Standards	NA
Major Arterial	Urban CBD	Refer to ODOT Access Spacing Standards	
Minor Arterial	Urban CBD	500 200	150 100
Major Collector	All	400	150
Minor Collector	All	300	100

3. **Properties with Multiple Frontages. Where a property has frontage on more than one street, access shall be limited to the street with the lesser classification.**
4. **Driveways. More than one driveway is permitted on a lot accessed from either a minor collector or local street as long as there is at least 40 feet of lot frontage separating each driveway approach. More than one driveway is permitted on a lot accessed from a major collector as long as there is at least 100 feet of lot frontage separating each driveway approach.**
5. **Alley Access. Where a property has frontage on an alley and the only other frontages are on collector or arterial streets, access shall be taken from the alley only. The review body may allow creation of an alley for access to lots that do not otherwise have frontage on a public street provided all of the following are met:**
   a. **The review body finds that creating a public street frontage is not feasible.**
   b. **The alley access is for no more than six dwellings and no more than six lots.**
   c. **The alley has through access to streets on both ends.**
   d. **One additional parking space over those otherwise required is provided for each dwelling. Where feasible, this shall be provided as a public use parking space adjacent to the alley.**
6. **Closure of Existing Accesses. Existing accesses that are not used as part of development or redevelopment of a property shall be closed and replaced with curbing, sidewalks, and landscaping, as appropriate.**
7. **Shared Driveways.**
   a. **The number of driveways onto arterial streets shall be minimized by the use of shared driveways with adjoining lots where feasible. The city shall require shared driveways as a condition of land division or site design review, as applicable, for traffic safety and access management purposes. Where there is an abutting developable property, a shared driveway shall be provided as appropriate. When shared driveways are required, they shall be stubbed to adjacent developable parcels to indicate future extension. "Stub" means that a driveway temporarily ends at the property line, but may be accessed or extended in the future as the adjacent parcel develops. "Developable" means that a parcel is either vacant or it is likely to receive additional development (i.e., due to infill or redevelopment potential).**
   b. **Access easements (i.e., for the benefit of affected properties) and maintenance agreements shall be recorded for all shared driveways, including pathways, at the time of final plat approval or as a condition of site development approval.**

c. **No more than four lots may access one shared driveway.**
d. **Shared driveways shall be posted as no parking fire lanes where required by the fire marshal.**
e. **Where three lots or three dwellings share one driveway, one additional parking space over those otherwise required shall be provided for each dwelling. Where feasible, this shall be provided as a common use parking space adjacent to the driveway.**

8. **Frontage Streets and Alleys. The review body for a partition, subdivision, or design review may require construction of a frontage street to provide access to properties fronting an arterial or collector street.**
9. **ODOT or Yamhill County Right-of-Way. Where a property abuts an ODOT or Yamhill County right-of-way, the applicant for any development project shall obtain an access permit from ODOT or Yamhill County.**
10. **Exceptions. The director may allow exceptions to the access standards above in any of the following circumstances:**
    a. **Where existing and planned future development patterns or physical constraints, such as topography, parcel configuration, and similar conditions, prevent access in accordance with the above standards.**
    b. **Where the proposal is to relocate an existing access for existing development, where the relocated access is closer to conformance with the standards above and does not increase the type or volume of access.**
    c. **Where the proposed access results in safer access, less congestion, a better level of service, and more functional circulation, both on street and on site, than access otherwise allowed under these standards.**
11. **Where an exception is approved, the access shall be as safe and functional as practical in the particular circumstance. The director may require that the applicant submit a traffic study by a registered engineer to show the proposed access meets these criteria.**

Applicant's Facts and Findings: This application proposes one access on Highway 99W. All other driveway and intersection spacing standards are met, as demonstrated on the submitted public improvement plans.

This standard is met.

S. Public Walkways.

1. **Projects subject to Type II design review, partition, or subdivision approval may be required to provide public walkways where necessary for public safety and convenience, or where necessary to meet the standards of this code. Public walkways are meant to connect cul-de-sacs to adjacent areas, to pass through oddly shaped or unusually long blocks, to provide for networks of public paths according to adopted plans, or to provide access to schools, parks or other community destinations or public areas. Where practical, public walkway easements and locations may also be used to accommodate public utilities.**
2. **Public walkways shall be located within a public access easement that is a minimum of 15 feet in width.**

3. **A walk strip, not less than 10 feet in width, shall be paved in the center of all public walkway easements. Such paving shall conform to specifications in the Newberg public works design and construction standards.**
4. **Public walkways shall be designed to meet the Americans with Disabilities Act requirements.**
5. **Public walkways connecting one right-of-way to another shall be designed to provide as short and straight of a route as practical.**
6. **The developer of the public walkway may be required to provide a homeowners' association or similar entity to maintain the public walkway and associated improvements.**
7. **Lighting may be required for public walkways in excess of 250 feet in length.**
8. **The review body may modify these requirements where it finds that topographic, preexisting development, or similar constraints exist.**

Applicant's Facts and Findings: Public walkways are proposed to connect the multi-family resident to Highway 99W, throughout the wetland/natural areas, and connecting from the development to Spring Meadow Park to the west.

This standard is met.

T. Street Trees. Street trees shall be provided for all projects subject to Type II design review, partition, or subdivision. Street trees shall be installed in accordance with the provisions of NMC 15.420.010(B)(4).

Applicant's Facts and Findings: As indicated on the submitted landscaping plans, street trees are proposed on all streets.

This standard is met.

U. Street Lights. All developments shall include underground electric service, light standards, wiring and lamps for street lights according to the specifications and standards of the Newberg public works design and construction standards. The developer shall install all such facilities and make the necessary arrangements with the serving electric utility as approved by the city. Upon the city's acceptance of the public improvements associated with the development, the street lighting system, exclusive of utility-owned service lines, shall be and become property of the city unless otherwise designated by the city through agreement with a private utility.

Applicant's Facts and Findings: This proposal includes developer-installed underground electric service, light standards, wiring and lamps for street lights according to the specifications and standards of the Newberg public works design and construction standards.

This standard is met.

V. Transit Improvements. Development proposals for sites that include or are adjacent to existing or planned transit facilities, as shown in the Newberg transportation system plan or adopted local or regional transit plan, shall be required to provide any of the following, as applicable and required by the review authority:

1. **Reasonably direct pedestrian connections between the transit facility and building entrances of the site. For the purpose of this section, "reasonably direct" means a route that does not deviate unnecessarily from a straight line or a route that does not involve a significant amount of out-of-direction travel for users.**
2. **A transit passenger landing pad accessible to disabled persons.**
3. **An easement of dedication for a passenger shelter or bench if such facility is in an adopted plan.**
4. **Lighting at the transit facility.**

Applicant's Facts and Findings: There are no transit facilities within or adjacent to this site and, as such, this standard is not applicable.

15.505.040 Public utility standards.

A. Purpose. The purpose of this section is to provide adequate services and facilities appropriate to the scale and type of development.

B. Applicability. This section applies to all development where installation, extension or improvement of water, wastewater, or private utilities is required to serve the development or use of the subject property.

C. General Standards.

1. **The design and construction of all improvements within existing and proposed rights-of-way and easements, all improvements to be maintained by the city, and all improvements for which city approval is required shall conform to the Newberg public works design and construction standards and require a public improvements permit.**
2. **The location, design, installation and maintenance of all utility lines and facilities shall be carried out with minimum feasible disturbances of soil and site. Installation of all proposed public and private utilities shall be coordinated by the developer and be approved by the city to ensure the orderly extension of such utilities within public right-of-way and easements.**

D. Standards for Water Improvements. All development that has a need for water service shall install the facilities pursuant to the requirements of the city and all of the following standards. Installation of such facilities shall be coordinated with the extension or improvement of necessary wastewater and stormwater facilities, as applicable.

1. **All developments shall be required to be linked to existing water facilities adequately sized to serve their intended area by the construction of water distribution lines, reservoirs and pumping stations which connect to such water service facilities. All necessary easements required for the construction of these facilities shall be obtained by the developer and granted to the city pursuant to the requirements of the city.**
2. **Specific location, size and capacity of such facilities will be subject to the approval of the director with reference to the applicable water master plan. All water facilities shall conform with city pressure zones and shall be looped where necessary to provide adequate pressure and fire flows during peak demand at every point within the system in the development to which the water facilities will be connected. Installation costs shall remain entirely the developer's responsibility.**
3. **The design of the water facilities shall take into account provisions for the future extension beyond the development to serve adjacent properties, which, in the judgment of the city, cannot be feasibly served otherwise.**

4. **Design, construction and material standards shall be as specified by the director for the construction of such public water facilities in the city.**

E. Standards for Wastewater Improvements. All development that has a need for wastewater services shall install the facilities pursuant to the requirements of the city and all of the following standards. Installation of such facilities shall be coordinated with the extension or improvement of necessary water services and stormwater facilities, as applicable.

1. **All septic tank systems and on-site sewage systems are prohibited. Existing septic systems must be abandoned or removed in accordance with Yamhill County standards.**
2. **All properties shall be provided with gravity service to the city wastewater system, except for lots that have unique topographic or other natural features that make gravity wastewater extension impractical as determined by the director. Where gravity service is impractical, the developer shall provide all necessary pumps/lift stations and other improvements, as determined by the director.**
3. **All developments shall be required to be linked to existing wastewater collection facilities adequately sized to serve their intended area by the construction of wastewater lines which connect to existing adequately sized wastewater facilities. All necessary easements required for the construction of these facilities shall be obtained by the developer and granted to the city pursuant to the requirements of the city.**
4. **Specific location, size and capacity of wastewater facilities will be subject to the approval of the director with reference to the applicable wastewater master plan. All wastewater facilities shall be sized to provide adequate capacity during peak flows from the entire area potentially served by such facilities. Installation costs shall remain entirely the developer's responsibility.**
5. **Temporary wastewater service facilities, including pumping stations, will be permitted only if the director approves the temporary facilities, and the developer provides for all facilities that are necessary for transition to permanent facilities.**
6. **The design of the wastewater facilities shall take into account provisions for the future extension beyond the development to serve upstream properties, which, in the judgment of the city, cannot be feasibly served otherwise.**
7. **Design, construction and material standards shall be as specified by the director for the construction of such wastewater facilities in the city.**

F. Easements. Easements for public and private utilities shall be provided as deemed necessary by the city, special districts, and utility companies. Easements for special purpose uses shall be of a width deemed appropriate by the responsible agency. Such easements shall be recorded on easement forms approved by the city and designated on the final plat of all subdivisions and partitions. Minimum required easement width and locations are as provided in the Newberg public works design and construction standards.

Applicant's Facts and Findings:	The development will connect to public utilities, including water and sanitary sewer. As demonstrated on the submitted public improvement plans, all public utilities are designed to be constructed to City standards. This standard is met.

15.505.050 Stormwater system standards.

A. Purpose. The purpose of this section is to provide for the drainage of surface water from all development; to minimize erosion; and to reduce degradation of water quality due to sediments and pollutants in stormwater runoff.

B. Applicability. The provisions of this section apply to all developments subject to site development review or land division review and to the reconstruction or expansion of such developments that increases the flow or changes the point of discharge to the city stormwater system. Additionally, the provisions of this section shall apply to all drainage facilities that impact any public storm drain system, public right-of-way or public easement, including but not limited to off-street parking and loading areas.

C. General Requirement. All stormwater runoff shall be conveyed to a public storm wastewater or natural drainage channel having adequate capacity to carry the flow without overflowing or otherwise causing damage to public and/or private property. The developer shall pay all costs associated with designing and constructing the facilities necessary to meet this requirement.

D. Plan for Stormwater and Erosion Control. No construction of any facilities in a development included in subsection (B) of this section shall be permitted until an engineer registered in the State of Oregon prepares a stormwater report and erosion control plan for the project. This plan shall contain at a minimum:

1. **The methods to be used to minimize the amount of runoff, sedimentation, and pollution created from the development both during and after construction.**
2. **Plans for the construction of stormwater facilities and any other facilities that depict line sizes, profiles, construction specifications, and other such information as is necessary for the city to review the adequacy of the stormwater plans.**
3. **Design calculations shall be submitted for all drainage facilities. These drainage calculations shall be included in the stormwater report and shall be stamped by a licensed professional engineer in the State of Oregon. Peak design discharges shall be computed based upon the design criteria outlined in the public works design and construction standards for the city.**

E. Development Standards. Development subject to this section shall be planned, designed, constructed, and maintained in compliance with the Newberg public works design and construction standards.

Applicant's Facts and Findings: The submitted public improvement plans include details of the proposed stormwater detention and treatment plan. The stormwater detention and treatment plan is designed to meet City standards and to preclude stormwater drainage on surrounding properties.

This standard is met.

SUMMARY AND CONCLUSION

Based upon the materials submitted herein, the Applicant respectfully requests approval from the City's Planning Commission of this application for a Planned Unit Development and a Conditional Use Permit.

PUBLISH DATE
07.18.2018
ISSUED FOR
LAND USE DOCUMENTS

PHASING PLAN

CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT

JT SMITH COMPANIES
NEWBERG, OR

811
Know what's below.
Call before you dig.

N
W E
S

SCALE: 1" = 100'
0 100' 200'

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
EXH

P:\17393-JTS-CRESTVIEW CROSSING\CAD\OD\DOE\EXHIBITS\2018-07-17 PHASING EXHIBIT\17393-EXH-PHASING PLAN.DWG

GeoEngineers
333 High Street NE, Suite 102
Salem, Oregon 97301
971.304.3078

August 9, 2018

J.T. Smith Companies
5285 Meadows Road, Suite 171
Lake Oswego, Oregon 97035

Attention: Jesse Nemec

Subject: Revised Geologic and Hydrogeologic Technical Memorandum
Crestview Crossing Project
Newberg, Oregon
File No. 6748-002-03

INTRODUCTION AND PROJECT UNDERSTANDING

The purpose of this memorandum is to provide J.T. Smith Companies with GeoEngineers, Inc. hydrogeologic assessment regarding Oxberg Inc.'s concern that grading and in-filling of the wetlands on the proposed Crestview Crossing Site (the Site) may harm the adjacent property's drinking water supply capacity and increase source water contamination potential. The assessment is based on infiltrations analysis on the Site, well logs, and previous area hydrogeological studies and reports. The project area is on the north side of Highway 99W, just east of the City of Newburg (Proximity Map of Crestview Crossing Site to Oxberg Well, Figure 1).

In this memorandum we summarize:

- Groundwater and surface water interaction
- Site geology and hydrogeology
- Oxberg well log
- Near-by wells
- Site-specific infiltration rates
- Source water assessment
- Conclusions

SURFACE WATER AND GROUNDWATER INTERACTION

Surface water comes in many forms; water in wetlands, streams, rivers, lakes and oceans. Groundwater on the other hand is subsurface water and is found in pore spaces between material like soil particles, sand grains and gravels; and in fractures, cracks and broken zones in rock. If these pores and fractures are full of water subsurface groundwater conditions are described as saturated and an aquifer is present. Conversely, if the pores and fractures are not completely full, then the subsurface groundwater conditions are described as unsaturated.

Aquifers are commonly described as confined or unconfined. One of the simplest ways to understand the difference is where water occurs during well drilling. If the water level in a well after it is built is the same as it was first encountered during drilling, that aquifer would be referred to as unconfined. If water level in a well after it is built is higher than where it was first encountered during drilling, that aquifer would be referred to as confined. Unconfined aquifers also are under atmospheric pressure and they are commonly in hydraulic continuity with surface water. Conversely, confined aquifers are under higher pressure than atmospheric and have very limited to essentially no hydraulic continuity with nearby surface water.

When surface water infiltrates into the ground it moves are different rates; quickly over a period of days or weeks or slowly over months and years. The ability of a porous material (rock/silt/sand/gravel) to allow fluids to pass through it is called permeability. Gravels and sands have high permeability that allow water to move quickly horizontally while finer materials like silt and clay have a lower permeability and can create layers in the subsurface that make it difficult for water to move through. Figure 2 provides a look at how long it can take water to move through a shallow unconfined aquifer into deeper confined aquifers. Generally, in a shallow unconfined aquifer the younger the water, while in a confined aquifer the older the water is.

Figure 2 also shows a common relationship between a shallow aquifer and surface water. In cases where a shallow unconfined aquifer discharges to surface water the surface waters can be described as gaining. In the opposite case, where surface water is leaking into a shallow unconfined aquifer the surface water would be described as losing. If the underlying aquifer is confined one would generally conclude that the surface water-groundwater connection is limited to non-existent with flow paths between to the two expressed in decades, centuries, or even longer.

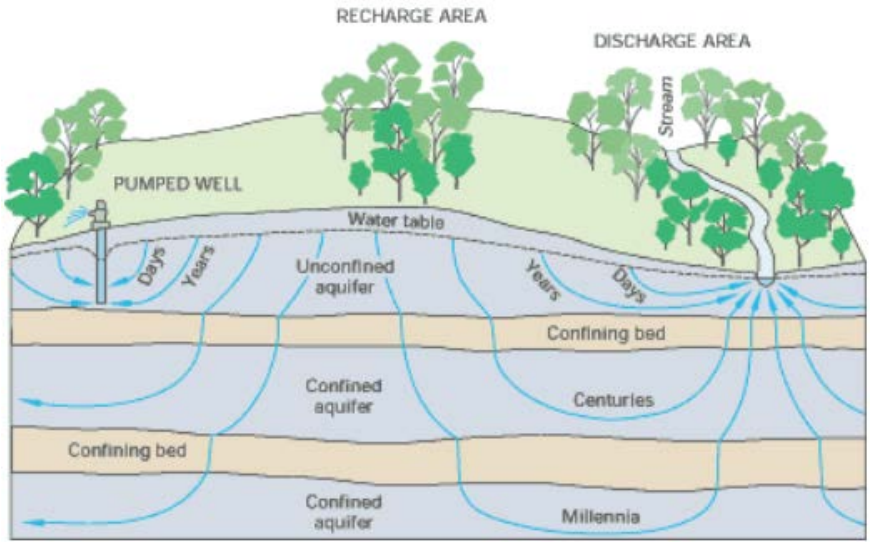


Figure 2: Groundwater Flow Paths
(Source: USGS, https://pubs.usgs.gov/circ/circ1139/htdocs/natural_processes_of_ground.htm)

SITE GEOLOGY AND HYDROGEOLOGY

The Site is located on the western edge of the Willamette Basin near the eastern edge of the Chehalem Mountains. Locally, the Site is located within the Chehalem Creek Valley, a broad alluvial drainage that forms an embayment of the Willamette Valley extending north and northwest into the Chehalem Mountains.

The *Engineering Geology of the Tualatin Valley Region, Oregon* (Schlicker and Deacon 1967) and *Groundwater in the Newberg Area, Northern Willamette Valley, Oregon* (United State Geological Survey [USGS] 1978) provide detailed descriptions of the geologic units found near the Site. For the purposes of this memorandum geologic units of interest are, from oldest to youngest, summarized as follows:

- **Columbia River Basalt Group (CRBG)**; is the **dominant groundwater source** in the Newberg area (USGS 1978). The CRBG forms the bedrock of the Chehalem Mountains. The CRBG consists of a series of individual basalt lava flows which range from 40 to 100 feet thick and may locally exceed 200 feet (Oregon Water Resources Department [OWRD] 2002). The CRBG has been deformed through faulting and folding, being uplifted into the Chehalem Mountains and underlying the Willamette Valley, including the Site. Between basalt flows there are zones of breccia, ash, and broken rock called interflow zones which are the main aquifers in the CRBG. The CRBG can produce anywhere from 15 to over 1,000 gallons a minute (gpm) but in recent years declines have been observed as recharge to the deep basalt aquifer is limited (OWRD 2002).
- **Helvetia and Troutdale Formations/Basin Fill Sediments**; the Helvetia Formation consists of reddish-brown sand, silt and clay. These deposits are often difficult to distinguish from the residual soils derived from weathered CRBG. The Troutdale Formation consists mostly of silt and clay with beds of fine sand and gravel. Aquifers hosted by these strata typically have low yields so production wells are not commonly found in them (OWRD 2002).
- **Willamette Silt**; is Missoula flood silt deposits. The Willamette Silt is found in the lowlands and flanks of bordering hills up to elevations of about 250 feet above sea level. The Willamette Silt has low

permeability but high porosity and is able to sustain low yield domestic wells (OWRD 2002). The Willamette Silt can store large amounts of groundwater in the winter releasing it in the spring as seeps and shallow groundwater discharge to streams and wetlands. However, because of the low permeability it acts as a confining layer inhibiting movement of groundwater into deeper aquifers (OWRD 2002).

Based on the reports reviewed for this memorandum the primary aquifer underlying the Site is found in CRBG interflow zones and consists of one or more confined interval approximately 100 feet or more below ground surface. These confined zones are separated from the surface by low permeability dense basalt, weathered basalt, basalt altered to clay and Willamette Silt.

OXBERG WELL LOG

It is our understanding that Oxbergs concerns focus on two wells used for water supply to the adjacent property. We were able to only locate one well log in the OWRD well log database. That well log, designated YAMH 2385, is reproduced in Attachment A.

Well YAMH 2385 is reported to have been completed in December 1986. It also is reported to consist of a 12-inch-diameter borehole drilled to 30 feet below ground surface (bgs) and an 8-inch borehole drilled to 200 feet bgs. Eight-inch casing is reported to have been installed from 1 foot above the surface to 162 feet bgs and 6-inch liner with perforations is reported to have been installed from 162 to 200 feet bgs. Per the *2004 Source Water Assessment Report for Oxberg Water System Newberg, Oregon PWS #4105308 (*Oregon Department of Human Services and Oregon Department of Environmental Quality [DHS and DEQ]) the cement seal from 0 to 30 feet bgs is adequate and no visible well construction deficiencies were noted.

The *2004 Source Water Assessment* indicates that well is drilled and screened in the CRBG (DHS and DEQ), producing from a 15-foot interval in the perforated liner between 162 and 200 feet bgs. Following well completion, the static depth to water was between 21 and 29 feet bgs which is many tens of feet above the water producing interval, suggesting the well is open to a confined aquifer in the CRBG, and not shallow unconfined water near the ground surface.

WELLS NEAR-BY

In addition to reviewing information about the Oxberg well we also reviewed information about other water wells near the Site. OWRD's online well database shows at least 64 water wells within ¾ quarters of a mile of the Site. Of these, 25 are less than 150 feet deep and 39 are more than 150 feet deep. Well construction, depth, water levels and pumping capacity reported for these wells is provided in Table 1 and summarized in Table 2. There are likely other wells in close proximity that are not identified during this OWRD search.

TABLE 2: SUMMARY OF NEAR-BY WELL DETAILS

	Wells <150 Feet Deep	Wells >150 Feet Deep
Number of wells	25	39
Average Constructed Depth	110.8	212.1
Average Depth of First Water (feet)	76.5	137.5
Post Drilling Static Water Level (feet)	31.7	56.9

Information source: https://apps.wrd.state.or.us/apps/gw/well_log/Default.aspx

We interpret the information shown on these well logs, and listed on Tables 1 and 2, to indicate that most of the area wells (including the Oxberg well) are in the CRBG, that these CRBG wells display evidence of confined conditions (final water levels are higher than the producing intervals), and there may be multiple groundwater producing intervals in the CRBG, one approximately 70 to 100 feet bgs and the other greater than approximately 125 feet bgs. **Based on that interpretation Oxberg well likely is completed in, and producing water from, a deeper confined CRBG aquifer underlying the Site area.**

SITE-SPECIFIC INFILTRATION RATES

GeoEngineers conducted infiltration testing to assist in evaluating the Site for stormwater infiltration design. Testing was conducted using the encased falling head and open pit infiltration testing procedures as described in the *Crestview Crossing Development Geotechnical Engineering Report* (May 12, 2018). Field measured infiltration results were 0.0 inches/hour for the encased falling head and 0.1 inches/hour for the open pit tests. Based on the fine-grained soil conditions and very low to negligible measured infiltration rates, infiltration of stormwater was not recommended to be used as the sole method of stormwater management at this site. Given these tests, we interpret that there is limited, to essentially no capacity for surface water to percolate into the ground and through the subsurface into the underlying confined CRBG aquifers.

These infiltration rates along with the ephemeral nature of the wetlands inform the surface water and groundwater connection at site; indicating that there is almost no connection and that surface water is not contributing to the deep aquifer in which the Oxberg well is pumping from.

SOURCE WATER ASSESSMENT

In addition to aquifer recharge potential we also address the potential for the proposed development to contaminate the groundwater being pumped by the Oxberg well. The Crestview Crossing project proposed drinking and fire protection water system will be supplied from Newberg's municipal water system, so there is no additional stress on the Oxberg wells. The *2004 Source Water Assessment* (DHS and DEQ) found:

1. The Oxberg well and aquifer are not considered highly sensitive to contamination based on well construction and the sensitivity analysis. This relates to directly around the well head and well house. Construction for the proposed development is located over 550 feet and downhill from the Oxberg well, and no deep subsurface work is proposed, so there is no potential for contamination at the well head during development. The second well, whose log was not available is understood to be on the northside of the lake, opposite of the proposed development.
2. Residential land use including apartments and condominiums was determined to be a low risk during the aquifer susceptibility analysis for potential contaminant sources inside the drinking water protection area.

The development of Crestview Crossing poses a low risk for potential source water contamination to the Oxberg well as no deep subsurface work is proposed and the Oxberg well is located in a confined aquifer. Drinking water will be supplied by the Newberg municipality so no new wells are planned.

CONCLUSIONS

Based on the hydrogeologic information reviewed for the Site and adjacent property where the Oxberg well is located, we conclude that there is little to no potential for the Crestview development to:

1. Impair groundwater recharge to the nearby Oxberg wells.
2. Effect groundwater quality in the Oxberg wells.

Both of these conclusions are based on the following observations:

- The Oxberg wells are in a confined aquifer that has limited to no hydraulic connection to the Site.
- In the unlikely event that there was a hydraulic connection between the confined aquifer the Oxberg wells pump water from, measured surface infiltration (recharge) rates are extremely low to non-existent, indicating little or no local recharge to the underlying confined aquifer.

If you have any questions, please do not hesitate to contact me at your convenience.

REFERENCES

DHS and DEQ. 2004. Oregon Department of Human Services Health Services Drinking Water Program and Oregon Department of Environmental Quality Water Quality Division Drinking Water Protection. *Source Water Assessment Report Summary of Analysis Oxberg Water System Newberg, Oregon Yamhill County PWS #4105308. April.*

OWRD. 2002. “Ground Water Supplies in the Willamette Basin.” Oregon Water Resource Department.

Schlicker, H.G. and R.J. Deacon. 1967. “Engineering Geology of the Tualatin Valley Region, Oregon.” Oregon Department of Geology and Mineral Industries, Bulletin 60, p. 103, 4 plates, 1:62,500 scale.

USGS. 1978. "Groundwater in the Newberg Area, Northern Willamette Valley, Oregon." Water Resource Department Ground Water Report No. 27. State of Oregon. Prepared in cooperation with the United State Department of the Interior Geological Survey.

Sincerely,
GeoEngineers, Inc.

Jonathon S. Travis, RG
Staff Geologist

Kevin A. Lindsey, PhD, LHg
Principal

ASC:LAH:JST:JCV:KAL:tjh

Attachments:
Table 1. Nearby Wells
Figure 1. Proximity Map of Crestview Crossing Site to Oxberg Well
Attachment A. Well Log YAMH 2385

Table 1

Nearby Wells
Crestview Crossing
Newberg, Oregon

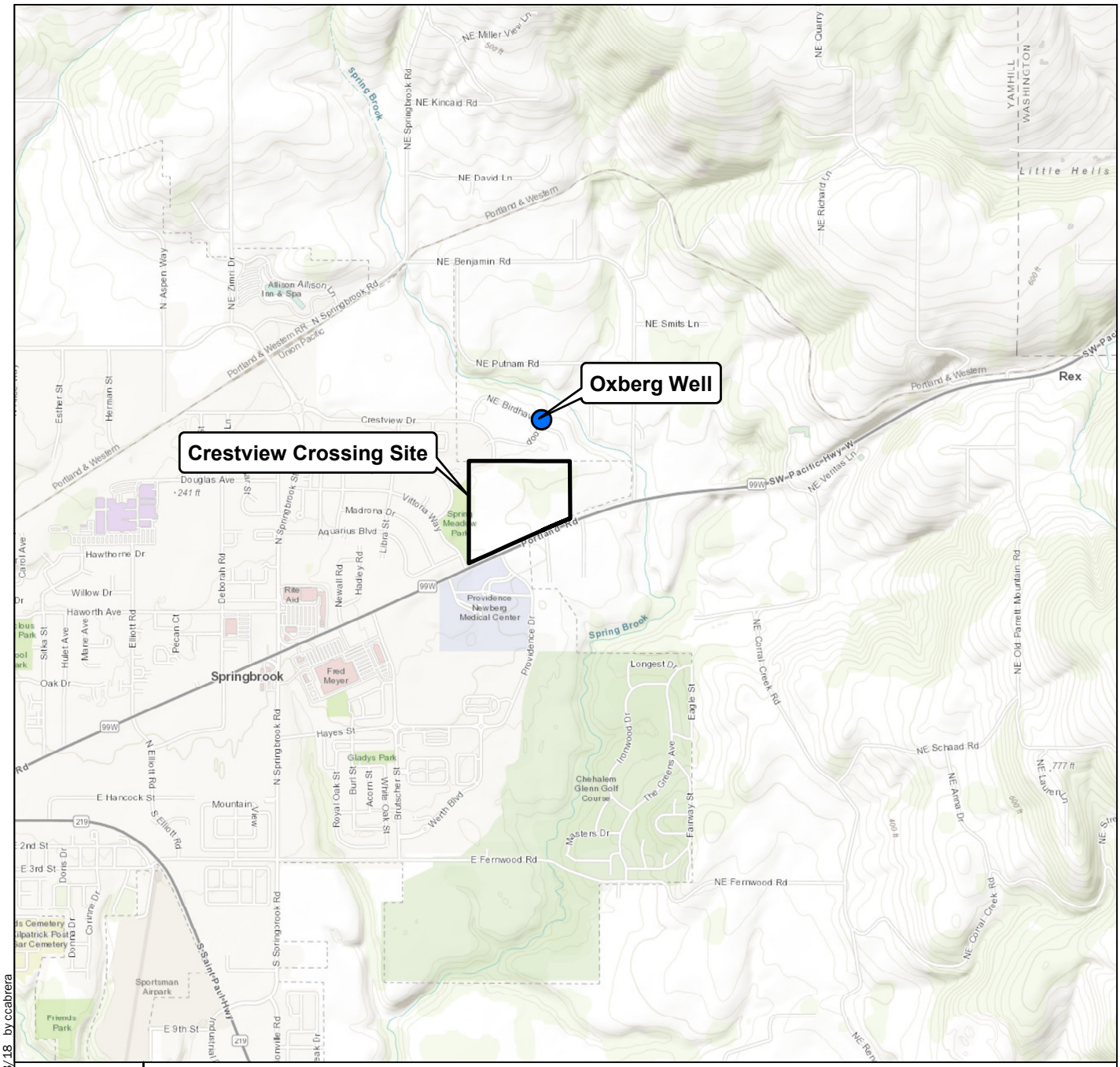
County	Well Number	Well Tag Number	Owner Last Name	Owner First Name	Company Name	Street	City	Zip	Depth of First Water (feet)	Depth Drilled (feet)	Completed Depth (feet)	Post Static Water Level (feet)	Date Drilling Complete	Township	Range	Section	Quarter 160	Quarter 40	Tax Lot	Street of Well	Max Well Yield (gpm)
Wells Drilled Less than 150 Feet																					
YAMH	2386		DAVIS	WOODROW		PO BOX 96	NEWBERG	97132		75	75	10	9/26/1958	3S	2W	16	NE				18
YAMH	2400		ROGERS	MR WALTER		2906 HOOVER BLVD	NEWBERG	97132		80	80	5	2/14/1961	3S	2W	16	SW	SW		SPRING BROOK JUNCTION & HWY 99 W SOUTH SIDE OF ROAD	7
YAMH	2399		MEEKER	FRANK		RT 2 BOX 100	NEWBERG	97132		81	81	18	12/22/1966	3S	2W	16					7
YAMH	3866	479			PARROTT MOUNTAIN CONSTRUCTION	16260 SW BELL RD	SHERWOOD	97140	78	81	81	5	4/11/1995	3S	2W	9	SE	NE	201	29935 NE BENJAMIN RD, NEWBERG	20
YAMH	2224		FELTY	RICHARD		RT 1 BOX 312B	NEWBERG		50	88	89	8	7/28/1982	3S	2W	9	SE	SW			75
YAMH	2273		ROWLAND	JERRY			NEWBERG		50	95	95	30	2/16/1957	3S	2W	9	SW	NW		RT 2 BOX 90	19
YAMH	51		ORTIZ	MR ROBERTO	ORTIZ, MRS ROBERTO	314 S EDWARDS	NEWBERG	97132	90	97	97	72	6/5/1990	3S	2W	9	SE	NW		DAVID COURT	50
YAMH	55625	100246	WEGTER	KEN		3872 CAMISHAUM COURT	SALEM	97305	40	99	99	26	3/24/2010	3S	2W	9	SE	SW	2800	29366 PUTNAM RD, NEWBERG	1
YAMH	56262	108231	MILLS	NANCY		14615 SPRINGBROOK RD	NEWBERG	97132	62	100	98	12	5/7/2012	3S	2W	9	SW	NE	1901	14615 SPRINGBROOK RD	21
YAMH	2395		MACDONALD	MRS J C		RT 2 BOX 331	NEWBERG	97132	87	100	100	90	5/5/1973	3S	2W	16	NW	SW			11
YAMH	2256		LOOKABILL	LYLE		ROUTE 2 BOX 32	NEWBERG	97132	79	104	102	56	5/18/1979	3S	2W	9	SE	SW			20
YAMH	2397		GLEASON	ELBERT		RT 2 BOX 326	NEWBERG	97132	35	105	105	26	6/21/1972	3S	2W	16					22
YAMH	2271				YOUNG AND PAWELSKI HOMES INC				60	107	108	30	9/22/1976	3S	2W	9	SE	NW			32
YAMH	298		BURGUSS	JOE		PO BOX 506	TUALATIN	97062	65	115	115	25	5/13/1976	3S	2W	16	NE				15
YAMH	4280		BURGUSS	JOE		PO BOX 506	TUALATIN	97062	80	115	115	35	1/13/1976	3S	2W	16		NE			12
YAMH	2213		WOOD	BILL	WOOD, CATHY	1506 N COLLEGE	NEWBERG	97132	75	118	111	30	9/21/1989	3S	2W	9	SE	SE			60
YAMH	2390		BURGUSS	JOE		PO BOX 506	TUALATIN	97062	90	122	122	34	3/6/1976	3S	2W	16	NE				15
YAMH	748		BENTLEY JR	MR JAMES E	BENTLEY JR, MRS JAMES E	PO BOX 856	NEWBERG	97132	85	125	125	15	6/17/1991	3S	2W	9	SE	NW		DAVID LANE & SPRINGBACK RD (INTERSECTION)	23
YAMH	1692		COCHRAN	MR MICHAEL J	COCHRAN, MRS MICHAEL J	35101 SW LADD HILL RD	WILSONVILLE	97070		125	125	32	4/3/1992	3S	2W	9	SE	NW		14630 NE SPRINGBROOK NEWBURG (NEXT DRIVEWAY NORTH)	15
YAMH	2272		LUCIANE	JOHN B		ROUTE 2 BOX 320	NEWBERG	97132	124	126	126	22	6/11/1973	3S	2W	9	SE	NW			10
YAMH	52152	26714	ALEXANDER	DON		1282 3RD ST 56	LAFAYETTE	97127	130	137	137	19	5/4/2000	3S	2W	16	SE	NE	1100	1217 KLIMEK DR, NEWBERG	25
YAMH	113		CARTER	MR JOHN	CARTER, MRS KELLI	10035 SW GARRETT #6	TIGARD	97223	68	143	143	32	9/13/1990	3S	2W	9	SE	NW		OFF SPRINGBROOK RD (1ST DIRT RD ON R, PAST BENJAMIN RD)	26
YAMH	2393		FORTUNE, JR	JOHN J		RT 2 BOX 321 C	NEWBERG	97132	105	145	145	65	2/27/1975	3S	2W	16	NE	NE			9
YAMH	2398		WAGNER	ED		RT 3 BOX 143	NEWBERG	97132		148	148	38	9/11/1965	3S	2W	16					10
YAMH	2383		DOANE	GARY		455 SE 32ND	HILLSBORO	97123		149	149	58	9/17/1949	3S	2W	16					18
Wells Drilled Greater than 100 Feet																					
YAMH	2396				LEAVITE AND WIDING	2712 NE SANDY	PORTLAND		63	150	150	61	12/17/1970	3S	2W	16					17
YAMH	2236		HUMPRES	JIM		3965 SW 202ND	ALOHA	97007	60	151	152	47	6/12/1975	3S	2W	9	SE				50
YAMH	299		BIXBY	ETHEL			NEWBERG	97132	87	152	152	35	5/5/1973	3S	2W	16					14
YAMH	2387		DAVIS	WOODROW W		ROUTE 2 BOX 96	NEWBERG	97132		155	155	22	8/28/1958	3S	2W	16	NE				5
YAMH	278		MILLER	TOM		1478 N SHERWOOD BLVD	SHERWOOD	97140	120	155	155	60	1/12/1987	3S	2W	9	SE	SW			20
YAMH	3901	2379	GAMBLE	MR VIC	GAMBLE, MRS VIC	10260 SW NIMBUS BLDG M1	TIGARD	97223	140	160	152	28	6/2/1995	3S	2W	9	SW	SE		0.5 MI N ON BENJAMIN RD OFF HWY 99W	100
YAMH	2269		STEELE	JAMES O		RT 2 BOX 312 A2	NEWBERG	97132	126	160	160	85	5/31/1978	3S	2W	9	SE	SW	3100		15
YAMH	2268				B & H CONSTRUCTION	222 NW 139TH ST	PORTLAND		156	162	162	90	11/14/1974	3S	2W	9	SE	NW			40
YAMH	2216		WAGNER	KARL		2301 JODI COURT	NEWBERG	97132	68	163	163	17	5/11/1987	3S	2W	9	SE	SE		29705 PUTNAM RD, NEWBERG	25
YAMH	767		WAGNER	MARY JANE		29705 PUTMAN RD NE	NEWBERG	97132	118	168	168	34	6/29/1991	3S	2W	9	SE	SE	3305	29705 PUTMAN RD NE	20

County	Well Number	Well Tag Number	Owner Last Name	Owner First Name	Company Name	Street	City	Zip	Depth of First Water (feet)	Depth Drilled (feet)	Completed Depth (feet)	Post Static Water Level (feet)	Date Drilling Complete	Township	Range	Section	Quarter 160	Quarter 40	Tax Lot	Street of Well	Max Well Yield (gpm)
YAMH	50354	8785	PECK	THOMAS		16050 PIT RD	HILLSBORO	97123	138	168		61	9/24/1996	3S	2W	9	SE	SE	4100	JUST EAST OF 29730 BENJAMIN RD, NEWBERG	120
YAMH	2389		SPANGLER	WILLIAM					92	170	170	62	1/20/1978	3S	2W	16	NW	SW			10
YAMH	2394		RETRY	ROBERT		312 N EDWARDS	NEWBERG	97132	103	170	170	50	4/8/1975	3S	2W	16					2
YAMH	3268		HOST	MR GARY A	HOST, MRS GARY A	8605 SW MANDAN DR	TUALATIN	97062	140	172	170	1	11/3/1994	3S	2W	9	SW	SE			100
YAMH	2211		BROWN	GLENN		29730 BENJAMIN RD	NEWBERG	97132	164	174	174	64	12/19/1989	3S	2W	9	SE	SE		29730 BENJAMIN RD	26
YAMH	2215		JOHNSON	EVERT	JOHNSON, ESTHER	29955 NE BENJAMIN RD	NEWBERG	97132	140	175	175	22	5/17/1989	3S	2W	9	SE	NE		29955 NE BENJAMIN RD	24
YAMH	50181	3228	DOBBINS	DAVE		29830 NE BENJAMIN	NEWBERG	97132	155	180	180	44	6/29/1996	3S	2W	9	SE	SE	3209	29830 NE BENJAMIN	100
YAMH	52308	37663	LOUIS	RON		739 CROSSBROOK DR	MORGEA	94556	115	183	183	115	8/10/2000	3S	2W	9	SW	NW	1800	3220 ZIMRI DR, NEWBERG	50
YAMH	54510	85530	NEWTON	FRED		30875 SW HEATER RD	SHERWOOD	97140	103	183	176	33	6/22/2006	3S	2W	9	SE	SE	3303	29815 SE PUTMAN, NEWBERG	90
YAMH	2219		SMITH	ROBERT D		RT 1 BOX 49	NEWBERG	97132	85	185	185	35	10/12/1982	3S	2W	9	SE		3900	RT 4 BOX 313 C; CO RD 54	50
YAMH	279		LUU	NGUAN		503 SE 47TH	PORTLAND	97215	140	195	196	66	11/3/1981	3S	2W	9	SE	SW		RT 2, NEWBERG	20
YAMH	2385				OXBERG INC.	PO BOX 467	NEWBERG	97132		200	200	29	12/11/1986	3S	2W	16				4100 E CRESTVIEW NEWBERG	45
YAMH	3169		DAMNAN	MR GARY	DAMNAN, MRS GARY	7750 SW 171ST	ALOHA	97223	145	200	200	52	8/4/1994	3S	2W	16	NE	NE			25
YAMH	2270		STEELE	JAMES O		607 N COLLEGE	NEWBERG	97132	183	203	204	51	7/12/1974	3S	2W	9	SE				30
YAMH	2391		RUBENS	CHRIS		118 W LEXINGTON	ASTORIA	97103	140	205	205	20	5/3/1977	3S	2W	16					30
YAMH	50344	8784	WISE	GEORGE	WISE, JAMIE	12287 SW LANSDOWNE LANE	TIGARD	97223	135	207	207	99	9/20/1996	3S	2W	9	SW	NE	1900	SPRINGBROOK RD	100
YAMH	3894		JACOBSEN	MRS JAN		4300 E PORTLAND RD	NEWBERG	97132	170	215	215	28	5/31/1995	3S	2W	16	SE	NW			30
YAMH	56487	106624			PROVIDENCE HEALTH SYSTEM	1001 PROVIDENCE DR	NEWBERG	97132		216	216	19	3/8/2013	3S	2W	16			1902	1001 PROVIDENCE DR; 150 YDS ON L	50
YAMH	50746	13498	ATZEN	NAN	ATZEN, TERRY	29365 NE PUTNAM RD	NEWBERG	97132	85	217	217	58	8/13/1997	3S	2W	9	SE	SW	3101	29365 NE PUTNAM RD	5
YAMH	2388		ROLOW	MR MIKE	ROLOW, MRS MIKE	RT 4 BOX 333C	NEWBERG		97	222	222	12	7/15/1985	3S	2W	16	SE	NW	100	RT 4 BOX 333C	28
YAMH	52800	51231	LYDA	JOHN		900 NE CHEHALEM DR	NEWBERG	97132	180	260	260	7	10/16/2001	3S	2W	16	SE	NE	900	1100 KLIMEK LANE	12
YAMH	2392		PETRY	ROBERT		312 N EDWARDS	NEWBERG	97132	270	290	290	50	4/14/1975	3S	2W	16					11
YAMH	138		COFFIELD	BILL		3104 ZIMIRI DRIVE	NEWBERG	97132		290	290	158	9/18/1990	3S	2W	9	SE	NW			2
YAMH	280		STIVERSON	JIM		RT 2 BOX 302C	NEWBERG	97132	274	290	290	160	11/16/1978	3S	2W	9	SE	NW			17
YAMH	55624	100245	MILLS	GLEN		15125 NE SPRINGBROOK LANE	NEWBERG	97132	138	300	300	102	3/22/2010	3S	2W	9	SE	SW	1604	NEAR 15125 NE SPRINGBROOK LANE	75
YAMH	362		BURGUSS	JOE		PO BOX 506	TUALATIN	97062	225	315	315	29	2/2/1976	3S	2W	16	NE				2
YAMH	281		MCKAY	GEORGE		RT 2 BOX 307	NEWBERG	97132	291	324	317	160	8/22/1984	3S	2W	9	SE				110
YAMH	900		PETRY	BOB		29465 NE PUTNAM RD	NEWBERG	97132	106	338	338	80	11/14/1991	3S	2W	9	SE	SE		29465 NE PUTNAM RD	7
YAMH	52306	37664	LOUIS	RON		739 CROSSBROOK DR	MORGEA	94556	62	424	424	75	8/11/2000	3S	2W	9	SW	NW	1800	3104 ZIMRI DR, NEWBERG	5

Notes:

Bold - Oxberg Well YAMH 2385

Source: Oregon Water Resource Well Log Query (https://apps.wrd.state.or.us/apps/gw/well_log/Default.aspx)



Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Mapbox Open Street Map, 2017
Topo base map from ESRI.

Projection: NAD 1983 UTM Zone 10N

Proximity Map of Crestview Crossing Site to Oxberg Well

Crestview Crossing
Newberg, Oregon

GeoEngineers

Figure 1

P:\6\6748002\GIS\MXD\6748002203_F01_OxbergWell.mxd Date Exported: 08/08/18 by ccabrera

ATTACHMENT A
Well Log YAMH 2385

ATE OF OREGON

TER WELL REPORT

as required by ORS 537.765)

WELL #2

7S/2W-16

DEC 26 1986

WATER RESOURCES DEPT. SALEM, OREGON

(1) OWNER:

name OXBERG INC.

Address P.O. BOX 467

City NEWBERG State OREG Zip 97132

(2) TYPE OF WORK:

☒ New Well ☐ Deepen ☐ Recondition ☐ Abandon

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable

☐ Other

(4) PROPOSED USE:

☐ Domestic ☒ Community ☐ Industrial ☐ Irrigation

☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval Yes ☐ No ☐ Depth of Completed Well 200 ft.

Explosives used Yes ☐ No ☒ Type ____ Amount ____

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
12	0	139	CEMENT	0	30	20
8	139	200				

How was seal placed: Method ☐ A ☐ B ☒ C ☐ D ☐ E

☐ Other

Backfill placed from ____ ft. to ____ ft. Material ____

Gravel placed from 30 ft. to 139 ft. Size of gravel 3/4" TO 1/4"

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8	+1	162	.250"	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:	6	160	200	160 LB	☐	☒	☐	☐
					☐	☐	☐	☐

...al location of shoe(s) ____

(7) PERFORATIONS/SCREENS:

☒ Perforations Method MILLS KNIFE

☐ Screens Type ____ Material ____

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
50	162		475	1/4"		☒	☐
162	200		160	1/4"		☐	☒
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☒ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
			1 hr.
45	50		1

Temperature of water ____ Depth Artesian Flow Found ____

Was a water analysis done? ☐ Yes By whom ____

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other ____

Depth of strata: ____

(9) LOCATION OF WELL by legal description:

County YAMHILL Latitude ____ Longitude ____

Township 3S N or S, Range 2W E or W, WM.

Section 16 ¼ ¼

Tax Lot ____ Lot ____ Block ____ Subdivision ____

Street Address of Well (or nearest address) 400 E. CRESTVIEW, NEWBERG, OREGON

(10) STATIC WATER LEVEL:

29 ft. below land surface. Date 12/11/86

Artesian pressure ____ lb. per square inch. Date ____

(11) WATER BEARING ZONES:

Depth at which water was first found ____

From	To	Estimated Flow Rate	SWL
50	200	45	29

(12) WELL LOG:

Ground elevation ____

Material	From	To	SWL
TOP SOIL	0	2	
BROWN CLAY	2	25	
SOFT DECOMPOSED			
BROWN ROCK WITH			
CLAY STREAKS	25	152	29
SOFT BROWN ROCK	152	172	29
BROWN CLAY	172	178	29
SOFT BROWN ROCK	178	200	29

Date started 11/26/86 Completed 12/11/86

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.

WWC Number ____

Signed ____ Date ____

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. all work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.

WWC Number 462

Signed C.C. Keller Date 12/24/86

PINK COPY - CUSTOMER

Transportation Impact Analysis

Crestview Crossing

Newberg, Oregon

Final

August 2018

Transportation Impact Analysis

Crestview Crossing

Newberg, Oregon

Prepared For:
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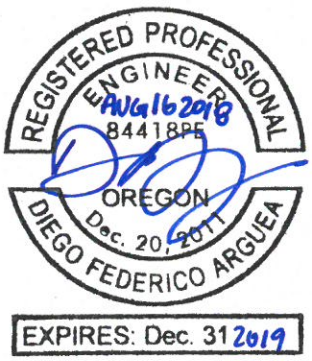

Project No. 21709

August 2018

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Section 1
Executive Summary

EXECUTIVE SUMMARY

JT Smith Companies proposes to develop a 33.13-acre property in Newberg, Oregon into a residential development consisting of up to 260 single-family homes and 48 apartment units. The development is occurring adjacent to a 4.43-acre commercial property that is not included as part of this development application. The site is located on the north side of OR 99W (Portland Road) near the intersection with Providence Drive and will include an extension of Crestview Drive to the south through the property and connecting to OR 99W to form the north leg of the OR 99W/Providence Drive intersection.

The subject property is currently occupied by farm land and one single-family home. It is bordered by residential uses to the west, north, and east and by OR 99W to the south. No direct accesses to the residential units or civic space are proposed on OR 99W or the Crestview Drive extension—these will instead be accessed via new internal local roadways and one new east-west connector that will connect to Crestview Drive north of OR 99W. Completion and occupancy of the development as described in this report is expected to occur by 2020.

The results of this study indicate that the proposed Crestview Crossing development can be constructed while maintaining acceptable traffic operations and safety at the study intersections, assuming provision of the recommended mitigation measures.

FINDINGS

Year 2017 Existing Conditions

- All of the study intersections currently meet City of Newberg (and Oregon Department of Transportation, where applicable) mobility targets during the weekday AM and PM peak hours, with the following exceptions:
  - The Springbrook Road/OR 99W intersection currently experiences a volume-to-capacity ratio (v/c) of 0.86 during the weekday AM peak hour, which exceeds the ODOT mobility standard of 0.85. The intersection also operates at level of service (LOS) E during the weekday PM peak hour, which exceeds the City standard of LOS D under current conditions.
  - The southbound stop-controlled approach to the Vittoria Way/OR 99W intersection currently operates at LOS E during the weekday PM peak hour, which exceeds the City standard of LOS D.
- A review of historical crash data did not reveal any patterns or trends in the site vicinity that require mitigation associated with this project.
  - One fatal crash was reported at the Springbrook Road/Crestview Drive roundabout—this crash occurred when a southbound motorcyclist struck a curb and was thrown from the vehicle. The crash report lists the cause as driver error—driving too fast for conditions.
  - Based upon a 2016 analysis, the Springbrook Road/OR 99W intersection is currently within the top five percent of the highest-scoring intersections in Region 2.

Since 2016, pavement marking improvements and an additional westbound left turn lane on OR 99W were added to this intersection, and the proposed Crestview Crossing development is expected to result in a net decrease in traffic at this intersection due to the reassignment of traffic to the Crestview Drive extension.

Year 2020 Background Conditions

- A two-percent annual growth rate was applied to the existing mainline traffic volumes on OR 99W to reflect general background growth in the area before any in-process traffic was considered.
- Traffic generated by the Oregon Clinic, to be located on the west side of Providence Drive south of Providence Newberg Medical Center, as well as the Providence Medical Office Building, to be located on the east side of Providence Drive across from the existing Providence Medical Center, were included in the background traffic volumes as in-process traffic.

Background traffic conditions with the assumed build-out of the north leg of the Providence Drive/OR 99W intersection (and no site-added traffic) were assumed as the base case against which future traffic conditions are compared.

- The proposed development will extend Crestview Drive south through the property and to the existing Providence Drive/OR 99W intersection, where it will form the north leg.
- Traffic volumes were assigned to the Crestview Drive extension based upon existing turning movement volumes at the study intersections and the Newberg Transportation System Plan.
- The background traffic condition includes rerouted traffic from the proposed Crestview Drive extension but does not include trips associated with new land uses within the proposed development.
- All of the study intersections are expected to continue operating acceptably during the weekday AM and PM peak hours under 2020 background traffic conditions with reassigned traffic, with the following exceptions:
  - The Springbrook Rd/OR 99W intersection is forecast to operate with a v/c ratio of 0.88 during the weekday PM peak hour, which exceeds the ODOT mobility standard of 0.85.
  - The weekday AM and PM peak hour v/c ratios at the Providence Drive/OR 99W intersection are forecast to be 0.92 and 0.98, respectively, which both exceed the ODOT mobility standard of 0.80.

Proposed Development Plan

- The proposed development is expected to generate approximately 2,826 weekday daily trips, of which approximately 213 (53 in, 160 out) are forecast to occur during the AM peak hour and approximately 285 (180 in, 105 out) are forecast to occur during the PM peak hour.
- A select-zone analysis of the Newberg Transportation Planning Model was used to develop a trip distribution pattern for the proposed development.

Year 2020 Total Conditions

- All of the study intersections are expected to continue operating acceptably during the weekday AM and PM peak hours under 2020 total traffic volumes, with the following exceptions:
  - The Springbrook Rd/OR 99W intersection is forecast to operate with a v/c ratio of 0.88 during the weekday PM peak hour, which exceeds the ODOT mobility standard of 0.85 but does not exceed the v/c ratio under background conditions with reassigned traffic.
  - The weekday AM and PM peak hour v/c ratios at the Providence Drive/OR 99W intersection are forecast to be 1.01 and 1.11, respectively, which both exceed the ODOT mobility standard of 0.80.
  - The new proposed Crestview Diver/East-West Connector intersection within the Crestview Crossing development is expected to operate acceptably as a single-lane roundabout.

Year 2020 Total Mitigated Conditions

- The Crestview Drive/Providence Drive/OR 99W intersection was analyzed under total traffic conditions with the following additional lane improvements:
  - Add an exclusive left turn lane on southbound Crestview Drive,
  - Add an exclusive right turn lane on southbound Crestview Drive,
  - Add an exclusive right turn lane on westbound OR 99W,
  - Restripe eastbound OR 99W to include an exclusive left turn lane, and,
  - Restripe the northbound Providence Drive approach to include an exclusive left turn lane and an exclusive right turn lane.

  With these improvements, the weekday AM and PM peak hour v/c ratios at the intersection are forecast to be 0.90 and 0.89, respectively. These exceed the ODOT mobility standard of 0.80 but do not exceed the respective v/c ratios under background conditions with reassigned traffic. As such, the impact of the development has been mitigated.

2025 Horizon Year Background Conditions

- An additional five years of growth (at a two-percent annual growth rate) was applied to the existing mainline traffic volumes on OR 99W to model horizon year background conditions.

Background traffic conditions with the assumed build-out of the north leg of the Providence Drive/OR 99W intersection (and no site-added traffic) were assumed as the base case against which future traffic conditions are compared.

- The background traffic condition includes rerouted traffic from the proposed Crestview Drive extension but does not include trips associated with new land uses within the proposed development.

- All of the study intersections are expected to continue operating acceptably during the weekday AM and PM peak hours under 2025 background traffic conditions with reassigned traffic, with the following exceptions:
  - The Springbrook Rd/OR 99W intersection is forecast to operate with a v/c ratio of 0.93 during the weekday PM peak hour, which exceeds the ODOT mobility standard of 0.85.
  - The weekday AM and PM peak hour v/c ratios at the Providence Drive/OR 99W intersection are forecast to be 0.98 and 1.03, respectively, which both exceed the ODOT mobility standard of 0.80.

2025 Horizon Year Total Conditions

- All of the study intersections are expected to continue operating acceptably during the weekday AM and PM peak hours under 2025 total traffic volumes, with the following exceptions:
  - The weekday AM and PM peak hour v/c ratios at the Springbrook Rd/OR 99W intersection are forecast to be 0.86 and 0.92, respectively, which both exceed the ODOT mobility standard of 0.85 but are not more than 0.03 above the v/c ratios under background conditions with reassigned traffic. Per ODOT policy guidance, when an intersection exceeds mobility targets but the v/c ratio increases by less than 0.03 as a result of development, the impacts are not considered significant.
  - The weekday AM and PM peak hour v/c ratios at the Providence Drive/OR 99W intersection are forecast to be 1.08 and 1.18, respectively, which both exceed the ODOT mobility standard of 0.80.

2025 Horizon Year Total Mitigated Conditions

- With the improvements at Crestview Drive/Providence Drive/OR 99W intersection noted above, the weekday AM and PM peak hour v/c ratios at the intersection are forecast to be 0.97 and 0.96, respectively. These exceed the ODOT mobility standard of 0.80 but do not exceed the respective v/c ratios under 2025 background conditions with reassigned traffic. As such, the impact of the development has been mitigated.

95th-percentile Queuing Analysis

- All 95th-percentile queues are projected to be accommodated by the provided storage lengths under 2025 total traffic conditions, with the following exceptions:
  - The southbound right turn at Springbrook Road/OR 99W during the weekday PM peak hour.
  - The northbound left turn at Brutscher Street/OR 99W during the weekday PM peak hour.

  Each of the queues noted above is expected to decrease under 2025 total traffic conditions compared with 2025 background traffic volumes due to reassigned traffic from Springbrook Road and OR 99W to the Crestview Drive extension.

2025 Horizon Year Commercial Property Sensitivity Analysis

A planning-level analysis was prepared to account for the future development potential of the 4.43-acre commercial property adjacent to the development site. While this is NOT part of this development application, the analysis was conducted to evaluate the future effectiveness of the recommended mitigations.

- A planning-level estimate for developable commercial area was used to estimate the number of potential commercial-related site trips. The gross leasable area-to-acreage ratio was assumed at 25 percent, and the entire commercial property was assumed as shopping center land use.
- The commercial development trips were added to the residential trips of this application to arrive at a total development estimate of 5,416 weekday daily trips, of which 370 (155 in, 215 out) will occur during the AM peak hour and 440 (247 in, 193 out) will occur during the PM peak hour. The development is also expected to generate approximately 96 pass-by trips during the weekday PM peak hour—these were treated as diverted trips from OR 99W.
- The Crestview Drive/Providence Drive/OR 99W intersection and Crestview Drive/East-West Connector roundabout were analyzed under 2025 conditions assuming development of the 4.43-acre commercial property.
- The Crestview Drive/East-West Connector intersection is expected to continue operating acceptably as a single-lane roundabout.
- With the mitigation improvements associated with the residential development in place, the weekday AM and PM peak hour v/c ratios at the Crestview Drive/Providence Drive/OR 99W intersection are forecast to be 0.98 and 1.02, respectively.

  Per ODOT policy guidance, when an intersection exceeds the mobility target but the v/c ratio increases by less than 0.03 as a result of development, the impacts are not considered significant. For this reason, no additional mitigation measures would be warranted as a result of additional commercial development.

RECOMMENDATIONS

Providence Drive/Crestview Drive/OR 99W Intersection

- The new north leg of the intersection, which will be an extension of Crestview Drive, should be configured as a four-lane section with one northbound lane and three southbound lanes (exclusive lanes for left-turn, through, and right-turn movements). At least 225 feet of southbound left turn storage and at least 150 feet of southbound right turn storage should be provided to accommodate the forecast 95th percentile queue lengths.
- The south leg of the intersection should be restriped to a four-lane section with one southbound lane and three northbound lanes (exclusive lanes for left-turn, through, and right-turn movements).
- Based on the forecast 95th percentile queuing analysis:
  - A westbound right turn lane should be constructed with at least 275 feet of storage.

  - An eastbound left turn lane should be striped to provide at least 125 feet of storage.
- Recommended signal phasing: the intersection should be operated with permissive left turn movements on the northbound and southbound approaches and fully protected left turn movements on the eastbound and westbound approaches.

On-Site Circulation/Site Access Operations

- Driveways, landscaping, utilities, and signage within the site should be located and maintained to provide sufficient sight distance at all new internal intersections and accesses.
- Other than at the Providence Drive/Crestview Drive/OR 99W intersection, a two-lane section of Crestview Drive should be adequate to accommodate turning movements and queuing within the proposed development.

Additional details of the study methodology, findings, and recommendations are provided within this report.

Section 2
Introduction

INTRODUCTION

PROJECT DESCRIPTION

JT Smith Companies proposes to develop a 33.13-acre property in Newberg, Oregon consisting of up to 260 single-family homes and 48 apartment units. The ultimate number of residential units may vary but is not anticipated to exceed the number of units analyzed in this report. The development is located adjacent to 4.43 acres of commercial property that are not included in this application but may be developed as part of a future phase.

Figure 1 displays the site vicinity, and Figure 2 illustrates the proposed site plan. The site is located on the north side of OR 99W (Portland Road) near the intersection with Providence Drive and will include an extension of Crestview Drive to the south through the property and connecting to OR 99W to form the north leg of the OR 99W/Providence Drive intersection. No direct accesses to the residential units or adjacent commercial property are proposed on OR 99W or the Crestview Drive extension—these will instead be accessed via new internal local roadways and one new east-west connector that will connect to Crestview Drive north of OR 99W. Completion and occupancy of the development as described in this report is expected to occur by 2020.

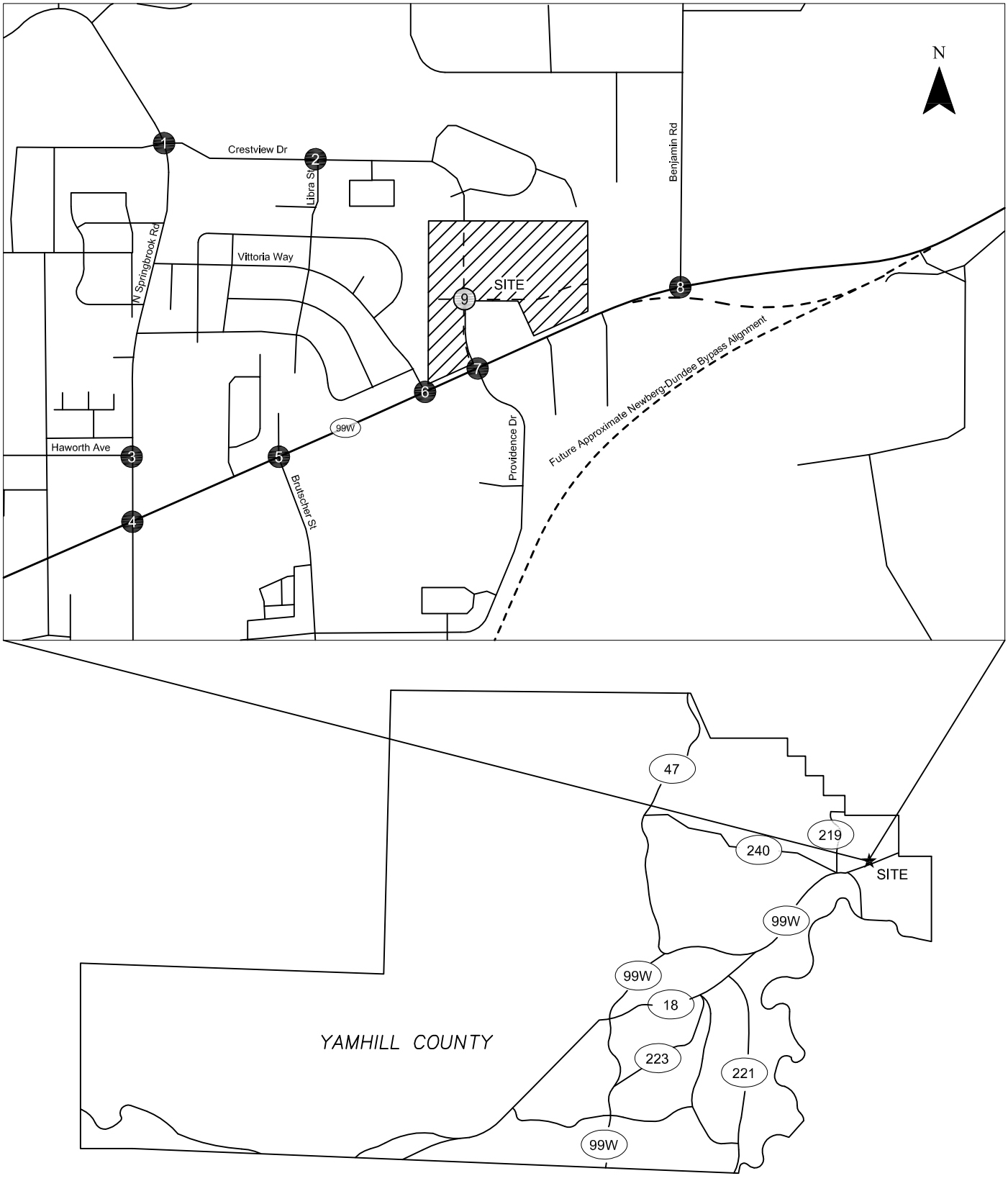
SCOPE AND ANALYSIS METHODOLOGY

This analysis determines the transportation-related impacts associated with the proposed Crestview Crossing development and was prepared in accordance with City of Newberg and Oregon Department of Transportation (ODOT) requirements for traffic impact analyses. The study intersections and scope of this project were selected based on conversations with City and ODOT staff and are documented in a scoping memorandum (dated October 19, 2017) and subsequent City and ODOT comments (*Appendix "A"*).

Study Intersections

This report includes an analysis of operations and safety at the following study intersections:

1. Springbrook Road/Crestview Drive,
2. Libra Street/Crestview Drive,
3. Springbrook Road/Haworth Avenue,
4. Springbrook Road/OR 99W,
5. Brutscher Street/OR 99W,
6. Vittoria Way/OR 99W,
7. Providence Drive/Future Crestview Drive extension/OR 99W,
8. Benjamin Road/OR 99W, and
9. Future Crestview Drive extension/Future east-west connector.



● - Study Intersection

Site Vicinity
Newberg, Oregon

Figure
1

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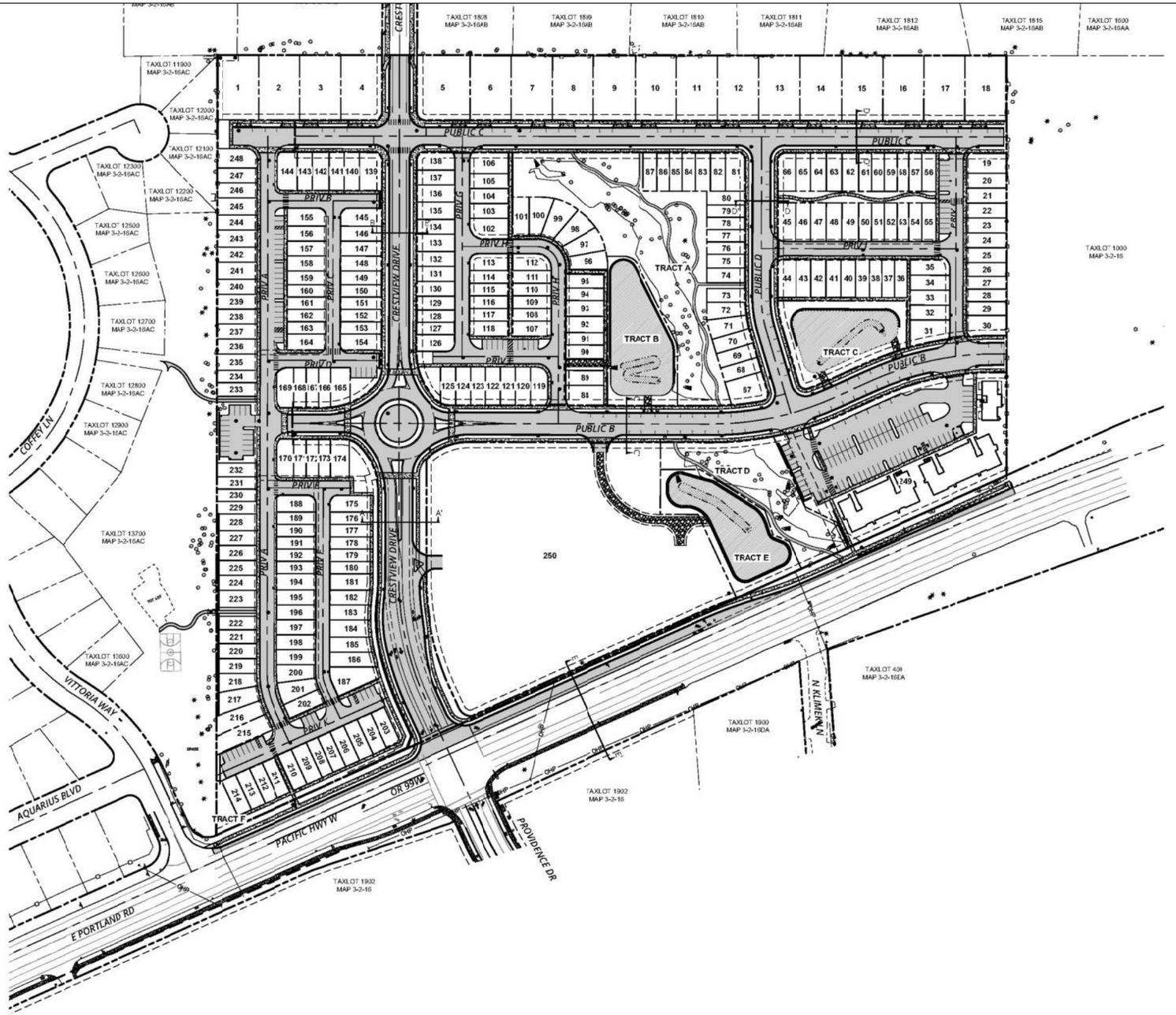
KITTELSON & ASSOCIATES



OVERALL SITE PLAN

CRESTVIEW CROSSING

PLANNED UNIT DEVELOPMENT

JT SMITH COMPANIES

3J CONSULTING

CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING

PROJECT INFORMATION

3J PROJECT #	17393
TAX LOT(S)	3S2W16 1380
LAND USE #	N/A
DESIGNED BY	ARS, JEJ, BM
CHECKED BY	AJM, RGW

SHEET NUMBER C210

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Site Plan Provided by 3J Consulting 6/5/2018

Proposed Site Plan
Newberg, Oregon

Figure
2

KITTELSON & ASSOCIATES

Study Scope

This report documents evaluation of the following transportation items:

- Year 2017 existing conditions analysis, including *Highway Capacity Manual 2000* (HCM 2000, Reference 1) volume-to-capacity (v/c) ratio, control delay, and 95th-percentile queuing analysis at the study intersections during the weekday AM and PM peak hours;
- A review of reported crash data from ODOT at the study intersections for the most recent five-year period available;
- Build-out Year 2020 background conditions (includes in-process traffic and regional growth but not traffic from the development), including HCM 2000 v/c ratio, control delay, and 95th-percentile queuing analysis at the study intersections during the weekday AM and PM peak hours;
- Build-out Year 2020 total conditions analysis, including HCM 2000 v/c ratio, control delay, and 95th-percentile queuing analysis at the study intersections during the weekday AM and PM peak hours;
- Horizon Year 2025 background conditions (includes in-process traffic and regional growth but not traffic from the development), including HCM 2000 v/c ratio, control delay, and 95th-percentile queuing analysis at the study intersections during the weekday AM and PM peak hours;
- Horizon Year 2020 total conditions analysis, including HCM 2000 v/c ratio, control delay, and 95th-percentile queuing analysis at the study intersections during the weekday AM and PM peak hours; and,
- On-site traffic operations and circulation.

Analysis Methodology and Applicable Standards

All Level of Service analyses described in this report were performed in accordance with the procedures stated in the HCM 2000. The operations and queuing analyses presented in this report were completed using *Synchro 9 and SimTraffic 9* software, with the exception of the roundabout analyses, which were completed using *Highway Capacity Software (HCS) 7*. Per HCM 2000 methodology, the reported traffic operations are based upon the worst 15 minutes of each peak hour—consequently, the study intersections are expected to perform better during the rest of the day, in general.

The study intersections along OR 99W are all subject to ODOT v/c ratio mobility targets, defined by the *1999 Oregon Highway Plan,* Policy 1F. The study intersections along OR 99W are within the Newberg urban growth boundary, on a Statewide Highway, on a freight route, outside a Metropolitan Planning Organization, outside a Special Transportation Area, and not on a freeway. Thus, the mobility target for each study intersection along OR 99W is a function of the posted speed limit, as shown in Table 1.

Table 1: OR 99W Mobility Targets

Intersection	Posted Speed (mph)	Mobility Target (v/c)
OR 99W/Springbrook Road	35	0.85
OR 99W/Brutcher Street	35	0.85
OR 99W/Vittoria Way	45	0.80
OR 99W/Providence Drive	45	0.80
OR 99W/Benjamin Road	55	0.75

With the exception of OR 99W/Benjamin Road, which is outside the City limits, all study intersections are additionally subject to City of Newberg mobility standards, which require LOS D or better.

Section 3
Existing Conditions

EXISTING CONDITIONS

The existing conditions analysis identifies the site conditions and current operational and geometric characteristics of the roadways within the study area. These conditions will be compared with future conditions later in this report.

Kittelson & Associates, Inc. (KAI) staff visited and inventoried the proposed Crestview Crossing site in November 2017. At that time, KAI collected information regarding site conditions, adjacent land uses, existing traffic operations, and transportation facilities in the study area.

SITE CONDITIONS AND ADJACENT LAND USES

The subject property is located on the north side of OR 99W (Portland Road) near the intersection with Providence Drive. The site is currently occupied by farm land and one single-family home, and it is bordered by residential uses to the west, north, and east and by OR 99W to the south.

Transportation Facilities

Existing lane configurations and traffic control devices at the study intersections are displayed in Figure 3. Table 2 summarizes the existing transportation facilities and roadways in the study area.

Table 2: Existing transportation facilities and roadways in the study area

Roadway	Functional Classification[1]	Number of Lanes	Posted Speed	Sidewalks	Bicycle Lanes	On-Street Parking
OR 99W	Major Arterial	4-5	35 mph – 55 mph[2]	Partial[3]	Yes	No
Springbrook Road	Minor Arterial	2-3	35 mph	Both Sides	South of Haworth Avenue	No
Crestview Drive	Major Collector	2	25 mph	Both sides east of Birdhaven Loop	East of Birdhaven Loop	No
Providence Drive	Major Collector	2	25 mph	Partial[4]	Yes	No
Brutscher Street	Major Collector	2-3	25 mph	Both Sides south of OR 99W	South of Fred Meyer entrance	No
Haworth Avenue	Major Collector	2	25 mph	Both Sides	No	Yes
Vittoria Way	Minor Collector	2	25 mph	Partial[5]	No	Yes
Libra Street	Local Street	2	25 mph	Both Sides	No	Yes
Benjamin Road	Local Street	2	45 mph	No	No	No

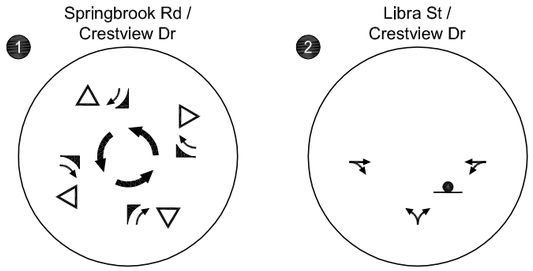
[1]City of Newberg Transportation System Plan (TSP, Reference 2)

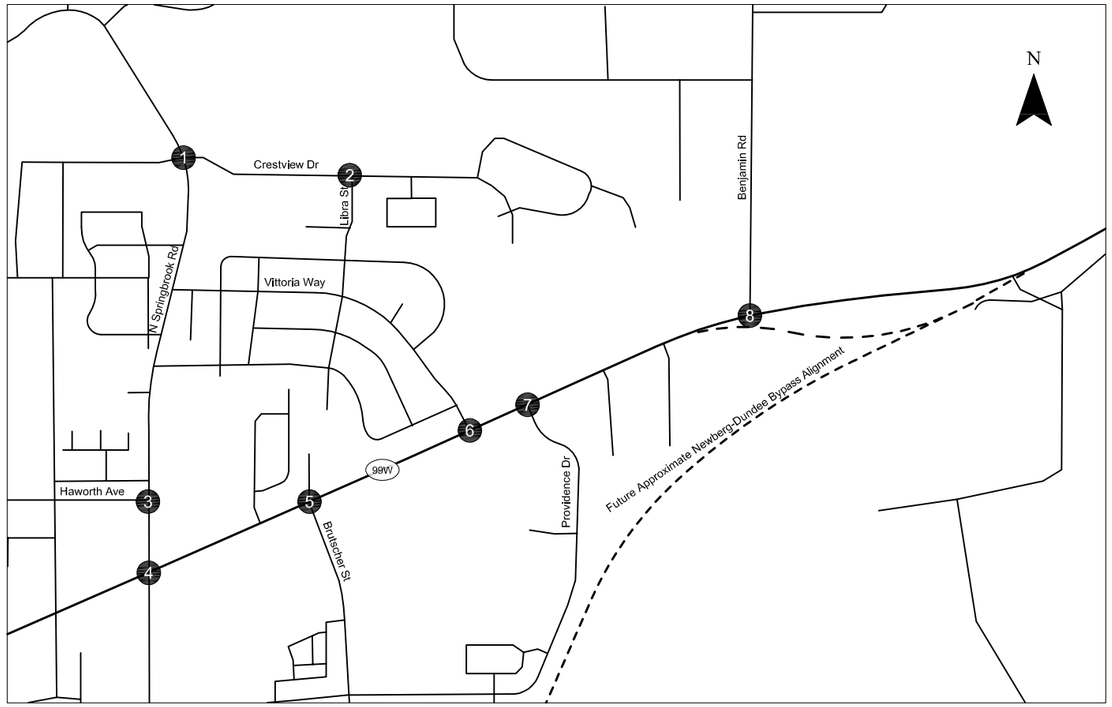
[2]Posted speed is 35 mph at and west of Brutscher Street, 45 mph from east of Brutscher Street to east of Providence Drive, and 55 mph at and east of Benjamin Road

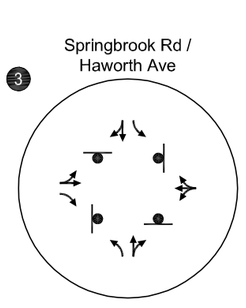
[3]Sidewalks are provided on both sides of OR 99W throughout the study area except on the north side from 250 feet east of Brutscher Street to the east end of the study area and on the south side from 400 feet east of Providence Drive to the east end of the study area

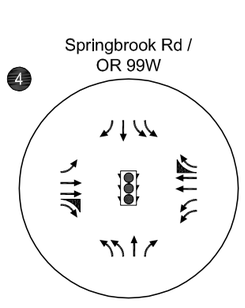
[4]The sidewalk on the east side of Providence Drive ends approximately 270 feet south of OR 99W.

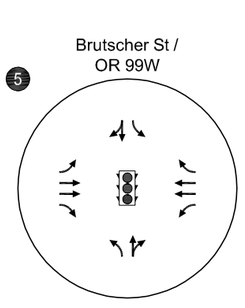
[5]No sidewalk is provided on the east side of Vittoria Way south of Aquarius Boulevard.

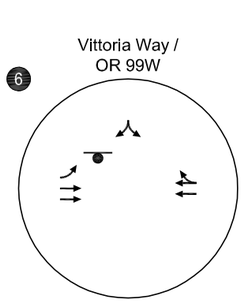


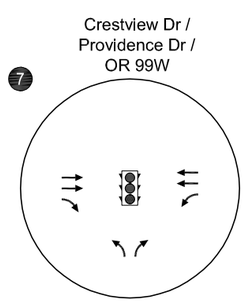


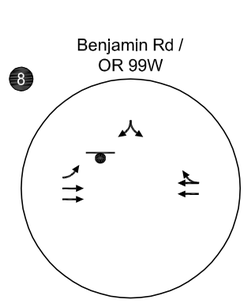












- STOP SIGN
- TRAFFIC SIGNAL
- ROUNDABOUT
- YIELD

Existing Lane Configurations and Traffic Control Devices
Newberg, Oregon

Figure 3

Roadway Facilities

The proposed Crestview Crossing development site is bordered to the south by OR 99W, which is maintained by ODOT and is classified a Major Arterial in the Newberg TSP. Crestview Drive, which is classified a Major Collector, will be extended south through the proposed development site and will connect to OR 99W to form the fourth leg of the existing OR 99W/Providence Drive intersection. The Crestview Drive extension will consist of one travel lane in either direction, except where turn lanes are needed. As shown in Figure 2, several new local streets will be constructed to serve the development, and one east-west connector roadway will intersect the Crestview Drive at a roundabout approximately 500 feet north of OR 99W.

Pedestrian and Bicycle Facilities

There are currently no sidewalks provided within the proposed site frontage along OR 99W, but sidewalks and bicycle lanes are provided on both sides of Crestview Drive and Providence Drive north and south of the proposed site. While paved shoulders are provided along both sides of OR 99W within the site vicinity, OR 99W is a high-speed roadway with no separated bicycle facilities.

TRANSIT FACILITIES

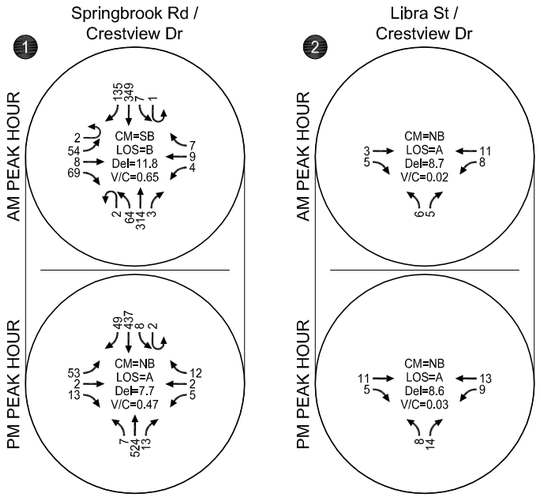
Transit service in the site vicinity is provided by Yamhill County Transit Area (YCTA, Reference 3). Route 7: Newberg Providence connects Providence Newberg Medical Center, which is approximately 0.15 mile south of the proposed development, to the Newberg Central Business District. Service is provided on weekdays at approximately one-hour intervals from approximately 7:15 AM to 6:15 PM.

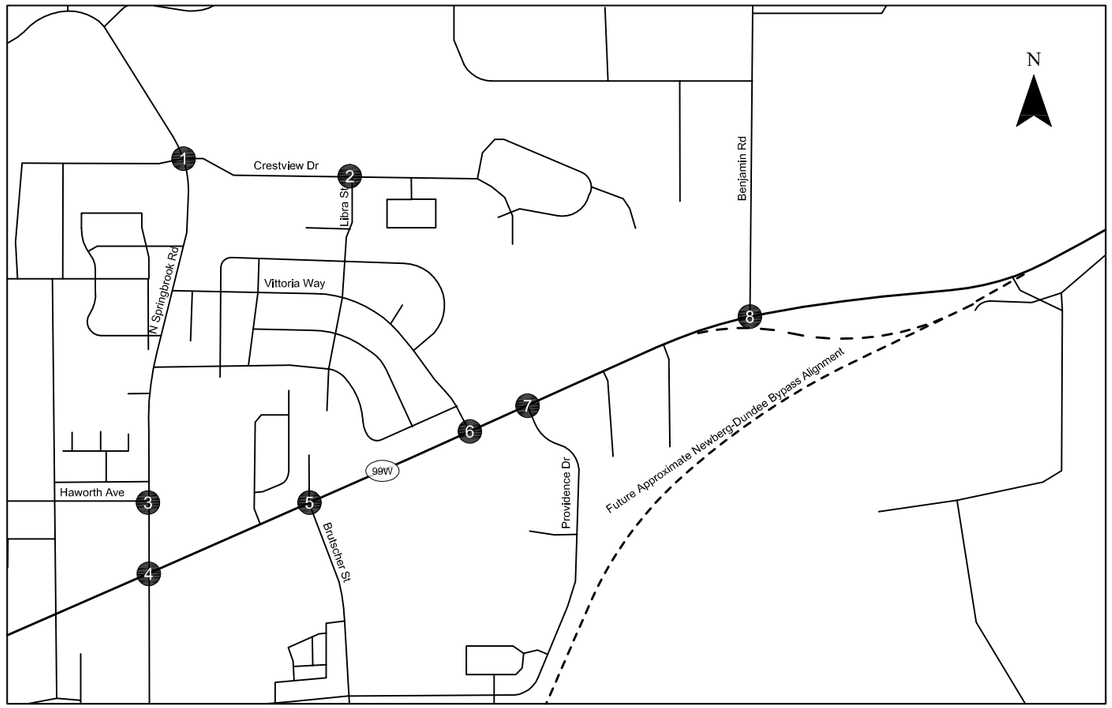
TRAFFIC VOLUMES AND PEAK HOUR OPERATIONS

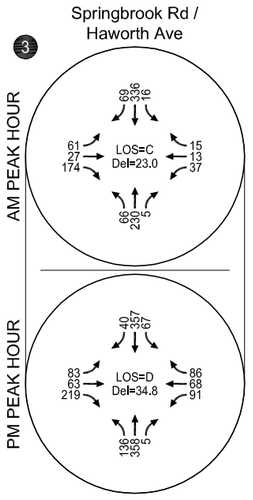
Turning movement counts were conducted at the Libra Street/Crestview Drive and Springbrook Road/Haworth Avenue intersections in November 2017 when school was in session. Counts were conducted at all other existing study intersections in September 2017 when school was in session—per scoping discussions with ODOT staff, the study intersections along OR 99W are heavily influenced by both seasonal traffic and school traffic, with the peak travel period occurring in September. Therefore, no seasonal count adjustment along OR 99W is required.

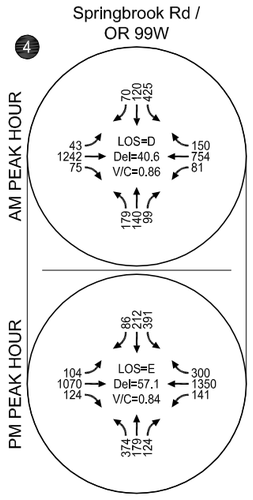
All counts used in this analysis were conducted on a typical midweek day during the morning (6:00 to 9:00 AM) and afternoon (3:00 to 6:00 PM) peak periods. The analysis time periods are based on a corridor-wide peak hour along OR 99W and individual intersection peak hours at the remaining study intersections. Figure 4 provides a summary of the year 2017 turning-movement counts.

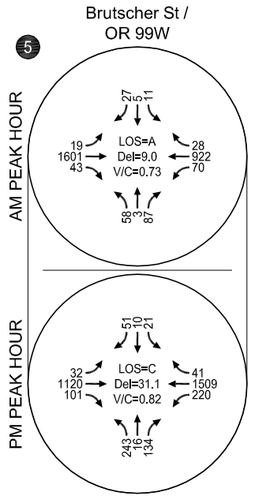
Appendix "B" contains the traffic count worksheets used in this study.

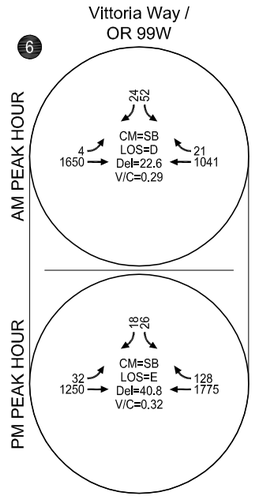


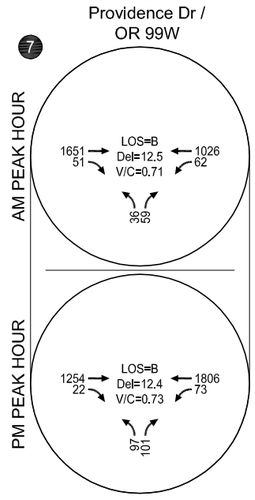


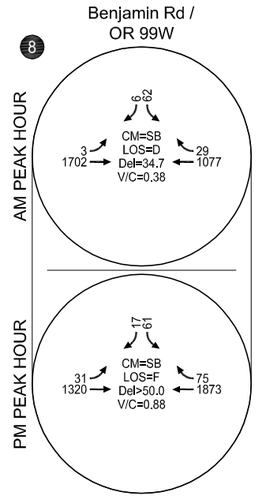












CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/
CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/
CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Existing Traffic Conditions
Weekday AM and PM Peak Hours
Newberg, Oregon

Figure
4

Calibration to Field Observations

Saturation Flow Rate

ODOT requires a base saturation flow rate of 1,750 vehicles per hour per lane outside the Portland metro area. Based on field observation and video data, vehicles exhibited driving behavior typical of urban areas. Thus, a saturation flow-rate study was prepared to calibrate the analysis to real-world observations. Using video data, the base saturation flow rate was calibrated to 1,800 vehicles per hour for the following two movements:

- Westbound OR 99W at Springbrook Road, and
- Westbound OR 99W at Providence Drive.

All analysis for these movements assumes the calibrated base saturation flow rates. *Appendix "C" contains the saturation flow study worksheets for these movements.*

Queuing

The *SimTraffic* queuing analysis (provided in later sections of this report) was found to overestimate the existing conditions 95th percentile queues at the Providence Drive/OR 99W intersection during the weekday AM and PM peak hours. For example, the eastbound right turn maximum queue observed during the AM peak hour was 25 feet (one vehicle length) and the *SimTraffic* results estimate a 95th-percentile queue of 100 feet. The *Synchro* analysis was found to reflect the existing field conditions more accurately, showing approximately one vehicle for the same eastbound right-turn movement during the AM peak hour.

For these reasons, the Synchro queuing outputs are reported for the Providence Drive/OR 99W intersection in addition to the *SimTraffic* outputs. As shown in the queuing analysis tables later in this report, the actual 95th percentile queues for the identified movements are expected to operate at a queue length in between the *Synchro* and the *SimTraffic* output.

Level of Service Analysis

Figure 4 also displays the existing levels of service at each of the study intersections during the weekday AM and PM peak hours. As shown in the figure, each of the study intersections currently meets ODOT and City mobility standards, with the following exceptions:

- The volume-to-capacity ratio of the Springbrook Road/OR 99W intersection is 0.86 during the weekday AM peak hour, which exceeds the ODOT mobility standard of 0.85. The weekday PM peak hour level of service of this intersection (LOS E) does not meet the City standard of LOS D.
- The weekday PM peak hour level of service of the Vittoria Way approach to the intersection with OR 99W (LOS E) does not meet the City standard of LOS D.

Appendix "C" contains the existing conditions Level of Service worksheets.

Traffic Safety

ODOT-reported crash data was reviewed for the most recent five-year period, from January 1, 2011 to December 31, 2015. Table 3 summarizes the reported crash data at the study intersections.

Table 3: ODOT-Reported Crash Data (January 1, 2011 to December 31, 2015)

Intersection	Crash Severity			Crash Type						Crash Rate[2]
	Fatal	Injury	PDO[1]	Rear End	Turning	Sideswipe	Angle	Other	Total	
Springbrook Rd / Crestview Dr	1	0	1	1	0	0	0	1	2	0.10
Libra St / Crestview Dr	0	0	0	0	0	0	0	0	0	0.00
Springbrook Rd / Haworth Ave	0	2	5	1	2	0	3	1	7	0.24
Springbrook Rd / OR 99W	0	27	41	53	9	2	2	2	68	0.84
Brutscher St / OR 99W	0	13	7	15	4	0	0	1	20	0.31
Vittoria Way / OR 99W	0	2	2	2	2	0	0	0	4	0.07
Providence Dr / OR 99W	0	2	9	11	0	0	0	0	11	0.18
Benjamin Rd / OR 99W	0	3	1	0	4	0	0	0	4	0.06

[1]Property Damage Only

[2]Per million entering vehicles

As shown in the table, one fatal crash was reported at the Springbrook Road/Crestview Drive roundabout—this crash occurred in 2013 when a southbound motorcyclist struck a curb and was thrown from the vehicle. The crash report lists the cause as driver error—driving too fast for conditions.

ODOT maintains a ranking of intersections with potential safety problems known as the Safety Priority Index System (SPIS). Based upon a 2016 analysis, none of the study intersections ranked within the top 5 percent of the highest-scoring intersections in Region 2.

No other crash trends or safety deficiencies were identified at the study intersections.

Appendix "D" contains the reported crash data from ODOT.

Section 4
Transportation Impact Analysis

TRANSPORTATION IMPACT ANALYSIS

The transportation impact analysis identifies how the study area's transportation system will operate in the year the proposed Crestview Crossing development is expected to be fully built and occupied, year 2020. The impact of traffic generated by the proposed Crestview Crossing development during the weekday AM and PM peak hours was examined as follows:

- The Oregon Clinic and the Providence Medical Office Building were identified as in-process developments by City of Newberg and included in the background traffic volumes;
- Year 2020 background traffic volumes at the study intersections were developed by applying a two-percent annual growth rate to the existing mainline volumes along OR 99W and then adding the in-process trips;
- Some traffic was reassigned based upon the new network link created by the Crestview Drive extension;
- Site trip distribution patterns were identified based upon a select zone analysis of the Newberg Model;
- Site-generated trips were estimated for build-out of the site and assigned to the study intersections based upon the assumed trip distribution pattern;
- Year 2020 total traffic volumes at the study intersections were developed by adding the site-generated trips to the 2020 background traffic volumes, accounting for reassigned traffic due to the Crestview Drive extension;
- Year 2025 background traffic volumes at the study intersections were developed by adding an additional five years of growth (at a two-percent annual growth rate) to the existing mainline volumes along OR 99W;
- Year 2025 total traffic volumes at the study intersections were developed by adding the site-generated trips to the 2025 background traffic volumes, accounting for reassigned traffic due to the Crestview Drive extension; and,
- On-site circulation issues and site-access operations were evaluated.

YEAR 2020 BACKGROUND TRAFFIC CONDITIONS

The year 2020 background traffic analysis identifies how the study area's transportation system will operate without the proposed Crestview Crossing development. This analysis includes traffic attributed to planned developments within the study area and to general growth in the region but does not include traffic from the proposed development.

Planned Developments and Transportation Improvements

The City of Newberg identified two in-process developments within the site vicinity: the Oregon Clinic, to be located on the west side of Providence Drive south of Providence Newberg Medical Center, as well as the Providence Medical Office Building, to be located on the east side of Providence Drive across from the existing Providence Medical Center.

In-process trips are summarized in a graphic in Appendix "E".

The following two planned transportation improvements were identified, neither of which will be completed prior to development of the proposed Crestview Crossing:

- The aforementioned Crestview Drive extension, which will be incorporated into site development and is described later in this report under Proposed Development Plan; and
- The Newberg-Dundee Bypass, which will intersect OR 99W approximately 0.5 miles east of the proposed development site and is not expected to be completed until after the proposed Crestview Crossing development is fully built and occupied (2020).

Background Growth

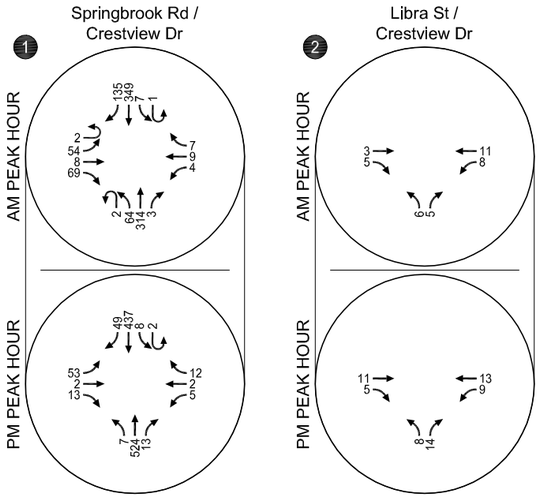
To account for general area growth, a two-percent annual growth rate was applied to the existing mainline volumes along OR 99W at the study intersections.

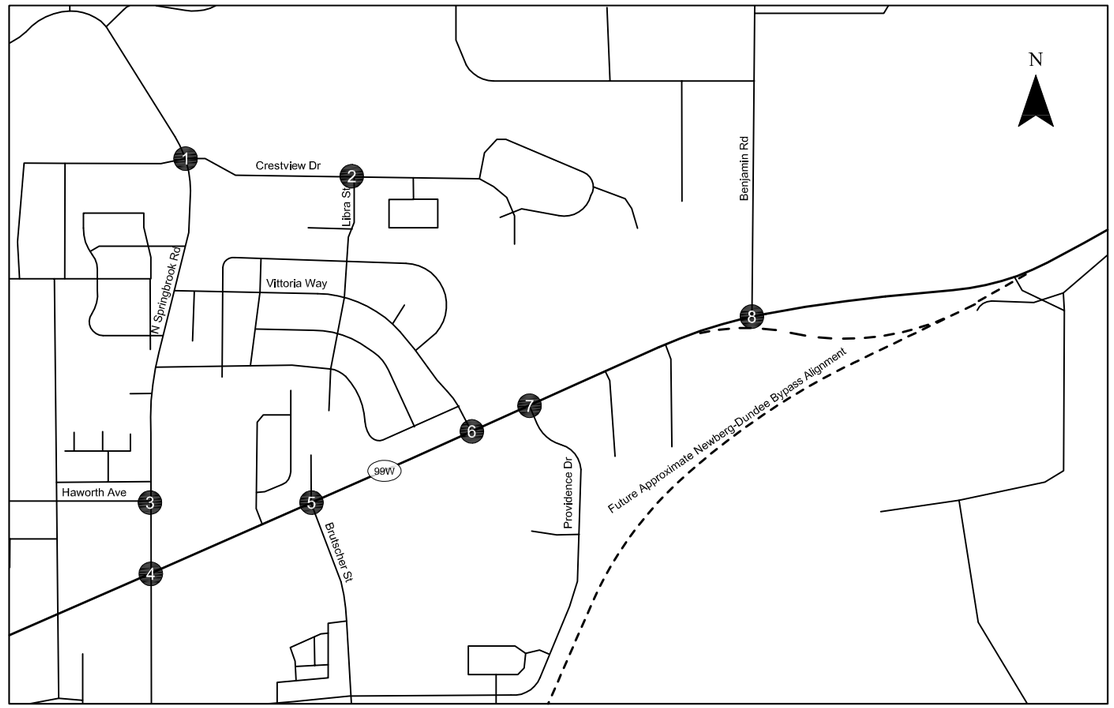
Figure 5 displays the 2020 background traffic volumes at the study intersections during the weekday AM and PM peak hours, which include general area growth and in-process trips identified previously.

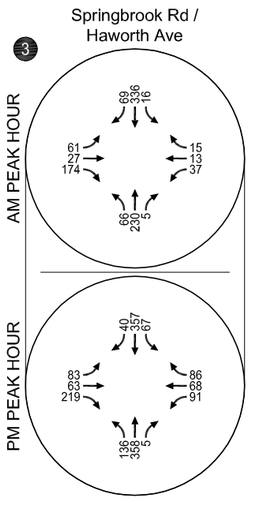
Crestview Drive Extension

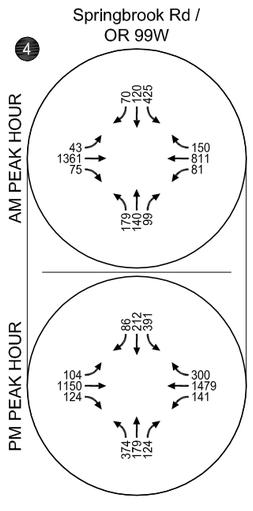
The Crestview Drive extension is contained within the City's Transportation System Plan and can be considered a regional system improvement independent of the land uses contained within the Crestview Crossing development. The construction of the Crestview Drive extension is expected to cause some traffic to shift from Springbrook Road and OR 99W. For this analysis, ttraffic volumes were reassigned to the new street system based on existing turning movement demand at the intersections of Springbrook Road/Crestview Drive, Springbrook Road/Haworth Avenue, and Springbrook Road/OR 99W.The City's Transportation System Plan was also consulted for consistency in assumptions. Figure 6 displays the estimated reassigned traffic volumes.

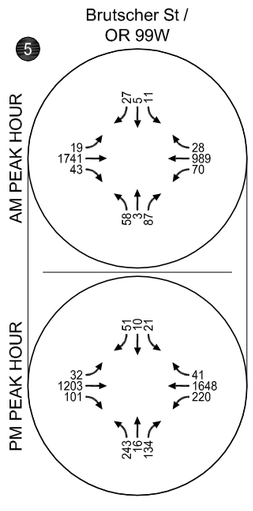
The reassigned traffic volumes shown in Figure 6 were added to the background traffic volumes in Figure 5 to arrive at the 2020 background traffic conditions, shown in Figure 7. Based on concurrence from ODOT transportation planning staff, this scenario serves as the base case against which future traffic conditions are prepared. The background condition for the Crestview Drive extension assumes a two-lane cross section, including the new north leg of the Providence Drive/OR 99W intersection. Any potential turn lane additions at the Crestview Drive/Providence Drive/OR 99W intersection will be considered mitigation measures associated with the Crestview Crossing development and are described under 2020 total traffic conditions. The assumed lane configurations for this scenario are displayed in Figure 8.

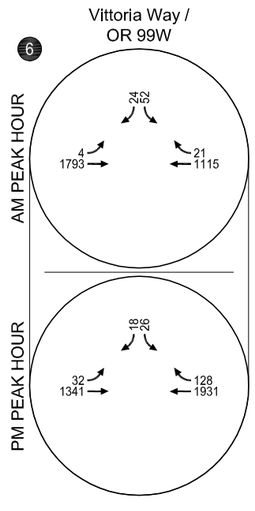


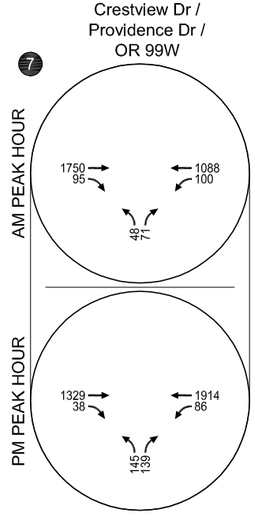


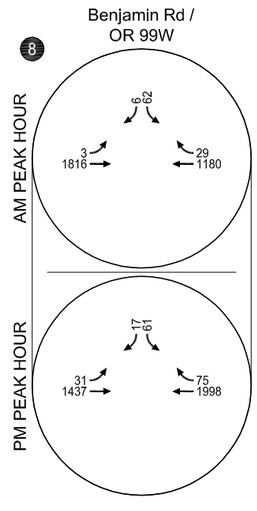






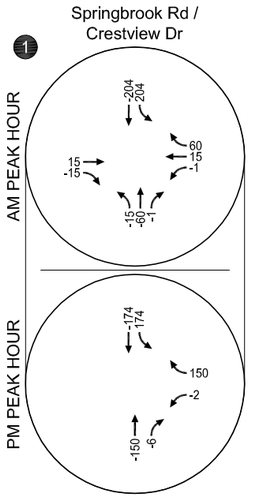


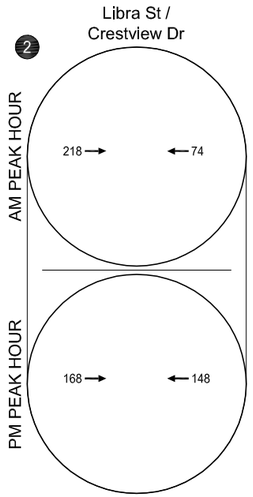


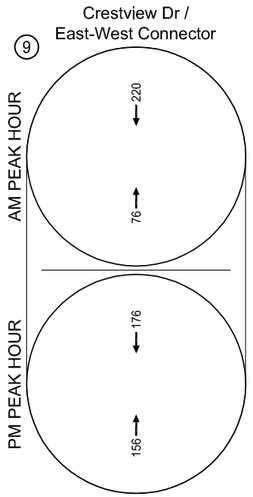


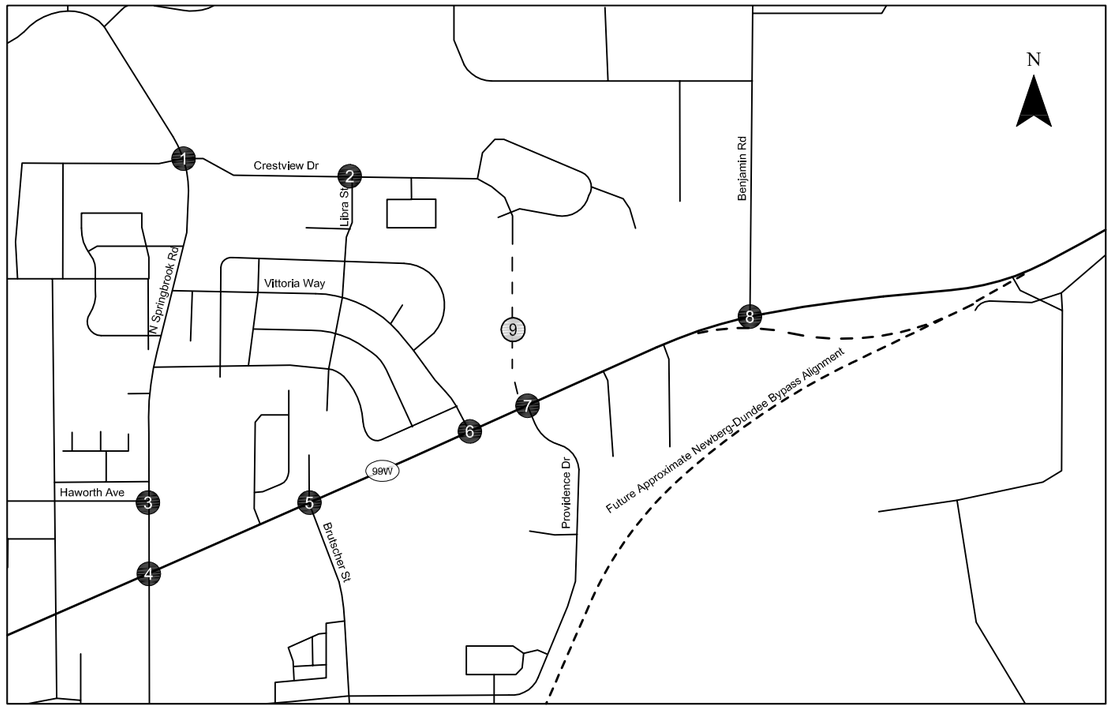
Year 2020 Background Traffic Volumes
Weekday AM and PM Peak Hours
Newberg, Oregon

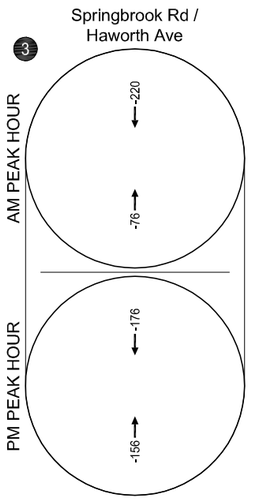
Figure
5

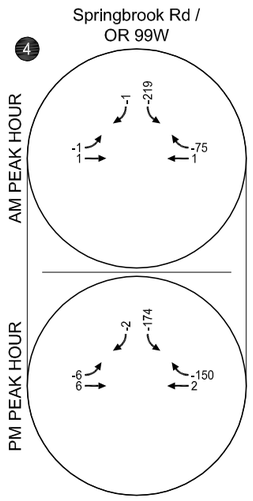


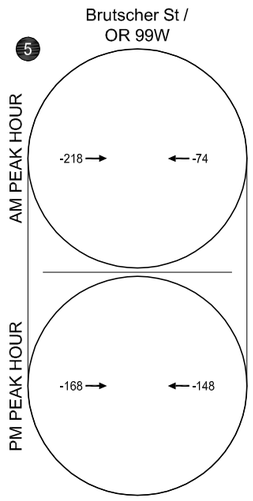


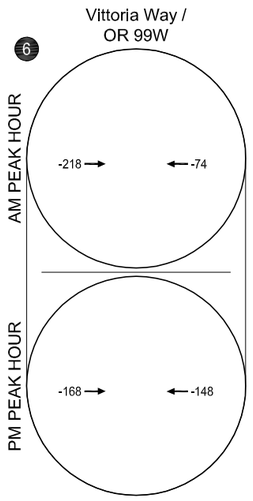


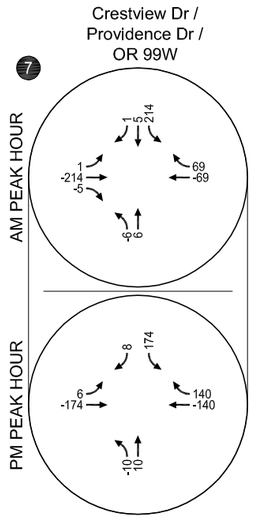


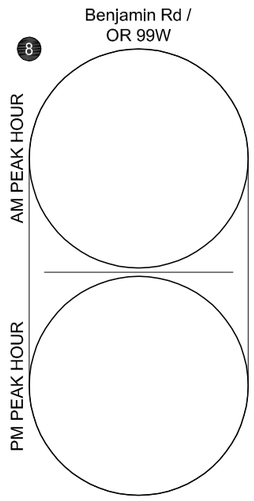






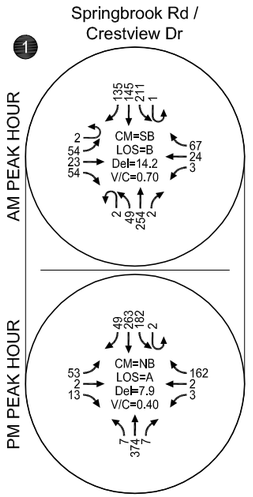


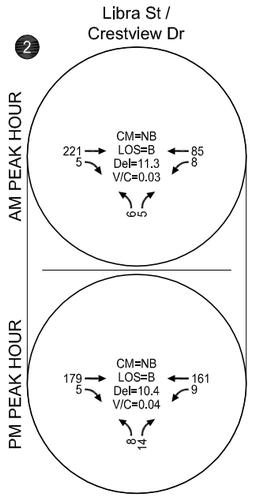


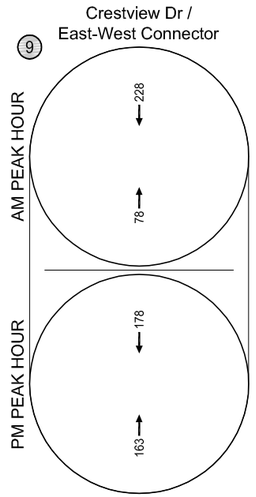


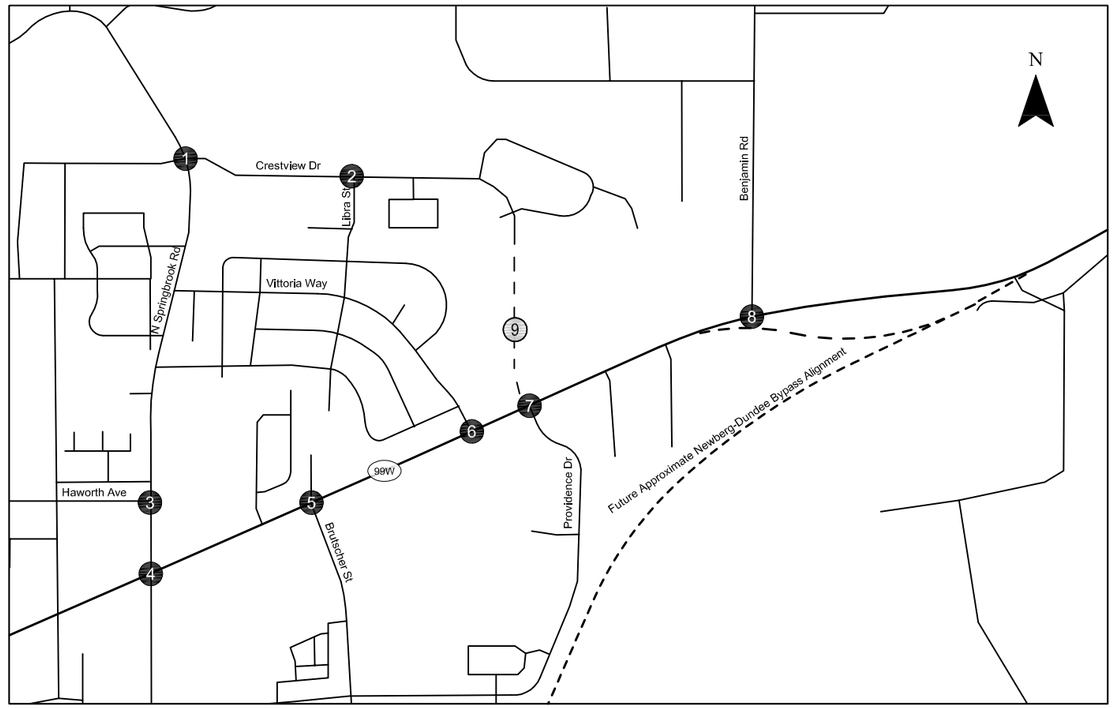
Reassigned Traffic Volumes
Weekday AM and PM Peak Hours
Newberg, Oregon

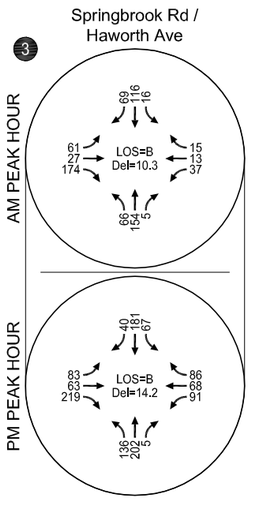
Figure
6

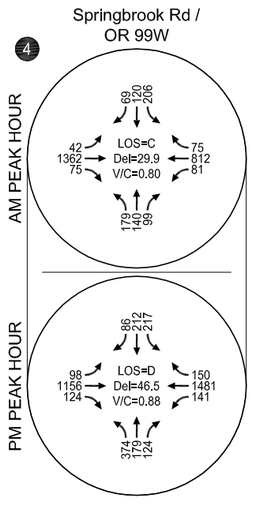


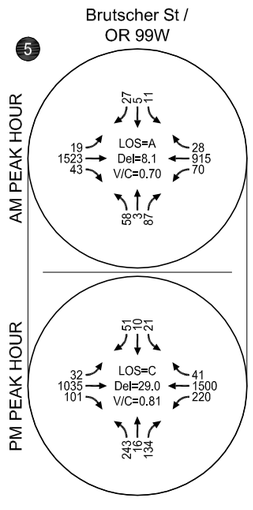


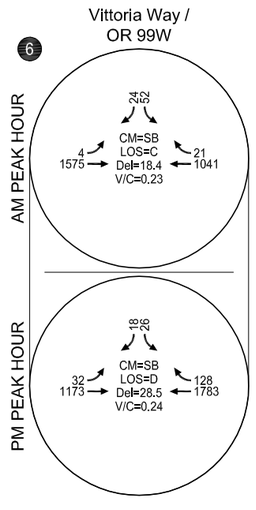


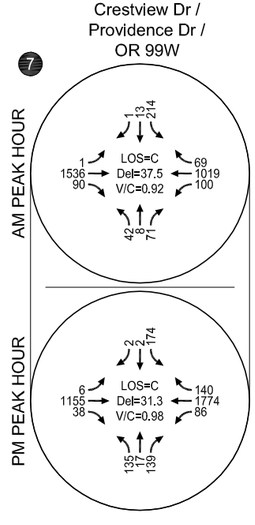


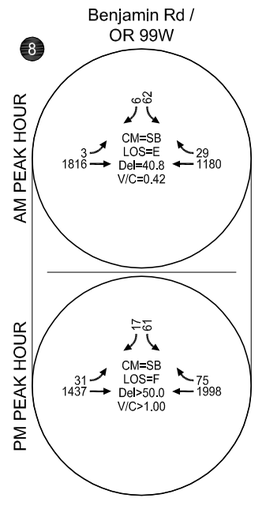












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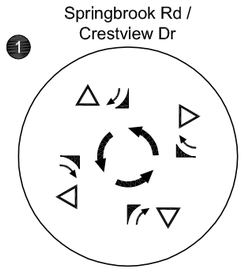
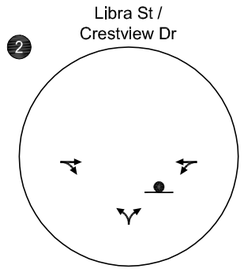
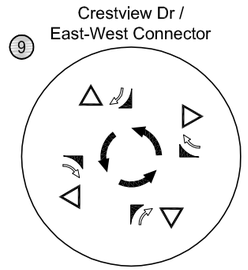
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/
CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/
CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

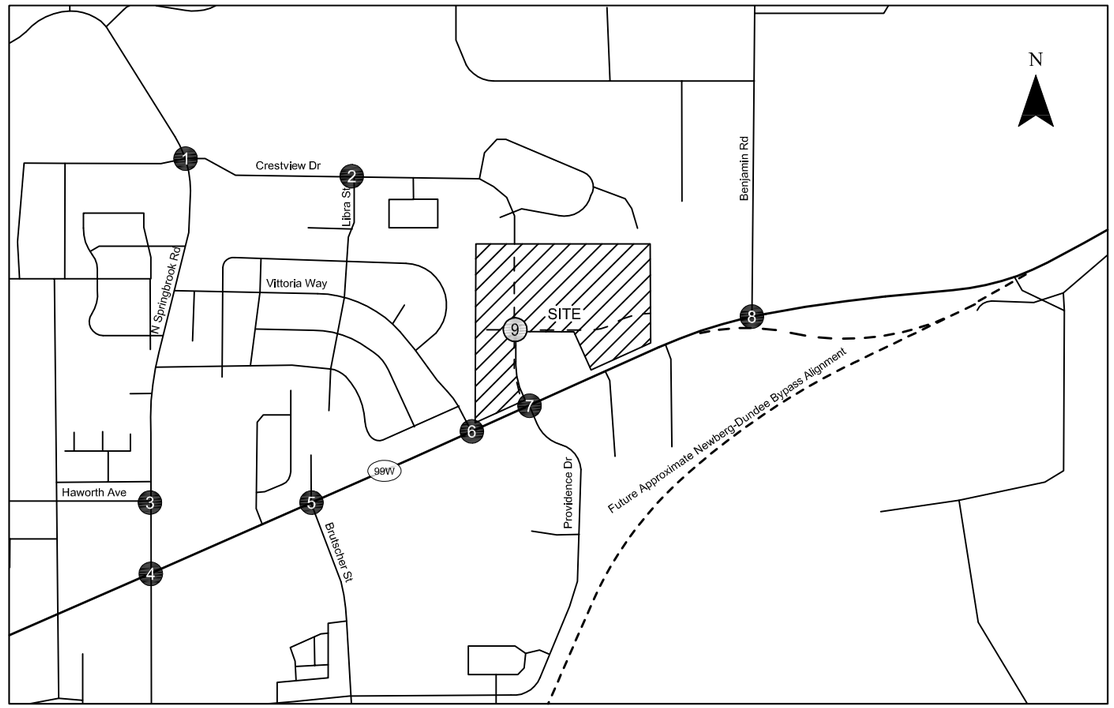
Year 2020 Background Traffic Conditions with Reassigned Traffic
Weekday AM and PM Peak Hours
Newberg, Oregon

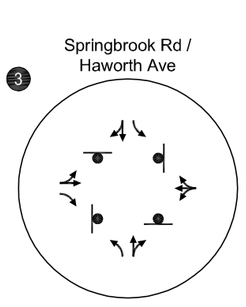
Figure
7

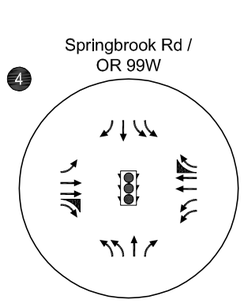


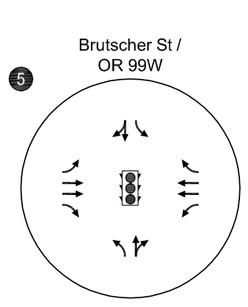


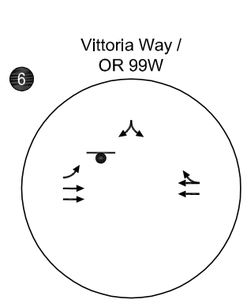


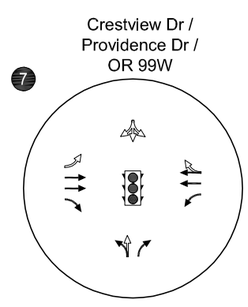


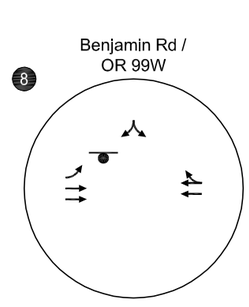












- STOP SIGN
- TRAFFIC SIGNAL
- ROUNDABOUT
- YIELD
- EXISTING
- PROPOSED

Assumed Lane Configurations
and Traffic Control Devices
Newberg, Oregon

Figure
8

KITTELSON & ASSOCIATES

Level of Service Analysis

Figure 7 also shows the corresponding level of service analysis—each of the study intersections is expected to continue meeting ODOT and City mobility standards, with the following exceptions:

- The Springbrook Rd/OR 99W intersection is forecast to operate with a v/c ratio of 0.88 during the weekday PM peak hour, which exceeds the ODOT mobility standard of 0.85.
- The weekday AM and PM peak hour v/c ratios at the Providence Drive/OR 99W intersection are forecast to be 0.89 and 0.92, respectively, which both exceed the ODOT mobility standard of 0.80.

Appendix "F" contains the year 2020 background with reassigned traffic Level of Service worksheets.

PROPOSED DEVELOPMENT PLAN

Per the site plan displayed in Figure 2, the Crestview Crossing development includes 248 single-family homes and 48 apartment units. However, given the potential for fluctuation in the final number of units, up to 260 single-family homes were analyzed in this report to provide a conservative analysis of the impacts. The site development will also include an extension of Crestview Drive to the south through the development and connecting to OR 99W to form the north leg of the OR 99W/Providence Drive intersection. Full-build out and occupancy of the phase of the development included in this report is expected to occur in 2020. A future development phase may include an additional 4.43 acres of commercial space adjacent to the development site but is not included in this application.

Trip Generation

The projected weekday daily, AM, and PM peak-hour vehicle trip ends for the proposed development were based on the *Trip Generation Manual*, 10th Edition (Reference 4). Table 4 summarizes the anticipated number of trips that will be generated by the proposed Crestview Crossing development.

Table 4: Proposed Trip Generation

Land Use	ITE Code	Size		Weekday Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
					Total	In	Out	Total	In	Out
Single-Family Detached Housing	210	260	units	2,504	189	47	142	254	160	94
Apartment	220	48	units	322	24	6	18	31	20	11
Total				**2,826**	**213**	**53**	**160**	**285**	**180**	**105**

As shown in Table 4, the proposed development is expected to generate approximately 2,826 weekday daily trips, of which 213 (53 in, 160 out) will occur during the AM peak hour and 285 (180 in, 105 out) will occur during the PM peak hour.

Site Trip Distribution/Trip Assignment

The site-generated trips were distributed onto the study area roadway system according to a select zone analysis of TAZ 117, which includes the proposed development site, from the Newberg Transportation Planning Model, provided by ODOT. This model was reviewed and adjusted based on field-observed turning movement patterns. The traffic generated by the proposed Crestview Crossing development is expected to follow the following trip distribution pattern:

- 15 percent to the east along OR 99W;
- 10 percent to the south along Providence Drive;
- 10 percent to the south along Brutscher Street;
- 35 percent to the west along OR 99W to Springbrook Road; and
- 30 percent to the north along the Crestview Drive extension to Springbrook Road.

Trips were then distributed at the Springbrook Road/Crestview Drive and Springbrook Road/OR 99W intersections based upon existing turning movement counts. Figure 9 illustrates the estimated trip distribution pattern for the proposed development.

The estimated site-generated trips were assigned to the network by distributing the trips shown in Table 5 according to the trip distribution pattern shown in Figure 9. Figure 9 illustrates the site-generated trips that are expected to use the roadway system during the weekday AM and PM peak hours.

Appendix "G" contains the select zone analysis results received from ODOT.

YEAR 2020 TOTAL TRAFFIC CONDITIONS

The total traffic conditions analysis forecasts how the study area's transportation system will operate with the traffic generated by the proposed Crestview Crossing development. The weekday AM and PM peak hour site-generated traffic volumes (shown in Figure 9) were added to the year 2020 background traffic volumes with reassigned traffic (shown in Figure 7) to arrive at the total traffic volumes shown in Figure 10.

Level of Service Analysis

The weekday AM and PM peak hour turning-movement volumes shown in Figure 10 were used to conduct an operational analysis at each study intersection to determine the year 2020 total traffic levels of service. The assumed lane configurations at the Crestview Drive/Providence Drive/OR 99W and Crestview Drive/East-West Connector intersections are displayed in Figure 8. The results of the total traffic analysis shown in Figure 10 indicate that all of the study intersections and site access points are forecast to meet ODOT and City mobility standards under 2020 total traffic conditions during the weekday AM and PM peak hours, with the following exceptions:

- The Springbrook Rd/OR 99W intersection is forecast to operate with a v/c ratio of 0.86 during the weekday PM peak hour, which exceeds the ODOT mobility standard of 0.85 but does not exceed the v/c ratio under background conditions with reassigned traffic.
- The weekday AM and PM peak hour v/c ratios at the Crestview Drive/Providence Drive/OR 99W intersection are forecast to be 0.98 and 1.08, respectively. These both exceed the ODOT mobility standard of 0.80.

Appendix "H" contains the year 2020 total traffic Level of Service worksheets.

Mitigation at Crestview Drive/Providence Drive/OR 99W

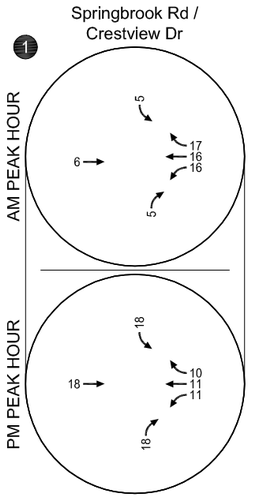
In conjunction with site development, JT Smith Companies proposes to add lanes to the Crestview Drive/Providence Drive/OR 99W intersection, shown in Figure 11 and described below:

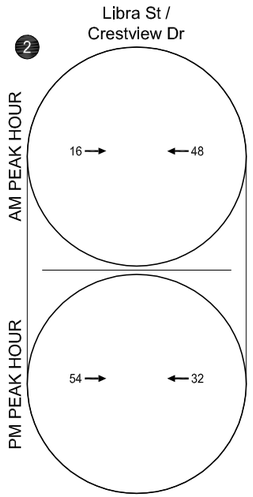
- Add an exclusive left turn lane on southbound Crestview Drive,
- Add an exclusive right turn lane on southbound Crestview Drive,
- Add an exclusive right turn lane on westbound OR 99W, and,
- Restripe the northbound Providence Drive approach to include an exclusive left turn lane and an exclusive right turn lane.

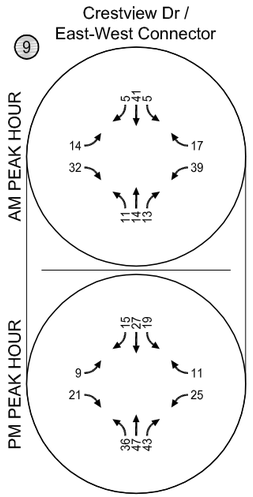
These improvements are considered to be above and beyond the geometry needed to construct the Crestview Drive extension.

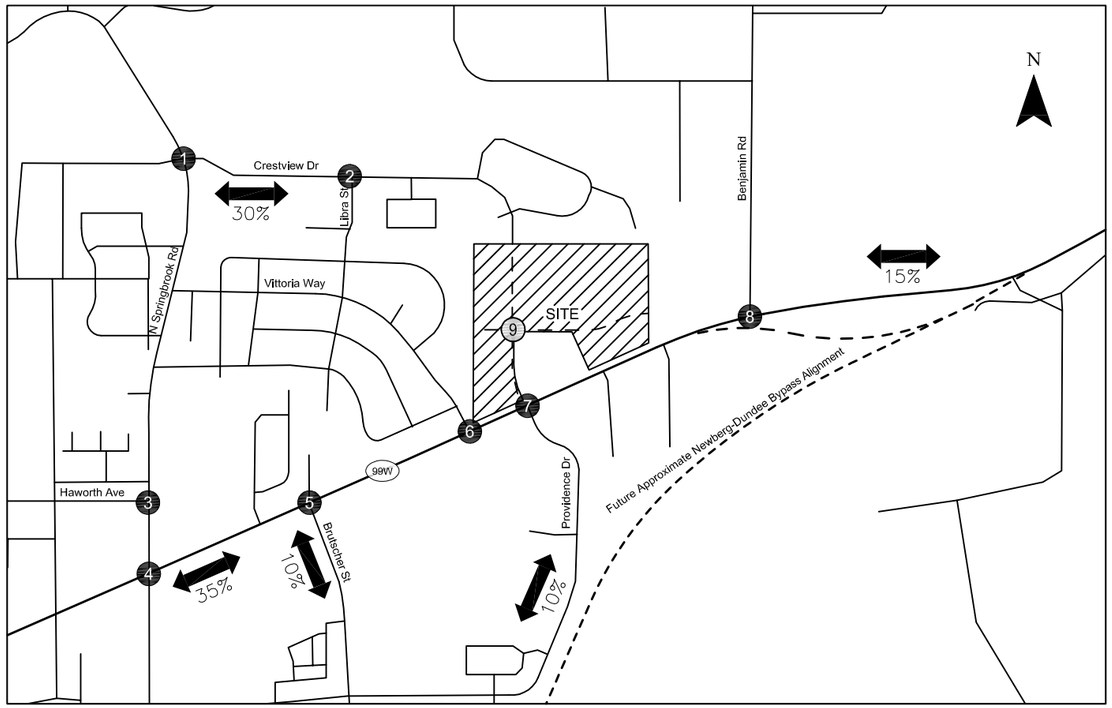
As shown in Figure 11, with these mitigation measures in place, the weekday AM and PM peak hour v/c ratios at the intersection are forecast to be 0.88 and 0.89, respectively. These both exceed the ODOT mobility standard of 0.80 but do not exceed the respective v/c ratios for background conditions with reassigned traffic.

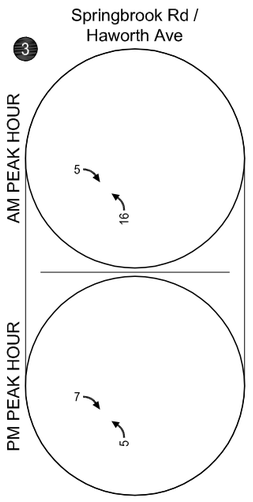
Appendix "I" contains the year 2020 total traffic with mitigation Level of Service worksheets.

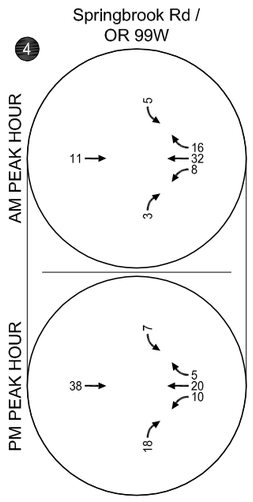


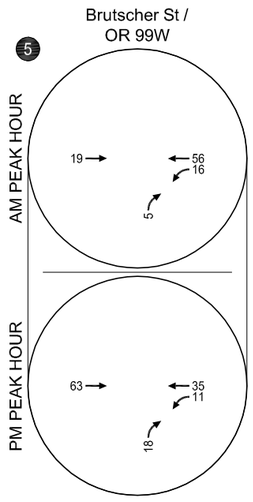


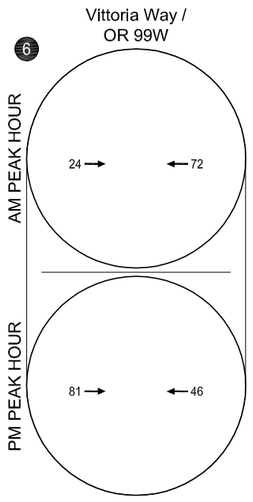


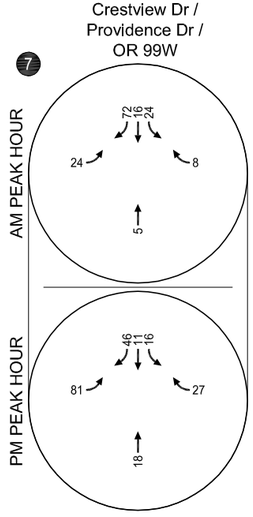


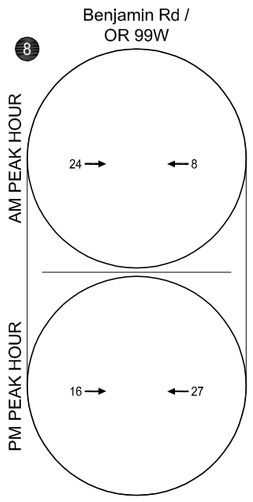








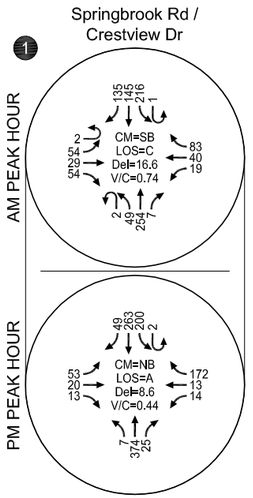


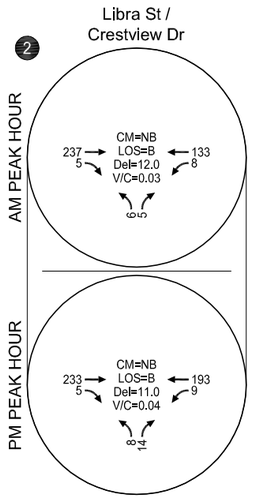


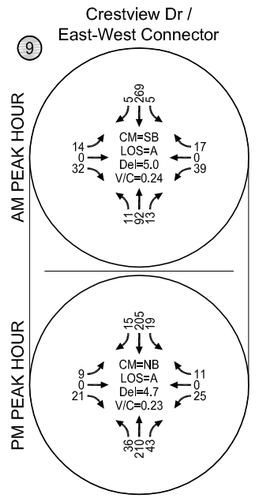
	TOTAL	IN	OUT
AM	213	53	160
PM	285	180	105

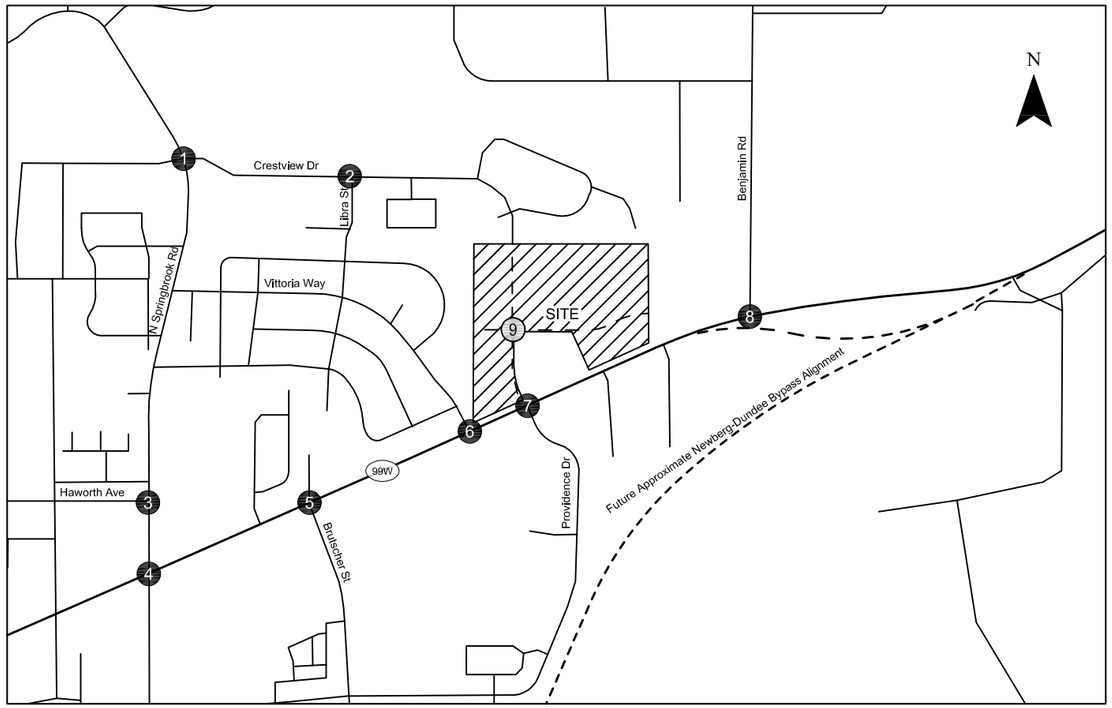
Site-Generated Trips
Weekday AM and PM Peak Hours
Newberg, Oregon

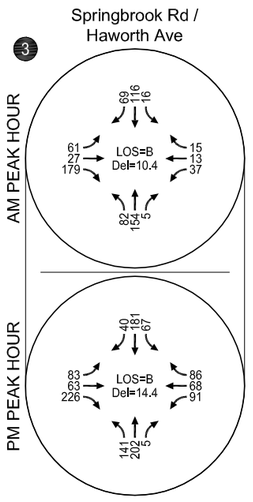
Figure
9

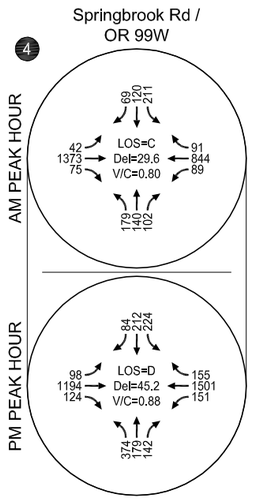


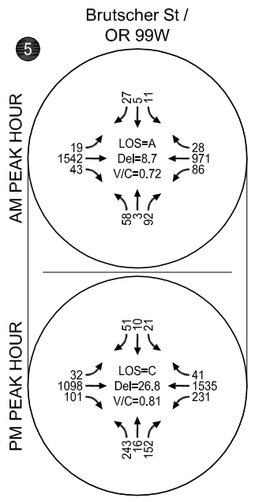


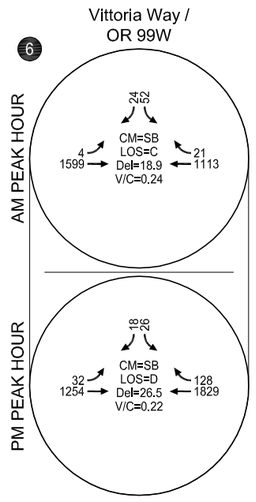


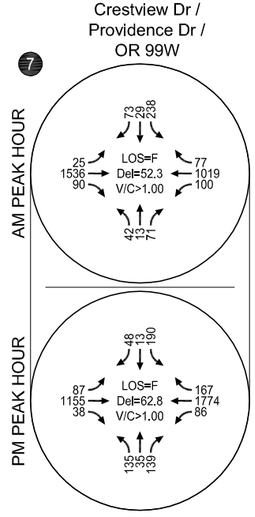


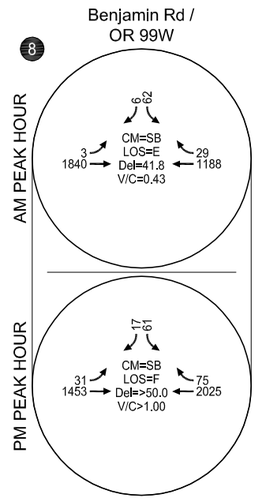












CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/
CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
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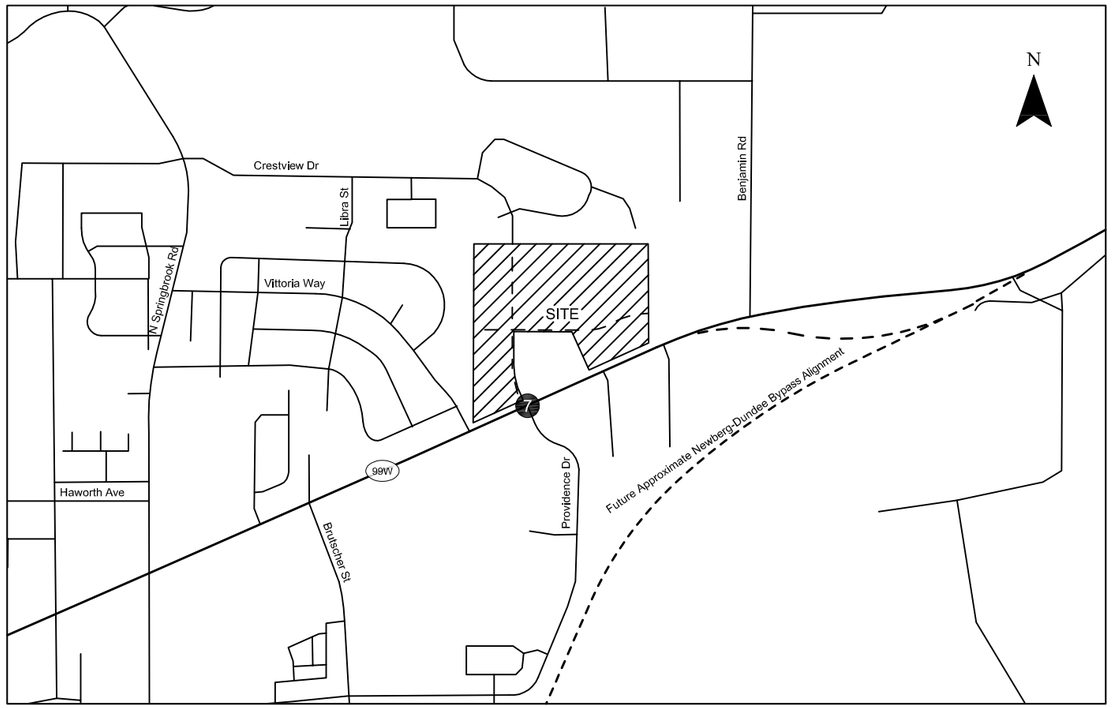
CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Year 2020 Total Traffic Conditions
Weekday AM and PM Peak Hours
Newberg, Oregon

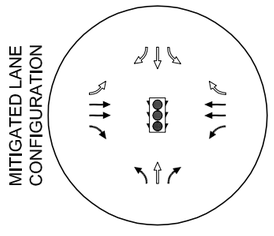
Figure
10



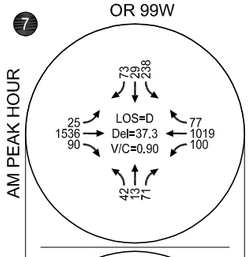
Crestview Dr / Providence Dr / OR 99W

7

MITIGATED LANE CONFIGURATION



AM PEAK HOUR



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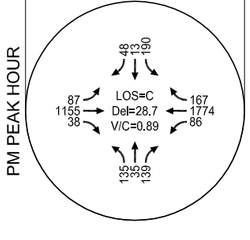

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
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Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/ CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

↖ - EXISTING
↖ - PROPOSED

Year 2020 Total Mitigated Traffic Conditions
Weekday AM and PM Peak Hours
Newberg, Oregon

Figure 11

2025 HORIZON YEAR BACKGROUND TRAFFIC CONDITIONS

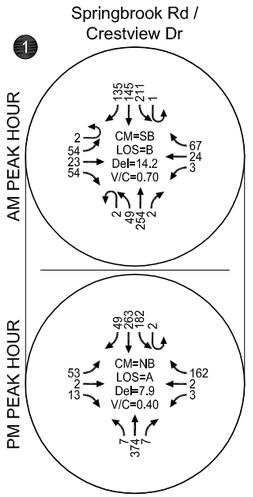
The 2025 horizon year background traffic volumes were developed from the 2020 background traffic volumes with reassigned traffic shown in Figure 8 and then adding an additional five years of growth (at two-percent annual growth) to the mainline through volumes at the study intersections on OR 99W. Figure 12 displays these volumes.

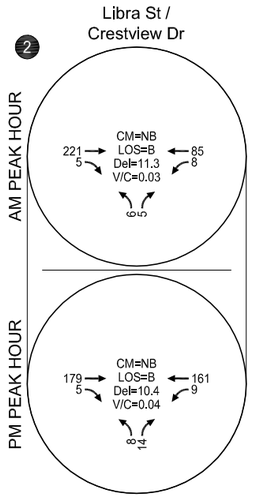
Level of Service Analysis

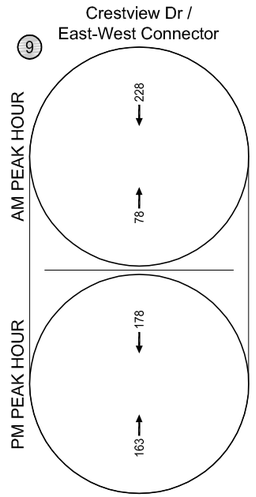
Figure 12 also shows the corresponding level of service analysis—each of the study intersections is expected to continue meeting ODOT and City mobility standards, with the following exceptions:

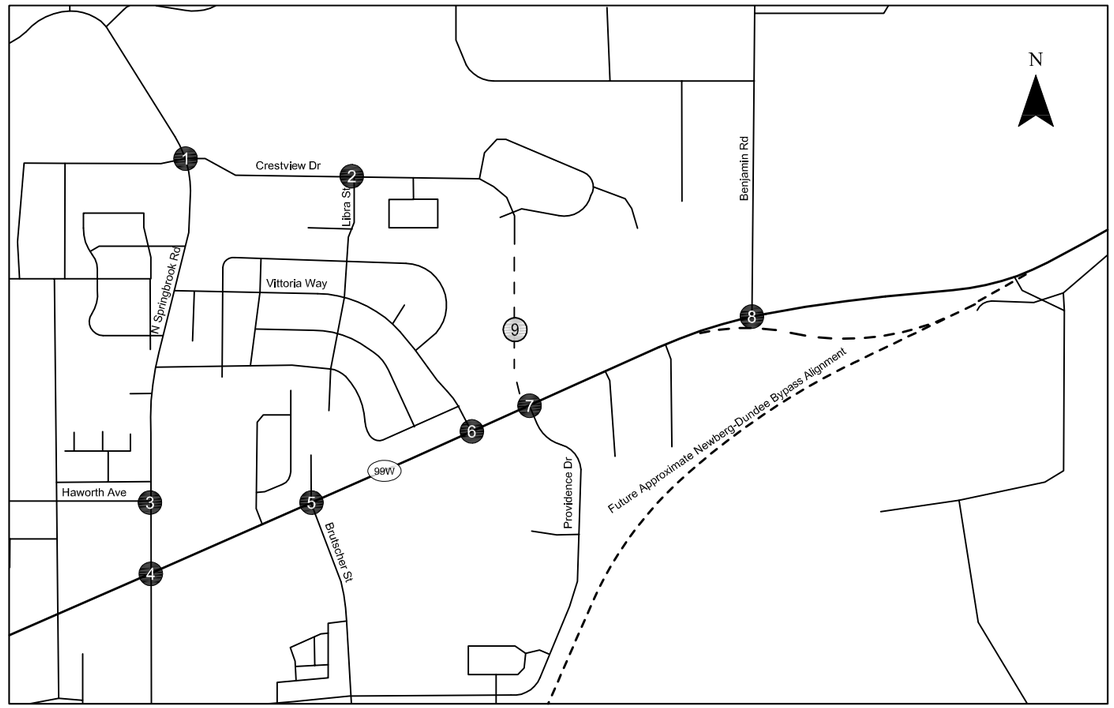
- The Springbrook Rd/OR 99W intersection is forecast to operate with a v/c ratio of 0.93 during the weekday PM peak hour, which exceeds the ODOT mobility standard of 0.85.
- The weekday AM and PM peak hour v/c ratios at the Providence Drive/OR 99W intersection are forecast to be 0.98 and 1.03, respectively, which both exceed the ODOT mobility standard of 0.80.

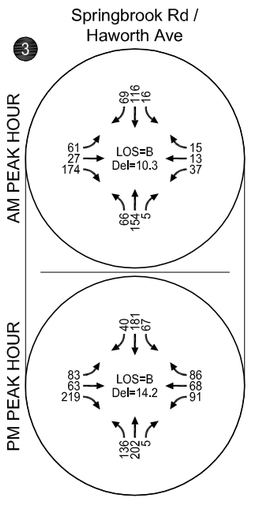
Appendix "J" contains the 2025 horizon year background traffic Level of Service worksheets.

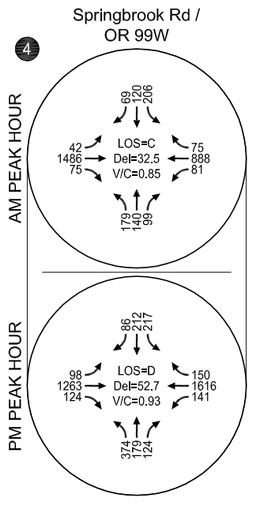


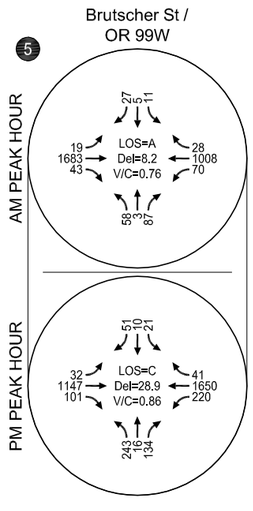


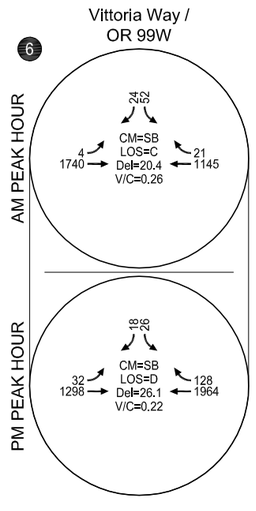


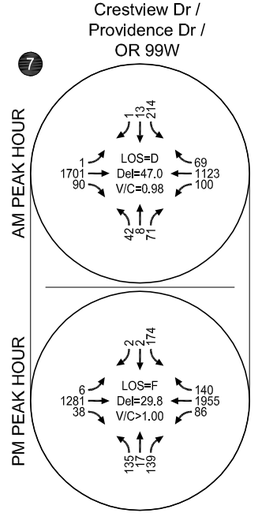


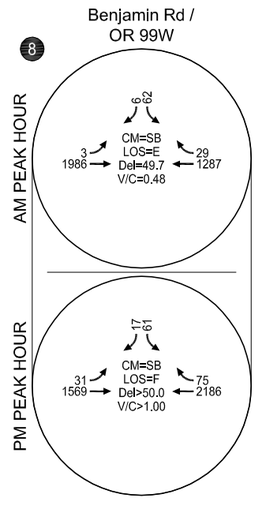












CM = CRITICAL MOVEMENT (UNSIGNALIZED)
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CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Year 2025 Background Traffic Conditions with Reassigned Traffic
Weekday AM and PM Peak Hours
Newberg, Oregon

Figure
12

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2025 HORIZON YEAR TOTAL TRAFFIC CONDITIONS

The 2025 horizon year total traffic volumes were developed by adding the site-generated trips shown in Figure 9 to the 2025 horizon year background traffic volumes shown in Figure 12. Figure 13 displays these volumes.

Level of Service Analysis

The weekday AM and PM peak hour turning-movement volumes shown in Figure 13 were used to conduct an operational analysis at each study intersection to determine the year 2025 total traffic levels of service. The assumed lane configurations at the Crestview Drive/Providence Drive/OR 99W and Crestview Drive/East-West Connector intersections are displayed in Figure 8. The results of the total traffic analysis shown in Figure 13 indicate that all of the study intersections and site access points are forecast to meet ODOT and City mobility standards under 2025 total traffic conditions during the weekday AM and PM peak hours, with the following exceptions:

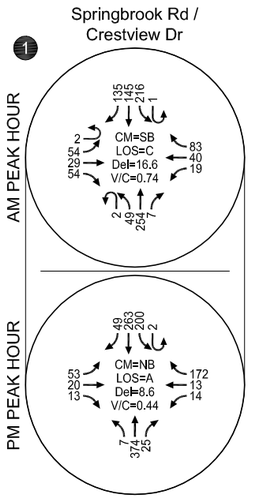
- The weekday AM and PM peak hour v/c ratios at the Springbrook Rd/OR 99W intersection are forecast to be 0.86 and 0.92, respectively. These both exceed the ODOT mobility standard of 0.85, but per ODOT policy, the v/c ratios do not reflect a significant impact because they are not more than 0.03 above the respective v/c ratios under 2025 background conditions.
- The weekday AM and PM peak hour v/c ratios at the Crestview Drive/Providence Drive/OR 99W intersection are forecast to be 1.08 and 1.18, respectively. These both exceed the ODOT mobility standard of 0.80.

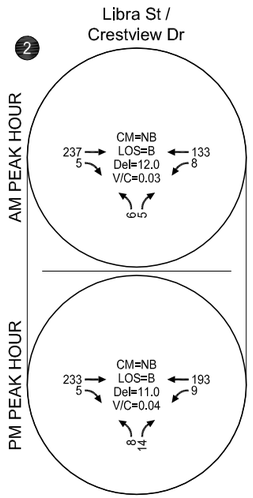
Appendix "K" contains the year 2025 total traffic Level of Service worksheets.

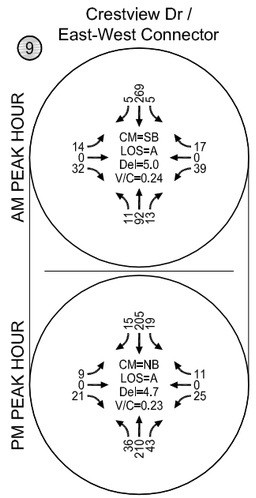
Mitigation at Crestview Drive/Providence Drive/OR 99W

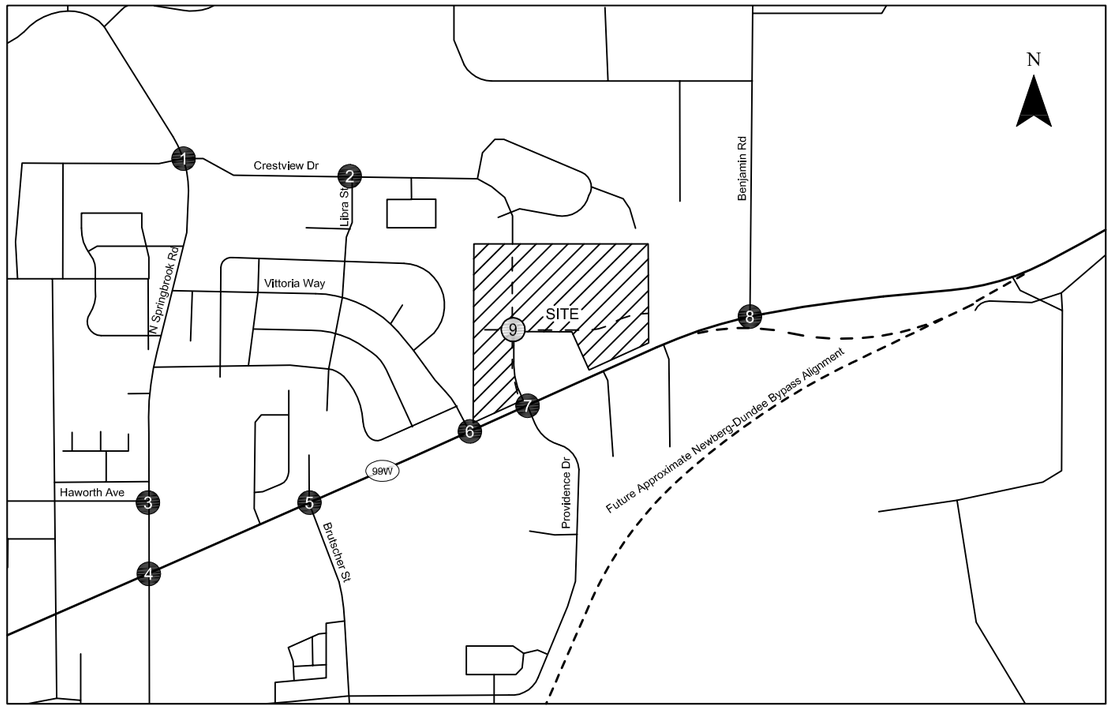
Figure 14 displays the 2025 horizon year total traffic conditions with the previously-mentioned mitigation measures at Crestview Drive/Providence Drive/OR 99W in place. As shown, the weekday AM and PM peak hour v/c ratios at the intersection are forecast to be 0.97 and 0.96, respectively. These both exceed the ODOT mobility standard of 0.80 but do not exceed the respective v/c ratios for background conditions with reassigned traffic.

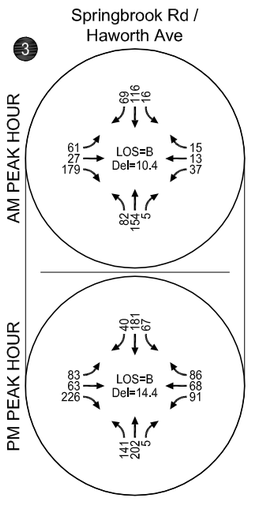
Appendix "L" contains the year 2025 total traffic with mitigation Level of Service worksheets.

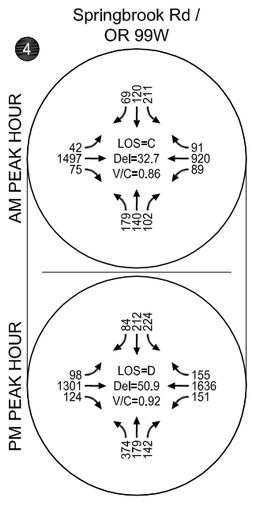


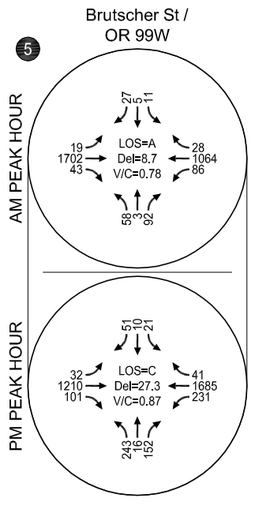


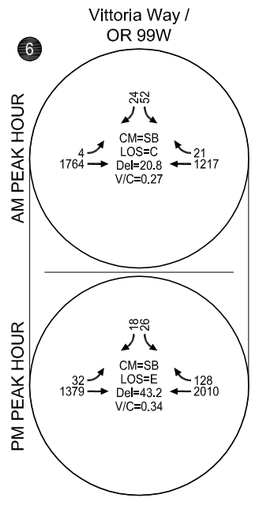


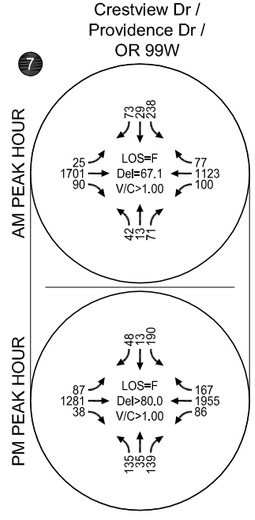


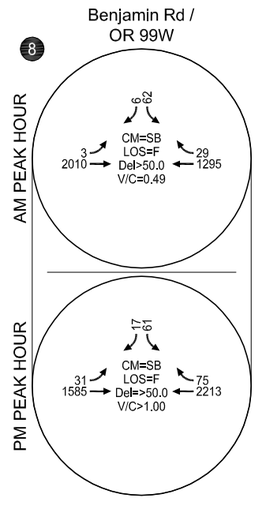












CM = CRITICAL MOVEMENT (UNSIGNALIZED)
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CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
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CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Year 2025 Total Traffic Conditions
Weekday AM and PM Peak Hours
Newberg, Oregon

Figure
13

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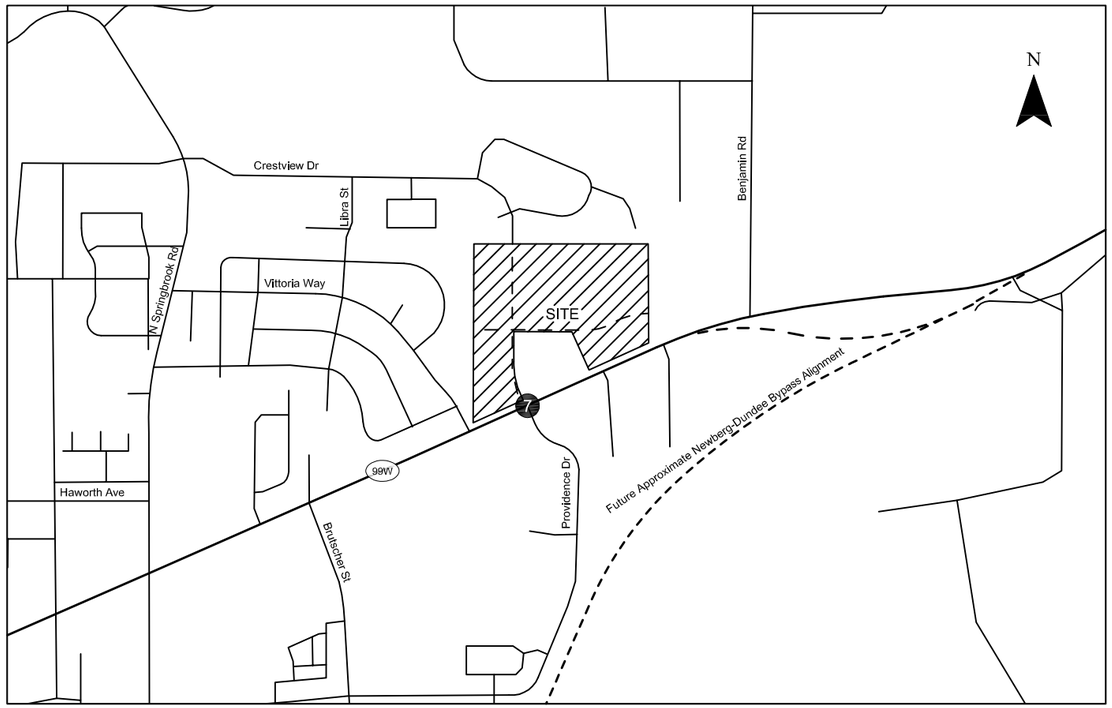
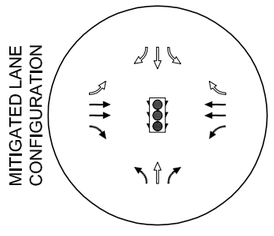


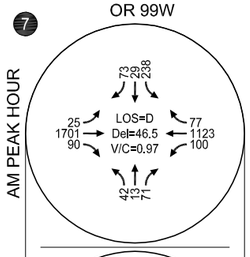
Crestview Dr / Providence Dr / OR 99W

7

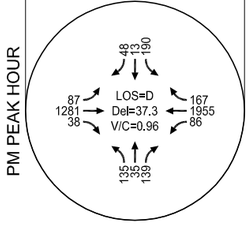
MITIGATED LANE CONFIGURATION



AM PEAK HOUR



PM PEAK HOUR



CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/ CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/ CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

↖ - EXISTING
↖ - PROPOSED

Year 2025 Total Mitigated Traffic Conditions
Weekday AM and PM Peak Hours
Newberg, Oregon

Figure 14

95TH-PERCENTILE QUEUING ANALYSIS

95th-percentile queues at the study intersections were reviewed to assess whether adequate storage would be provided at turn lanes and between intersections. *SimTraffic* was used to estimate the 95th-percentile queues at the signalized intersections along OR 99W (reflecting an average of five simulation runs), HCS was used to estimate the 95th-percentile queues at the roundabouts, and Synchro was used to estimate 95th-percentile queues elsewhere. Table 5 lists the estimated 95th-percentile queue for each movement at the study intersections under existing, 2020 background, and 2020 total traffic conditions (with the recommended mitigations in place). Reported queues are rounded up to the nearest vehicle length (approximately 25 feet). Note that minor changes in reported 95th-percentile queues between scenarios may be attributed to rounding and/or variability in random seeding.

Table 5: Summary of Existing and 2020 95th-percentile Queues

Intersection	Movement	Storage (ft)	95th-percentile Queue (ft)						Adequate Storage Provided?
			Existing		2020 Background with Reassigned Traffic		2020 Total Mitigated		
			AM	PM	AM	PM	AM	PM	
1: Springbrook Rd/ Crestview Dr	EB	N/A	50	25	50	25	50	25	Yes
	WB	N/A	25	25	25	25	50	25	Yes
	NB	N/A	75	75	125	50	125	75	Yes
	SB	N/A	125	50	150	50	200	75	Yes
2: Libra St/ Crestview Dr	EB	N/A	<25	<25	<25	<25	<25	<25	Yes
	WB	N/A	25	<25	<25	<25	<25	<25	Yes
	NB	N/A	25	<25	<25	<25	<25	<25	Yes
3: Springbrook Rd/ Haworth Ave	EB L/T	N/A	25	50	25	50	25	50	Yes
	EB R	100	50	75	50	75	50	75	Yes
	WB	N/A	25	125	25	75	25	75	Yes
	NB L	90	25	50	25	50	25	50	Yes
	NB T/R	N/A	100	250	50	75	50	75	Yes
	SB L	90	25	25	25	25	25	25	Yes
	SB T/R	N/A	275	300	50	75	50	75	Yes
4: Springbrook Rd/ OR 99W	EB L	350	175	400	150	250	150	300	Yes
	EB T	N/A	475	475	475	450	500	450	Yes
	EB R	350	175	100	125	150	150	150	Yes
	WB L	430	100	275	100	375	125	475	**No**
	WB T	N/A	225	575	175	750	175	700	Yes
	WB R	370	<25	375	<25	500	<25	400*	**No**
	NB L	320	150	400	200	325	200	325	**No**
	NB T	N/A	200	1,925	175	275	200	225	Yes
	NB R	320	100	275	100	125	100	125	Yes
	SB L	170	225	250	175	225	175	200*	**No**
	SB T	N/A	375	500	250	350	225	375	Yes
	SB R	130	125	175	125	175	125	150	**No**

Table 5: Summary of Existing and 2020 95th-percentile Queues (continued)

Intersection	Movement	Storage (ft)	95th-percentile Queue (ft)						Adequate Storage Provided?
			Existing		2020 Background with Reassigned Traffic		2020 Total Mitigated		
			AM	PM	AM	PM	AM	PM	
5: Brutscher St/ OR 99W	EB L	260	50	125	75	125	50	125	Yes
	EB T	N/A	125	375	200	400	200	400	Yes
	EB R	200	25	225	50	225	50	200	Yes
	WB L	350	125	475	125	475	150	325	Yes
	WB T	N/A	150	1,400	125	1,325	100	375	Yes
	WB R	80	50	75	25	75	25	75	Yes
	NB L	220	125	300	125	300	125	275	**No**
	NB T/R	N/A	125	500	100	500	100	300	Yes
	SB L	50	50	50	50	50	50	50	Yes
	SB T/R	N/A	50	100	50	100	50	75	Yes
6: Vittoria Way/ OR 99W	EB L	100	<25	<25	<25	<25	<25	<25	Yes
	EB T	N/A	<25	<25	<25	<25	<25	<25	Yes
	WB T/R	N/A	<25	<25	<25	<25	<25	<25	Yes
	SB	N/A	25	25	25	25	25	25	Yes
7: Crestview Dr/ Providence Dr/ OR 99W	EB L	100	N/A	N/A	25	50	100	125	**No**
	EB T	N/A	225	250	475	225	500	175	Yes
	EB R**	100	25	25	50	<25	50	<25	Yes
	WB L**	230	100	125	225	150	225	150	Yes
	WB T	N/A	100	1,175	175	425	225	525	Yes
	WB R	230	N/A	N/A	N/A	NA	75	275	**No**
	NB L	160	75	200	100	225	75	200	**No**
	NB T	N/A	N/A	N/A	N/A	N/A	50	175	Yes
	NB R	160	100	125	75	175	100	150	Yes
	SB L	200	N/A	N/A	N/A	N/A	250	250	**No**
	SB T	N/A	N/A	N/A	275	250	250	200	Yes
	SB R	200	N/A	N/A	N/A	N/A	75	75	Yes
8: Benjamin Rd/ OR 99W	EB L	250	<25	<25	<25	<25	<25	<25	Yes
	EB T	N/A	<25	<25	<25	<25	<25	<25	Yes
	WB T/R	N/A	<25	<25	<25	<25	<25	<25	Yes
	SB	N/A	50	125	75	150	50	150	Yes
9: Crestview Dr/ East-West Connector	EB	N/A	N/A	N/A	N/A	N/A	25	25	Yes
	WB	N/A	N/A	N/A	N/A	N/A	25	25	Yes
	NB	N/A	N/A	N/A	N/A	N/A	25	25	Yes
	SB	N/A	N/A	N/A	N/A	N/A	25	25	Yes

**SimTraffic* reported a maximum queue shorter than the 95th-percentile queue; therefore, the maximum queue is shown.

***SimTraffic* reported existing 95th-percentile queues that significantly overestimate field-observed maximum queues; therefore, the Synchro-reported 95th-percentile queue is shown.

The table indicates the following 95th-percentile queues are projected to exceed the provided storage lengths under 2020 total traffic conditions with the proposed mitigation measures:

- Springbrook Road/OR 99W:
  - Westbound left turn (weekday PM peak hour). The proposed development does not add trips to this movement and results in a net decrease in trips at this intersection, so no changes are recommended.
  - Westbound right turn (weekday PM peak hour). This queue will also exceed the storage length under 2020 background conditions, so no changes are recommended.
  - Northbound left turn (weekday PM peak hour). This queue will also exceed the storage length under 2020 background conditions, so no changes are recommended.
  - Southbound left turn (weekday AM and PM peak hours). These queues will also exceed the storage length under 2020 background conditions, so no changes are recommended.
  - Southbound right turn (weekday PM peak hour). This queue will also exceed the storage length under 2020 background conditions, so no changes are recommended.
- Brutscher Street/OR 99W:
  - Northbound left turn (weekday PM peak hour). This queue will also exceed the storage length under 2020 background conditions, so no changes are recommended.
- Crestview Drive/Providence Drive/OR 99W:
  - Eastbound left turn (weekday PM peak hour). Restriping the storage length is recommended (as discussed further in this section).
  - Northbound left turn (weekday PM peak hour). This queue will also exceed the storage length under 2020 background conditions, so no changes are recommended.

Table 6 displays the 95th-percentile queues at the study intersections along OR 99W for the 2025 horizon year, under the background with reassigned traffic conditions, as well as total traffic conditions.

Table 6. Summary of 2025 Horizon Year 95th-percentile Queues

Intersection	Movement	Storage (ft)	95th-percentile Queue (ft)				Adequate Storage Provided?
			2025 Background with Reassigned Traffic		2025 Total Mitigated		
			AM	PM	AM	PM	
4. Springbrook Rd/ OR 99W	EB L	350	175	325	250	325	Yes
	EB T	N/A	600	500	625	575	Yes
	EB R	350	225	150	225	250	Yes
	WB L	430	100	550	100	475	**No**
	WB T	N/A	200	1425	200	825	Yes
	WB R	370	<25	575	<25	550	**No**
	NB L	320	200	275	175	300	Yes
	NB T	N/A	200	225	175	250	Yes
	NB R	320	125	125	100	150	Yes
	SB L	170	200	225	200	200	**No**
	SB T	N/A	225	400	225	350	Yes
	SB R	130	125	175	125	175	**No**
5. Brutscher St/ OR 99W	EB L	260	50	175	75	100	Yes
	EB T	N/A	250	375	275	400	Yes
	EB R	200	50	225	75	225	**No**
	WB L	350	125	450	125	275	Yes
	WB T	N/A	100	1625	100	350	Yes
	WB R	80	25	75	25	75	Yes
	NB L	220	125	300	125	275	**No**
	NB T/R	N/A	125	500	125	275	Yes
	SB L	50	50	75	25	50	**No**
	SB T/R	N/A	50	125	50	100	Yes
6. Vittoria Way/ OR 99W	EB L	100	<25	25	<25	<25	Yes
	EB T	N/A	<25	<25	<25	<25	Yes
	WB T/R	N/A	<25	<25	<25	<25	Yes
	SB	N/A	50	25	50	25	Yes
7. Crestview Dr/ Providence Dr/ OR 99W	EB L	100	25	<25	100	150	**No**
	EB T	N/A	500	250	500	225	Yes
	EB R	100**	50	<25	50	<25	Yes
	WB L	230**	225	150	225	150	Yes
	WB T	N/A	200	1,650	250	1,300	Yes
	WB R	230	N/A	N/A	50	350	**No**
	NB L	160	100	250	100	200	**No**
	NB T	N/A	N/A	N/A	50	150	Yes
	NB R	160	100	175	100	125	Yes
	SB L	200	N/A	N/A	250	250	**No**
	SB T	N/A	325	250	300	225	Yes
	SB R	200	N/A	N/A	75	75	Yes

Table 6. Summary of 2025 Horizon Year 95th-percentile Queues (Continued)

Intersection	Movement	Storage (ft)	95th-percentile Queue (ft)				Adequate Storage Provided?
			2025 Background with Reassigned Traffic		2025 Total Mitigated		
			AM	PM	AM	PM	
8. Benjamin Rd/ OR 99W	EB L	250	25	25	25	25	Yes
	EB T	N/A	<25	<25	<25	<25	Yes
	WB T/R	N/A	<25	<25	<25	<25	Yes
	SB	N/A	50	200	50	200	Yes

**SimTraffic* reported a maximum queue shorter than the 95th-percentile queue; therefore, the maximum queue is shown.

***SimTraffic* reported existing 95th-percentile queues much higher than the field-observed maximum queues; therefore, the Synchro-reported 95th-percentile queue is shown.

In addition to the 95th-percentile queues expected to exceed the provided storage lengths under 2020 total traffic conditions, the table indicates the following 95th-percentile queues are projected to exceed the provided storage lengths under 2025 total traffic conditions with the proposed mitigation measures:

- Brutscher Street/OR 99W:
  - Eastbound right turn (weekday PM peak hour). This queue will also exceed the storage length under 2025 background conditions, so no changes are recommended.
- Crestview Drive/Providence Drive/OR 99W:
  - Eastbound right turn (weekday AM peak hour). This queue will also exceed the storage length under 2025 background conditions, so no changes are recommended.
  - Westbound left turn (weekday PM peak hour). This queue will also exceed the storage length under 2025 background conditions, so no changes are recommended.

Appendix "M" contains the SimTraffic *queuing worksheets.*

COMMERCIAL DEVELOPMENT SENSITIVITY ANALYSIS

As noted previously, approximately 4.43 acres adjacent to the proposed site could be developed in the future as commercial property. This commercial property is not included in this land use application but could be constructed at an undetermined time as part of a separate land use application. We investigated the potential impacts of developing the 4.43 acres of commercial property for the following reasons:

- To estimate the additional mitigations, if any, needed to meet ODOT policy, and
- To consider compatibility between these additional mitigations and the proposed lane geometry and mitigations on roadways and at intersections within and around the site, including the Crestview Drive/Providence Drive/OR 99W intersection and proposed Crestview Drive/East-West Connector roundabout.

A build-out year of 2020 and a horizon year of 2025 was assumed for this analysis for simplicity and for consistency with the analysis years of the residential development. Assuming a later background year would result in marginally different background traffic volumes because traffic on OR 99W could either

increase (if more in process developments are approved) or decrease (as a result of completion of the Newberg-Dundee Bypass).

Table 7 displays the trip generation for the commercial traffic (in addition to the residential), assuming 25 percent of the 4.43 acres becomes leasable floor space and that all of the property is developed as shopping center.

Table 7: Trip Generation Including Phase II

Land Use	ITE Code	Size		Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
					Total	In	Out	Total	In	Out
Single-Family Detached Housing	210	260	Units	2,504	189	47	142	254	160	94
Less Internal Trips				*276*	*9*	*2*	*7*	*28*	*18*	*10*
Apartment	220	48	Units	322	24	6	18	31	20	11
Less Internal Trips				*36*	*1*	*0*	*1*	*3*	*2*	*1*
Shopping Center	820	48,243*	ft^2	3,662	176	109	67	317	152	165
Less Internal Trips				*402*	*9*	*5*	*4*	*35*	*17*	*18*
Less Pass-by Trips				*358*	*0*	*0*	*0*	*96*	*48*	*48*
Total Gross Trips				**6,488**	**389**	**162**	**227**	**602**	**332**	**270**
Less Internal Trips				***714***	***19***	***7***	***12***	***66***	***37***	***29***
Less Pass-by Trips				***358***	***0***	***0***	***0***	***96***	***48***	***48***
Total Net New Trips				**5,416**	**370**	**155**	**215**	**440**	**247**	**193**

*Assumes a gross leasable area to acreage ratio of 0.25.

As shown, the commercial property, if developed, could generate a total development amount of 5,416 weekday daily trips, of which 370 (155 in, 215 out) would occur during the AM peak hour and 440 (247 in, 193 out) during the PM peak hour. The development is also expected to generate approximately 96 pass-by trips during the weekday PM peak hour—to conservatively estimate the impacts to the Crestview Drive/Providence Drive/OR 99W intersection, all of the pass-by trips were treated as diverted from OR 99W.

Figure 15 shows the trip generation and year 2020 total traffic conditions at the Crestview Drive/Providence Drive/OR 99W intersection and Crestview Drive/East-West Connector Roundabout. As shown, the Crestview Drive/East-West Connector Roundabout is expected to continue operating acceptably as a single-lane roundabout. With the mitigation improvements associated with the residential development in place, the weekday AM and PM peak hour v/c ratios at the Crestview Drive/Providence Drive/OR 99W intersection are forecast to be 0.92 and 0.95, respectively.

Figure 16 shows the trip generation and 2025 horizon year traffic conditions at the Crestview Drive/Providence Drive/OR 99W intersection and Crestview Drive/East-West Connector Roundabout. As shown, the Crestview Drive/East-West Connector Roundabout is expected to continue operating acceptably as a single-lane roundabout. With the mitigation improvements associated with the residential development in place, the weekday AM and PM peak hour v/c ratios at the Crestview Drive/Providence Drive/OR 99W intersection are forecast to be 0.98 and 1.02, respectively.

ODOT defines no significant impact as a v/c ratio of 0.03 above the background condition—therefore, assuming the same respective background conditions, no additional mitigations would be required for either the 2020 or 2025 analysis years.

Table 8 displays the estimated resulting 95th-percentile queues at the Crestview Drive/Providence Drive/OR 99W intersection from *SimTraffic*.

Table 8: Summary of 95th-percentile Queues Including Phase II

Intersection	Movement	Storage (ft)	95th-percentile Queue (ft)			
			2020 Phase II		2025 Phase II	
			AM	PM	AM	PM
7: Crestview Dr/ Providence Dr/ OR 99W	EB L	100	125*	125*	125	125*
	EB T	N/A	500	400	500*	425
	EB R**	100	50	<25	50	<25
	WB L**	230	225	150	225	150
	WB T	N/A	275	850	300	1,400
	WB R	230	125	275*	75	275*
	NB L	160	100	175	100	200
	NB T	N/A	75	175	50	125
	NB R	160	100	125	100	150
	SB L	200	225*	225*	225*	225*
	SB T	N/A	350	325*	325	300
	SB R	200	75	150	100	150

**SimTraffic* reported a maximum queue shorter than the 95th-percentile queue; therefore, the maximum queue is shown.

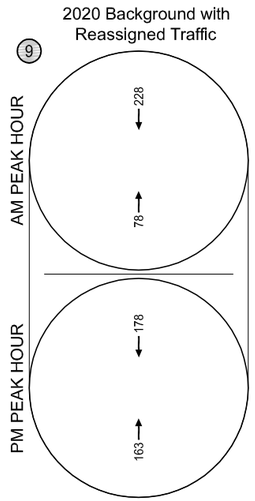
***SimTraffic* reported existing 95th-percentile queues much higher than the field-observed maximum queues; therefore, the Synchro-reported 95th-percentile queue is shown.

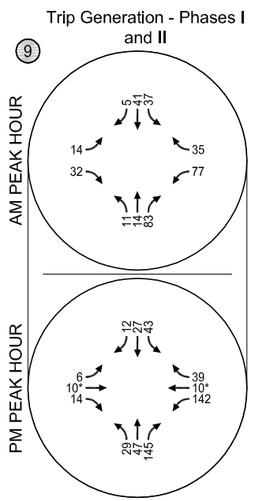
Based on the *SimTraffic* analysis, the following queue storage lengths are recommended:

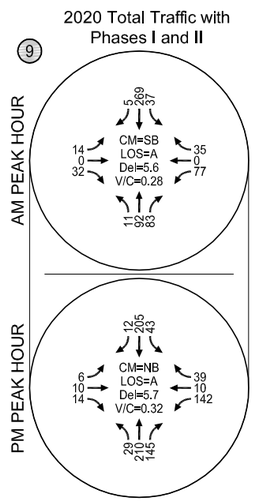
- A westbound right turn lane should be provided and include at least 275 feet of storage.
- The eastbound left turn lane should be restriped to include at least 125 feet of storage.
- An exclusive southbound left turn lane should be provided and include at least 225 feet of storage.
- An exclusive southbound right turn lane should be provided and include at least 150 feet of storage.

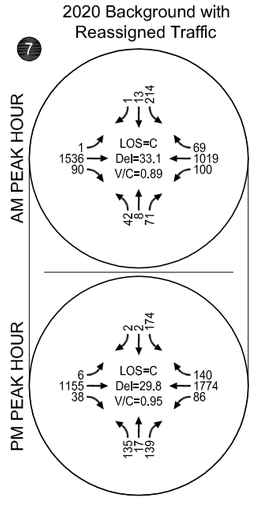
Other 95th-percentile queues at the intersection are expected to be equal in length or shorter than the 95th-percentile queues under 2025 background conditions—therefore, no other changes are recommended.

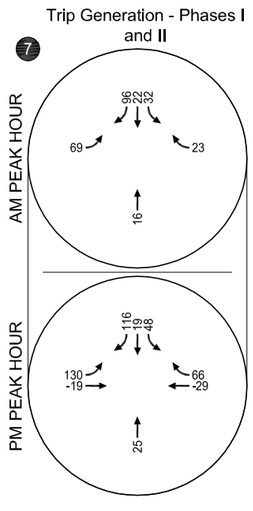
Appendix "N" contains the Phase II Sensitivity Analysis Level of Service worksheets.

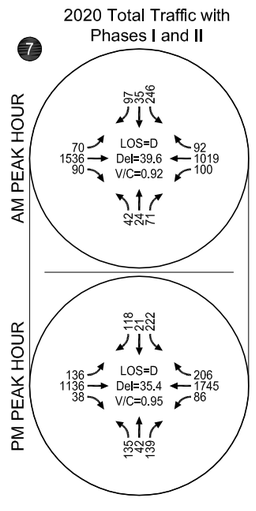






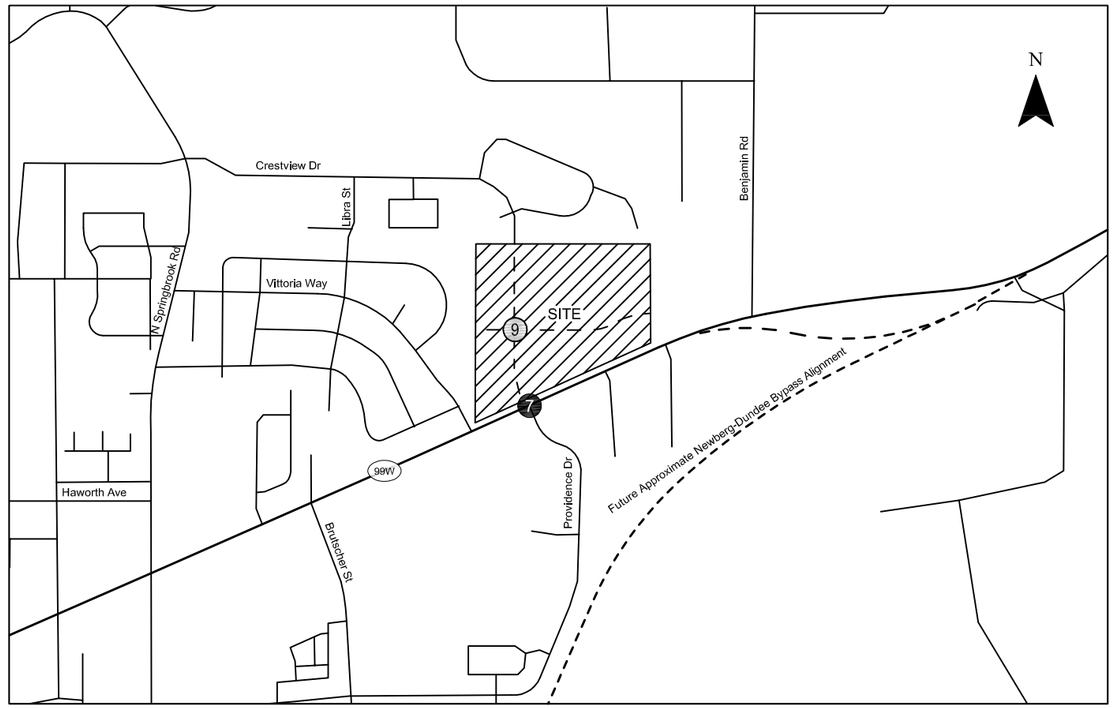






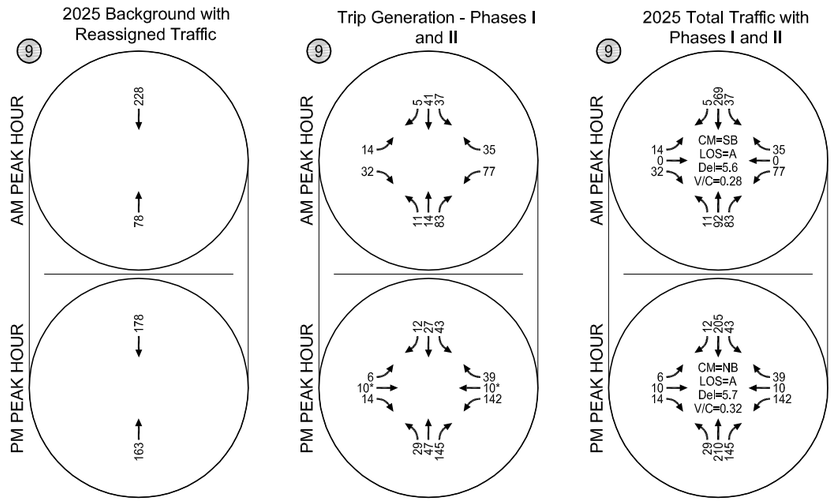
*Estimated retail-residential internal trips
Negative values indicate retail pass-by trips.

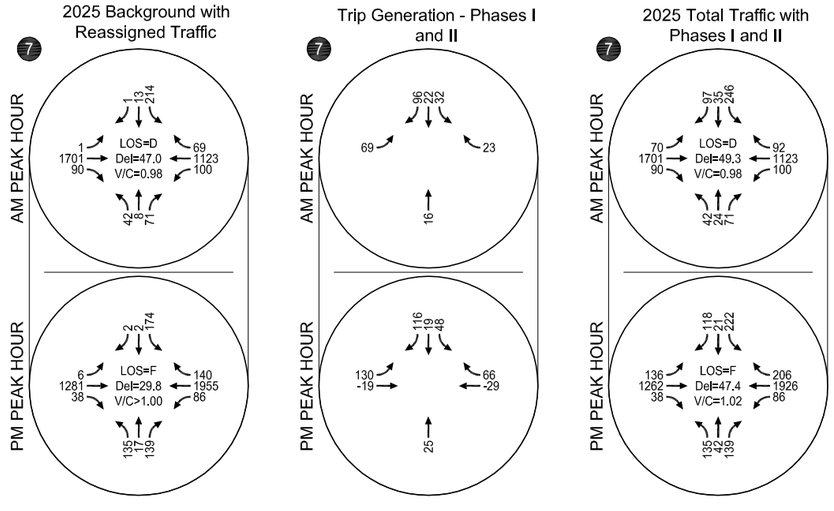
CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/
CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/
CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO



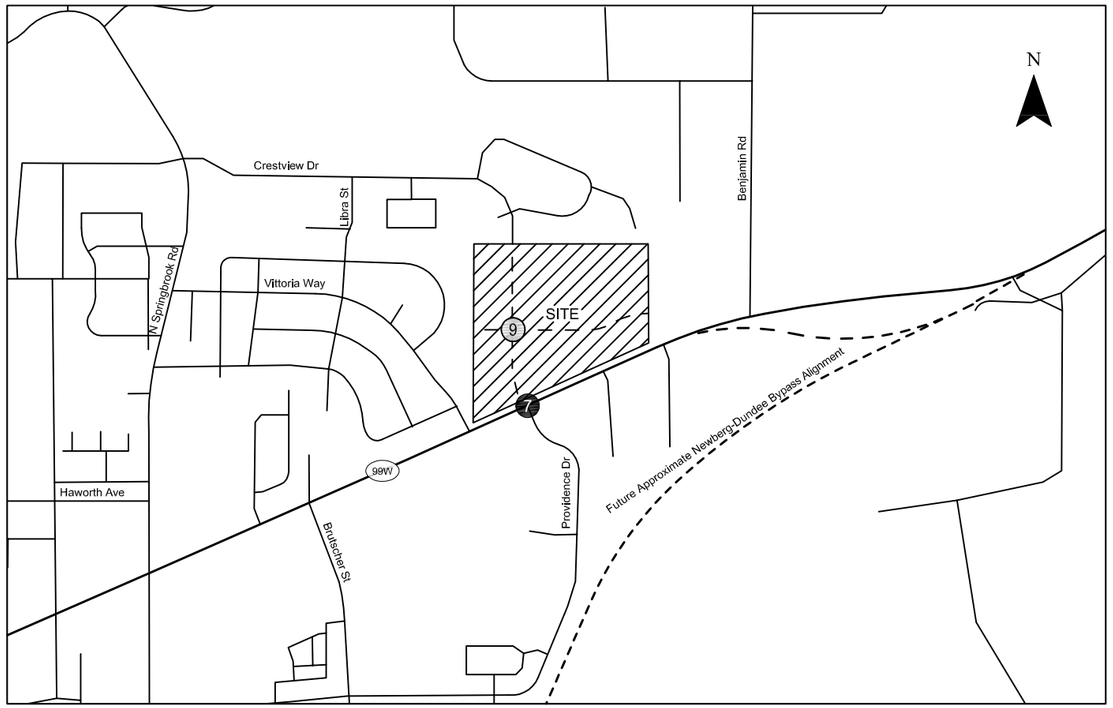
Year 2020 Total Traffic Conditions - Phase II Sensitivity Analysis
Weekday AM and PM Peak Hours
Newberg, Oregon

Figure 15





*Estimated retail-residential internal trips
Negative values indicate retail pass-by trips.



CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/
CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/
CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Year 2025 Total Traffic Conditions - Phase II Sensitivity Analysis
Weekday AM and PM Peak Hours
Newberg, Oregon

Figure
16

ON-SITE CIRCULATION/SITE-ACCESS OPERATIONS

Internal circulation was evaluated to ensure that the site provides sufficient on-site circulation for pedestrian movements and internal traffic. Figure 2 illustrates the proposed development plan. The following activities are recommended to ensure adequate safety and operation at the internal intersections and roadways:

- All local streets within the development should have two travel lanes.
- Other than at the Providence Drive/Crestview Drive/OR 99W intersection, a two-lane section of Crestview Drive should be adequate to accommodate turning movements and queuing within the proposed development.
- Shrubbery and landscaping near the internal intersections and site access points should be maintained to ensure adequate sight distance.

Section 5
Conclusions and Recommendations

CONCLUSIONS AND RECOMMENDATIONS

The results of the traffic impact analysis indicate that the proposed Crestview Crossing development can be constructed while maintaining acceptable levels of service and safety on the surrounding transportation system, provided the appropriate mitigations are in place. The findings of this analysis and our recommendations are discussed below.

Year 2017 Existing Conditions

- All of the study intersections currently meet City of Newberg (and Oregon Department of Transportation, where applicable) mobility targets during the weekday AM and PM peak hours, with the following exceptions:
  - The Springbrook Road/OR 99W intersection currently experiences a volume-to-capacity ratio (v/c) of 0.86 during the weekday AM peak hour, which exceeds the ODOT mobility standard of 0.85. The intersection also operates at level of service (LOS) E during the weekday PM peak hour, which exceeds the City standard of LOS D under current conditions.
  - The southbound stop-controlled approach to the Vittoria Way/OR 99W intersection currently operates at LOS E during the weekday PM peak hour, which exceeds the City standard of LOS D.
- A review of historical crash data did not reveal any patterns or trends in the site vicinity that require mitigation associated with this project.
  - One fatal crash was reported at the Springbrook Road/Crestview Drive roundabout—this crash occurred when a southbound motorcyclist struck a curb and was thrown from the vehicle. The crash report lists the cause as driver error—driving too fast for conditions.
  - Based upon a 2016 analysis, the Springbrook Road/OR 99W intersection is currently within the top five percent of the highest-scoring intersections in Region 2.

    Since 2016, pavement marking improvements and an additional westbound left turn lane on OR 99W were added to this intersection, and the proposed Crestview Crossing development is expected to result in a net decrease in traffic at this intersection due to the reassignment of traffic to the Crestview Drive extension.

Year 2020 Background Conditions

- A two-percent annual growth rate was applied to the existing mainline traffic volumes on OR 99W to reflect general background growth in the area before any in-process traffic was considered.
- Traffic generated by the Oregon Clinic, to be located on the west side of Providence Drive south of Providence Newberg Medical Center, as well as the Providence Medical Office Building, to be located on the east side of Providence Drive across from the existing Providence Medical Center, were included in the background traffic volumes as in-process traffic.

Background traffic conditions with the assumed build-out of the north leg of the Providence Drive/OR 99W intersection (and no site-added traffic) were assumed as the base case against which future traffic conditions are compared.

- The proposed development will extend Crestview Drive south through the property and to the existing Providence Drive/OR 99W intersection, where it will form the north leg.
- Traffic volumes were assigned to the Crestview Drive extension based upon existing turning movement volumes at the study intersections and the Newberg Transportation System Plan.
- The background traffic condition includes rerouted traffic from the proposed Crestview Drive extension but does not include trips associated with new land uses within the proposed development.
- All of the study intersections are expected to continue operating acceptably during the weekday AM and PM peak hours under 2020 background traffic conditions with reassigned traffic, with the following exceptions:
  - The Springbrook Rd/OR 99W intersection is forecast to operate with a v/c ratio of 0.88 during the weekday PM peak hour, which exceeds the ODOT mobility standard of 0.85.
  - The weekday AM and PM peak hour v/c ratios at the Providence Drive/OR 99W intersection are forecast to be 0.92 and 0.98, respectively, which both exceed the ODOT mobility standard of 0.80.

Proposed Development Plan

- The proposed development is expected to generate approximately 2,826 weekday daily trips, of which approximately 213 (53 in, 160 out) are forecast to occur during the AM peak hour and approximately 285 (180 in, 105 out) are forecast to occur during the PM peak hour.
- A select-zone analysis of the Newberg Transportation Planning Model was used to develop a trip distribution pattern for the proposed development.

Year 2020 Total Conditions

- All of the study intersections are expected to continue operating acceptably during the weekday AM and PM peak hours under 2020 total traffic volumes, with the following exceptions:
  - The Springbrook Rd/OR 99W intersection is forecast to operate with a v/c ratio of 0.88 during the weekday PM peak hour, which exceeds the ODOT mobility standard of 0.85 but does not exceed the v/c ratio under background conditions with reassigned traffic.
  - The weekday AM and PM peak hour v/c ratios at the Providence Drive/OR 99W intersection are forecast to be 1.01 and 1.11, respectively, which both exceed the ODOT mobility standard of 0.80.
  - The new proposed Crestview Diver/East-West Connector intersection within the Crestview Crossing development is expected to operate acceptably as a single-lane roundabout.

Year 2020 Total Mitigated Conditions

- The Crestview Drive/Providence Drive/OR 99W intersection was analyzed under total traffic conditions with the following additional lane improvements:
  - Add an exclusive left turn lane on southbound Crestview Drive,
  - Add an exclusive right turn lane on southbound Crestview Drive,
  - Add an exclusive right turn lane on westbound OR 99W,
  - Restripe eastbound OR 99W to include an exclusive left turn lane, and,
  - Restripe the northbound Providence Drive approach to include an exclusive left turn lane and an exclusive right turn lane.

  With these improvements, the weekday AM and PM peak hour v/c ratios at the intersection are forecast to be 0.90 and 0.89, respectively. These exceed the ODOT mobility standard of 0.80 but do not exceed the respective v/c ratios under background conditions with reassigned traffic. As such, the impact of the development has been mitigated.

2025 Horizon Year Background Conditions

- An additional five years of growth (at a two-percent annual growth rate) was applied to the existing mainline traffic volumes on OR 99W to model horizon year background conditions.

Background traffic conditions with the assumed build-out of the north leg of the Providence Drive/OR 99W intersection (and no site-added traffic) were assumed as the base case against which future traffic conditions are compared.

- The background traffic condition includes rerouted traffic from the proposed Crestview Drive extension but does not include trips associated with new land uses within the proposed development.
- All of the study intersections are expected to continue operating acceptably during the weekday AM and PM peak hours under 2025 background traffic conditions with reassigned traffic, with the following exceptions:
  - The Springbrook Rd/OR 99W intersection is forecast to operate with a v/c ratio of 0.93 during the weekday PM peak hour, which exceeds the ODOT mobility standard of 0.85.
  - The weekday AM and PM peak hour v/c ratios at the Providence Drive/OR 99W intersection are forecast to be 0.98 and 1.03, respectively, which both exceed the ODOT mobility standard of 0.80.

2025 Horizon Year Total Conditions

- All of the study intersections are expected to continue operating acceptably during the weekday AM and PM peak hours under 2025 total traffic volumes, with the following exceptions:
  - The weekday AM and PM peak hour v/c ratios at the Springbrook Rd/OR 99W intersection are forecast to be 0.86 and 0.92, respectively, which both exceed the ODOT mobility standard of 0.85 but are not more than 0.03 above the v/c ratios under

background conditions with reassigned traffic. Per ODOT policy guidance, when an intersection exceeds mobility targets but the v/c ratio increases by less than 0.03 as a result of development, the impacts are not considered significant.

- The weekday AM and PM peak hour v/c ratios at the Providence Drive/OR 99W intersection are forecast to be 1.08 and 1.18, respectively, which both exceed the ODOT mobility standard of 0.80.

2025 Horizon Year Total Mitigated Conditions

- With the improvements at Crestview Drive/Providence Drive/OR 99W intersection noted above, the weekday AM and PM peak hour v/c ratios at the intersection are forecast to be 0.97 and 0.96, respectively. These exceed the ODOT mobility standard of 0.80 but do not exceed the respective v/c ratios under 2025 background conditions with reassigned traffic. As such, the impact of the development has been mitigated.

95th-percentile Queuing Analysis

- All 95th-percentile queues are projected to be accommodated by the provided storage lengths under 2025 total traffic conditions, with the following exceptions:
  - The southbound right turn at Springbrook Road/OR 99W during the weekday PM peak hour.
  - The northbound left turn at Brutscher Street/OR 99W during the weekday PM peak hour.

  Each of the queues noted above is expected to decrease under 2025 total traffic conditions compared with 2025 background traffic volumes due to reassigned traffic from Springbrook Road and OR 99W to the Crestview Drive extension.

2025 Horizon Year Commercial Property Sensitivity Analysis

A planning-level analysis was prepared to account for the future development potential of the 4.43-acre commercial property adjacent to the development site. While this is NOT part of this development application, the analysis was conducted to evaluate the future effectiveness of the recommended mitigations.

- A planning-level estimate for developable commercial area was used to estimate the number of potential commercial-related site trips. The gross leasable area-to-acreage ratio was assumed at 25 percent, and the entire commercial property was assumed as shopping center land use.
- The commercial development trips were added to the residential trips of this application to arrive at a total development estimate of 5,416 weekday daily trips, of which 370 (155 in, 215 out) will occur during the AM peak hour and 440 (247 in, 193 out) will occur during the PM peak hour. The development is also expected to generate approximately 96 pass-by trips during the weekday PM peak hour—these were treated as diverted trips from OR 99W.

- The Crestview Drive/Providence Drive/OR 99W intersection and Crestview Drive/East-West Connector roundabout were analyzed under 2025 conditions assuming development of the 4.43-acre commercial property.
- The Crestview Drive/East-West Connector intersection is expected to continue operating acceptably as a single-lane roundabout.
- With the mitigation improvements associated with the residential development in place, the weekday AM and PM peak hour v/c ratios at the Crestview Drive/Providence Drive/OR 99W intersection are forecast to be 0.98 and 1.02, respectively.

  Per ODOT policy guidance, when an intersection exceeds the mobility target but the v/c ratio increases by less than 0.03 as a result of development, the impacts are not considered significant. For this reason, no additional mitigation measures would be warranted as a result of additional commercial development.

RECOMMENDATIONS

Providence Drive/Crestview Drive/OR 99W Intersection

- The new north leg of the intersection, which will be an extension of Crestview Drive, should be configured as a four-lane section with one northbound lane and three southbound lanes (exclusive lanes for left-turn, through, and right-turn movements). At least 225 feet of southbound left turn storage and at least 150 feet of southbound right turn storage should be provided to accommodate the forecast 95th percentile queue lengths.
- The south leg of the intersection should be restriped to a four-lane section with one southbound lane and three northbound lanes (exclusive lanes for left-turn, through, and right-turn movements).
- Based on the forecast 95th percentile queuing analysis:
  - A westbound right turn lane should be constructed with at least 275 feet of storage.
  - An eastbound left turn lane should be striped to provide at least 125 feet of storage.
- Recommended signal phasing: the intersection should be operated with permissive left turn movements on the northbound and southbound approaches and fully protected left turn movements on the eastbound and westbound approaches.

On-Site Circulation/Site Access Operations

- Driveways, landscaping, utilities, and signage within the site should be located and maintained to provide sufficient sight distance at all new internal intersections and accesses.
- Other than at the Providence Drive/Crestview Drive/OR 99W intersection, a two-lane section of Crestview Drive should be adequate to accommodate turning movements and queuing within the proposed development.

Section 6
References

REFERENCES

1. Transportation Research Board of the National Academies. *Highway Capacity Manual 2000*. 2000.

2. City of Newberg, Oregon. *Transportation System Plan*. 2016.

3. Yamhill County Transit Area. "Routes and Schedules." 2017. <http://www.yctransitarea.org/index.php/routes-and-schedules/>. Accessed 12-21-2017.

4. Institute of Transportation Engineers. *Trip Generation: 10th Edition*. 2017.

Appendix A
Scoping Memorandum

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

SCOPING MEMORANDUM

Date: October 19, 2017

Project #: 21709

To: Steve Olson, City of Newberg
Gerry Juster and Keith Blair, ODOT

From: Zachary Bugg, PhD; Diego Arguea, PE; and Matt Hughart, AICP

Project: Crestview Crossing

Subject: Traffic Impact Analysis Scoping Memorandum

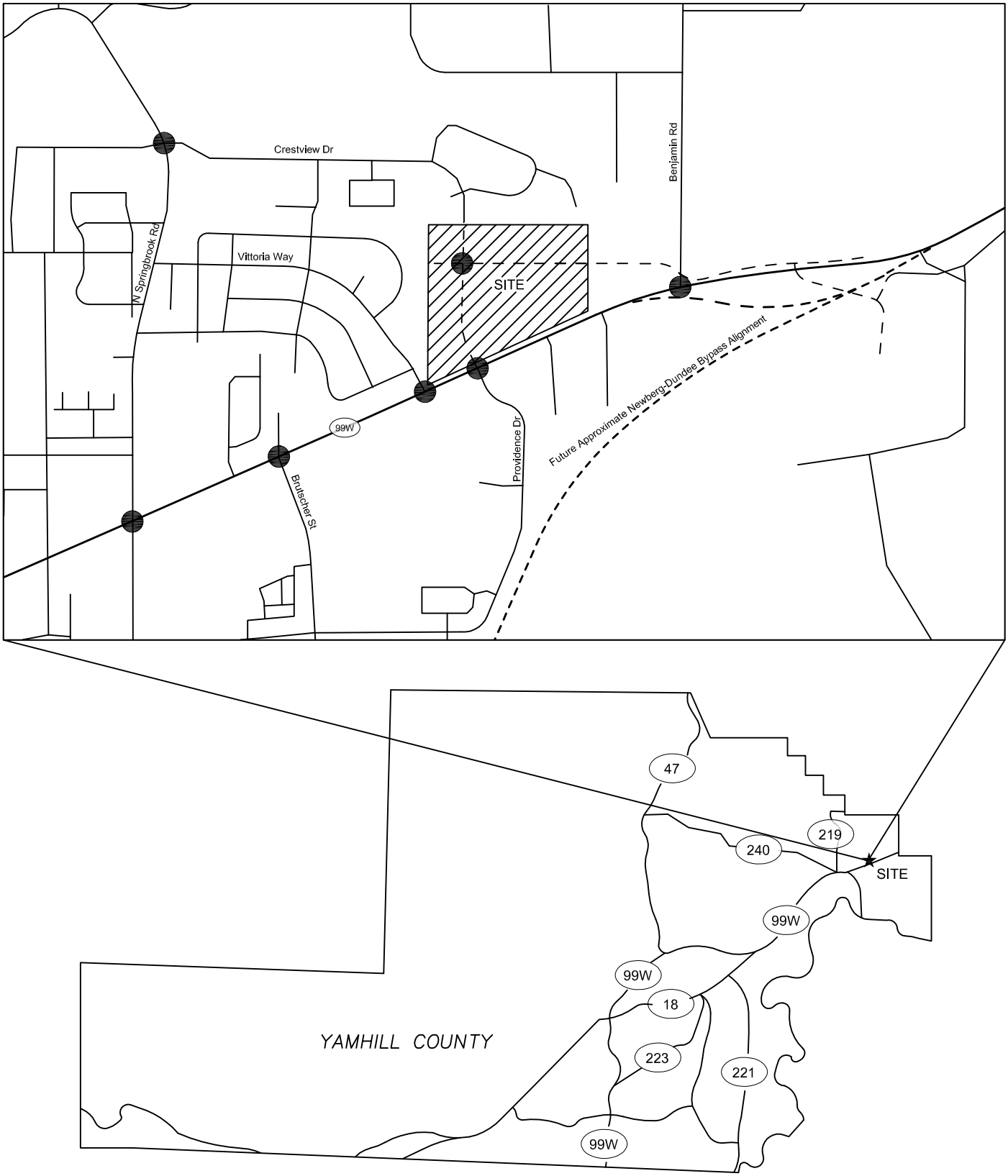
This memorandum represents a scoping needs assessment for preparing the Traffic Impact Analysis (TIA) associated with the proposed development located at the northeast corner of the OR 99W/ Providence Drive intersection in Newberg, Oregon. The assumptions for scoping the TIA are based on a review of a conceptual site plan, a preapplication meeting and discussions between City of Newberg staff and the Applicant, and our working knowledge of the transportation policies of City of Newberg and the Oregon Department of Transportation (ODOT).

Proposed Development

The Applicant, JT Smith Companies, is in the process of preparing an application to develop a 33.13-acre mixed-use development on the subject property. The site is currently occupied by farm land and one single family home. The site is bordered by OR 99W to the south and by residential uses to the west, north, and east.

Figure 1 displays a site vicinity map, and Figure 2 displays the proposed site plan. Per the current site plan, the development will include 249 single-family homes, 48 apartment units, 4.43 acres of commercial property, and 1.17 acres of civic space. As shown, the site development includes an extension of Crestview Drive to the south through the proposed development, connecting to OR 99W to form the north leg of the OR 99W/Providence Drive intersection.

Per ODOT and City of Newberg criteria, a TIA is needed as part of the design review application for the development. This memorandum presents the proposed methodology to prepare the TIA and reflects the outcome of conversations with City and ODOT staff.



● - Study Intersection

Site Vicinity
Newberg, Oregon

Figure
1

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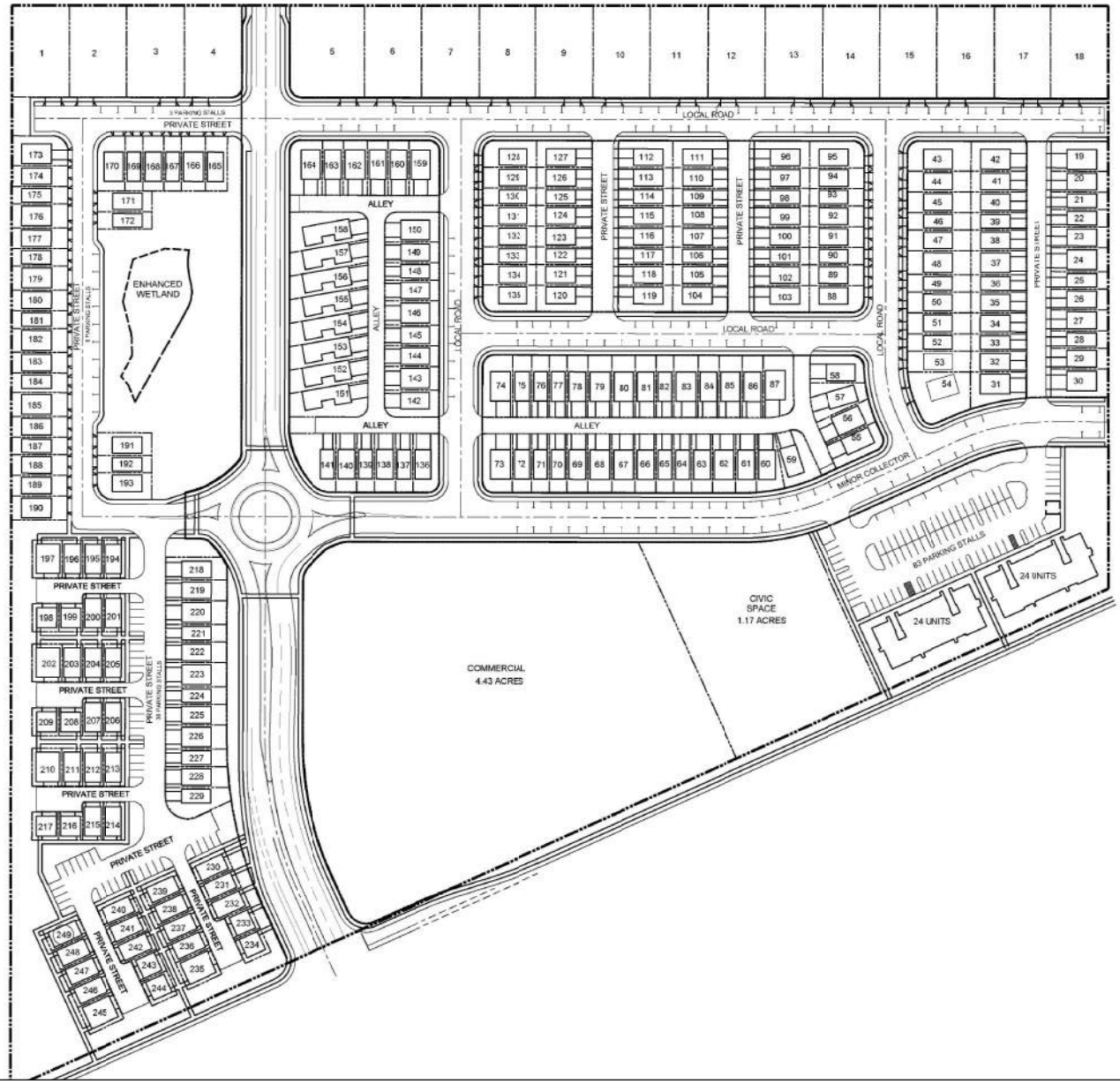
KITTELSON & ASSOCIATES



SITE STATISTICS

PROPERTY:	3216AC 13800 & 321601100
JURISDICTION:	CITY OF NEWBERG
GROSS SIZE:	33.13 ACRES
EXISTING ZONING:	
R-1:	4.31 ACRES
R-2:	6.58 ACRES
C-2:	22.24 ACRES
PROPOSED ZONING:	R-1 & R-3
R-1:	5.73 ACRES
R-3:	23.00 ACRES
C-2:	4.40 ACRES

SITE NOTE

SITE MAP HAS BEEN PREPARED USING DATA FROM EXISTING TAX MAPS AND METRO'S RLIS GIS DATA. THIS MAP HAS BEEN PREPARED FOR ILLUSTRATIVE PURPOSES ONLY. ALL BOUNDARY AND DIMENSIONAL INFORMATION SHOULD BE VERIFIED BY A PROFESSIONAL LAND SURVEYOR.

N
W E
S

SCALE:
0 150' 300'

Site Plan Provided by 3J Consulting 8/14/2017

Proposed Site Plan
Newberg, Oregon

Figure
2

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KITTELSON & ASSOCIATES

Trip Generation

Preliminary trip generation estimates for the proposed development were prepared based on the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 9th Edition (Reference 1) for weekday daily, AM peak hour, and PM peak hour time periods. The trip generation is based on the residential and commercial mix, with an assumed use of the civic space for a community center. Internal and pass-by trips were estimated based on rates identified in the *Trip Generation Handbook,* 2nd Edition (Institute of Transportation Engineers, 2004)[1]. The trip generation is summarized below in Table 1.

Table 1. Preliminary Trip Generation Estimate

Land Use	ITE Code	Size	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Single-Family Detached Housing	210	249 units	2,370	187	47	140	249	157	92
Less Internal Trips (13% Daily, 8% AM, 12% PM)			*308*	*15*	*4*	*11*	*30*	*19*	*11*
Apartment	220	48 units	320	24	5	19	30	20	10
Less Internal Trips (13% Daily, 8% AM, 12% PM)			*42*	*2*	*0*	*2*	*4*	*2*	*2*
Shopping Center	820	48,243 ft²*	2,060	46	29	17	179	86	93
Less Internal Trips (13% Daily, 8% AM, 12% PM)			*268*	*4*	*2*	*2*	*21*	*10*	*11*
Less Pass-by Trips (34% Daily, AM, PM)			*610*	*14*	*7*	*7*	*54*	*27*	*27*
Recreational Community Center	495	12,741 ft²*	292	26	17	9	35	17	18
Less Internal Trips (13% Daily, 8% AM, 12% PM)			*38*	*2*	*1*	*1*	*4*	*2*	*2*
Total Gross Trips			**5,042**	**283**	**98**	**185**	**493**	**280**	**213**
Less Internal Trips			***656***	***23***	***7***	***16***	***59***	***33***	***26***
Less Pass-by Trips			***610***	***14***	***7***	***7***	***54***	***27***	***27***
Total Net New Trips			**3,776**	**246**	**84**	**162**	**380**	**220**	**160**

*Assumes gross floor area/acreage = 0.25

As shown in Table 1, the proposed development is estimated to generate a potential of up to 246 weekday AM peak hour trips and 380 weekday PM peak hour trips.

To provide a high estimate that would result in a more conservative analysis, the trip generation in Table 1 reflects the commercial property as a general Shopping Center—no further details about the development of this property are known at this time. Also, the trip generation assumes that the civic space will function as a community area, and thus has been estimated to operate as a Recreational Community Center for trip generation estimate purposes. Should the civic space only be available as a private amenity to the residential community (such as a community pool/fitness center), then all trips associated with this land use will be internal to the development, and thus the total net new trips will

[1] The ITE Trip Generation Handbook does not include trip internalization rates for the weekday AM peak hour time period. The weekday midday peak hour trip internalization rates were applied as the best available data.

be lower than what is shown in Table 1. The final TIA will document all assumptions and reflect the revised trip generation accordingly.

The internalization calculations and assumptions are included in Attachment "A" to this memorandum.

Trip Distribution and Assignment

The study area is contained within the Newberg Transportation Planning Model. A select-zone analysis will be used to develop a trip distribution pattern for the proposed site (TAZ 117). Please provide two select zone analyses, one with the Crestview Road connection and one without the Crestview Road connection through the proposed site.

Study Area and Intersections

Based on the estimated trip generation and assignment patterns, the following intersections and accesses are proposed for analysis:

- OR 99W/Springbrook Road
- OR 99W/Brutscher Street
- OR 99W/Vittoria Way
- OR 99W/Providence Drive/Crestview Drive
- OR 99W/Benjamin Road
- Crestview Drive/Site Access
- Springbrook Road/Crestview Drive

Additionally, all accesses to the commercial property and civic property will be analyzed.

Time Periods for Analysis

Existing and estimated build-out year 2020 conditions at the identified study intersections will be analyzed using Synchro/SimTraffic Version 9 software. Turning movement counts at the study intersections will be collected during the morning (6 – 9 AM) and afternoon (3 – 6 PM) periods on a typical mid-week day when school is in session. Additionally, a 16-hour count (6 AM – 10 PM) will be performed at the OR 99W/Providence Drive intersection in support of a potential modified signal design and complete safety analysis.

Based on conversations with ODOT staff, the site is located in an area influenced by both seasonal traffic and school traffic, with the peak travel period occurring in September. Therefore, the counts will be performed between September 12, 2017 and September 21, 2017 per ODOT direction, and no seasonal volume adjustment will be required.

In-process Developments

A two percent annual growth rate will be applied to the existing mainline traffic volumes on OR 99W to generate future background traffic volumes before any trips associated with approved in-process developments are added to the background traffic volumes. We request that City of Newberg and/or ODOT confirm the two percent annual growth rate and provide any other developments to be included as in-process.

Network Traffic Reassignment

The proposed development will result in a major network connection via the southward extension of Crestview Drive to OR 99W. The methodology for reassigning existing traffic to this new connection will be based upon a combination of the Transportation System Plan and the results of the select-zone analysis applying the Newberg Transportation Planning Model.

Queuing Analysis

An analysis of average and 95th-percentile queues will be prepared based on *SimTraffic* microsimulation. The analysis will be based on five simulation runs per intersection and analysis scenario.

Crash Analysis

The most recent five years of reported crash data at the study intersections will be requested from ODOT and reviewed in detail. The ODOT Statewide Priority Index System (SPIS) will also be reviewed to identify any sites where safety issues may encourage further investigation.

Signal Timing

We will obtain the latest signal timing and phasing information for the three signalized study intersections from ODOT:

- OR 99W/Springbrook Road
- OR 99W/Brutscher Street
- OR 99W/Providence Drive

Next Steps

We trust this memorandum provides adequate documentation of the proposed land use action, methodology, and specific study intersections and analysis periods to address in the TIA. We formally request that City of Newberg and ODOT Region 2 provide written confirmation and/or questions

regarding the proposed methodology and project TIA assumptions as soon as possible so that we may proceed with our analysis. If you have any questions, please give us a call at (503) 228-5230.

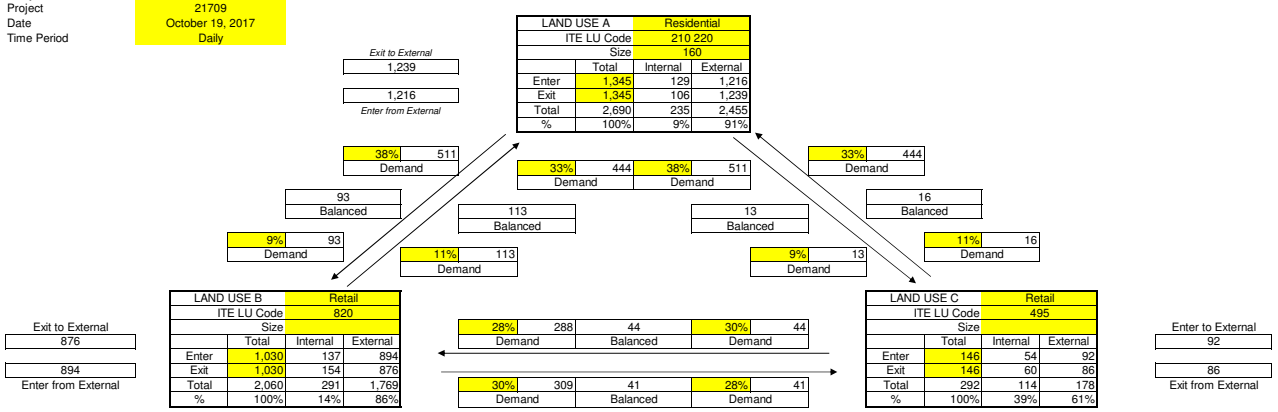
REFERENCES

1. Institute of Transportation Engineers. *Trip Generation Manual, 9th Edition*. 2012.
2. Institute of Transportation Engineers. *Trip Generation Handbook, 2nd Edition*. 2004.

ATTACHMENT A

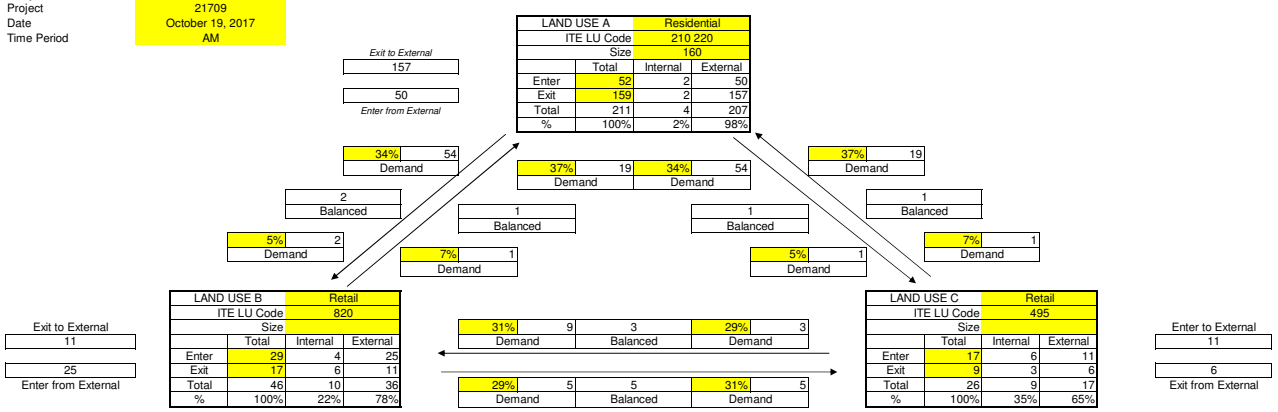
Trip Generation Internalization Calculations

Analyst	ZHB
Project	21709
Date	October 19, 2017
Time Period	Daily



NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
	LAND USE A	LAND USE B	LAND USE C	TOTAL	
Enter	1,216	894	92	2,201	
Exit	1,239	876	86	2,201	
Total	2,455	1,769	178	4,402	INTERNAL CAPTURE
Single-Use Trip Gen Est.	2,690	2,060	292	5,042	13%

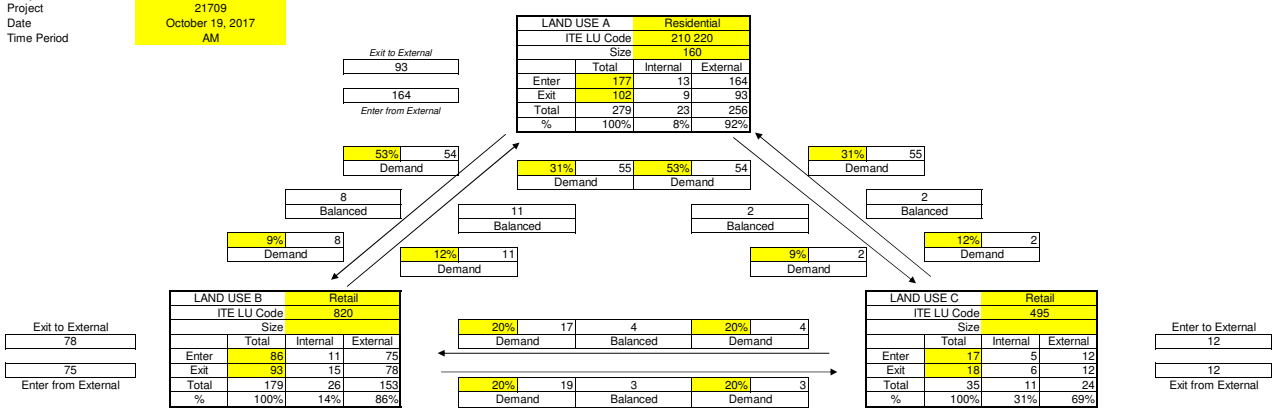
Analyst	ZHB
Project	21709
Date	October 19, 2017
Time Period	AM



NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT

	LAND USE A	LAND USE B	LAND USE C	TOTAL	
Enter	50	25	11	86	
Exit	157	11	6	173	
Total	207	36	17	260	INTERNAL CAPTURE
Single-Use Trip Gen Est.	211	46	26	283	8%

Analyst	ZHB
Project	21709
Date	October 19, 2017
Time Period	AM



NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
	LAND USE A	**LAND USE B**	**LAND USE C**	**TOTAL**	
Enter	164	75	12	250	
Exit	93	78	12	183	
Total	256	153	24	434	INTERNAL CAPTURE
Single-Use Trip Gen Est.	279	179	35	493	12%

Appendix B
Turning Movement Counts

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

LOCATION: Springbrook Rd -- Crestview Dr

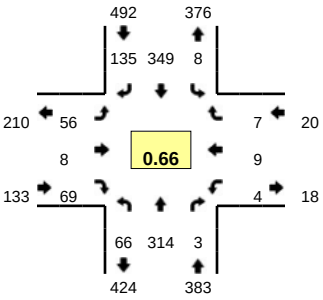
CITY/STATE: Newberg, OR

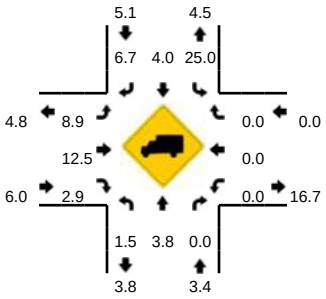
QC JOB #: 14505611

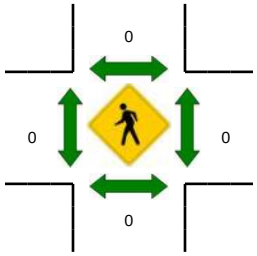
DATE: Thu, Sep 14 2017

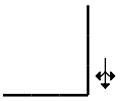
Peak-Hour: 7:05 AM -- 8:05 AM

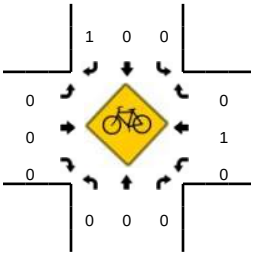
Peak 15-Min: 7:20 AM -- 7:35 AM

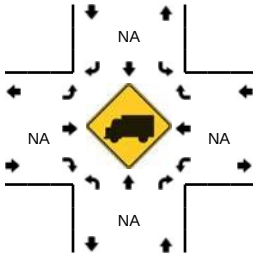


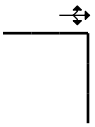


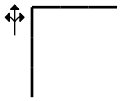


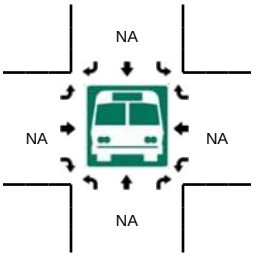












5-Min Count Period Beginning At	Springbrook Rd (Northbound)				Springbrook Rd (Southbound)				Crestview Dr (Eastbound)				Crestview Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:35 AM	0	9	0	0	0	19	2	0	0	0	1	0	0	0	0	0	31	
6:40 AM	1	10	0	0	0	22	5	0	1	0	3	0	0	0	1	0	43	
6:45 AM	0	20	0	0	0	35	5	0	0	0	1	0	0	0	0	0	61	
6:50 AM	0	10	0	0	1	30	12	0	1	0	0	0	0	2	1	0	57	
6:55 AM	0	23	0	0	1	22	9	0	1	1	0	0	1	1	0	0	59	485
7:00 AM	1	13	0	0	1	27	4	0	2	0	0	0	1	1	2	0	52	511
7:05 AM	6	21	1	1	1	23	11	1	3	0	0	0	1	0	0	0	69	558
7:10 AM	5	15	0	0	0	37	14	0	1	0	3	0	0	1	1	0	77	596
7:15 AM	14	16	0	0	1	26	23	0	9	2	6	1	0	0	0	0	98	660
7:20 AM	15	37	1	0	1	26	28	0	7	2	14	0	0	2	0	0	133	758
7:25 AM	10	30	0	0	0	29	26	0	7	3	21	0	0	5	1	0	132	851
7:30 AM	5	39	0	0	0	31	15	0	14	0	19	1	0	0	0	0	124	936
7:35 AM	1	25	1	1	1	30	8	0	8	1	2	0	0	0	1	0	79	984
7:40 AM	1	24	0	0	1	39	1	0	1	0	0	0	0	0	0	0	67	1008
7:45 AM	0	25	0	0	0	28	0	0	1	0	0	0	0	0	1	0	55	1002
7:50 AM	2	23	0	0	0	28	3	0	1	0	2	0	2	1	2	0	64	1009
7:55 AM	5	30	0	0	0	23	5	0	2	0	2	0	0	0	0	0	67	1017
8:00 AM	0	29	0	0	2	29	1	0	0	0	0	0	1	0	1	0	63	1028
8:05 AM	1	24	0	0	0	35	0	0	2	0	1	0	0	0	3	0	66	1025
8:10 AM	0	38	1	0	0	25	4	0	0	0	0	0	2	1	4	0	75	1023
8:15 AM	1	18	0	2	0	28	2	0	0	0	2	0	0	0	1	0	54	979
8:20 AM	2	17	0	0	0	39	1	0	1	0	0	0	2	0	1	0	63	909
8:25 AM	0	8	1	0	0	28	3	0	3	0	1	0	0	0	0	0	44	821
8:30 AM	0	25	0	0	0	22	0	0	2	0	0	0	0	0	0	0	49	746

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	120	424	4	0	4	344	276	0	112	20	216	4	0	28	4	0	1556
Heavy Trucks	0	12	0		0	16	16		4	4	8		0	0	0		60
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2018 11:00 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

LOCATION: N Libra St -- Crestview Dr

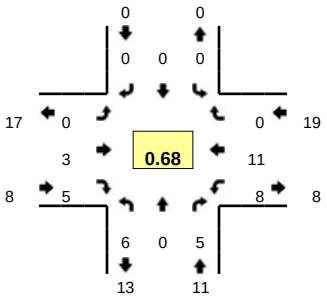
CITY/STATE: Newberg, OR

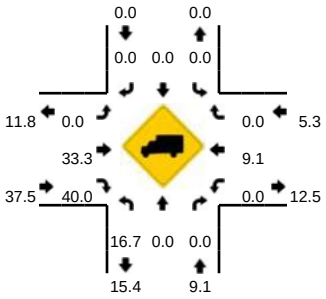
QC JOB #: 14566406

DATE: Wed, Nov 15 2017

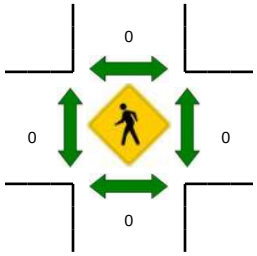
Peak-Hour: 8:00 AM -- 9:00 AM

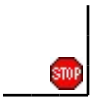
Peak 15-Min: 8:10 AM -- 8:25 AM

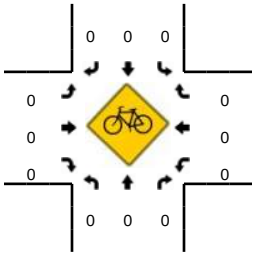


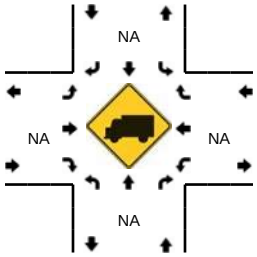


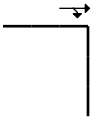
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

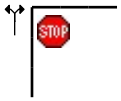


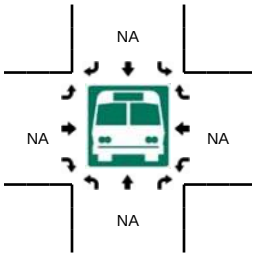












5-Min Count Period Beginning At	N Libra St (Northbound)				N Libra St (Southbound)				Crestview Dr (Eastbound)				Crestview Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	0	0	0	0	0	0	0	0	0	1	0	0	3	0	0	6	
7:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	
7:10 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
7:15 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	3	
7:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
7:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	4	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	
7:35 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	
7:40 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	3	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	4	
7:50 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
7:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	33
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	28
8:05 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	3	28
8:10 AM	4	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	7	33
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3	33
8:20 AM	1	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	4	36
8:25 AM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	2	34
8:30 AM	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	3	34
8:35 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	3	35
8:40 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	33
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	31
8:50 AM	0	0	2	0	0	0	0	0	0	0	1	0	1	1	0	0	5	35
8:55 AM	1	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	4	38

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	0	4	0	0	0	0	0	0	4	4	0	4	20	0	0	56
Heavy Trucks	4	0	0		0	0	0		0	0	4		0	0	0		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2018 11:04 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

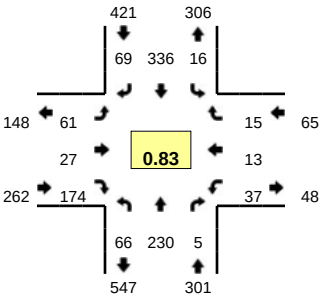
LOCATION: N Springbrook Rd -- Haworth Ave

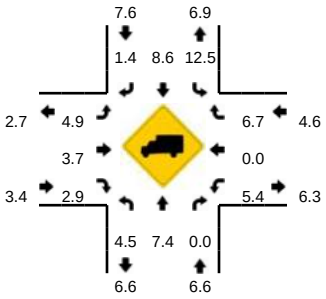
QC JOB #: 14566404

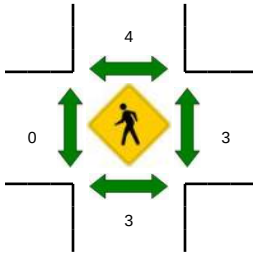
CITY/STATE: Newberg, OR

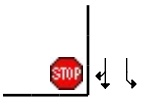
DATE: Wed, Nov 15 2017

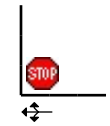
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:20 AM -- 8:35 AM

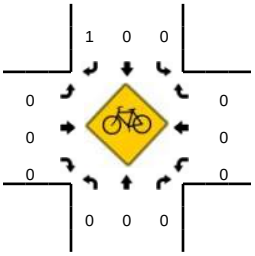


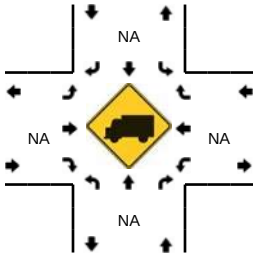


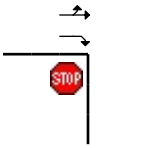


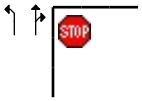


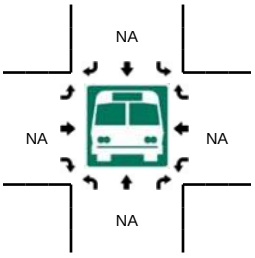












5-Min Count Period Beginning At	N Springbrook Rd (Northbound)				N Springbrook Rd (Southbound)				Haworth Ave (Eastbound)				Haworth Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	28	0	0	1	17	7	0	15	1	21	0	2	1	0	0	96	
7:05 AM	5	21	0	0	0	24	7	0	10	1	15	0	1	0	0	0	84	
7:10 AM	5	17	0	0	1	26	5	0	4	1	19	0	2	1	2	0	83	
7:15 AM	3	18	0	0	0	30	5	0	11	0	23	0	0	0	0	0	90	
7:20 AM	6	20	1	0	0	24	4	0	8	1	17	0	2	2	1	0	86	
7:25 AM	6	13	0	0	1	26	4	0	7	3	16	0	1	0	0	0	77	
7:30 AM	3	17	0	0	1	22	6	0	10	1	13	0	4	1	2	0	80	
7:35 AM	6	24	0	0	0	31	5	0	5	0	13	0	0	0	1	0	85	
7:40 AM	1	19	2	0	3	24	9	0	6	0	10	0	4	1	1	0	80	
7:45 AM	2	12	0	0	0	19	4	0	5	0	6	0	2	1	2	0	53	
7:50 AM	8	23	0	0	3	16	10	0	9	1	14	0	2	0	0	0	86	
7:55 AM	3	10	1	0	0	28	5	0	0	4	8	0	1	0	0	0	60	960
8:00 AM	5	17	0	0	1	19	5	0	5	0	11	0	3	0	3	0	69	933
8:05 AM	4	24	1	0	1	19	7	0	4	1	11	0	3	0	3	0	78	927
8:10 AM	2	24	0	0	1	23	7	0	5	3	15	0	4	1	1	0	86	930
8:15 AM	6	28	0	0	2	26	3	0	9	4	11	0	0	1	0	0	90	930
8:20 AM	5	28	0	0	1	42	5	0	3	3	11	0	5	2	0	0	105	949
8:25 AM	6	17	0	0	2	36	10	0	9	2	18	0	0	0	0	0	100	972
8:30 AM	9	13	0	0	3	35	11	0	7	3	21	0	4	3	1	0	110	1002
8:35 AM	6	17	0	0	0	40	5	0	2	2	22	0	3	1	1	0	99	1016
8:40 AM	5	14	1	0	1	30	5	0	1	3	19	0	5	1	2	0	87	1023
8:45 AM	7	17	1	0	2	16	6	0	9	2	13	0	4	0	1	0	78	1048
8:50 AM	6	16	0	0	1	18	2	0	1	1	8	0	4	1	1	0	59	1021
8:55 AM	5	15	2	0	1	32	3	0	6	3	14	0	2	3	2	0	88	1049

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	80	232	0	0	24	452	104	0	76	32	200	0	36	20	4	0	1260
Heavy Trucks	4	8	0		4	36	4		0	4	8		0	0	0		68
Pedestrians		8				4				0				4			16
Bicycles	0	0	0		0	0	1		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2018 11:04 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

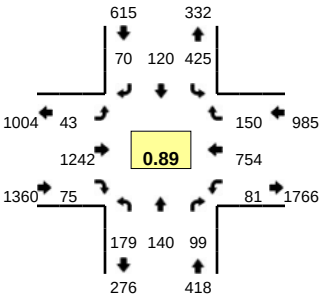
Type of peak hour being reported: User-Defined

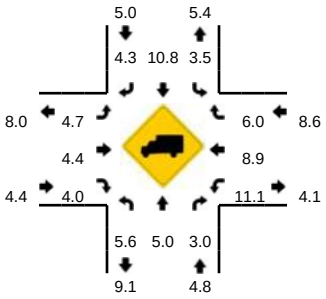
Method for determining peak hour: Total Entering Volume

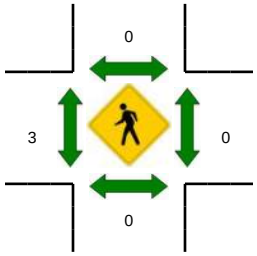
LOCATION: N Springbrook Rd -- OR 99W
CITY/STATE: Newberg, OR

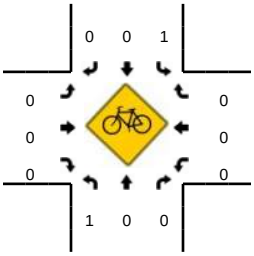
QC JOB #: 14505601
DATE: Thu, Sep 14 2017

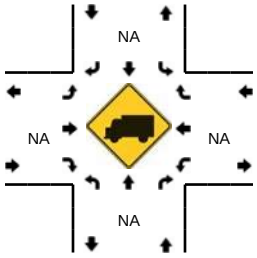
Peak-Hour: 6:55 AM -- 7:55 AM
Peak 15-Min: 7:20 AM -- 7:35 AM

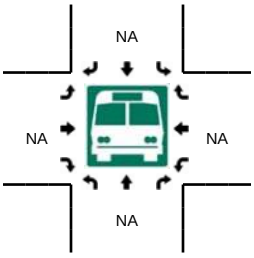


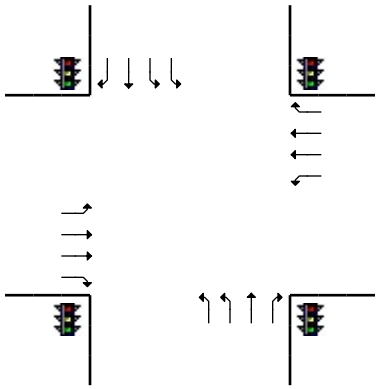












5-Min Count Period Beginning At	N Springbrook Rd (Northbound)				N Springbrook Rd (Southbound)				OR 99W (Eastbound)				OR 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:25 AM	5	2	7	0	27	11	3	0	0	104	3	0	2	32	4	0	200	
6:30 AM	9	4	6	0	27	7	3	0	1	141	6	0	3	39	5	0	251	
6:35 AM	12	4	11	0	43	8	1	0	0	109	3	0	5	50	4	1	251	
6:40 AM	7	5	10	0	26	6	1	0	2	136	2	0	3	42	4	0	244	
6:45 AM	5	7	9	0	23	7	4	0	3	119	0	0	0	63	9	0	249	
6:50 AM	7	9	9	0	44	4	6	0	1	111	1	0	5	52	6	0	255	
6:55 AM	5	9	7	0	36	2	4	0	4	101	5	0	6	49	14	0	242	2665
7:00 AM	6	10	6	0	33	7	9	0	4	112	2	0	4	49	19	0	261	2739
7:05 AM	8	12	7	0	17	10	6	0	3	85	3	0	8	60	12	0	231	2795
7:10 AM	13	16	7	0	42	8	5	0	3	114	5	1	7	51	6	0	278	2858
7:15 AM	14	18	9	0	33	8	9	0	1	103	2	0	7	44	13	0	261	2952
7:20 AM	18	12	7	0	41	13	7	0	3	114	3	0	6	54	11	0	289	3012
7:25 AM	18	17	15	0	31	15	5	0	1	104	15	0	5	87	21	0	334	3146
7:30 AM	20	8	11	0	48	13	7	0	5	108	6	0	5	80	15	0	326	3221
7:35 AM	20	12	11	0	33	17	6	0	6	84	9	0	8	68	10	0	284	3254
7:40 AM	19	9	8	0	48	6	2	0	2	116	12	0	8	65	9	0	304	3314
7:45 AM	18	11	6	0	25	12	5	0	10	90	6	0	9	78	11	0	281	3346
7:50 AM	20	6	5	0	38	9	5	0	0	111	7	0	8	69	9	0	287	3378
7:55 AM	10	16	11	0	17	7	6	0	3	92	11	0	16	74	14	0	277	3413
8:00 AM	13	9	9	0	35	11	9	0	0	65	10	2	10	79	14	0	266	3418
8:05 AM	17	11	9	0	28	5	11	0	3	105	8	0	4	68	11	0	280	3467
8:10 AM	23	27	14	0	22	14	8	0	3	67	8	0	9	82	17	0	294	3483
8:15 AM	25	15	11	0	29	10	5	0	2	97	1	0	4	57	7	0	263	3485
8:20 AM	11	4	8	0	34	20	4	0	5	83	6	0	8	62	8	0	253	3449

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	224	148	132	0	480	164	76	0	36	1304	96	0	64	884	188	0	3796
Heavy Trucks	16	4	0		12	20	4		4	60	8		0	80	8		216
Pedestrians		0				0				4				0			4
Bicycles	1	0	0		1	0	0		0	0	0		0	0	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2018 10:59 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

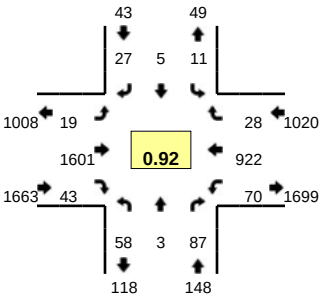
Type of peak hour being reported: User-Defined

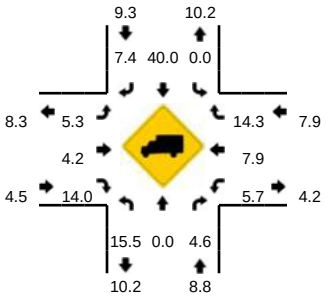
Method for determining peak hour: Total Entering Volume

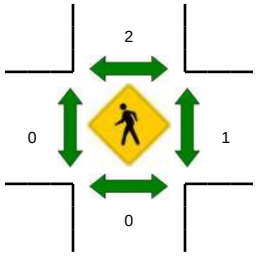
LOCATION: Brutscher St -- OR 99W
CITY/STATE: Newberg, OR

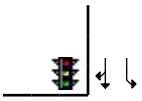
QC JOB #: 14505603
DATE: Thu, Sep 14 2017

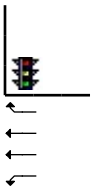
Peak-Hour: 6:55 AM -- 7:55 AM
Peak 15-Min: 7:25 AM -- 7:40 AM

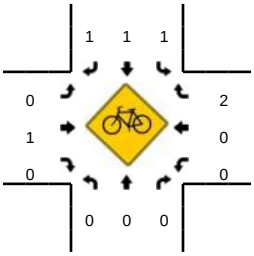


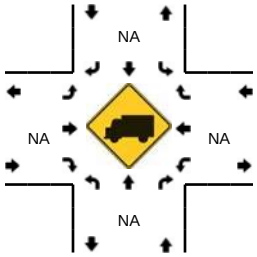


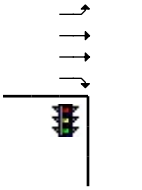


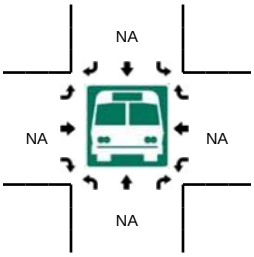












5-Min Count Period Beginning At	Brutscher St (Northbound)				Brutscher St (Southbound)				OR 99W (Eastbound)				OR 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:25 AM	0	0	4	0	0	0	6	0	0	139	1	0	4	36	3	0	193	
6:30 AM	2	0	10	0	0	0	2	0	1	154	3	0	3	50	0	0	225	
6:35 AM	1	0	4	0	1	0	1	0	0	173	1	0	3	48	2	0	234	
6:40 AM	2	1	10	0	1	2	0	0	4	133	1	0	6	51	0	0	211	
6:45 AM	2	1	9	0	2	0	1	0	1	170	1	0	2	66	4	0	259	
6:50 AM	1	2	14	0	4	0	3	0	1	140	5	0	11	59	3	0	243	
6:55 AM	3	0	4	0	1	1	2	0	1	148	3	0	5	73	1	0	242	2513
7:00 AM	3	0	5	0	2	0	1	0	0	126	2	0	7	55	4	0	205	2547
7:05 AM	4	0	12	0	2	0	1	0	1	117	2	0	3	73	2	0	217	2604
7:10 AM	4	0	4	0	1	0	3	0	2	132	1	0	6	64	3	0	220	2643
7:15 AM	4	0	11	0	0	0	3	0	1	158	2	0	10	62	2	0	253	2717
7:20 AM	8	0	3	0	1	1	1	0	1	124	6	0	2	71	1	0	219	2721
7:25 AM	7	0	11	0	0	0	2	0	2	145	7	1	3	94	3	0	275	2803
7:30 AM	6	1	6	0	1	0	2	0	3	128	4	0	9	92	0	0	252	2830
7:35 AM	3	1	6	0	1	2	2	0	0	144	2	0	3	81	6	0	251	2847
7:40 AM	2	0	15	0	1	0	9	0	3	131	6	0	9	65	3	0	244	2880
7:45 AM	7	1	7	0	1	0	1	0	0	137	4	0	3	98	1	0	260	2881
7:50 AM	7	0	3	0	0	1	0	0	4	111	4	0	10	94	2	0	236	2874
7:55 AM	10	2	10	0	4	0	2	0	1	122	5	1	5	78	1	0	241	2873
8:00 AM	10	1	11	0	1	0	2	0	1	83	14	0	9	80	2	0	214	2882
8:05 AM	8	0	6	0	0	1	3	0	1	106	1	0	1	90	4	0	221	2886
8:10 AM	16	2	6	0	0	1	1	0	2	100	5	1	4	80	2	0	220	2886
8:15 AM	6	0	5	0	2	1	2	0	3	93	5	1	15	69	0	0	202	2835
8:20 AM	7	1	9	0	2	0	1	0	1	114	7	1	8	60	0	0	211	2827

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	64	8	92	0	8	8	24	0	20	1668	52	4	60	1068	36	0	3112
Heavy Trucks	16	0	0		0	0	0		0	40	4		0	92	0		152
Pedestrians		0				4				0				4			8
Bicycles	0	0	0		1	0	0		0	1	0		0	0	1		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2018 10:59 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

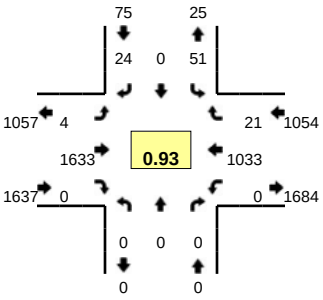
Type of peak hour being reported: User-Defined

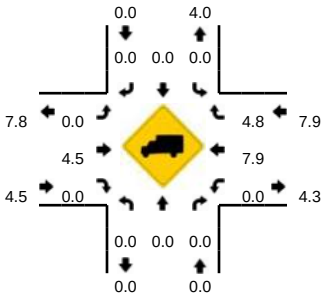
Method for determining peak hour: Total Entering Volume

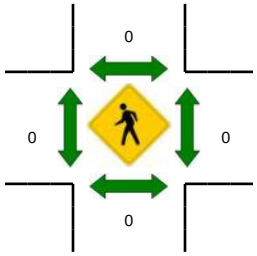
LOCATION: Vittoria Way -- OR 99W
CITY/STATE: Newberg, OR

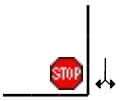
QC JOB #: 14505605
DATE: Thu, Sep 14 2017

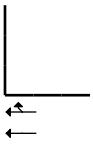
Peak-Hour: 6:55 AM -- 7:55 AM
Peak 15-Min: 7:25 AM -- 7:40 AM

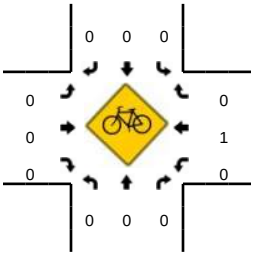


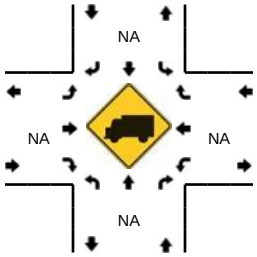


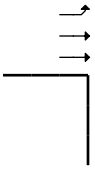


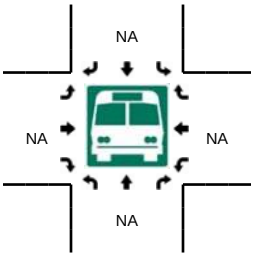












5-Min Count Period Beginning At	Vittoria Way (Northbound)				Vittoria Way (Southbound)				OR 99W (Eastbound)				OR 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:25 AM	0	0	0	0	10	0	0	0	0	155	0	0	0	39	3	0	207	
6:30 AM	0	0	0	0	7	0	2	0	0	141	0	0	0	54	1	0	205	
6:35 AM	0	0	0	0	3	0	2	0	0	182	0	0	0	60	1	0	248	
6:40 AM	0	0	0	0	4	0	1	0	0	126	0	0	0	63	0	0	194	
6:45 AM	0	0	0	0	1	0	3	0	1	180	0	0	0	69	0	0	254	
6:50 AM	0	0	0	0	4	0	3	0	0	131	0	0	0	65	0	0	203	
6:55 AM	0	0	0	0	7	0	1	0	0	156	0	0	0	89	1	0	254	2446
7:00 AM	0	0	0	0	3	0	0	0	0	123	0	0	0	66	2	0	194	2477
7:05 AM	0	0	0	0	6	0	2	0	0	142	0	0	0	76	1	0	227	2532
7:10 AM	0	0	0	0	5	0	3	0	0	125	0	0	0	78	2	0	213	2590
7:15 AM	0	0	0	0	5	0	1	0	1	165	0	0	0	66	0	0	238	2633
7:20 AM	0	0	0	0	6	0	1	0	1	131	0	0	0	72	2	0	213	2650
7:25 AM	0	0	0	0	5	0	3	0	1	133	0	0	0	106	4	0	252	2695
7:30 AM	0	0	0	0	3	0	2	0	0	130	0	0	0	95	2	0	232	2722
7:35 AM	0	0	0	0	3	0	2	0	1	153	0	0	0	97	4	0	260	2734
7:40 AM	0	0	0	0	3	0	1	0	0	130	0	0	0	72	1	0	207	2747
7:45 AM	0	0	0	0	2	0	2	0	0	147	0	0	0	113	1	0	265	2758
7:50 AM	0	0	0	0	3	0	6	0	0	98	0	0	0	103	1	0	211	2766
7:55 AM	0	0	0	0	2	0	1	0	0	124	0	0	0	90	3	0	220	2732
8:00 AM	0	0	0	0	2	0	3	0	3	91	0	0	0	89	1	0	189	2727
8:05 AM	0	0	0	0	1	0	0	0	0	99	0	0	0	80	1	0	181	2681
8:10 AM	0	0	0	0	1	0	0	0	2	95	0	0	0	97	0	0	195	2663
8:15 AM	0	0	0	0	4	0	1	0	1	95	0	0	0	80	2	0	183	2608
8:20 AM	0	0	0	0	1	0	0	0	4	113	0	0	0	81	1	0	200	2595

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	44	0	28	0	8	1664	0	0	0	1192	40	0	2976
Heavy Trucks	0	0	0		0	0	0		0	48	0		0	104	0		152
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2018 10:59 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

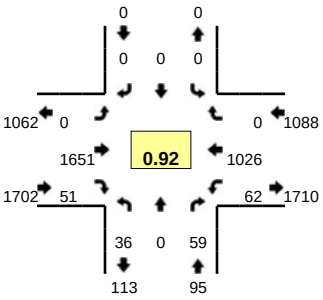
Type of peak hour being reported: User-Defined

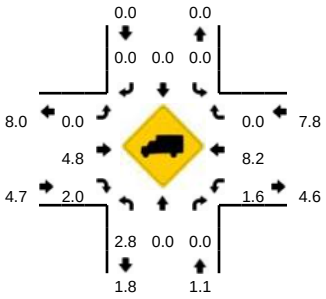
Method for determining peak hour: Total Entering Volume

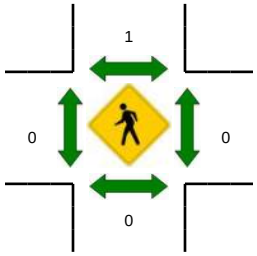
LOCATION: Providence Dr -- OR 99W
CITY/STATE: Newberg, OR

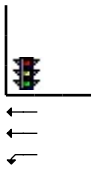
QC JOB #: 14505607
DATE: Thu, Sep 14 2017

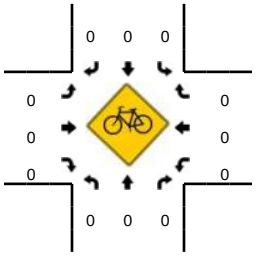
Peak-Hour: 6:55 AM -- 7:55 AM
Peak 15-Min: 7:25 AM -- 7:40 AM

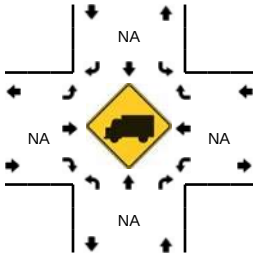


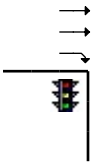


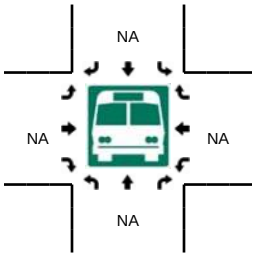












5-Min Count Period Beginning At	Providence Dr (Northbound)				Providence Dr (Southbound)				OR 99W (Eastbound)				OR 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:25 AM	1	0	2	0	0	0	0	0	0	167	3	0	4	42	0	0	219	
6:30 AM	0	0	6	0	0	0	0	0	0	149	3	0	3	53	0	0	214	
6:35 AM	0	0	3	0	0	0	0	0	0	184	6	0	6	64	0	0	263	
6:40 AM	1	0	5	0	0	0	0	0	0	132	2	0	6	60	0	0	206	
6:45 AM	0	0	1	0	0	0	0	0	0	174	6	0	2	69	0	0	252	
6:50 AM	2	0	3	0	0	0	0	0	0	130	4	0	4	63	0	0	206	
6:55 AM	2	0	4	0	0	0	0	0	0	146	4	0	14	86	0	0	256	2501
7:00 AM	1	0	2	0	0	0	0	0	0	132	3	0	6	68	0	0	212	2556
7:05 AM	0	0	3	0	0	0	0	0	0	143	5	0	4	77	0	0	232	2619
7:10 AM	3	0	9	0	0	0	0	0	0	131	2	0	3	80	0	0	228	2677
7:15 AM	2	0	3	0	0	0	0	0	0	164	2	0	3	62	0	0	236	2711
7:20 AM	2	0	10	0	0	0	0	0	0	128	6	0	4	74	0	0	224	2748
7:25 AM	4	0	2	0	0	0	0	0	0	141	4	0	6	106	0	0	263	2792
7:30 AM	6	0	8	0	0	0	0	0	0	126	3	0	7	93	0	0	243	2821
7:35 AM	4	0	6	0	0	0	0	0	0	163	4	0	5	97	0	0	279	2837
7:40 AM	5	0	7	0	0	0	0	0	0	130	6	0	4	71	0	0	223	2854
7:45 AM	4	0	2	0	0	0	0	0	0	150	5	0	6	116	0	0	283	2885
7:50 AM	3	0	3	0	0	0	0	0	0	97	7	0	0	96	0	0	206	2885
7:55 AM	2	0	2	0	0	0	0	0	0	111	14	0	6	98	0	0	233	2862
8:00 AM	1	0	3	0	0	0	0	0	0	81	1	0	5	82	0	0	173	2823
8:05 AM	8	0	3	0	0	0	0	0	0	93	7	0	4	75	0	0	190	2781
8:10 AM	1	0	3	0	0	0	0	0	0	92	5	0	4	96	0	0	201	2754
8:15 AM	2	0	0	0	0	0	0	0	0	91	10	0	3	76	0	0	182	2700
8:20 AM	3	0	1	0	0	0	0	0	0	102	8	0	6	80	0	0	200	2676

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	56	0	64	0	0	0	0	0	0	1720	44	0	72	1184	0	0	3140
Heavy Trucks	0	0	0		0	0	0		0	52	0		4	96	0		152
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2018 10:59 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

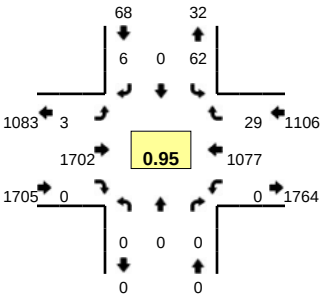
Type of peak hour being reported: User-Defined

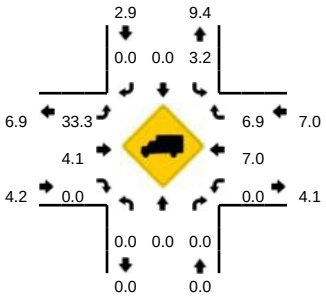
Method for determining peak hour: Total Entering Volume

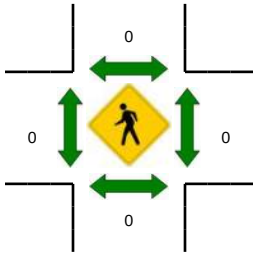
LOCATION: NE Benjamin Rd -- OR 99W
CITY/STATE: Newberg, OR

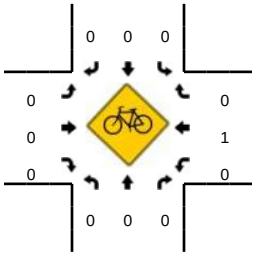
QC JOB #: 14505609
DATE: Thu, Sep 14 2017

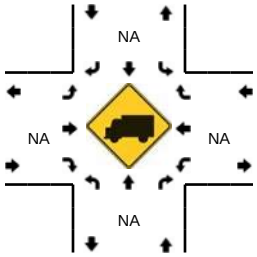
Peak-Hour: 6:55 AM -- 7:55 AM
Peak 15-Min: 7:20 AM -- 7:35 AM

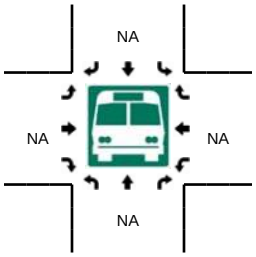












5-Min Count Period Beginning At	NE Benjamin Rd (Northbound)				NE Benjamin Rd (Southbound)				OR 99W (Eastbound)				OR 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:25 AM	0	0	0	0	3	0	2	0	1	155	0	0	0	47	0	0	208	
6:30 AM	0	0	0	0	2	0	0	0	0	160	0	0	0	49	0	0	211	
6:35 AM	0	0	0	0	4	0	0	0	0	180	0	0	0	71	0	0	255	
6:40 AM	0	0	0	0	7	0	0	0	0	156	0	0	0	70	1	0	234	
6:45 AM	0	0	0	0	6	0	0	0	0	170	0	0	0	74	3	0	253	
6:50 AM	0	0	0	0	3	0	1	0	0	141	0	0	0	73	3	0	221	
6:55 AM	0	0	0	0	4	0	1	0	0	127	0	0	0	95	2	0	229	2520
7:00 AM	0	0	0	0	7	0	1	0	0	154	0	0	0	72	2	0	236	2601
7:05 AM	0	0	0	0	7	0	0	0	0	139	0	0	0	77	2	0	225	2650
7:10 AM	0	0	0	0	10	0	0	0	0	145	0	0	0	85	1	0	241	2722
7:15 AM	0	0	0	0	10	0	1	0	1	149	0	0	0	60	1	0	222	2742
7:20 AM	0	0	0	0	1	0	0	0	0	158	0	0	0	95	1	0	255	2790
7:25 AM	0	0	0	0	2	0	0	0	1	126	0	0	0	107	7	0	243	2825
7:30 AM	0	0	0	0	8	0	0	0	0	150	0	0	0	101	1	0	260	2874
7:35 AM	0	0	0	0	3	0	1	0	0	153	0	0	0	86	6	0	249	2868
7:40 AM	0	0	0	0	3	0	1	0	0	152	0	0	0	76	3	0	235	2869
7:45 AM	0	0	0	0	5	0	1	0	1	136	0	0	0	116	2	0	261	2877
7:50 AM	0	0	0	0	2	0	0	0	0	113	0	0	0	107	1	0	223	2879
7:55 AM	0	0	0	0	5	0	0	0	0	106	0	0	0	99	5	0	215	2865
8:00 AM	0	0	0	0	6	0	0	0	0	105	0	0	0	82	4	0	197	2826
8:05 AM	0	0	0	0	1	0	1	0	0	103	0	0	0	82	8	0	195	2796
8:10 AM	0	0	0	0	5	0	1	0	1	81	0	0	0	93	1	0	182	2737
8:15 AM	0	0	0	0	4	0	1	0	0	106	0	0	0	78	4	0	193	2708
8:20 AM	0	0	0	0	1	0	1	0	0	94	0	0	0	93	1	0	190	2643

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	44	0	0	0	4	1736	0	0	0	1212	36	0	3032
Heavy Trucks	0	0	0		0	0	0		0	56	0		0	80	8		144
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2018 10:59 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

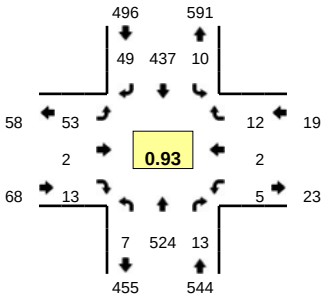
LOCATION: Springbrook Rd -- Crestview Dr

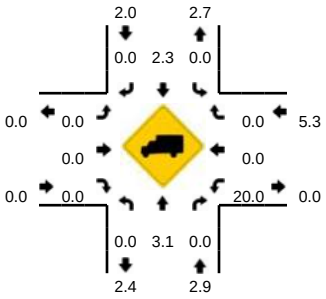
QC JOB #: 14505612

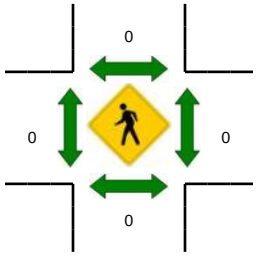
CITY/STATE: Newberg, OR

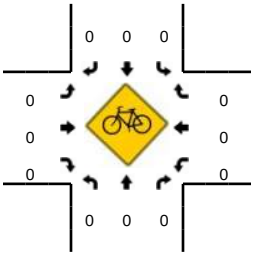
DATE: Thu, Sep 14 2017

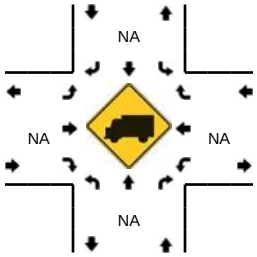
Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 4:40 PM -- 4:55 PM

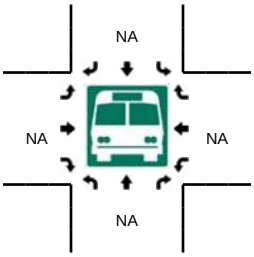












5-Min Count Period Beginning At	Springbrook Rd (Northbound)				Springbrook Rd (Southbound)				Crestview Dr (Eastbound)				Crestview Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	27	0	0	0	40	0	1	4	1	0	0	0	0	0	0	73	913
4:05 PM	1	31	0	0	1	55	3	0	2	0	0	0	1	0	1	0	95	925
4:10 PM	0	34	1	0	1	41	2	0	2	0	1	0	0	0	1	0	83	933
4:15 PM	2	26	2	0	1	35	2	0	0	0	0	0	1	0	1	0	70	923
4:20 PM	1	47	0	0	0	27	3	0	2	0	2	0	0	0	1	0	83	930
4:25 PM	1	36	1	0	0	32	6	0	1	0	0	0	0	0	0	0	77	939
4:30 PM	1	39	0	0	0	32	1	0	2	0	2	0	2	0	2	0	81	942
4:35 PM	1	31	3	0	0	38	4	0	3	0	0	0	2	0	0	0	82	922
4:40 PM	0	39	1	0	0	56	2	1	0	0	0	0	1	0	2	0	102	953
4:45 PM	2	47	1	0	2	40	4	0	2	0	0	0	0	0	2	0	100	986
4:50 PM	0	46	0	0	1	44	8	0	0	0	2	0	0	0	0	0	101	1017
4:55 PM	1	46	3	0	0	30	12	0	6	0	1	0	0	0	1	0	100	1047
5:00 PM	0	44	1	0	0	25	3	0	15	0	3	0	2	0	1	0	94	1068
5:05 PM	2	46	0	0	0	30	6	0	8	0	3	0	1	0	1	0	97	1070
5:10 PM	1	44	2	0	0	37	1	0	8	0	1	0	0	0	1	0	95	1082
5:15 PM	1	46	1	0	0	30	1	0	4	0	0	0	0	2	0	0	85	1097
5:20 PM	0	43	0	0	1	47	4	0	3	0	0	0	0	0	2	0	100	1114
5:25 PM	0	45	1	0	2	29	2	0	1	0	1	0	0	0	0	0	81	1118
5:30 PM	0	31	2	0	0	40	3	1	3	2	2	0	0	0	2	0	86	1123
5:35 PM	0	47	1	0	2	29	3	0	3	0	0	0	1	0	0	0	86	1127
5:40 PM	1	41	0	0	0	33	0	0	1	1	0	0	1	0	0	0	78	1103
5:45 PM	1	29	1	0	1	41	1	0	7	0	0	0	1	0	2	0	84	1087
5:50 PM	3	34	0	0	1	34	2	0	4	0	0	0	2	1	0	0	81	1067
5:55 PM	1	27	0	0	0	37	0	0	0	0	0	0	0	0	0	0	65	1032

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	528	8	0	12	560	56	4	8	0	8	0	4	0	16	0	1212
Heavy Trucks	0	12	0		0	8	0		0	0	0		0	0	0		20
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2018 11:02 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

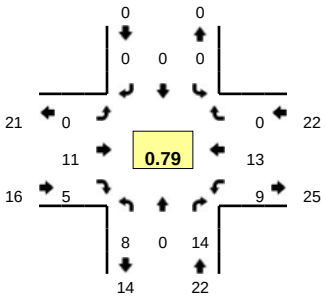
LOCATION: N Libra St -- Crestview Dr

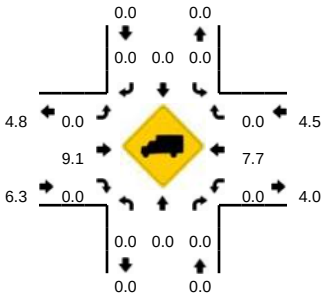
QC JOB #: 14566407

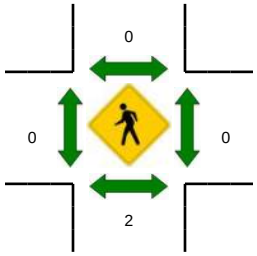
CITY/STATE: Newberg, OR

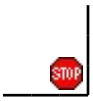
DATE: Wed, Nov 15 2017

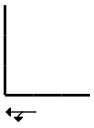
Peak-Hour: 3:40 PM -- 4:40 PM
Peak 15-Min: 4:25 PM -- 4:40 PM

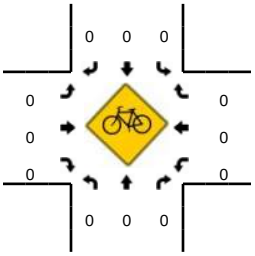


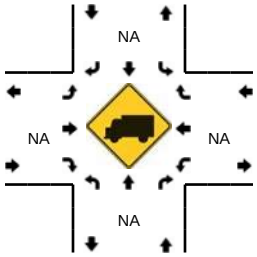


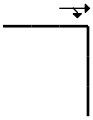


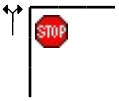


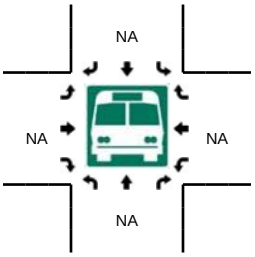












5-Min Count Period Beginning At	N Libra St (Northbound)				N Libra St (Southbound)				Crestview Dr (Eastbound)				Crestview Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:10 PM	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	3	
3:15 PM	0	0	3	0	0	0	0	0	0	1	0	0	0	0	0	0	4	
3:20 PM	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
3:25 PM	0	0	0	1	0	0	0	0	0	0	1	0	1	1	0	0	4	
3:30 PM	0	0	2	0	0	0	0	0	0	1	0	0	0	1	0	0	4	
3:35 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	
3:40 PM	0	0	1	0	0	0	0	0	0	0	1	0	1	1	0	0	4	
3:45 PM	0	0	1	0	0	0	0	0	0	2	1	0	0	1	0	0	5	
3:50 PM	0	0	2	0	0	0	0	0	0	1	0	0	0	2	0	0	5	
3:55 PM	0	0	2	0	0	0	0	0	0	0	0	0	2	1	0	0	5	47
4:00 PM	2	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	4	49
4:05 PM	0	0	0	0	0	0	0	0	0	3	0	0	1	1	0	0	5	48
4:10 PM	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	47
4:15 PM	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	5	48
4:20 PM	1	0	2	0	0	0	0	0	0	2	0	0	1	0	0	0	6	51
4:25 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	2	0	0	4	51
4:30 PM	2	0	0	0	0	0	0	0	0	1	1	0	1	3	0	0	8	55
4:35 PM	2	0	1	0	0	0	0	0	0	0	1	0	2	1	0	0	7	60
4:40 PM	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	3	59
4:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2	56
4:50 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	2	53
4:55 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	51
5:00 PM	0	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0	6	53
5:05 PM	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	50

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	0	8	0	0	0	0	0	0	8	8	0	12	24	0	0	76
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2018 11:04 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

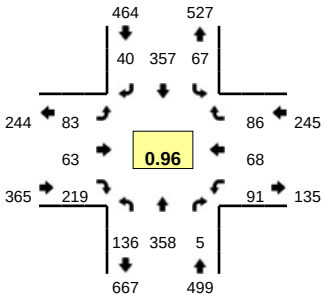
Method for determining peak hour: Total Entering Volume

LOCATION: N Springbrook Rd -- Haworth Ave

QC JOB #: 14566405

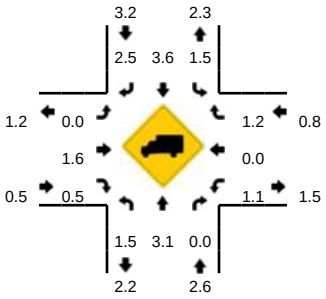
CITY/STATE: Newberg, OR

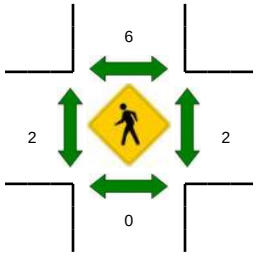
DATE: Wed, Nov 15 2017

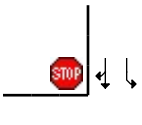


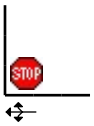
Peak-Hour: 4:20 PM -- 5:20 PM

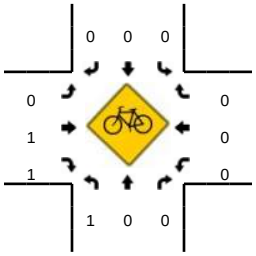
Peak 15-Min: 4:50 PM -- 5:05 PM

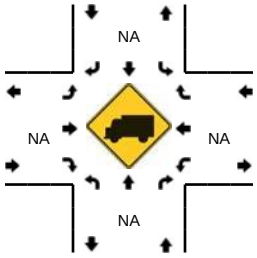


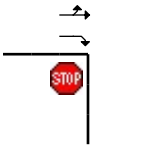


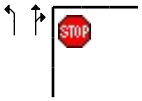


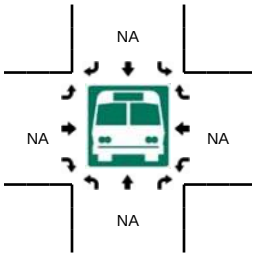












5-Min Count Period Beginning At	N Springbrook Rd (Northbound)				N Springbrook Rd (Southbound)				Haworth Ave (Eastbound)				Haworth Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:50 PM	8	18	1	0	5	30	3	0	5	5	10	0	9	4	7	0	105	
3:55 PM	10	24	0	0	3	28	5	0	10	1	18	0	10	7	4	0	120	1317
4:00 PM	11	21	3	0	2	21	3	0	7	4	11	0	7	2	1	0	93	1309
4:05 PM	14	24	1	0	9	33	5	0	7	5	18	0	7	4	3	0	130	1328
4:10 PM	11	22	2	0	6	31	5	0	7	4	13	0	11	10	5	0	127	1340
4:15 PM	12	25	0	0	6	29	3	0	8	5	11	0	11	7	7	0	124	1359
4:20 PM	8	33	0	0	9	28	5	0	4	9	12	0	6	6	7	0	127	1360
4:25 PM	13	22	1	0	3	33	3	0	5	4	12	0	10	4	1	0	111	1367
4:30 PM	14	30	0	0	4	23	5	0	12	3	18	0	6	8	6	0	129	1380
4:35 PM	12	31	0	0	5	30	4	0	10	4	16	0	9	3	5	0	129	1402
4:40 PM	9	33	2	0	5	28	6	0	5	7	27	0	4	6	10	0	142	1424
4:45 PM	14	22	1	0	3	28	2	0	8	2	18	0	8	7	8	0	121	1458
4:50 PM	12	26	1	0	2	31	5	0	6	4	23	0	12	9	8	0	139	1492
4:55 PM	6	23	0	0	9	34	3	0	9	5	17	0	5	7	7	0	125	1497
5:00 PM	13	29	0	0	6	29	2	0	9	7	23	0	8	8	10	0	144	1548
5:05 PM	13	36	0	0	6	27	0	0	3	4	16	0	6	3	8	0	122	1540
5:10 PM	13	31	0	0	8	31	2	0	6	10	14	0	11	3	6	0	135	1548
5:15 PM	9	42	0	0	7	35	3	0	6	4	23	0	6	4	10	0	149	1573
5:20 PM	19	26	2	0	2	27	3	0	3	5	16	0	10	6	6	0	125	1571
5:25 PM	8	24	0	0	1	29	4	0	7	5	12	0	10	5	6	0	111	1571
5:30 PM	14	20	2	0	3	23	3	0	6	5	7	0	5	7	7	0	102	1544
5:35 PM	18	31	1	0	3	21	3	0	7	5	18	0	4	4	5	0	120	1535
5:40 PM	10	36	2	0	2	16	5	0	3	6	15	0	11	7	5	0	118	1511
5:45 PM	11	24	0	0	2	17	1	0	1	6	5	0	14	3	4	0	88	1478

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	124	312	4	0	68	376	40	0	96	64	252	0	100	96	100	0	1632
Heavy Trucks	0	16	0		0	4	0		0	4	4		0	0	0		28
Pedestrians		0				8				0				0			8
Bicycles	0	0	0		0	0	0		0	0	1		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2018 11:05 AM

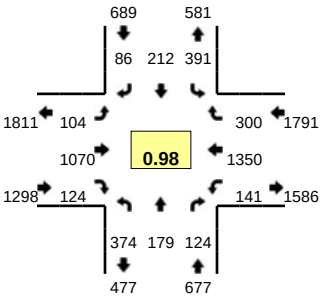
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

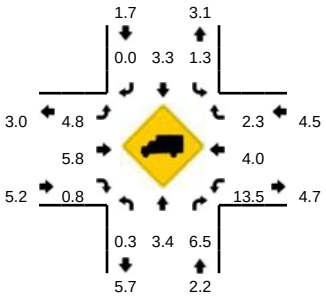
Method for determining peak hour: Total Entering Volume

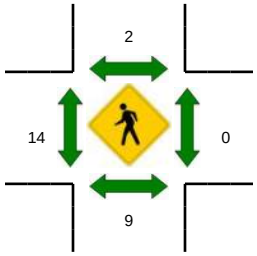
LOCATION: N Springbrook Rd -- OR 99W
CITY/STATE: Newberg, OR

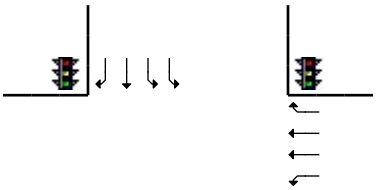
QC JOB #: 14505602
DATE: Thu, Sep 14 2017

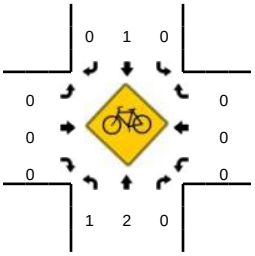


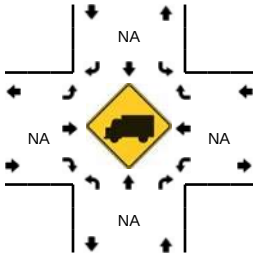
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:20 PM -- 5:35 PM

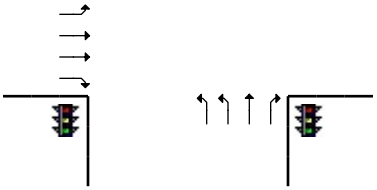


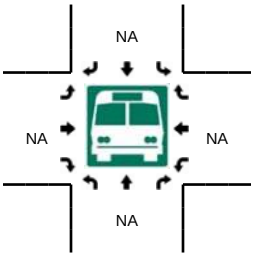












5-Min Count Period Beginning At	N Springbrook Rd (Northbound)				N Springbrook Rd (Southbound)				OR 99W (Eastbound)				OR 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	30	10	12	0	29	9	5	0	12	90	11	0	16	105	20	0	349	4050
4:05 PM	31	12	9	0	20	16	9	0	7	103	12	0	15	114	22	0	370	4104
4:10 PM	25	14	16	0	33	11	7	0	3	90	5	1	8	111	23	0	347	4133
4:15 PM	34	14	10	0	31	10	6	0	7	99	14	1	12	129	21	0	388	4191
4:20 PM	33	18	15	0	28	15	16	0	7	91	10	0	16	115	24	0	388	4241
4:25 PM	27	18	14	0	31	17	8	0	11	93	8	0	17	99	29	0	372	4270
4:30 PM	42	14	13	0	36	8	8	0	12	96	10	0	17	118	15	0	389	4304
4:35 PM	29	13	7	0	27	15	7	0	8	81	5	1	15	133	20	0	361	4307
4:40 PM	33	12	11	0	15	14	12	0	6	93	11	0	15	137	16	0	375	4338
4:45 PM	28	12	12	0	31	20	9	0	10	98	13	0	12	108	28	0	381	4368
4:50 PM	31	15	10	0	24	11	5	0	11	91	16	0	14	123	25	0	376	4432
4:55 PM	35	18	7	0	26	27	6	0	3	89	9	0	11	96	35	0	362	4458
5:00 PM	40	17	16	1	45	16	9	0	8	86	10	0	11	97	23	0	379	4488
5:05 PM	32	16	10	0	38	17	7	0	7	81	5	0	11	85	22	0	331	4449
5:10 PM	32	17	10	0	27	21	4	0	12	84	11	2	21	103	28	0	372	4474
5:15 PM	26	8	7	0	33	14	5	0	5	104	9	0	9	119	26	0	365	4451
5:20 PM	33	12	10	0	29	9	9	0	9	101	9	0	12	140	21	0	394	4457
5:25 PM	31	14	9	0	29	13	6	0	7	73	11	0	9	138	28	0	368	4453
5:30 PM	20	19	12	0	35	32	6	0	12	90	9	0	9	110	24	1	379	4443
5:35 PM	35	17	8	0	43	18	8	0	7	93	14	0	8	118	16	0	385	4467
5:40 PM	30	14	13	0	31	14	12	0	11	80	8	0	13	113	24	0	363	4455
5:45 PM	36	12	11	0	21	12	10	0	9	81	9	1	14	121	21	1	359	4433
5:50 PM	27	16	5	0	26	15	7	0	11	104	14	0	11	136	19	0	391	4448
5:55 PM	28	13	6	0	25	12	10	0	9	102	15	0	11	120	17	0	368	4454

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	336	180	124	0	372	216	84	0	112	1056	116	0	120	1552	292	4	4564
Heavy Trucks	0	8	8		8	4	0		4	44	0		16	64	0		156
Pedestrians		4				0				0				0			4
Bicycles	0	1	0		0	0	0		0	0	0		0	0	0		1
Railroad Stopped Buses																	

Comments:

Report generated on 6/5/2018 11:01 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

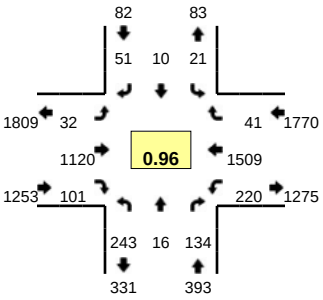
Type of peak hour being reported: User-Defined

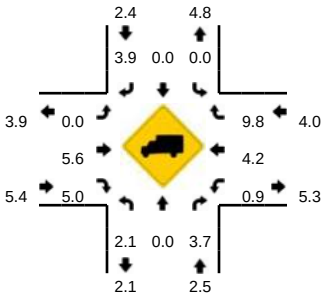
Method for determining peak hour: Total Entering Volume

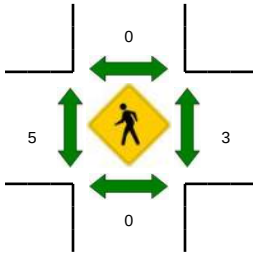
LOCATION: Brutscher St -- OR 99W
CITY/STATE: Newberg, OR

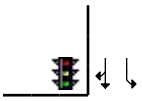
QC JOB #: 14505604
DATE: Thu, Sep 14 2017

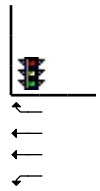
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:30 PM -- 5:45 PM

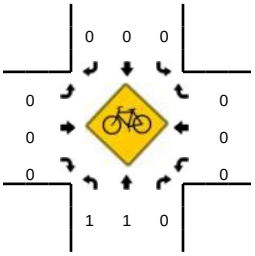


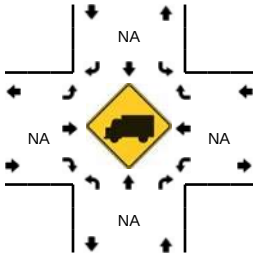


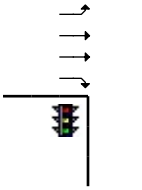


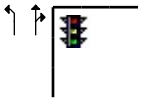


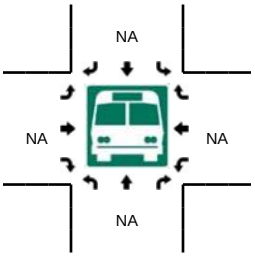












5-Min Count Period Beginning At	Brutscher St (Northbound)				Brutscher St (Southbound)				OR 99W (Eastbound)				OR 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	10	1	15	0	1	4	10	0	0	87	5	1	30	121	3	0	288	3289
4:05 PM	16	4	5	0	0	1	6	0	3	88	7	1	20	120	7	0	278	3283
4:10 PM	25	3	7	0	4	2	5	0	2	91	13	1	16	123	5	0	297	3335
4:15 PM	23	2	5	0	1	1	5	0	1	80	7	1	20	135	3	0	284	3307
4:20 PM	17	2	7	0	1	1	6	0	3	118	7	0	17	138	5	0	322	3368
4:25 PM	24	3	9	0	2	1	3	0	1	101	13	2	12	112	5	0	288	3385
4:30 PM	13	2	10	0	1	1	6	0	1	96	11	1	21	151	5	1	320	3433
4:35 PM	17	1	13	0	0	2	9	0	2	77	11	0	18	135	4	0	289	3462
4:40 PM	13	4	8	0	2	1	4	0	0	78	5	0	18	150	0	0	283	3500
4:45 PM	21	1	7	0	1	1	6	0	3	78	12	0	22	117	4	0	273	3469
4:50 PM	29	5	12	0	1	2	5	0	2	81	10	0	22	118	1	0	288	3501
4:55 PM	22	0	11	0	1	0	6	0	2	118	9	0	13	127	4	0	313	3523
5:00 PM	23	0	12	0	1	1	2	0	3	82	7	0	21	112	6	0	270	3505
5:05 PM	23	2	13	0	5	0	7	0	2	102	5	0	19	99	4	0	281	3508
5:10 PM	19	0	19	0	1	1	6	0	0	92	9	1	21	142	0	0	311	3522
5:15 PM	14	1	15	0	1	0	1	0	3	98	9	0	15	130	4	0	291	3529
5:20 PM	17	1	8	0	4	0	4	0	0	83	7	1	15	124	2	0	266	3473
5:25 PM	19	3	5	0	3	0	2	0	2	94	9	1	18	132	4	0	292	3477
5:30 PM	14	0	9	0	2	0	3	0	2	98	10	2	22	132	1	0	295	3452
5:35 PM	21	1	9	0	0	2	6	0	5	94	7	1	20	139	6	0	311	3474
5:40 PM	21	2	14	0	1	3	3	0	2	100	7	0	12	137	5	0	307	3498
5:45 PM	16	2	12	0	2	3	4	0	0	70	12	0	16	142	4	0	283	3508
5:50 PM	15	1	15	0	0	0	5	0	1	77	9	0	29	124	2	0	278	3498
5:55 PM	26	0	15	0	0	2	5	0	2	86	10	0	7	101	3	0	257	3442

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	224	12	128	0	12	20	48	0	36	1168	96	12	216	1632	48	0	3652
Heavy Trucks	4	0	0		0	0	4		0	72	4		0	64	8		156
Pedestrians		0				0				4				0			4
Bicycles	1	0	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2018 11:01 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

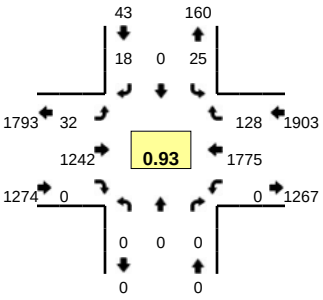
Type of peak hour being reported: User-Defined

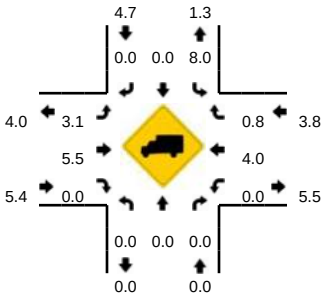
Method for determining peak hour: Total Entering Volume

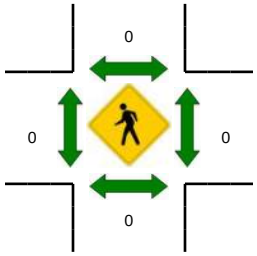
LOCATION: Vittoria Way -- OR 99W
CITY/STATE: Newberg, OR

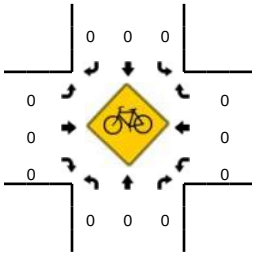
QC JOB #: 14505606
DATE: Thu, Sep 14 2017

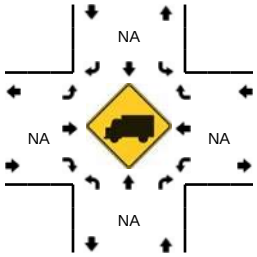
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:30 PM -- 5:45 PM

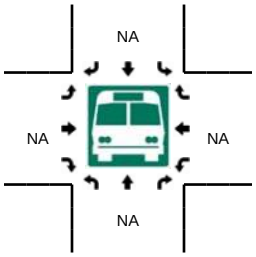












5-Min Count Period Beginning At	Vittoria Way (Northbound)				Vittoria Way (Southbound)				OR 99W (Eastbound)				OR 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	1	0	1	0	2	98	0	0	0	133	5	0	240	2850
4:05 PM	0	0	0	0	0	0	2	0	1	95	0	0	0	140	10	0	248	2876
4:10 PM	0	0	0	0	2	0	2	0	1	103	0	0	0	167	5	0	280	2938
4:15 PM	0	0	0	0	2	0	2	0	1	76	0	0	0	154	3	0	238	2917
4:20 PM	0	0	0	0	1	0	2	0	3	107	0	0	0	144	10	0	267	2937
4:25 PM	0	0	0	0	1	0	0	0	0	117	0	0	0	139	6	0	263	2976
4:30 PM	0	0	0	0	0	0	1	0	2	115	0	0	0	172	11	0	301	3061
4:35 PM	0	0	0	0	2	0	1	0	1	87	0	0	0	147	12	0	250	3071
4:40 PM	0	0	0	0	1	0	0	0	1	91	0	0	0	156	14	0	263	3111
4:45 PM	0	0	0	0	0	0	3	0	0	88	0	0	0	157	10	0	258	3127
4:50 PM	0	0	0	0	2	0	0	0	2	88	0	0	0	148	11	0	251	3134
4:55 PM	0	0	0	0	1	0	1	0	1	107	0	0	0	139	8	0	257	3116
5:00 PM	0	0	0	0	3	0	0	0	1	101	0	0	0	129	15	0	249	3125
5:05 PM	0	0	0	0	0	0	3	0	3	116	0	0	0	134	9	0	265	3142
5:10 PM	0	0	0	0	1	0	0	0	8	112	0	0	0	158	13	0	292	3154
5:15 PM	0	0	0	0	3	0	0	0	4	112	0	0	0	142	10	0	271	3187
5:20 PM	0	0	0	0	4	0	3	0	5	96	0	0	0	146	7	0	261	3181
5:25 PM	0	0	0	0	5	0	2	0	2	84	0	0	0	148	9	0	250	3168
5:30 PM	0	0	0	0	1	0	1	0	2	105	0	0	0	158	14	0	281	3148
5:35 PM	0	0	0	0	3	0	3	0	1	88	0	0	0	176	8	0	279	3177
5:40 PM	0	0	0	0	2	0	2	0	3	145	0	0	0	140	14	0	306	3220
5:45 PM	0	0	0	0	3	0	1	0	1	82	0	0	0	161	7	0	255	3217
5:50 PM	0	0	0	0	1	0	3	0	1	88	0	0	0	151	5	0	249	3215
5:55 PM	0	0	0	0	1	0	0	0	2	94	0	0	0	123	6	0	226	3184

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	24	0	24	0	24	1352	0	0	0	1896	144	0	3464
Heavy Trucks	0	0	0		0	0	0		0	72	0		0	76	0		148
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2018 11:01 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

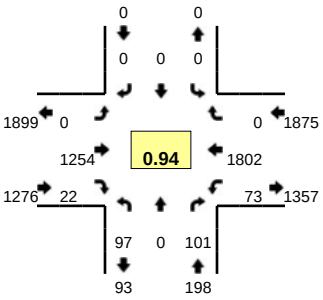
Type of peak hour being reported: User-Defined

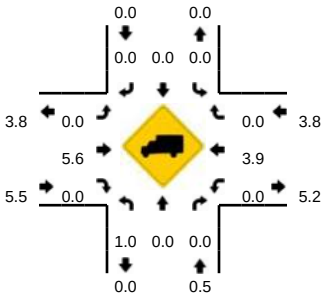
Method for determining peak hour: Total Entering Volume

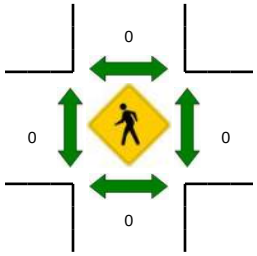
LOCATION: Providence Dr -- OR 99W
CITY/STATE: Newberg, OR

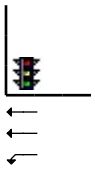
QC JOB #: 14505608
DATE: Thu, Sep 14 2017

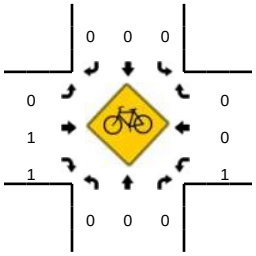
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

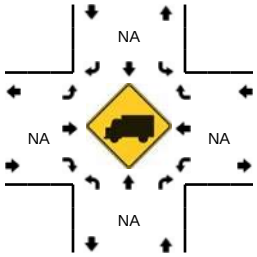


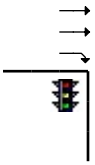


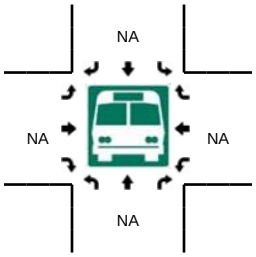












5-Min Count Period Beginning At	Providence Dr (Northbound)				Providence Dr (Southbound)				OR 99W (Eastbound)				OR 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	8	0	2	0	0	0	0	0	0	98	6	0	6	133	0	0	253	2940
4:05 PM	10	0	5	0	0	0	0	0	0	93	4	0	7	137	0	0	256	2965
4:10 PM	22	0	11	0	0	0	0	0	0	101	5	0	7	149	0	0	295	3032
4:15 PM	6	0	5	0	0	0	0	0	0	77	2	0	7	157	0	0	254	3028
4:20 PM	7	0	5	0	0	0	0	0	0	106	0	0	8	140	0	0	266	3033
4:25 PM	7	0	5	0	0	0	0	0	0	117	0	0	2	142	0	0	273	3076
4:30 PM	9	0	9	0	0	0	0	0	0	115	1	0	5	169	0	0	308	3155
4:35 PM	10	0	10	0	0	0	0	0	0	91	2	0	5	154	0	0	272	3173
4:40 PM	11	0	8	0	0	0	0	0	0	92	2	0	6	151	0	0	270	3223
4:45 PM	11	0	4	0	0	0	0	0	0	87	1	0	4	156	0	0	263	3238
4:50 PM	8	0	4	0	0	0	0	0	0	85	2	0	2	153	0	0	254	3242
4:55 PM	6	0	9	0	0	0	0	0	0	105	1	0	7	139	0	0	267	3231
5:00 PM	9	0	4	0	0	0	0	0	0	99	2	0	3	138	0	2	257	3235
5:05 PM	11	0	14	0	0	0	0	0	0	117	1	0	6	132	0	0	281	3260
5:10 PM	5	0	11	0	0	0	0	0	0	121	3	0	9	165	0	0	314	3279
5:15 PM	12	0	16	0	0	0	0	0	0	116	2	0	8	140	0	0	294	3319
5:20 PM	9	0	9	0	0	0	0	0	0	94	4	0	6	142	0	0	264	3317
5:25 PM	6	0	11	0	0	0	0	0	0	93	2	0	6	154	0	0	272	3316
5:30 PM	11	0	2	0	0	0	0	0	0	100	0	0	7	161	0	0	281	3289
5:35 PM	6	0	7	0	0	0	0	0	0	91	1	0	8	173	0	0	286	3303
5:40 PM	3	0	10	0	0	0	0	0	0	146	3	0	5	149	0	0	316	3349
5:45 PM	1	0	2	0	0	0	0	0	0	86	1	0	4	170	0	0	264	3350
5:50 PM	9	0	5	0	0	0	0	0	0	90	1	0	0	146	0	0	251	3347
5:55 PM	5	0	6	0	0	0	0	0	0	91	3	0	7	121	0	0	233	3313

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	112	0	164	0	0	0	0	0	0	1416	24	0	92	1748	0	0	3556
Heavy Trucks	0	0	0		0	0	0		0	108	0		0	68	0		176
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	1	0		1	0	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2018 11:01 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

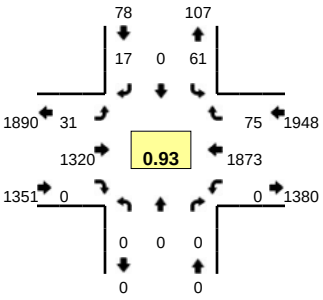
Type of peak hour being reported: User-Defined

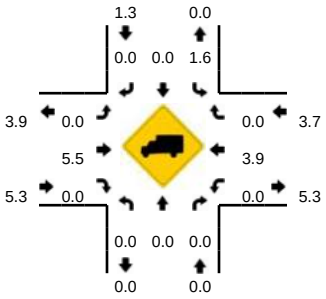
Method for determining peak hour: Total Entering Volume

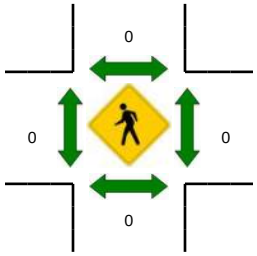
LOCATION: NE Benjamin Rd -- OR 99W
CITY/STATE: Newberg, OR

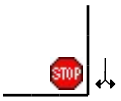
QC JOB #: 14505610
DATE: Thu, Sep 14 2017

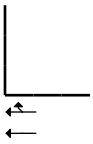
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

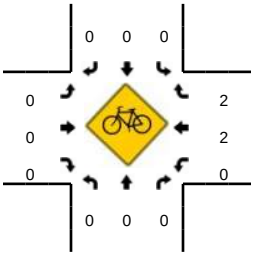


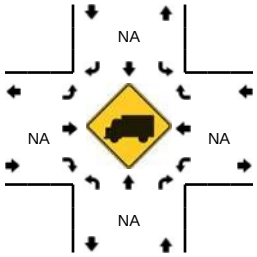


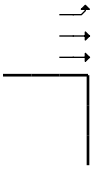


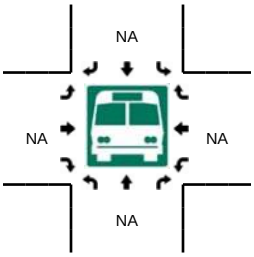












5-Min Count Period Beginning At	NE Benjamin Rd (Northbound)				NE Benjamin Rd (Southbound)				OR 99W (Eastbound)				OR 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	1	0	2	105	0	0	0	137	4	0	249	2869
4:05 PM	0	0	0	0	8	0	1	0	1	103	0	0	0	150	11	0	274	2932
4:10 PM	0	0	0	0	3	0	1	0	2	114	0	0	0	151	2	0	273	2975
4:15 PM	0	0	0	0	2	0	1	0	1	82	0	0	0	168	8	0	262	3002
4:20 PM	0	0	0	0	3	0	1	0	1	105	0	0	0	128	7	0	245	2982
4:25 PM	0	0	0	0	1	0	0	0	2	100	0	0	0	160	6	0	269	3025
4:30 PM	0	0	0	0	3	0	0	0	2	126	0	0	0	166	5	0	302	3086
4:35 PM	0	0	0	0	3	0	3	0	0	110	0	0	0	155	6	0	277	3114
4:40 PM	0	0	0	0	5	0	0	0	0	108	0	0	0	164	4	0	281	3171
4:45 PM	0	0	0	0	3	0	1	0	1	92	0	0	0	186	4	0	287	3222
4:50 PM	0	0	0	0	5	0	1	0	3	85	0	0	0	139	1	0	234	3220
4:55 PM	0	0	0	0	5	0	0	0	1	105	0	0	0	131	7	0	249	3202
5:00 PM	0	0	0	0	3	0	6	0	4	106	0	0	0	139	5	0	263	3216
5:05 PM	0	0	0	0	3	0	0	0	3	124	0	0	0	133	4	0	267	3209
5:10 PM	0	0	0	0	6	0	0	0	1	128	0	0	0	178	7	0	320	3256
5:15 PM	0	0	0	0	2	0	1	0	3	137	0	0	0	153	10	0	306	3300
5:20 PM	0	0	0	0	4	0	0	0	6	104	0	0	0	164	8	0	286	3341
5:25 PM	0	0	0	0	5	0	4	0	2	96	0	0	0	168	5	0	280	3352
5:30 PM	0	0	0	0	7	0	2	0	0	97	0	0	0	150	10	0	266	3316
5:35 PM	0	0	0	0	7	0	1	1	3	102	0	0	0	172	8	0	294	3333
5:40 PM	0	0	0	0	10	0	1	0	4	144	0	0	0	160	6	0	325	3377
5:45 PM	0	0	0	0	1	0	2	0	3	78	0	0	0	165	5	0	254	3344
5:50 PM	0	0	0	0	3	0	2	0	1	105	0	0	0	140	3	0	254	3364
5:55 PM	0	0	0	0	1	0	3	0	2	100	0	0	0	133	7	0	246	3361

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	48	0	4	0	40	1476	0	0	0	1980	100	0	3648
Heavy Trucks	0	0	0		0	0	0		0	80	0		0	84	0		164
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	1	1		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2018 11:01 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix C
Year 2017 Existing Conditions
Level of Service Worksheets

Intersection: Pacific Highway/Providence Drive

Scenario: Weekday AM Peak 15 minutes + 15 min

Saturation Flow Summary (7:25 - 7:55 AM)

Westbound

start	end	Green Time (seconds)	Number of Vehicles	Number of headways	Flow Rate (Calculated)	Notes	Flow Rate (Usable)
7:27:14	7:27:16	0:00:02	2	1	1800		1800
7:29:14	7:29:21	0:00:07	4	3	1543		1543
7:31:12	7:31:20	0:00:08	5	4	1800		1800
7:35:12	7:35:26	0:00:14	8	7	1800		1800
7:37:08	7:37:15	0:00:07	4	3	1543		1543
7:39:11	7:39:21	0:00:10	5	4	1440		1440
7:43:08	7:43:10	0:00:02	2	1	1800		1800
7:49:15	7:49:23	0:00:08	4	3	1350	truck	
7:53:08	7:53:15	0:00:07	5	4	2057		2057
		0:00:00					
		0:00:00					
		0:00:00					
		0:00:00					
		0:00:00					
	Average Saturation Flow Rate ***				**1681**		**1723**

All observations based on queue lengths of 5 vehicles or greater, and based on the 4th vehicle to enter the intersection after beginning of green

Intersection: Pacific Highway/Providence Drive

Scenario: Weekday PM Peak 15 minutes + 15 min

Saturation Flow Summary (5:05 - 5:35 PM)

Westbound

start	end	Green Time (seconds)	Number of Vehicles	Number of headways	Flow Rate (Calculated)	Notes	Flow Rate (Usable)
17:06:23	17:06:39	0:00:16	9	8	1800		1800
17:08:53	17:09:17	0:00:24	11	10	1500		1500
17:10:53	17:11:01	0:00:08	4	3	1350	truck	
17:13:29	17:13:46	0:00:17	9	8	1694		1694
17:15:43	17:15:47	0:00:04	3	2	1800		1800
17:20:28	17:20:33	0:00:05	4	3	2160		2160
17:22:42	17:22:49	0:00:07	4	3	1543		1543
17:25:05	17:25:10	0:00:05	3	2	1440		1440
17:27:23	17:27:30	0:00:07	4	3	1543		1543
17:29:47	17:29:58	0:00:11	6				
17:32:09	17:32:17	0:00:08	5				
17:34:32	17:34:42	0:00:10	6				
		0:00:00					
		0:00:00					
	Average Saturation Flow Rate ***				**1648**		**1685**

All observations based on queue lengths of 5 vehicles or greater, and based on the 4th vehicle to enter the intersection after beginning of green

HCS 2010 Roundabouts Report

General Information		Site Information	
Analyst	ZHB	Intersection	Springbrook/Crestview
Agency or Co.	KAI	E/W Street Name	Crestview Dr
Date Performed	10/21/2017	N/S Street Name	Springbrook Rd
Analysis Year	2017	Analysis Time Period (hrs)	0.25
Time Period	Existing AM	Peak Hour Factor	0.66
Project Description	Crestview Crossing	Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	2	54	8	69	0	4	9	7	2	64	314	3	1	7	349	135
Percent Heavy Vehicles, %	9	9	13	3	0	0	0	0	2	2	4	0	25	25	4	7
Flow Rate (v_{PCE}), pc/h	3	89	14	108	0	6	14	11	3	99	495	5	2	13	550	219
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9734			4.9734			4.9734			4.9734	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		214			31			602			784	
Entry Volume veh/h		202			31			581			746	
Circulating Flow (v_c), pc/h	574			691			121			125		
Exiting Flow (v_{ex}), pc/h	32			335			597			667		
Capacity (c_{pce}), pc/h		769			682			1220			1215	
Capacity (c), veh/h		724			682			1177			1155	
v/c Ratio (x)		0.28			0.05			0.49			0.65	

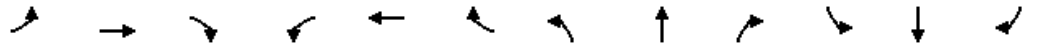
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		8.3			5.8			8.5			11.8	
Lane LOS		A			A			A			B	
95% Queue, veh		1.1			0.1			2.8			5.0	
Approach Delay, s/veh	8.3			5.8			8.5			11.8		
Approach LOS	A			A			A			B		
Intersection Delay, s/veh | LOS	10.0						A					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	3	5	8	11	6	5
Future Volume (Veh/h)	3	5	8	11	6	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	2%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	4	7	12	16	9	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			11		48	8
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			11		48	8
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.3
p0 queue free %			99		99	99
cM capacity (veh/h)			1621		919	1081

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	11	28	16
Volume Left	0	12	9
Volume Right	7	0	7
cSH	1700	1621	983
Volume to Capacity	0.01	0.01	0.02
Queue Length 95th (ft)	0	1	1
Control Delay (s)	0.0	3.1	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	3.1	8.7
Approach LOS			A

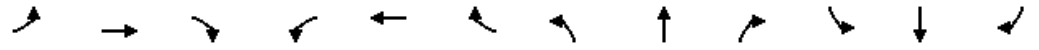
Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	17.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	61	27	174	37	13	15	66	230	5	16	336	69
Future Volume (vph)	61	27	174	37	13	15	66	230	5	16	336	69
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	73	33	210	45	16	18	80	277	6	19	405	83

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	106	210	79	80	283	19	488
Volume Left (vph)	73	0	45	80	0	19	0
Volume Right (vph)	0	210	18	0	6	0	83
Hadj (s)	0.42	-0.65	0.05	0.58	0.10	0.72	0.01
Departure Headway (s)	7.7	6.6	7.8	7.3	6.8	7.2	6.5
Degree Utilization, x	0.23	0.38	0.17	0.16	0.53	0.04	0.88
Capacity (veh/h)	448	519	423	471	501	480	547
Control Delay (s)	11.7	12.4	12.4	10.5	16.1	9.3	38.3
Approach Delay (s)	12.2		12.4	14.9		37.2	
Approach LOS	B		B	B		E	

Intersection Summary				
Delay	23.0			
Level of Service	C			
Intersection Capacity Utilization	48.1%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	1242	75	81	754	150	179	140	99	425	120	70
Future Volume (vph)	43	1242	75	81	754	150	179	140	99	425	120	70
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			3%			0%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	3197	1430	2906	3138	1403	2997	1642	1423	3101	1577	1408
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	3197	1430	2906	3138	1403	2997	1642	1423	3101	1577	1408
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	48	1396	84	91	847	169	201	157	111	478	135	79
RTOR Reduction (vph)	0	0	45	0	0	88	0	0	96	0	0	69
Lane Group Flow (vph)	48	1396	39	91	847	81	201	157	15	478	135	10
Confl. Peds. (#/hr)							3					3
Heavy Vehicles (%)	5%	4%	4%	11%	9%	6%	6%	5%	3%	4%	11%	4%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	7.2	55.2	55.2	9.3	57.3	57.3	24.1	16.0	16.0	23.0	14.9	14.9
Effective Green, g (s)	7.2	55.2	55.2	9.3	57.3	57.3	24.1	16.0	16.0	23.0	14.9	14.9
Actuated g/C Ratio	0.06	0.46	0.46	0.08	0.48	0.48	0.20	0.13	0.13	0.19	0.12	0.12
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.3	4.2	4.2	2.3	4.0	4.0	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	94	1470	657	225	1498	669	601	218	189	594	195	174
v/s Ratio Prot	0.03	c0.44		0.03	c0.27		0.07	c0.10		c0.15	0.09	
v/s Ratio Perm			0.03			0.06			0.01			0.01
v/c Ratio	0.51	0.95	0.06	0.40	0.57	0.12	0.33	0.72	0.08	0.80	0.69	0.06
Uniform Delay, d1	54.7	31.1	18.0	52.7	22.4	17.4	41.1	49.9	45.5	46.4	50.4	46.3
Progression Factor	1.00	1.00	1.00	0.95	0.87	1.38	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9	14.2	0.2	0.6	1.5	0.3	0.2	10.1	0.1	7.5	8.9	0.1
Delay (s)	57.5	45.3	18.2	50.8	21.0	24.3	41.3	59.9	45.6	53.9	59.3	46.4
Level of Service	E	D	B	D	C	C	D	E	D	D	E	D
Approach Delay (s)		44.2			23.9			48.5			54.1	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1601	43	70	922	28	58	3	87	11	5	27
Future Volume (vph)	19	1601	43	70	922	28	58	3	87	11	5	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		2%			0%			0%			-2%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1567	3165	1265	1568	3079	1273	1433	1408		1678	1361	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.73	1.00		0.56	1.00	
Satd. Flow (perm)	1567	3165	1265	1568	3079	1273	1109	1408		991	1361	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	1740	47	76	1002	30	63	3	95	12	5	29
RTOR Reduction (vph)	0	0	13	0	0	7	0	86	0	0	26	0
Lane Group Flow (vph)	21	1740	34	76	1002	23	63	12	0	12	8	0
Confl. Peds. (#/hr)	2					2			1	1		
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	5%	4%	14%	6%	8%	14%	16%	0%	5%	0%	40%	7%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		
Actuated Green, G (s)	3.2	86.6	86.6	9.2	92.6	92.6	11.7	11.7		11.7	11.7	
Effective Green, g (s)	3.2	86.6	86.6	9.2	92.6	92.6	11.7	11.7		11.7	11.7	
Actuated g/C Ratio	0.03	0.72	0.72	0.08	0.77	0.77	0.10	0.10		0.10	0.10	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	41	2284	912	120	2375	982	108	137		96	132	
v/s Ratio Prot	0.01	c0.55		c0.05	0.33			0.01			0.01	
v/s Ratio Perm			0.03			0.02	c0.06			0.01		
v/c Ratio	0.51	0.76	0.04	0.63	0.42	0.02	0.58	0.09		0.12	0.06	
Uniform Delay, d1	57.6	10.3	4.8	53.8	4.6	3.2	51.8	49.3		49.5	49.2	
Progression Factor	1.29	0.22	0.06	0.96	0.95	0.89	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.1	1.2	0.0	8.1	0.5	0.0	6.5	0.2		0.4	0.1	
Delay (s)	77.7	3.5	0.3	59.9	4.9	2.9	58.3	49.5		49.9	49.3	
Level of Service	E	A	A	E	A	A	E	D		D	D	
Approach Delay (s)		4.3			8.6			53.0			49.5	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	1650	1041	21	52	24
Future Vol, veh/h	4	1650	1041	21	52	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-2	2	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	4	8	5	0	0
Mvmt Flow	4	1774	1119	23	56	26

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1142	0	-	0	2027	571
Stage 1	-	-	-	-	1131	-
Stage 2	-	-	-	-	896	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	619	-	-	-	~ 51	469
Stage 1	-	-	-	-	274	-
Stage 2	-	-	-	-	364	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	619	-	-	-	~ 51	469
Mov Cap-2 Maneuver	-	-	-	-	165	-
Stage 1	-	-	-	-	274	-
Stage 2	-	-	-	-	362	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	33.3
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	619	-	-	-	207
HCM Lane V/C Ratio	0.007	-	-	-	0.395
HCM Control Delay (s)	10.9	-	-	-	33.3
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	1.8

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1651	51	62	1026	36	59
Future Volume (vph)	1651	51	62	1026	36	59
Ideal Flow (vphpl)	1750	1750	1750	1800	1750	1750
Grade (%)	-3%			2%	3%	
Total Lost time (s)	6.0	6.0	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3214	1480	1614	3135	1590	1465
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3214	1480	1614	3135	1590	1465
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1795	55	67	1115	39	64
RTOR Reduction (vph)	0	6	0	0	0	60
Lane Group Flow (vph)	1795	49	67	1115	39	4
Heavy Vehicles (%)	5%	2%	2%	8%	3%	0%
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Actuated Green, G (s)	87.1	87.1	9.8	102.9	8.1	8.1
Effective Green, g (s)	87.1	87.1	9.8	102.9	8.1	8.1
Actuated g/C Ratio	0.73	0.73	0.08	0.86	0.07	0.07
Clearance Time (s)	6.0	6.0	4.5	4.5	4.5	4.5
Vehicle Extension (s)	5.0	5.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	2332	1074	131	2688	107	98
v/s Ratio Prot	c0.56		c0.04	0.36	c0.02	
v/s Ratio Perm		0.03				0.00
v/c Ratio	0.77	0.05	0.51	0.41	0.36	0.04
Uniform Delay, d1	10.2	4.7	52.8	1.9	53.5	52.3
Progression Factor	1.30	0.61	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.1	4.4	0.5	2.9	0.3
Delay (s)	15.1	2.9	57.2	2.4	56.4	52.6
Level of Service	B	A	E	A	E	D
Approach Delay (s)	14.7			5.5	54.0	
Approach LOS	B			A	D	

Intersection Summary			
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	1702	1077	29	62	6
Future Vol, veh/h	3	1702	1077	29	62	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	-2	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	33	4	7	7	3	0
Mvmt Flow	3	1792	1134	31	65	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1164	0	-	0	2051	582
Stage 1	-	-	-	-	1149	-
Stage 2	-	-	-	-	902	-
Critical Hdwy	4.76	-	-	-	6.46	6.7
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.53	-	-	-	3.53	3.3
Pot Cap-1 Maneuver	447	-	-	-	~ 60	477
Stage 1	-	-	-	-	298	-
Stage 2	-	-	-	-	391	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	447	-	-	-	~ 60	477
Mov Cap-2 Maneuver	-	-	-	-	181	-
Stage 1	-	-	-	-	298	-
Stage 2	-	-	-	-	388	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	34.7
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	447	-	-	-	191
HCM Lane V/C Ratio	0.007	-	-	-	0.375
HCM Control Delay (s)	13.1	-	-	-	34.7
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	1.6

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCS 2010 Roundabouts Report

General Information		Site Information	
Analyst	ZHB	Intersection	Springbrook/Crestview
Agency or Co.	KAI	E/W Street Name	Crestview Dr
Date Performed	10/21/2017	N/S Street Name	Springbrook Rd
Analysis Year	2017	Analysis Time Period (hrs)	0.25
Time Period	Existing PM	Peak Hour Factor	0.93
Project Description	Crestview Crossing	Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	53	2	13	0	5	2	12	0	7	524	13	2	8	437	49
Percent Heavy Vehicles, %	0	0	0	0	20	20	0	0	0	0	3	0	0	0	2	0
Flow Rate (v_{PCE}), pc/h	0	57	2	14	0	6	2	13	0	8	580	14	2	9	479	53
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9734			4.9734			4.9734			4.9734	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		73			21			602			543	
Entry Volume veh/h		73			20			585			534	
Circulating Flow (v_c), pc/h	496			647			70			16		
Exiting Flow (v_{ex}), pc/h	25			63			652			499		
Capacity (c_{pce}), pc/h		832			714			1285			1358	
Capacity (c), veh/h		832			680			1249			1334	
v/c Ratio (x)		0.09			0.03			0.47			0.40	

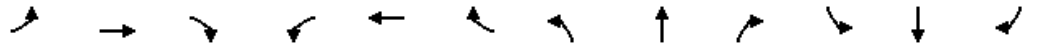
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		5.2			5.6			7.7			6.5	
Lane LOS		A			A			A			A	
95% Queue, veh		0.3			0.1			2.6			2.0	
Approach Delay, s/veh	5.2			5.6			7.7			6.5		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	7.0						A					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	11	5	9	13	8	14
Future Volume (Veh/h)	11	5	9	13	8	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	2%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	14	6	11	16	10	18
Pedestrians					2	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			22		57	19
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			22		57	19
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	98
cM capacity (veh/h)			1604		947	1063

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	20	27	28
Volume Left	0	11	10
Volume Right	6	0	18
cSH	1700	1604	1018
Volume to Capacity	0.01	0.01	0.03
Queue Length 95th (ft)	0	1	2
Control Delay (s)	0.0	3.0	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	3.0	8.6
Approach LOS			A

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	17.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	83	63	219	91	68	86	136	358	5	67	357	40
Future Volume (vph)	83	63	219	91	68	86	136	358	5	67	357	40
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	86	66	228	95	71	90	142	373	5	70	372	42

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	152	228	256	142	378	70	414
Volume Left (vph)	86	0	95	142	0	70	0
Volume Right (vph)	0	228	90	0	5	0	42
Hadj (s)	0.30	-0.68	-0.12	0.53	0.04	0.53	0.00
Departure Headway (s)	9.0	8.0	8.6	8.8	8.3	8.8	8.2
Degree Utilization, x	0.38	0.51	0.61	0.35	0.87	0.17	0.95
Capacity (veh/h)	379	428	395	398	426	399	426
Control Delay (s)	16.3	17.9	24.4	15.2	44.9	12.4	58.4
Approach Delay (s)	17.3		24.4	36.8		51.8	
Approach LOS	C		C	E		F	

Intersection Summary				
Delay	34.8			
Level of Service	D			
Intersection Capacity Utilization	59.5%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	1070	124	141	1350	300	374	179	124	391	212	86
Future Volume (vph)	104	1070	124	141	1350	300	374	179	124	391	212	86
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			3%			0%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	3137	1440	2854	3288	1423	3177	1674	1361	3193	1699	1438
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	3137	1440	2854	3288	1423	3177	1674	1361	3193	1699	1438
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	106	1092	127	144	1378	306	382	183	127	399	216	88
RTOR Reduction (vph)	0	0	56	0	0	138	0	0	111	0	0	76
Lane Group Flow (vph)	106	1092	71	144	1378	168	382	183	16	399	216	12
Confl. Peds. (#/hr)	2		9	9		2	14					14
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	5%	6%	1%	13%	4%	2%	0%	3%	6%	1%	3%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	12.5	77.8	77.8	11.7	77.0	77.0	15.1	17.7	17.7	16.3	18.9	18.9
Effective Green, g (s)	12.5	77.8	77.8	11.7	77.0	77.0	15.1	17.7	17.7	16.3	18.9	18.9
Actuated g/C Ratio	0.09	0.56	0.56	0.08	0.55	0.55	0.11	0.13	0.13	0.12	0.13	0.13
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.3	4.2	4.2	2.3	4.0	4.0	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	141	1743	800	238	1808	782	342	211	172	371	229	194
v/s Ratio Prot	c0.07	0.35		0.05	c0.42		0.12	0.11		c0.12	c0.13	
v/s Ratio Perm			0.05			0.12			0.01			0.01
v/c Ratio	0.75	0.63	0.09	0.61	0.76	0.22	1.12	0.87	0.09	1.08	0.94	0.06
Uniform Delay, d1	62.2	21.2	14.5	61.9	24.4	16.1	62.5	60.0	54.1	61.9	60.0	52.8
Progression Factor	1.00	1.00	1.00	0.96	1.16	3.14	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.7	1.7	0.2	2.2	2.0	0.4	84.1	28.6	0.1	68.3	43.5	0.1
Delay (s)	80.9	22.9	14.7	61.6	30.2	50.9	146.5	88.6	54.2	130.2	103.5	52.9
Level of Service	F	C	B	E	C	D	F	F	D	F	F	D
Approach Delay (s)		26.8			36.2			114.3			112.3	
Approach LOS		C			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	57.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1120	101	220	1509	41	243	16	134	21	10	51
Future Volume (vph)	32	1120	101	220	1509	41	243	16	134	21	10	51
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		2%			0%			0%			-2%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1646	3105	1402	1646	3197	1352	1620	1442		1674	1471	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.72	1.00		0.52	1.00	
Satd. Flow (perm)	1646	3105	1402	1646	3197	1352	1221	1442		911	1471	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	33	1167	105	229	1572	43	253	17	140	22	10	53
RTOR Reduction (vph)	0	0	40	0	0	13	0	110	0	0	42	0
Lane Group Flow (vph)	33	1167	65	229	1572	30	253	47	0	22	21	0
Confl. Peds. (#/hr)							5		3	3		5
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	6%	5%	1%	4%	10%	2%	0%	4%	0%	0%	4%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		
Actuated Green, G (s)	5.4	74.9	74.9	22.3	91.8	91.8	30.3	30.3		30.3	30.3	
Effective Green, g (s)	5.4	74.9	74.9	22.3	91.8	91.8	30.3	30.3		30.3	30.3	
Actuated g/C Ratio	0.04	0.54	0.54	0.16	0.66	0.66	0.22	0.22		0.22	0.22	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	63	1661	750	262	2096	886	264	312		197	318	
v/s Ratio Prot	0.02	c0.38		c0.14	c0.49			0.03			0.01	
v/s Ratio Perm			0.05			0.02	c0.21			0.02		
v/c Ratio	0.52	0.70	0.09	0.87	0.75	0.03	0.96	0.15		0.11	0.07	
Uniform Delay, d1	66.0	24.3	15.9	57.5	16.3	8.5	54.2	44.4		44.0	43.6	
Progression Factor	0.81	1.07	1.81	0.95	0.80	0.29	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.4	1.7	0.2	19.9	1.8	0.1	43.5	0.2		0.2	0.1	
Delay (s)	57.2	27.7	28.8	74.5	14.9	2.5	97.7	44.6		44.2	43.7	
Level of Service	E	C	C	E	B	A	F	D		D	D	
Approach Delay (s)		28.6			22.0			77.4			43.8	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	32	1250	1775	128	26	18
Future Vol, veh/h	32	1250	1775	128	26	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-2	2	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	5	4	1	8	0
Mvmt Flow	34	1344	1909	138	28	19

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2046	0	-	0	2718	1023
Stage 1	-	-	-	-	1977	-
Stage 2	-	-	-	-	741	-
Critical Hdwy	4.16	-	-	-	6.96	6.9
Critical Hdwy Stg 1	-	-	-	-	5.96	-
Critical Hdwy Stg 2	-	-	-	-	5.96	-
Follow-up Hdwy	2.23	-	-	-	3.58	3.3
Pot Cap-1 Maneuver	268	-	-	-	~ 15	237
Stage 1	-	-	-	-	87	-
Stage 2	-	-	-	-	417	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	268	-	-	-	~ 13	237
Mov Cap-2 Maneuver	-	-	-	-	68	-
Stage 1	-	-	-	-	87	-
Stage 2	-	-	-	-	364	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	74.5
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	268	-	-	-	96
HCM Lane V/C Ratio	0.128	-	-	-	0.493
HCM Control Delay (s)	20.4	-	-	-	74.5
HCM Lane LOS	C	-	-	-	F
HCM 95th %tile Q(veh)	0.4	-	-	-	2.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱	↰	↑↑	↰	↱
Traffic Volume (vph)	1254	22	73	1806	97	101
Future Volume (vph)	1254	22	73	1806	97	101
Ideal Flow (vphpl)	1750	1750	1750	1800	1750	1750
Grade (%)	-3%			2%	3%	
Total Lost time (s)	6.0	6.0	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3184	1479	1646	3256	1621	1465
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3184	1479	1646	3256	1621	1465
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1334	23	78	1921	103	107
RTOR Reduction (vph)	0	3	0	0	0	95
Lane Group Flow (vph)	1334	20	78	1921	103	12
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	6%	0%	0%	4%	1%	0%
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Actuated Green, G (s)	96.9	96.9	12.9	115.8	15.2	15.2
Effective Green, g (s)	96.9	96.9	12.9	115.8	15.2	15.2
Actuated g/C Ratio	0.69	0.69	0.09	0.83	0.11	0.11
Clearance Time (s)	6.0	6.0	4.5	4.5	4.5	4.5
Vehicle Extension (s)	5.0	5.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	2203	1023	151	2693	175	159
v/s Ratio Prot	0.42		0.05	c0.59	c0.06	
v/s Ratio Perm		0.01				0.01
v/c Ratio	0.61	0.02	0.52	0.71	0.59	0.07
Uniform Delay, d1	11.4	6.7	60.6	5.1	59.4	56.1
Progression Factor	0.79	1.03	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.0	3.9	1.6	5.9	0.3
Delay (s)	10.0	7.0	64.5	6.7	65.3	56.3
Level of Service	B	A	E	A	E	E
Approach Delay (s)	10.0			9.0	60.7	
Approach LOS	A			A	E	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	31	1320	1873	75	61	17
Future Vol, veh/h	31	1320	1873	75	61	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	-2	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	5	4	0	2	0
Mvmt Flow	33	1419	2014	81	66	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2095	0	-	0	2830	1047
Stage 1	-	-	-	-	2054	-
Stage 2	-	-	-	-	776	-
Critical Hdwy	4.1	-	-	-	6.44	6.7
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.2	-	-	-	3.52	3.3
Pot Cap-1 Maneuver	267	-	-	-	~ 19	242
Stage 1	-	-	-	-	106	-
Stage 2	-	-	-	-	452	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	267	-	-	-	~ 17	242
Mov Cap-2 Maneuver	-	-	-	-	81	-
Stage 1	-	-	-	-	106	-
Stage 2	-	-	-	-	396	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	142
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	267	-	-	-	95
HCM Lane V/C Ratio	0.125	-	-	-	0.883
HCM Control Delay (s)	20.4	-	-	-	142
HCM Lane LOS	C	-	-	-	F
HCM 95th %tile Q(veh)	0.4	-	-	-	5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Appendix D
ODOT Crash Data

CITY OF NEWBERG, YAMHILL COUNTY

Springbrook Rd & Crestview Dr

January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALC	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00762	Y	N	N	N	N	09/01/2013	16	CRESTVIEW DR	INTER	CROSS	N	Y	CLR	FIX OBJ	01	NONE 0	STRGHT										040,001	01
CITY						Sun 1P	0	SPRINGBROOK RD	S		UNKNOWN	Y	DRY	FIX		PRVTE	N S									000	040	00
No						*45 18 55.04* *-122 56 45.33*		1	05	4		N	DAY	FAT		MTRCYCLE		01	DRVR	KILL	72	F	OR-Y OR<25		047,081	000	001	01
00109	N	N	N			02/12/2013	17	CRESTVIEW DR	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	STRGHT											07
NONE						Tue 9P	0	SPRINGBROOK RD	S		YIELD	Y	DRY	REAR		PRVTE	S N									000		00
No						*45 18 55.04* *-122 56 45.33*		1	06	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	21	M	OR-Y OR<25		026	000		07
															02	NONE 0	STOP											
																PRVTE	S N									011		00
																PSNGR CAR		01	DRVR	NONE	46	M	OR-Y OR<25		000	000		00

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Libra St & Crestview Dr
January 1, 2011 through December 31, 2015

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

CITY OF NEWBERG, YAMHILL COUNTY — N Springbrook Rd & Haworth Ave

January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALC	DRUGS	SCHL	WORK	DATE / DAY/TIME / LAT/LONG	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00274	N	N	N	N	N	03/27/2012	17	HAWORTH AVE	INTER	CROSS	N	N	CLR	PED	01	NONE 0	TURN-L										02
CITY						Tue 2P	0	SPRINGBROOK RD	N		STOP SIGN	N	DRY	PED		PRVTE	E S									000	00
No						*45 18 28.71* *-122 56 48.98*		1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	33	M	OR-Y OR<25		029	000		02
																	STRGHT N S	01	CONV	INJB	53	M		01	000	000		00
00286	N	N	N			03/31/2012	17	HAWORTH AVE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						Sat 4P	0	SPRINGBROOK RD	S		UNKNOWN	N	DRY	REAR		PRVTE	S N									000	00
No						*45 18 28.71* *-122 56 48.98*		1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	32	F	OR-Y OR<25		026	000		07
															02	NONE 0	STOP											
																PRVTE	S N									011	00
																PSNGR CAR		01	DRVR	NONE	17	F	OR-Y OR<25		000	000		00
01227	N	N	N	N	N	11/16/2014	16	HAWORTH AVE	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											03
CITY						Sun 3P	0	SPRINGBROOK RD	CN		STOP SIGN	N	DRY	TURN		PRVTE	N S									000	00
No						*45 18 28.71* *-122 56 48.98*		1	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	57	F	OTH-Y N-RES		021	000		03
															02	NONE 0	TURN-L											
																PRVTE	S W									000	00
																PSNGR CAR		01	DRVR	NONE	55	M	OR-Y OR<25		000	000		00
00505	N	N	N			06/17/2013	17	HAWORTH AVE	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NO RPT						Mon 2P	0	SPRINGBROOK RD	CN		STOP SIGN	N	DRY	TURN		PRVTE	N S									000	00
No						*45 18 28.71* *-122 56 48.98*		1	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	77	M	OR-Y OR<25		028	000		02
															02	NONE 0	TURN-R											
																PRVTE	W S									000	00
																PSNGR CAR		01	DRVR	NONE	78	F	OR-Y OR<25		000	000		00
00038	N	N	N			01/11/2014	17	HAWORTH AVE	INTER	3-LEG	N	N	CLD	ANGL-OTH	01	NONE 0	STRGHT											02
NO RPT						Sat 7P	0	SPRINGBROOK RD	CN		STOP SIGN	N	WET	ANGL		PRVTE	W E									000	00
No						*45 18 28.71* *-122 56 48.98*		1	03	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	24	M	OR-Y OR<25		028	000		02
															02	NONE 0	STRGHT											
																PRVTE	N S									000	00
																PSNGR CAR		01	DRVR	NONE	68	M	OR-Y OR<25		000	000		00
00685	N	N	N	N	N	06/24/2014	16	HAWORTH AVE	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
CITY						Tue 9A	0	SPRINGBROOK RD	CN		STOP SIGN	N	DRY	ANGL		PRVTE	N S									000	00
No						*45 18 28.71* *-122 56 48.98*		1	03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	23	F	OR-Y OR<25		028	000		02
															02	NONE 0	STRGHT											
																PRVTE	W E									000	00
																PSNGR CAR		01	DRVR	INJC	41	M	OR-Y OR<25		000	000		00

CITY OF NEWBERG, YAMHILL COUNTY

N Springbrook Rd & Haworth Ave

January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALC	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00578	N	N	N			07/05/2013	17	HAWORTH AVE	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NO RPT						Fri 4P	0	SPRINGBROOK RD	CN		STOP SIGN	N	DRY	ANGL		PRVTE	W E									000		00
No	*45 18 28.71*					*-122 56 48.98*		1	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	58	F	OR-Y OR<25		028	000		02
																		02	PSNG	NO<5	04	M			000	000		00
															02	NONE 0	STRGHT											
																PRVTE	S N									000		00
																PSNGR CAR		01	DRVR	NONE	75	F	OR-Y OR<25		000	000		00

091 PACIFIC HIGHWAY WEST

OR 99W & Springbrook Rd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED / ALCOHOL / DRUGS	DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	CONN #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00029	N N N N N	01/10/2012	YAMHILL	1 14			INTER	CROSS	N	N	CLR	PED	01	NONE 0	TURN-R											02
CITY		Tue 3P	NEWBERG	MN 0	PACIFIC HY 99W		UN		TRF SIGNAL	N	DRY	PED		PRVTE	W S										000		00
			NEWBERG UA	22.03	SPRINGBROOK RD		05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	71	F	OR-Y		029	026		02
No	45 18 23.12	-122 56 48.94		009100100	S00	1															OR<25					
															STRGHT	01	PED	INJB	14	F		01	000	035		00
															W E											
00178	N N N	02/24/2012	YAMHILL	1 14			INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE		Fri 9P	NEWBERG	MN 0	PACIFIC HY 99W		E		TRF SIGNAL	N	DRY	REAR		PRVTE	E W										000		00
			NEWBERG UA	22.03	SPRINGBROOK RD		06	2		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	50	M	OR-Y		026	000		07
No	45 18 23.12	-122 56 48.94		009100100	S00	1															OR<25					
													02	NONE 0	STOP											
														PRVTE	E W									011		00
														PSNGR CAR		01	DRVR	NONE	65	F	OR-Y		000	000		00
																					OR<25					
00248	N N N	03/19/2012	YAMHILL	1 14			INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										013	27
NO RPT		Mon 7A	NEWBERG	MN 0	PACIFIC HY 99W		W		TRF SIGNAL	N	WET	REAR		PRVTE	W E										000		00
			NEWBERG UA	22.03	SPRINGBROOK RD		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	29	M	OR-Y		026	000		07
No	45 18 23.12	-122 56 48.94		009100100	S00	1															OR<25					
													02	NONE	STOP											
														PRVTE	W E									011	013	00
														PSNGR CAR		01	DRVR	NONE	73	M	OR-Y		000	000		00
																					OR<25					
													03	NONE 0	STOP											
														PRVTE	W E									011		00
														PSNGR CAR		01	DRVR	NONE	61	M	OR-Y		000	000		00
																					OR<25					
00319	N N N N N	04/18/2013	YAMHILL	1 14			INTER	CROSS	N	N	CLR	S-OTHER	01	NONE 0	TURN-L											05
CITY		Thu 8P	NEWBERG	MN 0	PACIFIC HY 99W		UN		TRF SIGNAL	N	DRY	TURN		PRVTE	N E										000		00
			NEWBERG UA	22.05	SPRINGBROOK RD		05	0		N	DARK	INJ		PSNGR CAR		01	DRVR	NONE	69	M	OR-Y		080	000		05
No	45 18 23.12	-122 56 48.94		009100100	S00	1															OR<25					
													02	NONE 0	TURN-L											
														PRVTE	N E									000		00
														PSNGR CAR		01	DRVR	NONE	42	M	OR-Y		000	000		00
																					OR<25					
																02	PSNG	INJC	41	F			000	000		00
																03	PSNG	INJC	12	F			000	000		00
00732	N N N	09/11/2011	YAMHILL	1 14			INTER	CROSS	N	N	CLR	S-STRGHT	01	NONE 0	STRGHT											13
NONE		Sun 7P	NEWBERG	MN 0	PACIFIC HY 99W		NE		TRF SIGNAL	N	DRY	SS-O		PRVTE	SW NE										000		00
			NEWBERG UA	22.05	SPRINGBROOK RD		05	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y		045	000		13
No	45 18 23.12	-122 56 48.94		009100100	S00	1															OR<25					

091 PACIFIC HIGHWAY WEST

OR 99W & Springbrook Rd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	SCHOOL BUS	WORK ZONE	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CNTL	OFFRD RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 0 PRVTE	STRGHT SW NE									000	00
																	PSNGR CAR		01	DRVR	NONE	31	F	OR-Y OR<25		000	000	00
00516 NONE	N	N	N			07/07/2011 Thu 8A	YAMHILL NEWBERG	1 14 MN 0	PACIFIC HY 99W	INTER NE	CROSS 4	N TRF SIGNAL	N N	UNK UNK	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NE SW										000	07 00
							NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y UNK	026		000	07
No						*45 18 23.12 -122 56 48.94*		009100100S00	1																			
																02	NONE 0 PRVTE	STOP NE SW									011	00
																	PSNGR CAR		01	DRVR	NONE	60	M	OR-Y OR<25		000	000	00
00692 NONE	N	N	N			08/26/2011 Fri 3P	YAMHILL NEWBERG	1 14 MN 0	PACIFIC HY 99W	INTER NE	CROSS 4	N TRF SIGNAL	N N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NE SW										000	07 00
							NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	39	M	OR-Y OR<25	026		000	07
No						*45 18 23.12 -122 56 48.94*		009100100S00	1																			
																02	NONE 0 PRVTE	STOP NE SW									011	00
																	PSNGR CAR		01	DRVR	NONE	25	F	OR-Y OR<25		000	000	00
																			02	PSNG	NO<5	02	F			000	000	00
																			03	PSNG	NO<5	01	M			000	000	00
01087 NONE	N	N	N			12/23/2011 Fri 5P	YAMHILL NEWBERG	1 14 MN 0	PACIFIC HY 99W	INTER NE	CROSS 4	N TRF SIGNAL	N N	CLR DRY	S-1STOP REAR	01	NONE 0 UNKN	BACK SW NE										000	10 00
							NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y UNK	011		000	10
No						*45 18 23.12 -122 56 48.94*		009100100S00	1																			
																02	NONE 0 PRVTE	STOP NE SW									011	00
																	PSNGR CAR		01	DRVR	NONE	25	F	OR-Y OR<25		000	000	00
00690 NO RPT	N	N	N			08/11/2012 Sat 11A	YAMHILL NEWBERG	1 14 MN 0	PACIFIC HY 99W	INTER NE	CROSS 4	N TRF SIGNAL	N N	CLR DRY	S-1TURN TURN	01	NONE 0 PRVTE	STRGHT NE SW										000	13 00
							NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	24	F	OR-Y OR<25	045		000	13
No						*45 18 23.12 -122 56 48.94*		009100100S00	1																			
																02	NONE 0 PRVTE	TURN-L NE S									000	00
																	PSNGR CAR		01	DRVR	NONE	74	M	OR-Y OR>25		000	000	00
00851 NO RPT	N	N	N			09/28/2012 Fri 2P	YAMHILL NEWBERG	1 14 MN 0	PACIFIC HY 99W	INTER NE	CROSS 4	N TRF SIGNAL	N N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NE SW										000	07 00
							NEWBERG UA	22.05	SPRINGBROOK RD	06	2		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	19	M	OR-Y OR<25	026		000	07
No						*45 18 23.12 -122 56 48.94*		009100100S00	1																			

091 PACIFIC HIGHWAY WEST

OR 99W & Springbrook Rd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SP ED / EA RS / DL UC / CH WO / SL RK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
												02	NONE 0 PRVTE	STOP NE SW									011		00
													PSNGR CAR		01	DRVR	NONE	86	M	OR-Y OR<25		000	000		00
01210 NO RPT	N N N	12/27/2012 Thu 9P	YAMHILL NEWBERG	1 14 MN 0	PACIFIC HY 99W	INTER NE	CROSS	N TRF SIGNAL	N	N CLR N DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NE SW									000		27 00
			NEWBERG UA	22.05	SPRINGBROOK RD	06	2		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	30	F	OR-Y OR<25		016,026	038		27
No	*45 18 23.12*	*-122 56 48.94*		009100100S00	1										02	PSNG	NO<5	04	M			000	000		00
												02	NONE 0 PRVTE	STOP NE SW									011		00
													PSNGR CAR		01	DRVR	NONE	47	M	OR-Y OR<25		000	000		00
00766 NO RPT	N N N	09/02/2013 Mon 5P	YAMHILL NEWBERG	1 14 MN 0	PACIFIC HY 99W	INTER NE	CROSS	N TRF SIGNAL	N	N CLR N DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NE SW									000		07 00
			NEWBERG UA	22.05	SPRINGBROOK RD	06	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	22	F	OR-Y OR<25		026	000		07
No	*45 18 23.12*	*-122 56 48.94*		009100100S00	1							02	NONE 0 PRVTE	STOP NE SW									011		00
													PSNGR CAR		01	DRVR	INJC	52	F	OR-Y OR<25		000	000		00
															02	PSNG	INJC	17	F			000	000		00
00947 NONE	N N N	10/26/2013 Sat 10A	YAMHILL NEWBERG	1 14 MN 0	PACIFIC HY 99W	INTER NE	CROSS	N L-GRN-SIG	N	N CLR N DRY	S-1STOP REAR	01	NONE 0 PRVTE	TURN-L NE S									000		07 00
			NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	48	M	OR-Y OR>25		026	000		07
No	*45 18 23.12*	*-122 56 48.94*		009100100S00	1							02	NONE 0 PRVTE	STOP NE SW									012		00
													PSNGR CAR		01	DRVR	INJC	24	M	OR-Y OR<25		000	000		00
															02	PSNG	INJC	23	F			000	000		00
00636 NONE	N N N	06/11/2014 Wed 8A	YAMHILL NEWBERG	1 14 MN 0	PACIFIC HY 99W	INTER NE	CROSS	N TRF SIGNAL	N	N CLR N DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NE SW									000	004	07 00
			NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	30	M	OR-Y OR<25		026	000		07
No	*45 18 23.12*	*-122 56 48.94*		009100100S00	1							02	NONE 0 PRVTE	STOP NE SW									011	004	00
													PSNGR CAR		01	DRVR	NONE	65	M	OR-Y OR<25		000	000		00
00630 NONE	N N N	06/12/2014 Thu 12P	YAMHILL NEWBERG	1 14 MN 0	PACIFIC HY 99W	INTER NE	CROSS	N TRF SIGNAL	N	N CLR N DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NE SW									000		07 00
			NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	70	M	OR-Y OR<25		026	000		07
No	*45 18 23.12*	*-122 56 48.94*		009100100S00	1																				

091 PACIFIC HIGHWAY WEST

OR 99W & Springbrook Rd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	SCHL BUS	WORK ZONE	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC CONN # FIRST STREET SECOND STREET INTERSECTION	SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE 0 PRVTE	STOP NE SW									011		00
																		PSNGR CAR		01	DRVR	NONE	53	M	OR-Y OR<25		000	000		00
00715	N	N	N			07/03/2014	YAMHILL	1 14			INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT													07
NONE						Thu 6P	NEWBERG	MN 0	PACIFIC HY 99W		NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
							NEWBERG UA	22.05	SPRINGBROOK RD		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	56	F	OR-Y OR<25		026	000		07
No						*45 18 23.12 -122 56 48.94*		009100100	S00	1																					
																	02	NONE 0 PRVTE	STOP NE SW									011		00
																		PSNGR CAR		01	DRVR	INJC	63	F	OR-Y OR<25		000	000		00
																				02	PSNG	INJC	22	F			000	000		00
00773	N	N	N	N	N	07/17/2014	YAMHILL	1 14			INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT													07
STATE						Thu 4P	NEWBERG	MN 0	PACIFIC HY 99W		NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
							NEWBERG UA	22.05	SPRINGBROOK RD		06	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	41	M	OR-Y OR<25		000,026	000		00,07
No						*45 18 23.12 -122 56 48.94*		009100100	S00	1																					
																	02	NONE 0 PRVTE	STOP NE SW									011		00
																		PSNGR CAR		01	DRVR	INJC	50	M	OR-Y OR<25		000	000		00
01266	N	N	N			11/21/2014	YAMHILL	1 14			INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT													29
NONE						Fri 4P	NEWBERG	MN 0	PACIFIC HY 99W		NE		TRF SIGNAL	N	WET	REAR		PRVTE	SW NE									000		00
							NEWBERG UA	22.05	SPRINGBROOK RD		06	2		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	49	M	OR-Y OR<25		026	000		29
No						*45 18 23.12 -122 56 48.94*		009100100	S00	1																					
																	02	NONE 0 PRVTE	STOP SW NE									011		00
																		PSNGR CAR		01	DRVR	NONE	38	F	OR-Y OR<25		000	000		00
00541	N	N	N			06/08/2015	YAMHILL	1 14			INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT													29
NONE						Mon 4P	NEWBERG	MN 0	PACIFIC HY 99W		NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
							NEWBERG UA	22.05	SPRINGBROOK RD		06	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	36	F	OR-Y OR<25		026	000		29
No						*45 18 23.12 -122 56 48.94*		009100100	S00	1																					
																	02	NONE 0 PRVTE	STOP NE SW									011		00
																		PSNGR CAR		01	DRVR	INJC	51	F	OR-Y OR<25		000	000		00
00858	N	N	N			08/24/2015	YAMHILL	1 14			INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT													29
CITY						Mon 7P	NEWBERG	MN 0	PACIFIC HY 99W		NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
							NEWBERG UA	22.05	SPRINGBROOK RD		06	2		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	21	F	OR-Y OR<25		026	026		29
No						*45 18 23.12 -122 56 48.94*		009100100	S00	1																					

091 PACIFIC HIGHWAY WEST

OR 99W & Springbrook Rd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALC	SCH	WRK	DATE / DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC CONN # FIRST STREET SECOND STREET INTERSECTION SEQ#	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 0 PRVTE	STOP NE SW								011		00
																PSNGR CAR		01	DRVR	NONE	34	M	OR-Y OR<25		000	000		00
00124 CITY	Y	N	N	N	02/19/2011 Sat 2P	YAMHILL NEWBERG NEWBERG UA	1 14 MN 0 22.05	PACIFIC HY 99W SPRINGBROOK RD	INTER E 05	CROSS 2	N TRF SIGNAL	N N	CLD DRY DAY	ANGL-OTH TURN PDO	01	NONE 0 PRVTE PSNGR CAR	U-TURN E E	01	DRVR	NONE	32	M	OR-Y OR<25	008		000 000		08,01 00 08,01
No	*45 18 23.12 -122 56 48.94*						009100100S00		1																			
															02	NONE 0 PRVTE	TURN-R S E								016		00
																PSNGR CAR		01	DRVR	NONE	17	M	OR-Y OR<25		000	000		00
00711 CITY	N	N	N	N	09/02/2011 Fri 4P	YAMHILL NEWBERG NEWBERG UA	1 14 MN 0 22.05	PACIFIC HY 99W SPRINGBROOK RD	INTER E 06	CROSS 0	N TRF SIGNAL	N N	CLR DRY DAY	S-1STOP REAR PDO	01	POLCE PRVTE PSNGR CAR	STRGHT E W	01	DRVR	NONE	39	M	OR-Y OR<25	026		000 000		07 00 07
No	*45 18 23.12 -122 56 48.94*						009100100S00		1																			
															02	NONE 1 PRVTE	STOP E W								011		00
																PSNGR CAR		01	DRVR	NONE	41	F	OR-Y OR<25		000	000		00
00125 CITY	N	N	N		02/19/2013 Tue 7A	YAMHILL NEWBERG NEWBERG UA	1 14 MN 0 22.05	PACIFIC HY 99W SPRINGBROOK RD	INTER E 06	CROSS 0	N TRF SIGNAL	N N	RAIN WET DAY	S-1STOP REAR INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT E W	01	DRVR	NONE	25	F	OR-Y OR<25	026		000 000		07 00 07
No	*45 18 23.12 -122 56 48.94*						009100100S00		1																			
															02	NONE 0 PRVTE	STOP E W								011		00
																PSNGR CAR		01	DRVR	INJC	38	M	OR-Y OR<25		000	000		00
00667 CITY	N	N	N		07/31/2013 Wed 3P	YAMHILL NEWBERG NEWBERG UA	1 14 MN 0 22.05	PACIFIC HY 99W SPRINGBROOK RD	INTER E 06	CROSS 0	N NONE	N N	CLR DRY DAY	S-1STOP REAR INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT E W	01	DRVR	NONE	59	M	OR-Y OR<25	052,026		000	013		32 00 32
No	*45 18 23.12 -122 56 48.94*						009100100S00		1																			
															02	NONE 0 PRVTE	STOP E W								011	013	00
																PSNGR CAR		01	DRVR	INJC	50	M	OR-Y OR<25		000	000		00
															03	NONE 0 PRVTE	STOP E W								011		00
																PSNGR CAR		01	DRVR	INJC	52	F	OR-Y OR<25		000	000		00

091 PACIFIC HIGHWAY WEST

OR 99W & Springbrook Rd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEC / ALC / DRK	DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00845	N N N	09/26/2013	YAMHILL	1 14		INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											07
NO RPT		Thu 5P	NEWBERG	MN 0	PACIFIC HY 99W	E		TRF SIGNAL	N	WET	REAR		PRVTE	E W									000		00
			NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	23	F	OR-Y		026	000		07
No	*45 18 23.12*	*-122 56 48.94*		009100100S00	1															OR<25					
												02	NONE 0	STOP											
													PRVTE	E W									011		00
													MTRCYCLE		01	DRVR	INJC	42	M	OR-Y		000	000		00
																				OR<25					
01195	N N N	12/21/2012	YAMHILL	1 14		INTER	CROSS	N	N	RAIN	S-1STOP	01	POLCE 0	STRGHT											07
STATE		Fri 9A	NEWBERG	MN 0	PACIFIC HY 99W	S	2	TRF SIGNAL	N	WET	REAR		PUBLC	S N									000		00
			NEWBERG UA	22.05	SPRINGBROOK RD	06			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	28	M	OR-Y		026	000		07
No	*45 18 23.12*	*-122 56 48.94*		009100100S00	1															OR<25					
												02	NONE 0	STOP											
													PRVTE	S N									011		00
													PSNGR CAR		01	DRVR	INJC	35	F	OR-Y		000	000		00
																				OR<25					
00987	N N N	11/01/2012	YAMHILL	1 14		INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	TURN-L											08,02
NO RPT		Thu 7A	NEWBERG	MN 0	PACIFIC HY 99W	SW		L-GRN-SIG	N	WET	TURN		PRVTE	S SW									000		00
			NEWBERG UA	22.05	SPRINGBROOK RD	05	0		N	DAWN	PDO		SCHL BUS		01	DRVR	NONE	58	M	OR-Y		007,028	000		08,02
No	*45 18 23.12*	*-122 56 48.94*		009100100S00	1															OR<25					
												02	NONE 0	TURN-L											
													PRVTE	S SW									000		00
													PSNGR CAR		01	DRVR	NONE	48	M	OR-Y		000	000		00
																				OR<25					
00976	N N N N N	09/12/2014	YAMHILL	1 14		INTER	CROSS	N	N	CLR	S-STRGHT	01	NONE 0	STRGHT										062,121	10
CITY		Fri 12P	NEWBERG	MN 0	PACIFIC HY 99W	SW		TRF SIGNAL	N	DRY	SS-O		PRVTE	SW NE									000	062,121	00
			NEWBERG UA	22.05	SPRINGBROOK RD	05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	30	F	OR-Y		080	000		10
No	*45 18 23.12*	*-122 56 48.94*		009100100S00	1															OR<25					
												02	NONE 0	STRGHT											
													PRVTE	SW NE									000		00
													PSNGR CAR		01	DRVR	INJC	37	M	OR-Y		000	000		00
																				OR<25					
												03	NONE 0	STRGHT											
													PRVTE	SW NE									000		00
													PSNGR CAR		01	DRVR	NONE	51	M	OR-Y		000	000		00
																				OR<25					
00507	N N N	06/20/2011	YAMHILL	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	07
NO RPT		Mon 3P	NEWBERG	MN 0	PACIFIC HY 99W	SW		UNKNOWN	N	DRY	REAR		PRVTE	SW NE									000		00
			NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	59	F	OR-Y		026	000		07
No	*45 18 23.12*	*-122 56 48.94*		009100100S00	1															OR<25					

091 PACIFIC HIGHWAY WEST

OR 99W & Springbrook Rd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	S P E D	E A U C	D R S W L G H R	C O K	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# FC CMPT/MLG MILEPNT LRS	CONN # FIRST STREET SECOND STREET INTERSECTION SEQ#	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CNTL	OFFRD WTHR SURF RNDBT LIGHT COLL TYP DRVWY	CRASH TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
														02	NONE 0 PRVTE	STOP SW NE									011	013	00
															PSNGR CAR		01	DRVR	NONE	51	M	OTH-Y N-RES		000	000		00
														03	NONE 0 PRVTE	STOP SW NE									011		00
															PSNGR CAR		01	DRVR	NONE	31	F	OR-Y OR<25		000	000		00
01023 NONE	N	N	N		12/06/2011 Tue 2P	YAMHILL NEWBERG	1 14 MN 0		INTER SW	CROSS	N TRF SIGNAL	N CLR S-1STOP N DRY REAR		01	NONE 0 PRVTE	STRGHT SW NE											07 00
						NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N DAY PDO			PSNGR CAR		01	DRVR	NONE	00	M	UNK OR<25	026	000			07
No					*45 18 23.12 -122 56 48.94*		009100100S00	1																			
														02	NONE 0 PRVTE	STOP SW NE									011		00
															PSNGR CAR		01	DRVR	NONE	72	M	OR-Y OR<25		000	000		00
01058 NONE	N	N	N		12/15/2011 Thu 8A	YAMHILL NEWBERG	1 14 MN 0		INTER SW	CROSS	N TRF SIGNAL	N CLD S-1STOP N WET REAR		01	NONE 0 PRVTE	STRGHT SW NE											07 00
						NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N DAY PDO			PSNGR CAR		01	DRVR	NONE	25	M	OR-Y OR>25	026	000			07
No					*45 18 23.12 -122 56 48.94*		009100100S00	1																			
														02	NONE 0 PRVTE	STOP SW NE									011		00
															PSNGR CAR		01	DRVR	NONE	40	M	OR-Y OR<25		000	000		00
00066 NO RPT	N	N	N		01/21/2012 Sat 9P	YAMHILL NEWBERG	1 14 MN 0		INTER SW	CROSS	N UNKNOWN	N CLR ANGL-STP N DRY TURN		01	NONE 0 PRVTE	TURN-L SW N											13 00
						NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N DARK PDO			PSNGR CAR		01	DRVR	NONE	17	F	OR-Y OR<25	045	000			13
No					*45 18 23.12 -122 56 48.94*		009100100S00	1																			
														02	NONE 0 PRVTE	STOP SW NE									012		00
															PSNGR CAR		01	DRVR	NONE	57	M	OR-Y OR<25		000	000		00
00818 NONE	N	N	N		09/21/2012 Fri 3P	YAMHILL NEWBERG	1 14 MN 0		INTER SW	CROSS	N TRF SIGNAL	N CLR S-1STOP N WET REAR		01	NONE 0 PRVTE	STRGHT SW NE										124 124	07 00
						NEWBERG UA	22.05	SPRINGBROOK RD	06	2		N DAY PDO			PSNGR CAR		01	DRVR	NONE	19	M	OR-Y OR<25	026	000			07
No					*45 18 23.12 -122 56 48.94*		009100100S00	1																			
														02	NONE 0 PRVTE	STOP SW NE									011		00
															PSNGR CAR		01	DRVR	NONE	26	F	OR-Y OR<25		000	000		00

091 PACIFIC HIGHWAY WEST

OR 99W & Springbrook Rd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEDLS	DRSWLK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00868	N N N N N		10/02/2012	YAMHILL	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
CITY			Tue 5P	NEWBERG	MN 0		PACIFIC HY 99W	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE										000		00
				NEWBERG UA	22.05		SPRINGBROOK RD	06	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	44	M	OR-Y		043	000		07
No			*45 18 23.12 -122 56 48.94*		009100100S00		1															OR<25					
														02	NONE 0	STOP											
															PRVTE	SW NE									011		00
															PSNGR CAR		01	DRVR	INJC	41	M	OR-Y		000	000		00
																						OR<25					
																	02	PSNG	INJC	39	F			000	000		00
00873	N N N		10/03/2012	YAMHILL	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE			Wed 12P	NEWBERG	MN 0		PACIFIC HY 99W	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE										000		00
				NEWBERG UA	22.05		SPRINGBROOK RD	06	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	20	F	OTH-Y		026	000		07
No			*45 18 23.12 -122 56 48.94*		009100100S00		1															OR<25					
														02	NONE 0	STOP											
															PRVTE	SW NE									011		00
															PSNGR CAR		01	DRVR	INJC	41	M	OR-Y		000	000		00
																						OR<25					
00888	Y N N		10/07/2012	YAMHILL	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										093		01
NO RPT			Sun 12P	NEWBERG	MN 0		PACIFIC HY 99W	SW		L-GRN-SIG	N	DRY	REAR		PRVTE	SW NE										000		00
				NEWBERG UA	22.05		SPRINGBROOK RD	06	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	24	M	OR-Y		047	088	093	01
No			*45 18 23.12 -122 56 48.94*		009100100S00		1															OR>25					
														02	NONE 0	STOP											
															PRVTE	SW NE									012		00
															PSNGR CAR		01	DRVR	INJC	69	M	OTH-Y		000	000		00
																						N-RES					
																	02	PSNG	INJC	65	F			000	000		00
00278	N N N N N		04/04/2013	YAMHILL	1	14		INTER	CROSS	N	N	CLD	S-1STOP	01	NONE 0	STRGHT											07
CITY			Thu 7A	NEWBERG	MN 0		PACIFIC HY 99W	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE										000		00
				NEWBERG UA	22.05		SPRINGBROOK RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	47	M	OR-Y		026	000		07
No			*45 18 23.12 -122 56 48.94*		009100100S00		1															OR<25					
														02	NONE 0	STOP											
															PRVTE	SW NE									011		00
															PSNGR CAR		01	DRVR	INJC	39	M	OR-Y		000	000		00
																						OR<25					
00294	N N N		04/09/2013	YAMHILL	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NO RPT			Tue 1P	NEWBERG	MN 0		PACIFIC HY 99W	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE										000		00
				NEWBERG UA	22.05		SPRINGBROOK RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	25	F	OR-Y		026	000		07
No			*45 18 23.12 -122 56 48.94*		009100100S00		1															OR<25					
														02	NONE 0	STOP											
															PRVTE	SW NE									011		00
															PSNGR CAR		01	DRVR	NONE	55	M	OR-Y		000	000		00
																						OR<25					

091 PACIFIC HIGHWAY WEST

OR 99W & Springbrook Rd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEC	DARK	SCHL	WORK	DATE / DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00460	N	N	N		06/04/2013	YAMHILL	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT						OR-Y				07
CITY					Tue 7A	NEWBERG	MN 0	PACIFIC HY 99W	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000	00
						NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	62	M	OR-Y		026	000	07
No	*45 18 23.12*	*-122 56 48.94*					009100100S00	1															OR<25				
															02	NONE 0	STOP										
																PRVTE	SW NE									011	00
																PSNGR CAR		01	DRVR	INJC	44	M	OR-Y		000	000	00
																							OR<25				
00545	N	N	N		06/26/2013	YAMHILL	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT						OR-Y				07
NONE					Wed 9A	NEWBERG	MN 0	PACIFIC HY 99W	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000	00
						NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	UNK		026	000	07
No	*45 18 23.12*	*-122 56 48.94*					009100100S00	1															UNK				
															02	NONE 0	STOP										
																PRVTE	SW NE									011	00
																PSNGR CAR		01	DRVR	NONE	46	F	OR-Y		000	000	00
																							OR<25				
00688	N	N	N		08/06/2013	YAMHILL	1 14		INTER	CROSS	N	N	UNK	S-1STOP	01	NONE	STRGHT										07
NONE					Tue 3P	NEWBERG	MN 0	PACIFIC HY 99W	SW		TRF SIGNAL	N	UNK	REAR		PRVTE	SW NE									000	00
						NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y		026	000	07
No	*45 18 23.12*	*-122 56 48.94*					009100100S00	1															OR<25				
															02	NONE 0	STOP										
																PRVTE	SW NE									011	00
																PSNGR CAR		01	DRVR	NONE	51	M	OR-Y		000	000	00
																							OR<25				
01203	N	N	N		12/31/2013	YAMHILL	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT						OR-Y				07
NO RPT					Tue 5P	NEWBERG	MN 0	PACIFIC HY 99W	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000	00
						NEWBERG UA	22.05	SPRINGBROOK RD	06	2		N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	41	F	OR-Y		026	000	07
No	*45 18 23.12*	*-122 56 48.94*					009100100S00	1															OR<25				
															02	NONE 0	STOP										
																PRVTE	SW NE									011	00
																PSNGR CAR		01	DRVR	INJC	61	F	OR-Y		000	000	00
																							OR<25				
																		02	PSNG	INJC	59	M			000	000	00
00391	N	N	N		04/12/2014	YAMHILL	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	STRGHT										07
NONE					Sat 10A	NEWBERG	MN 0	PACIFIC HY 99W	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000	00
						NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	26	F	OR-Y		026	000	07
No	*45 18 23.12*	*-122 56 48.94*					009100100S00	1															OR<25				
																		02	PSNG	NO<5	04	F			000	000	00
																		03	PSNG	NO<5	01	M			000	000	00
															02	NONE 0	STOP										
																PRVTE	SW NE									011	00
																PSNGR CAR		01	DRVR	INJC	27	F	OR-Y		000	000	00
																							OR<25				

091 PACIFIC HIGHWAY WEST

OR 99W & Springbrook Rd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	SCHOOL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
01251	N	N	N			11/19/2014	YAMHILL	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NO RPT						Wed 1P	NEWBERG	MN 0	PACIFIC HY 99W	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE										000		00
							NEWBERG UA	22.05	SPRINGBROOK RD	06	2		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	51	M	OTH-Y		026	000		29
No						*45 18 23.12 -122 56 48.94*		009100100S00	1															N-RES					
																02	NONE 0	STOP											
																	PRVTE	SW NE									011		00
																	PSNGR CAR		01	DRVR	NONE	64	F	OR-Y		000	000		00
																								OR<25					
00214	N	N	N	N	N	02/28/2015	YAMHILL	1 14		INTER	CROSS	N	N	CLR	S-STRGHT	01	NONE 0	STRGHT											07
CITY						Sat 5P	NEWBERG	MN 0	PACIFIC HY 99W	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000		00
							NEWBERG UA	22.05	SPRINGBROOK RD	06	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	52	M	OR-Y		043	000		07
No						*45 18 23.12 -122 56 48.94*		009100100S00	1															OR<25					
																02	NONE 0	STRGHT											
																	PRVTE	SW NE									006		00
																	PSNGR CAR		01	DRVR	INJC	32	M	OR-Y		000	000		00
																								OR<25					
00379	N	N	N	N	N	04/23/2015	YAMHILL	1 14		INTER	CROSS	N	N	CLD	S-1STOP	01	NONE 0	STRGHT											32,29
CITY						Thu 11A	NEWBERG	MN 0	PACIFIC HY 99W	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000		00
							NEWBERG UA	22.05	SPRINGBROOK RD	06	2		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	22	F	OR-Y		052,026	000		32,29
No						*45 18 23.12 -122 56 48.94*		009100100S00	1															OR<25					
																02	NONE 0	STOP											
																	PRVTE	SW NE									011		00
																	PSNGR CAR		01	DRVR	NONE	66	M	OR-Y		000	000		00
																								OR<25					
00296	N	N	N			03/23/2014	YAMHILL	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	TURN-R											27
NONE						Sun 6P	NEWBERG	MN 0	PACIFIC HY 99W	SW		YIELD	N	DRY	REAR		PRVTE	SW S									000		00
							NEWBERG UA	22.05	SPRINGBROOK RD	09	2		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	39	M	OR-Y		026	000		27
No						*45 18 23.12 -122 56 48.94*		009100100S00	1															OR<25					
																02	NONE 0	STOP											
																	PRVTE	SW S									011		00
																	PSNGR CAR		01	DRVR	NONE	00	F	UNK		000	000		00
																								UNK					
00038	Y	N	N			01/12/2011	YAMHILL	1 14		INTER	CROSS	N	N	RAIN	S-STRGHT	01	NONE 0	STRGHT											01
NONE						Wed 5P	NEWBERG	MN 0	PACIFIC HY 99W	W		TRF SIGNAL	N	WET	REAR		PRVTE	W E									000		00
							NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DARK	INJ		PSNGR CAR		01	DRVR	NONE	58	F	OR-Y		042	000		01
No						*45 18 23.12 -122 56 48.94*		009100100S00	1															OR<25					
																02	NONE 0	STRGHT											
																	PRVTE	W E									000		00
																	PSNGR CAR		01	DRVR	INJC	47	F	OR-Y		000	000		00
																								OR<25					

091 PACIFIC HIGHWAY WEST

OR 99W & Springbrook Rd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	WORK ZONE	DATE / DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00168	N	N	N		03/02/2011	YAMHILL	1	14	INTER	CROSS	N	N	UNK	S-1STOP	01	NONE	STRGHT										07,27
NONE					Wed 4P	NEWBERG	MN 0	PACIFIC HY 99W	W		UNKNOWN	N	UNK	REAR		PRVTE	W E									000	00
						NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	34	M	OR-Y	026	000		07,27
No					*45 18 23.12 -122 56 48.94*		009100100S00	1																OR<25				
															02	NONE 0	STOP										
																PRVTE	W E									011	00
																PSNGR CAR		01	DRVR	NONE	35	M	OR-Y	000	000		00
																							OR<25				
00493	Y	N	N		07/01/2011	YAMHILL	1	14	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										01
CITY					Fri 12P	NEWBERG	MN 0	PACIFIC HY 99W	W		TRF SIGNAL	N	DRY	REAR		PRVTE	E W									000	00
						NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK	026	000		01
No					*45 18 23.12 -122 56 48.94*		009100100S00	1																UNK				
															02	NONE 0	STOP										
																PRVTE	E W									011	00
																PSNGR CAR		01	DRVR	NONE	37	F	OR-Y	000	000		00
																							OR<25				
																		02	PSNG	NO<5	01	M		000	000		00
00686	N	N	N		08/24/2011	YAMHILL	1	14	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	STRGHT										07
NONE					Wed 4P	NEWBERG	MN 0	PACIFIC HY 99W	W		UNKNOWN	N	DRY	REAR		PRVTE	W E									000	00
						NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	52	F	OR-Y	026	000		07
No					*45 18 23.12 -122 56 48.94*		009100100S00	1																OR<25				
															02	NONE	STOP										
																PRVTE	W E									011	00
																PSNGR CAR		01	DRVR	NONE	34	F	OR-Y	000	000		00
																							OR<25				
00138	N	N	N		02/21/2013	YAMHILL	1	14	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										07
NONE					Thu 3P	NEWBERG	MN 0	PACIFIC HY 99W	W		YIELD	N	DRY	REAR		PRVTE	W E									000	00
						NEWBERG UA	22.05	SPRINGBROOK RD	06	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	M	UNK	026	000		07
No					*45 18 23.12 -122 56 48.94*		009100100S00	1																OR>25				
															02	NONE 0	STOP										
																PRVTE	W E									011	00
																PSNGR CAR		01	DRVR	INJC	32	M	OR-Y	000	000		00
																							OR>25				
00468	N	N	N		05/01/2014	YAMHILL	1	14	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										27
NONE					Thu 7A	NEWBERG	MN 0	PACIFIC HY 99W	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W E									000	00
						NEWBERG UA	22.05	SPRINGBROOK RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	51	M	OR-Y	026	000		27
No					*45 18 23.12 -122 56 48.94*		009100100S00	1																OR<25				
															02	NONE 0	STOP										
																PRVTE	W E									011	00
																PSNGR CAR		01	DRVR	INJC	55	M	OR-Y	000	000		00
																							OR<25				

091 PACIFIC HIGHWAY WEST

OR 99W & Springbrook Rd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	WORK ZONE	DATE / DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# CMPT/MILEPNT LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR / OWNER / VEH TYPE	QTY / MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00821	N	N	N		09/21/2012	YAMHILL	1 14		INTER	CROSS	N	N	RAIN	O-1 L-TURN	01	NONE	0 STRGHT											04
NO RPT					Fri 6A	NEWBERG	MN 0	PACIFIC HY 99W	CN		L-GRN-SIG	N	WET	TURN		PRVTE	NE SW									000		00
						NEWBERG UA	22.05	SPRINGBROOK RD	02	2		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	UNK	020		000		04
No					*45 18 23.12 -122 56 48.94*		009100100S00	1																UNK					
															02	NONE	0 TURN-L											
																PRVTE	SW N									000		00
																PSNGR CAR		01	DRVR	NONE	22	M	OR-Y	000		000		00
																							OR<25					
01045	N	N	N		11/15/2012	YAMHILL	1 14		INTER	CROSS	N	N	CLD	S-1STOP	01	NONE	0 STRGHT										092	07,14
NONE					Thu 3P	NEWBERG	MN 0	PACIFIC HY 99W	CN		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
						NEWBERG UA	22.05	SPRINGBROOK RD	02	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	25	F	OR-Y	026		000		07,14
No					*45 18 23.12 -122 56 48.94*		009100100S00	1																OR<25					
															02	NONE	0 STOP											
																PRVTE	NE SW									011		00
																PSNGR CAR		01	DRVR	INJC	30	M	OR-Y	000		000		00
																							OR<25					
00400	N	N	N		05/28/2011	YAMHILL	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0 STRGHT											07
NO RPT					Sat 4P	NEWBERG	MN 0	PACIFIC HY 99W	CN		TRF SIGNAL	N	DRY	REAR		PRVTE	W E									000		00
						NEWBERG UA	22.05	SPRINGBROOK RD	03	2		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	68	M	OR-Y	026		000		07
No					*45 18 23.12 -122 56 48.94*		009100100S00	1																OR>25					
															02	NONE	0 STOP											
																PRVTE	W E									011		00
																PSNGR CAR		01	DRVR	NONE	33	F	OR-Y	000		000		00
																							OR<25					
00272	N	N	N	N	N 03/27/2012	YAMHILL	1 14		INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE	0 STRGHT											03
CITY					Tue 9P	NEWBERG	MN 0	PACIFIC HY 99W	CN		TRF SIGNAL	N	WET	ANGL		PRVTE	W E									000		00
						NEWBERG UA	22.05	SPRINGBROOK RD	03	0		N	DARK	INJ		PSNGR CAR		01	DRVR	NONE	17	F	OR-Y	021		000		03
No					*45 18 23.12 -122 56 48.94*		009100100S00	1																OR<25					
															02	NONE	0 STRGHT											
																PRVTE	N S									000		00
																PSNGR CAR		01	DRVR	INJC	63	M	OR-Y	000		000		00
																							OR<25					
00922	N	N	N	N	N 10/15/2012	YAMHILL	1 14		INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE	0 STRGHT											02
CITY					Mon 7P	NEWBERG	MN 0	PACIFIC HY 99W	CN		TRF SIGNAL	N	WET	ANGL		PRVTE	W E									000		00
						NEWBERG UA	22.05	SPRINGBROOK RD	03	2		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	65	M	OR-Y	028		000		02
No					*45 18 23.12 -122 56 48.94*		009100100S00	1																OR<25					
															02	NONE	0 STRGHT											
																PRVTE	N S									015		00
																PSNGR CAR		01	DRVR	NONE	56	M	OR-Y	000		000		00
																							OR<25					

091 PACIFIC HIGHWAY WEST

OR 99W & Springbrook Rd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEC / ALC / DRK	DATE / DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00683	N N N N N	07/10/2015	YAMHILL	1 14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										04
CITY		Fri 11P	NEWBERG	MN 0	PACIFIC HY 99W	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SW NE									000	00
			NEWBERG UA	22.05	SPRINGBROOK RD	03	2		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	23	M	OR-Y		020	000	04
No		*45 18 23.12 -122 56 48.94*		009100100S00	1															OR<25				
												02	NONE 0	TURN-L										
													PRVTE	NE S									015	00
													PSNGR CAR		01	DRVR	NONE	23	M	OR-Y		000	000	00
																				OR<25				
01301	N N N	12/01/2014	YAMHILL	1 14		INTER	CROSS	N	N	RAIN	O-OTHER	01	NONE 0	TURN-R										08,02
NONE		Mon 11A	NEWBERG	MN 0	PACIFIC HY 99W	CN		TRF SIGNAL	N	WET	TURN		PRVTE	S NE									016	00
			NEWBERG UA	22.05	SPRINGBROOK RD	04	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	54	F	OR-Y		028	000	02
No		*45 18 23.12 -122 56 48.94*		009100100S00	1															OR<25				
												02	NONE 0	TURN-L										
													PRVTE	N NE									000	00
													PSNGR CAR		01	DRVR	INJC	18	F	OR-Y		007	000	08
																				OR<25				
00073	N N N N N	01/21/2015	YAMHILL	1 14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	TURN-L										04,27
CITY		Wed 6A	NEWBERG	MN 0	PACIFIC HY 99W	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N NE									015	00
			NEWBERG UA	22.05	SPRINGBROOK RD	04	2		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	45	F	OR-Y		020,004,016	000	04,27
No		*45 18 23.12 -122 56 48.94*		009100100S00	1															OR<25				
												02	NONE 0	STRGHT										
													PRVTE	S N									000	00
													PSNGR CAR		01	DRVR	NONE	74	F	OR-Y		000	000	00
																				OR<25				
00445	N N N	04/23/2014	YAMHILL	1 14		INTER	CROSS	N	N	RAIN	S-STRGHT	01	NONE 0	STRGHT										13
NONE		Wed 4P	NEWBERG	MN 0	PACIFIC HY 99W	W		TRF SIGNAL	N	WET	REAR		PRVTE	W E									000	00
			NEWBERG UA	22.06	SPRINGBROOK RD	06	2		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	25	M	OR-Y		045	000	13
No		*45 18 23.12 -122 56 48.94*		009100100S00	1															OR<25				
												02	NONE 0	STRGHT										
													PRVTE	W E									000	00
													PSNGR CAR		01	DRVR	NONE	21	F	OR-Y		000	000	00
																				OR<25				

CITY OF NEWBERG, YAMHILL COUNTY

OR 99W & Springbrook Rd

January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALCHL	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
01068	N	N	N			11/07/2011	16	PACIFIC HY 99W	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NO RPT						Mon 7A	0	SPRINGBROOK RD	N		TRF SIGNAL	N	WET	REAR		PUBLC	N S										000		00
No						*45 18 23.13*	*-122 56 48.94*	1	06	0		N	DAY	PDO		SCHL BUS		01	DRVR	NONE	00	U	UNK		026	000		07
																							UNK					
															02	NONE 0	STOP											
																PRVTE	N S									011		00
																PSNGR CAR		01	DRVR	NONE	51	F	OR-Y		000	000		00
																							OR<25					
00064	N	N	N	N	N	01/21/2011	14	PACIFIC HY 99W	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						Fri 4P	0	SPRINGBROOK RD	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S N									000		00
Yes						*45 18 23.14*	*-122 56 48.90*	1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		026	000		07
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	S N									011		00
																PSNGR CAR		01	DRVR	NONE	36	F	OR-Y		000	000		00
																							OR<25					
00790	N	N	N	N	N	09/30/2011	14	PACIFIC HY 99W	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
CITY						Fri 3P	0	SPRINGBROOK RD	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S N									000		00
No						*45 18 23.13*	*-122 56 48.94*	1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	32	F	OR-Y		026	000		07
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	S N									011		00
																PSNGR CAR		01	DRVR	NONE	31	F	OR-Y		000	000		00
																							OR<25					
																		02	PSNG	NO<5	02	F			000	000		00
00604	N	N	N			07/17/2012	16	PACIFIC HY 99W	INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											07
NONE						Tue 11A	0	SPRINGBROOK RD	S		TRF SIGNAL	N	WET	REAR		PRVTE	S N									000		00
No						*45 18 23.12*	*-122 56 48.94*	1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK		026	000		07
																							UNK					
															02	NONE 0	STOP											
																PRVTE	S N									011		00
																PSNGR CAR		01	DRVR	NONE	62	F	OR-Y		000	000		00
																							OR<25					
00744	N	N	N			07/11/2014	16	PACIFIC HY 99W	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						Fri 6A	0	SPRINGBROOK RD	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S N									000		00
No						*45 18 23.12*	*-122 56 48.94*	1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	M	UNK		026	000		07
																							UNK					
															02	NONE 0	STOP											
																PRVTE	S N									011		00
																PSNGR CAR		01	DRVR	INJC	43	F	OR-Y		000	000		00
																							OR<25					
01229	N	N	N			11/26/2015	14	PACIFIC HY 99W	INTER	CROSS	N	N	CLR	O-1STOP	01	NONE 0	BACK											10
NONE						Thu 1P	0	SPRINGBROOK RD	S		TRF SIGNAL	N	DRY	BACK		PRVTE	N S									000		00
No						*45 18 23.15*	*-122 56 48.95*	1	06	2		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK		011	000		10
																							OR<25					

CITY OF NEWBERG, YAMHILL COUNTY

OR 99W & Springbrook Rd

January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALC	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 0	STOP											
																PRVTE	S N									011		00
																PSNGR CAR		01	DRVR	NONE	48	F	OR-Y		000	000		00
																							OR<25					

091 PACIFIC HIGHWAY WEST

OR 99W & Brutscher St
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SP	ELC	DAUSLH	RSWCOR	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG	CONN # / FIRST STREET / SECOND STREET / INTERSECTION	SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00415	N	N	N		05/19/2012	YAMHILL	1	14			INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											013	07
NO RPT					Sat 10A	NEWBERG	MN 0		BRUTSCHER ST		NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
						NEWBERG UA	21.80		PACIFIC HY 99W		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	31	M	OR-Y		026	000		07
No					*45 18 28.53 -122 56 31.38*		009100100		S00	1																OR<25					
																	02	NONE 0	STOP										011	013	00
																		PRVTE	NE SW											
																		PSNGR CAR		01	DRVR	NONE	36	F	OR-Y		000	000		00
																									OR<25					
																	03	NONE 0	STOP										011		00
																		PRVTE	NE SW											
																		PSNGR CAR		01	DRVR	INJC	38	M	OR-Y		000	000		00
																									OR<25					
00518	N	N	N		06/22/2012	YAMHILL	1	14			INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT												27
NO RPT					Fri 4P	NEWBERG	MN 0		BRUTSCHER ST		NE		TRF SIGNAL	N	WET	REAR		PRVTE	NE SW									000		00
						NEWBERG UA	21.80		PACIFIC HY 99W		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	20	F	OR-Y		026	000		27
No					*45 18 28.53 -122 56 31.38*		009100100		S00	1																OR<25					
																	02	NONE 0	STOP										011		00
																		PRVTE	NE SW											
																		PSNGR CAR		01	DRVR	INJC	42	F	OR-Y		000	000		00
																									OR<25					
00907	N	N	N		10/04/2012	YAMHILL	1	14			INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												07
NONE					Thu 5P	NEWBERG	MN 0		BRUTSCHER ST		NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
						NEWBERG UA	21.80		PACIFIC HY 99W		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	26	M	OR-Y		026	000		07
No					*45 18 28.53 -122 56 31.38*		009100100		S00	1																OR<25					
																	02	NONE 0	STOP										011		00
																		PRVTE	NE SW											
																		PSNGR CAR		01	DRVR	NONE	40	M	OR-Y		000	000		00
																									OR<25					
00829	N	N	N		09/23/2013	YAMHILL	1	14			INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT												07
NONE					Mon 2P	NEWBERG	MN 0		BRUTSCHER ST		NE		TRF SIGNAL	N	WET	REAR		PRVTE	NE SW									000		00
						NEWBERG UA	21.80		PACIFIC HY 99W		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	40	F	OR-Y		026	000		07
No					*45 18 28.53 -122 56 31.38*		009100100		S00	1																OR<25					
																	02	NONE 0	STOP										011		00
																		PRVTE	NE SW											
																		PSNGR CAR		01	DRVR	INJC	71	M	OR-Y		000	000		00
																									OR<25					
01413	N	N	N		12/30/2014	YAMHILL	1	14			INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												29
NO RPT					Tue 2P	NEWBERG	MN 0		BRUTSCHER ST		NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
						NEWBERG UA	21.80		PACIFIC HY 99W		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	33	M	OR-Y		026	000		29
No					*45 18 28.53 -122 56 31.38*		009100100		S00	1																OR<25					

091 PACIFIC HIGHWAY WEST

OR 99W & Brutscher St
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	DRUG	ALC	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# FC CMPT/MLG MILEPNT LRS	CONN # FIRST STREET SECOND STREET INTERSECTION SEQ#	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																02	NONE 0 PRVTE	STOP NE SW									011		00
																	PSNGR CAR		01	DRVR	NONE	19	M	OR-Y OR<25		000	000		00
00441	N	N	N			05/08/2015	YAMHILL	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												29
NONE						Fri UNK	NEWBERG	MN 0	BRUTSCHER ST	NE		TRF SIGNAL	N	DRY	REAR		UNKN	NE SW									000		00
							NEWBERG UA	21.80	PACIFIC HY 99W	06	0		N	DAY	PDO		UNKNOWN		01	DRVR	NONE	00	U	UNK		026	000		29
No						*45 18 28.53 -122 56 31.38*		009100100S00	1															UNK					
																02	NONE 0 PRVTE	STOP NE SW									011		00
																	PSNGR CAR		01	DRVR	NONE	78	M	OR-Y OR<25		000	000		00
00661	N	N	N			08/18/2011	YAMHILL	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013		32
NO RPT						Thu 5P	NEWBERG	MN 0	BRUTSCHER ST	E		UNKNOWN	N	DRY	REAR		PRVTE	E W									000		00
							NEWBERG UA	21.80	PACIFIC HY 99W	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	35	F	OR-Y OR<25	052,026		000		32
No						*45 18 28.53 -122 56 31.38*		009100100S00	1																				
																02	NONE 0 PRVTE	STOP E W									011	013	00
																	PSNGR CAR		01	DRVR	INJC	43	M	OR-Y OR<25		000	000		00
																03	NONE 0 PRVTE	STOP E W									011		00
																	PSNGR CAR		01	DRVR	NONE	59	M	OR-Y OR<25		000	000		00
01018	N	N	N			11/09/2012	YAMHILL	1 14		INTER	CROSS	N	N	CLD	ANGL-STP	01	NONE 0	TURN-L										092		32,27
CITY						Fri 5P	NEWBERG	MN 0	BRUTSCHER ST	SW		TRF SIGNAL	N	DRY	TURN		PRVTE	SE SW									000		00
							NEWBERG UA	21.80	PACIFIC HY 99W	05	0		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	44	M	OR-Y OR<25	052,016		038		32,27
No						*45 18 28.53 -122 56 31.38*		009100100S00	1																				
																02	NONE 0 PRVTE	STOP NE SW									011	092	00
																	PSNGR CAR		01	DRVR	NONE	71	M	OR-Y OR<25		000	000		00
00469	N	N	N	N	N	06/11/2012	YAMHILL	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												27
CITY						Mon 10A	NEWBERG	MN 0	BRUTSCHER ST	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000		00
							NEWBERG UA	21.80	PACIFIC HY 99W	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	22	F	OR-Y OR<25	026		000		27
No						*45 18 28.53 -122 56 31.38*		009100100S00	1																				
																02	NONE 0 PRVTE	STOP SW NE									011		00
																	PSNGR CAR		01	DRVR	INJB	46	F	OR-Y OR<25		000	000		00
																			02	PSNG	INJB	25	F			000	000		00

091 PACIFIC HIGHWAY WEST

OR 99W & Brutscher St
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SP ED / EL AU / DC CS / LG CO / SL WK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00585	N N N N N	07/09/2013	YAMHILL	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
CITY		Tue 6A	NEWBERG	MN 0	BRUTSCHER ST	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE										000		00
			NEWBERG UA	21.80	PACIFIC HY 99W	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	50	M	OR-Y		026	000		07
No	*45 18 28.53*	*-122 56 31.38*		009100100S00	1															OR<25					
												02	NONE 0	STOP											
													PRVTE	SW NE									011		00
													PSNGR CAR		01	DRVR	INJC	36	M	OR-Y		000	000		00
																				OR<25					
00400	N N N	04/14/2014	YAMHILL	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
CITY		Mon 4P	NEWBERG	MN 0	BRUTSCHER ST	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW										000		00
			NEWBERG UA	21.80	PACIFIC HY 99W	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	25	M	OR-Y		026	000		07
No	*45 18 28.53*	*-122 56 31.38*		009100100S00	1															OR<25					
												02	NONE 0	STOP											
													PRVTE	NE SW									011		00
													PSNGR CAR		01	DRVR	INJC	24	M	OR-Y		000	000		00
																				OR<25					
00296	N N N	03/27/2015	YAMHILL	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 1	STRGHT										013		07
NONE		Fri 12P	NEWBERG	MN 0	BRUTSCHER ST	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE										000		00
			NEWBERG UA	21.80	PACIFIC HY 99W	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	46	M	OR-Y		043,026	000		07
No	*45 18 28.53*	*-122 56 31.38*		009100100S00	1															OR<25					
												02	NONE 0	STOP											
													PRVTE	SW NE									011	013	00
													PSNGR CAR		01	DRVR	INJC	73	F	OR-Y		000	000		00
																				OR<25					
												03	NONE 0	STOP											
													PRVTE	SW NE									011		00
													PSNGR CAR		01	DRVR	NONE	00	M	UNK		000	000		00
																				UNK					
00806	N N N	08/13/2015	YAMHILL	1 14		INTER	CROSS	N	N	CLR	S-STRGHT	01	NONE 0	STRGHT										092		29
NONE		Thu 5P	NEWBERG	MN 0	BRUTSCHER ST	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE										000		00
			NEWBERG UA	21.80	PACIFIC HY 99W	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	29	M	OR-Y		042	000		29
No	*45 18 28.53*	*-122 56 31.38*		009100100S00	1															OR>25					
												02	NONE 0	STRGHT											
													PRVTE	SW NE									007	092	00
													PSNGR CAR		01	DRVR	INJC	19	F	OR-Y		000	000		00
																				OR<25					
00875	N N N	09/01/2015	YAMHILL	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013		29
NONE		Tue 6P	NEWBERG	MN 0	BRUTSCHER ST	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE										000		00
			NEWBERG UA	21.80	PACIFIC HY 99W	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	26	M	OR-Y		026	000		29
No	*45 18 28.53*	*-122 56 31.38*		009100100S00	1															OR<25					

091 PACIFIC HIGHWAY WEST

OR 99W & Brutscher St
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEC / ALCH / DRK	DAY/TIME / CITY / LAT/LONG	COUNTY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
												02	NONE 0 / PRVTE	STOP / SW NE									011	013	00
													PSNGR CAR		01	DRVR	INJC	53	F	OR-Y / OR<25		000	000		00
												03	NONE 0 / PRVTE	STOP / SW NE									012		00
													PSNGR CAR		01	DRVR	NONE	39	F	OR-Y / OR<25		000	000		00
00045	N N N N N	01/14/2011	YAMHILL	1 14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											07
CITY		Fri 5P	NEWBERG	MN 0	BRUTSCHER ST	W		TRF SIGNAL	N	WET	REAR		PRVTE	W E									000		00
			NEWBERG UA	21.80	PACIFIC HY 99W	06	0		N	DARK	INJ		PSNGR CAR		01	DRVR	NONE	23	M	OR-Y / OR<25	026	000			07
No		*45 18 28.53 -122 56 31.38*		009100100S00	1																				
												02	NONE 0 / PRVTE	STOP / W E									011		00
													PSNGR CAR		01	DRVR	INJC	22	F	OR-Y / OR<25		000	000		00
01005	N N N	11/07/2011	YAMHILL	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE		Mon 5P	NEWBERG	MN 0	BRUTSCHER ST	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W E									000		00
			NEWBERG UA	21.80	PACIFIC HY 99W	06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	42	F	OR-Y / OR>25	026	000			07
No		*45 18 28.53 -122 56 31.38*		009100100S00	1																				
												02	NONE 0 / PRVTE	STOP / W E									011		00
													PSNGR CAR		01	DRVR	INJC	31	M	OR-Y / OR>25		000	000		00
00115	N N N N N	02/04/2014	YAMHILL	1 14		INTER	CROSS	N	N	CLD	O-OTHER	01	NONE	BACK											10
CITY		Tue 3P	NEWBERG	MN 0	BRUTSCHER ST	W		TRF SIGNAL	N	SNO	BACK		PRVTE	E W									000		00
			NEWBERG UA	21.80	PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	59	F	OR-Y / OR<25	011	000			10
No		*45 18 28.53 -122 56 31.38*		009100100S00	1																				
												02	NONE 0 / PRVTE	STOP / W E									011		00
													PSNGR CAR		01	DRVR	NONE	20	F	OR-Y / OR<25		000	000		00
00375	N N N	05/05/2013	YAMHILL	1 14		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	U-TURN											08
NO RPT		Sun 12P	NEWBERG	MN 0	BRUTSCHER ST	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S S									000		00
			NEWBERG UA	21.80	PACIFIC HY 99W	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	63	M	OR-Y / OR<25	008	000			08
No		*45 18 28.53 -122 56 31.38*		009100100S00	1																				
												02	NONE 0 / PRVTE	STRGHT / E W									000		00
													PSNGR CAR		01	DRVR	NONE	46	F	OR-Y / OR<25		000	000		00

091 PACIFIC HIGHWAY WEST

OR 99W & Brutscher St
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	SCHL ZONE	WORK ZONE	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC	CONN # FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR / QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00740	N	N	N			08/23/2013	YAMHILL	1	14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										002	04,27
NO RPT						Fri 1P	NEWBERG	MN 0		BRUTSCHER ST	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	W E									000		00
							NEWBERG UA	21.80		PACIFIC HY 99W	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	31	F	OR-Y		020	000	002	04,27
No						*45 18 28.53 -122 56 31.38*		009100100S00																		OR<25					
																				02	PSNG	NO<5	01	M			000	000		00
																	02	NONE 0	TURN-L									000		00
																		PRVTE	S W											
																		PSNGR CAR		01	DRVR	NONE	23	F	OR-Y		000	000		00
																									OR<25					
01186	N	N	N			11/02/2014	YAMHILL	1	14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
NONE						Sun 6P	NEWBERG	MN 0		BRUTSCHER ST	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	NE SW									000		00
							NEWBERG UA	21.80		PACIFIC HY 99W	02	0		Y	DUSK	INJ		PSNGR CAR		01	DRVR	INJC	40	M	OR-Y		000	000		00
No						*45 18 28.53 -122 56 31.38*		009100100S00																		OR<25					
																	02	NONE 0	TURN-L									019		00
																		UNKN	SW NW											
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		028,004	000		02
																									UNK					

091 PACIFIC HIGHWAY WEST

OR 99W & Vittoria Way
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEC / ALC / DRK	DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00013	N N N N N	01/04/2012	YAMHILL	1 14		INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE 0	TURN-L											02
CITY		Wed 7P	NEWBERG	MN 0	PACIFIC HY 99W	NE		UNKNOWN	N	WET	TURN		PRVTE	N NE										000		00
			NEWBERG UA	21.54	VITTORIA WAY	05	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	28	F	OR-Y		028	000		02
No		*45 18 34.08 -122 56 14.07*		009100100S00	1															OR<25					
												02	NONE 1	STRGHT											
													PRVTE	SW NE									000		00
													SEMI TOW		01	DRVR	NONE	52	M	OTH-Y		000	000		00
																				N-RES					
00066	N N N N N	01/21/2014	YAMHILL	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											32
CITY		Tue 8A	NEWBERG	MN 0	PACIFIC HY 99W	NE		STOP SIGN	N	DRY	REAR		PRVTE	NE SW										000		00
			NEWBERG UA	21.54	VITTORIA WAY	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	19	F	OR-Y		052,026	000		32
No		*45 18 34.08 -122 56 14.07*		009100100S00	1															OR<25					
												02	NONE 0	STOP											
													PRVTE	NE SW									011		00
													PSNGR CAR		01	DRVR	INJC	47	M	OR-Y		000	000		00
																				OR<25					
00836	N N N	10/13/2011	YAMHILL	1 14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											07
NO RPT		Thu 6P	NEWBERG	MN 0	PACIFIC HY 99W	SW		TRF SIGNAL	N	WET	REAR		PRVTE	SW NE										000		00
			NEWBERG UA	21.54	VITTORIA WAY	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	73	M	OR-Y		026	000		07
No		*45 18 34.08 -122 56 14.07*		009100100S00	1															OR<25					
												02	NONE 0	STOP											
													PRVTE	SW NE									011		00
													PSNGR CAR		01	DRVR	NONE	18	F	OR-Y		000	000		00
																				OR<25					
00131	N N N	02/13/2012	YAMHILL	1 14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-L											32
NO RPT		Mon 10A	NEWBERG	MN 0	PACIFIC HY 99W	CN		UNKNOWN	N	DRY	TURN		PRVTE	SE SW										000		00
			NEWBERG UA	21.54	VITTORIA WAY	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	76	F	OR-Y		052	000		32
No		*45 18 34.08 -122 56 14.07*		009100100S00	1															OR<25					
												02	NONE 0	STRGHT											
													PRVTE	SW NE									000		00
													PSNGR CAR		01	DRVR	INJC	27	F	OR-Y		000	000		00
																				OR<25					

091 PACIFIC HIGHWAY WEST

OR 99W & Providence Dr
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	DRUG	ALC	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00144	N	N	N			02/12/2015	YAMHILL	1	14							01	NONE 0	STRGHT												29
NONE						Thu 4P	NEWBERG	MN 0	PROVIDENCE DR	NE		UNKNOWN	N	DRY	REAR		UNKN	NE SW										000		00
							NEWBERG UA	21.45	PACIFIC HY 99W	06	0		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK		026	000		29
No						*45 18 36.29 -122 56 7.21*		009100100	S00 1																UNK					
																02	NONE 0	STOP											
																	PRVTE	NE SW									011		00
																	PSNGR CAR		01	DRVR	NONE	24	F	OR-Y		000	000		00
																									OR<25				
00824	N	N	N	N	N	09/22/2012	YAMHILL	1	14							01	NONE 0	STRGHT												32,16,27
CITY						Sat 2P	NEWBERG	MN 0	PROVIDENCE DR	NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
							NEWBERG UA	21.46	PACIFIC HY 99W	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	20	F	OR-Y		052,016	025		32,16,27
No						*45 18 36.11 -122 56 7.77*		009100100	S00 1																OR<25					
																02	NONE 0	STOP											
																	PRVTE	NE SW									011		00
																	PSNGR CAR		01	DRVR	NONE	25	F	OTH-Y		000	000		00
																									N-RES				
																			02	PSNG	INJC	23	F			000	000		00
																			03	PSNG	INJC	77	F			000	000		00
00565	N	N	N			06/12/2015	YAMHILL	1	14							01	NONE 0	STRGHT												29
NONE						Fri 5P	NEWBERG	MN 0	PROVIDENCE DR	NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
							NEWBERG UA	21.46	PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	18	F	OR-Y		026	000		29
No						*45 18 36.11 -122 56 7.77*		009100100	S00 1																OR<25					
																02	NONE 0	STOP											
																	PRVTE	NE SW									011		00
																	PSNGR CAR		01	DRVR	NONE	27	F	OR-Y		000	000		00
																									OR>25				
01108	N	N	N	N	N	12/30/2011	YAMHILL	1	14							01	NONE 0	STRGHT												07
CITY						Fri 8A	NEWBERG	MN 0	PROVIDENCE DR	SW		TRF SIGNAL	N	WET	REAR		PRVTE	SW NE									000		00
							NEWBERG UA	21.46	PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	48	M	OR-Y		042	000		07
No						*45 18 36.11 -122 56 7.77*		009100100	S00 1																OR>25					
																02	NONE 0	STRGHT											
																	PRVTE	SW NE									006		00
																	PSNGR CAR		01	DRVR	NONE	83	M	OR-Y		000	000		00
																									OR<25				
00833	N	N	N			09/25/2012	YAMHILL	1	14							01	NONE 0	STRGHT												07
NO RPT						Tue 2P	NEWBERG	MN 0	PROVIDENCE DR	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000		00
							NEWBERG UA	21.46	PACIFIC HY 99W	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	81	F	OTH-Y		026	000		07
No						*45 18 36.11 -122 56 7.77*		009100100	S00 1																N-RES					
																02	NONE 0	STOP											
																	PRVTE	SW NE									011		00
																	PSNGR CAR		01	DRVR	INJC	28	F	OR-Y		000	000		00
																									OR<25				

091 PACIFIC HIGHWAY WEST

OR 99W & Providence Dr
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SP ED / EL AU / DC CS / RS LH / WC OR / LK	DATE / DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# FC / CMPT/MLG / MILEPNT / LRS	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00623	N N N N N	07/18/2013	YAMHILL	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											27
CITY		Thu 7P	NEWBERG	MN 0	PROVIDENCE DR	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE										000		00
			NEWBERG UA	21.46	PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	32	M	OR-Y		026	000		27
No	*45 18 36.11*	*-122 56 7.77*		009100100S00	1															OR<25					
												02	NONE 0	STOP											
													PRVTE	SW NE									011		00
													PSNGR CAR		01	DRVR	NONE	40	M	OR-Y		000	000		00
																				OR<25					
00589	N N N	06/03/2014	YAMHILL	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	07
NONE		Tue 2P	NEWBERG	MN 0	PROVIDENCE DR	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE										000		00
			NEWBERG UA	21.46	PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	41	M	OR-Y		026	000		07
No	*45 18 36.11*	*-122 56 7.77*		009100100S00	1															OR<25					
												02	NONE 0	STOP											
													PRVTE	SW NE									011		00
													PSNGR CAR		01	DRVR	NONE	40	M	OR-Y		000	000		00
																				OR<25					
												03	NONE 0	STOP											
													PRVTE	SW NE									011		00
													MTRCYCLE		01	DRVR	NONE	34	M	OR-Y		000	000		00
																				OR<25					
00725	N N N	07/07/2014	YAMHILL	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE		Mon 2P	NEWBERG	MN 0	PROVIDENCE DR	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE										000		00
			NEWBERG UA	21.46	PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	56	M	OR-Y		026	000		07
No	*45 18 36.11*	*-122 56 7.77*		009100100S00	1															OR<25					
												02	NONE 0	STOP											
													PRVTE	SW NE									011		00
													PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		000	000		00
																				OR<25					
00658	N N N	07/03/2015	YAMHILL	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
CITY		Fri 2P	NEWBERG	MN 0	PROVIDENCE DR	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE										000		00
			NEWBERG UA	21.46	PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	19	F	OR-Y		026	000		29
No	*45 18 36.11*	*-122 56 7.77*		009100100S00	1															OR<25					
												02	NONE 0	STOP											
													PRVTE	SW NE									011		00
													PSNGR CAR		01	DRVR	NONE	66	M	OR-Y		000	000		00
																				OR<25					
01343	N N N	12/21/2015	YAMHILL	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE		Mon 12P	NEWBERG	MN 0	PROVIDENCE DR	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE										000		00
			NEWBERG UA	21.46	PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK		026	000		29
No	*45 18 36.11*	*-122 56 7.77*		009100100S00	1															OR<25					

091 PACIFIC HIGHWAY WEST

OR 99W & Providence Dr
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	SCHOOL BUS	WORK ZONE	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC CONN # FIRST STREET SECOND STREET INTERSECTION	SEQ#	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE 0 PRVTE	STOP SW NE										011		00
																		PSNGR CAR		01	DRVR	NONE	32	F	OR-Y OR<25		000	000		00
00616	N	N	N			07/20/2012	YAMHILL	1 14			INTER	3-LEG	N		N	RAIN	S-1STOP	01	NONE	STRGHT												07
NONE						Fri 7A	NEWBERG	MN 0	PROVIDENCE DR		W		TRF SIGNAL		N	WET	REAR		PRVTE	W E									000		00
							NEWBERG UA	21.46	PACIFIC HY 99W		06	0			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	52	M	OR-Y OR<25		026	000		07
No						*45 18 36.11 -122 56 7.77*		009100100	S00	1																						
																	02	NONE 0 PRVTE	STOP W E										011		00
																		PSNGR CAR		01	DRVR	NONE	41	F	OR-Y OR<25		000	000		00

091 PACIFIC HIGHWAY WEST

OR 99W & Benjamin Rd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEC LGHT	DRK CND	SCHL BUS	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00620	N	N	N	08/08/2011	YAMHILL	1 02		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-L										02
NONE				Mon 4P		MN 0		CN		STOP SIGN	N	DRY	TURN		PRVTE	N E									000	00
						21.08		01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	27	M	OR-Y		028	000	02
No				*45 18 43.08 -122 55 42.80*		009100100S00																OR<25				
														02	NONE 0	STRGHT										
															PRVTE	E W									000	00
															PSNGR CAR		01	DRVR	NONE	66	M	OR-Y		000	000	00
																						OR<25				
00579	N	N	N	N N	07/09/2012	YAMHILL	1 02		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-L										02
STATE					Mon 5P		MN 0		CN		STOP SIGN	N	DRY	TURN		PRVTE	N E									015	00
						21.08		01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	51	F	OR-Y		028	000	02
No				*45 18 43.08 -122 55 42.80*		009100100S00																OR<25				
														02	NONE 0	STRGHT										
															PRVTE	E W									000	00
															PSNGR CAR		01	DRVR	INJC	38	M	OR-Y		000	000	00
																						OR<25				
00318	N	N	N		03/28/2014	YAMHILL	1 02		INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE 0	TURN-L										02
NO RPT					Fri 3P		MN 0		CN		STOP SIGN	N	WET	TURN		PRVTE	N E									000	00
						21.08		01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	66	F	OR-Y		028	000	02
No				*45 18 43.08 -122 55 42.80*		009100100S00																OR<25				
																	02	PSNG	NO<5	04	F			000	000	00
														02	NONE 0	STRGHT										
															PRVTE	E W									000	00
															PSNGR CAR		01	DRVR	NONE	56	M	OR-Y		000	000	00
																						OR<25				
00675	N	N	N	N N	06/23/2014	YAMHILL	1 02		INTER	3-LEG	N	N	CLD	ANGL-OTH	01	NONE 0	TURN-R										02
CITY					Mon 3P		MN 0		CN		STOP SIGN	N	DRY	TURN		PRVTE	N W									000	00
						21.08		03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	43	M	OR-Y		028	000	02
No				*45 18 43.08 -122 55 42.80*		009100100S00																OR<25				
														02	NONE 0	STRGHT										
															PRVTE	E W									000	00
															PSNGR CAR		01	DRVR	INJC	24	F	OR-Y		000	000	00
																						OR<25				

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
014	EMR V PKD	EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED OR DISABLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP A VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
046	W/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC
047	A/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD
052	MERGING	MERGING
055	SPRAY	BLINDED BY WATER SPRAY

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST

CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS SIG	DISREGARDED TRAFFIC SIGNAL
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
17	ILLNESS	PHYSICAL ILLNESS
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
28	NM INATT	NON-MOTORIST INATTENTION
29	F AVOID	FAILED TO AVOID VEHICLE AHEAD
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)
40	VIEW OBS	VIEW OBSCURED
50	USED MDN	IMPROPER USE OF MEDIAN OR SHOULDER
51	FAIL LN	FAILED TO MAINTAIN LANE
52	OFF RD	RAN OFF ROAD

COLLISION TYPE CODE TRANSLATION LIST

COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST

CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1 L-TURN	FROM OPPOSITE DIRECTION-ONE LEFT TURN,ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST

LIC CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)
1	OR-Y	VALID OREGON LICENSE
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY
3	SUSP	SUSPENDED/REVOKED

DRIVER RESIDENCE CODE TRANSLATION LIST

RES CODE	SHORT DESC	LONG DESCRIPTION
1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
4	N-RES	NON-RESIDENT
9	UNK	UNKNOWN IF OREGON RESIDENT

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNED FROM WRONG LANE
007	TO WRONG	TURNED INTO WRONG LANE
008	ILLEG U	U-TURNED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS)
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TOO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WORK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAY ON RD	STANDING OR LYING IN ROADWAY
071	NM IMP USE	IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST
073	ELUDING	ELUDING / ATTEMPT TO ELUDE
079	F NEG CURV	FAILED TO NEGOTIATE A CURVE
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER-CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	INDRCT PED	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	INDRCT BIK	PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK)
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHI(
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH)
047	BR ABUTMNT	BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013)
048	BR COLMN	BRIDGE PILLAR OR COLUMN
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, FALLEN OR FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
074	OVERHD OBJ	OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	LO-HI EDGE	LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ FRM MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE)
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTHR CRASH	CRASH RELATED TO ANOTHER SEPARATE CRASH
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
091	BUILDING	BUILDING OR OTHER STRUCTURE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE
093	CELL PHONE	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL WTNSD	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	FIXED OBJECT, UNKNOWN TYPE.
101	OTHER OBJ	NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE
102	TEXTING	TEXTING
103	WZ WORKER	WORK ZONE WORKER
104	ON VEHICLE	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
108	OFFICER	LAW ENFORCEMENT / POLICE OFFICER
109	SUB-BIKE	"SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC.
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
115	DSTRCT GPS	DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE
116	DSTRCT OTH	DISTRACTED BY OTHER ELECTRONIC DEVICE
117	RR GATE	RAIL CROSSING DROP-ARM GATE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
118	EXPNSN JNT	EXPANSION JOINT
119	JERSEY BAR	JERSEY BARRIER
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
121	FENCE	FENCE
123	OBJ IN VEH	LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL)
125	SHLDR	SHOULDER GAVE WAY
126	BOULDER	ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE)
127	LAND SLIDE	ROCK SLIDE OR LAND SLIDE
128	CURVE INV	CURVE PRESENT AT CRASH LOCATION
129	HILL INV	VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION
130	CURVE HID	VIEW OBSCURED BY CURVE
131	HILL HID	VIEW OBSCURED BY VERTICAL GRADE / HILL
132	WINDOW HID	VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS
133	SPRAY HID	VIEW OBSCURED BY WATER SPRAY

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

FUNC CLASS	DESCRIPTION
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE
02	RURAL PRINCIPAL ARTERIAL - OTHER
06	RURAL MINOR ARTERIAL
07	RURAL MAJOR COLLECTOR
08	RURAL MINOR COLLECTOR
09	RURAL LOCAL
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP
14	URBAN PRINCIPAL ARTERIAL - OTHER
16	URBAN MINOR ARTERIAL
17	URBAN MAJOR COLLECTOR
18	URBAN MINOR COLLECTOR
19	URBAN LOCAL
78	UNKNOWN RURAL SYSTEM
79	UNKNOWN RURAL NON-SYSTEM
98	UNKNOWN URBAN SYSTEM
99	UNKNOWN URBAN NON-SYSTEM

HIGHWAY COMPONENT TRANSLATION LIST

CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY
2	INJA	INCAPACITATING INJURY - BLEEDING, BROKEN BONES
3	INJB	NON-INCAPACITATING INJURY
4	INJC	POSSIBLE INJURY - COMPLAINT OF PAIN
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE

LIGHT CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY

PEDESTRIAN LOCATION CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
13	AT INTERSECTION - IN BIKE LANE
14	NOT AT INTERSECTION - IN BIKE LANE
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
16	NOT AT INTERSECTION - IN PARKING LANE

ROAD CHARACTER CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

PARTICIPANT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYA
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OB
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	UNK	UNKNOWN TYPE OF NON-MOTORIST

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING

095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

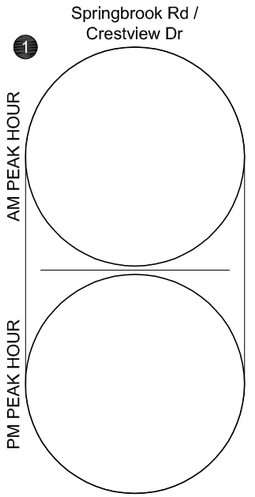
VEHICLE TYPE CODE TRANSLATION LIST

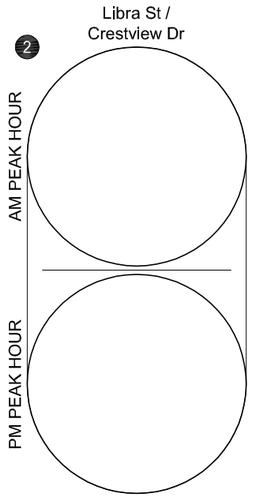
CODE	SHORT DESC	LONG DESCRIPTION
00	PDO	NOT COLLECTED FOR PDO CRASHES
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER (STANDING)
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

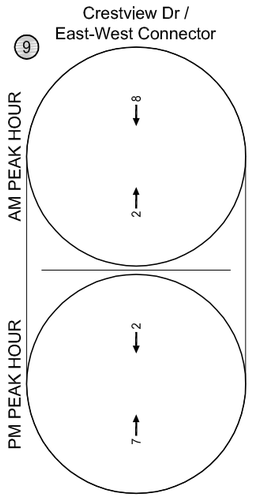
WEATHER CONDITION CODE TRANSLATION LIST

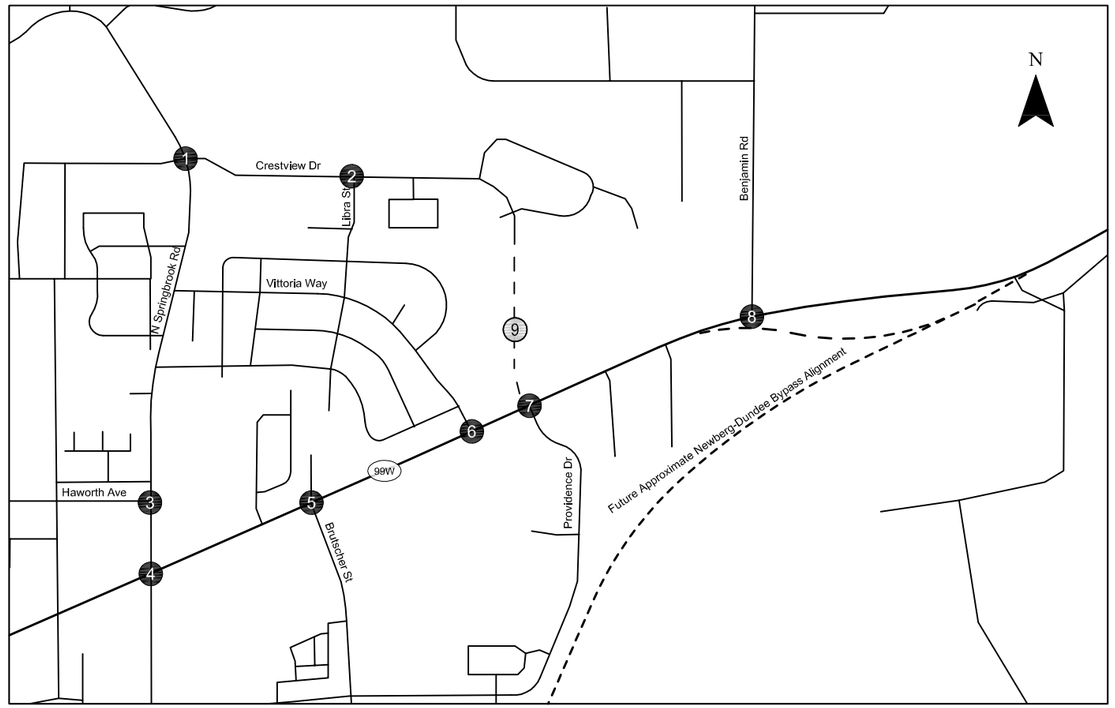
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH

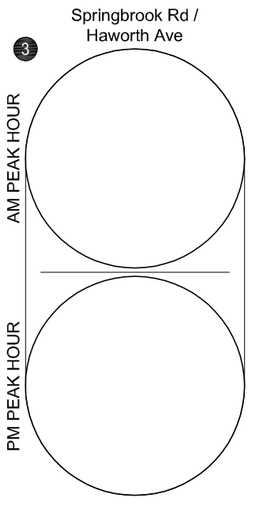
Appendix E
In-Process Developments

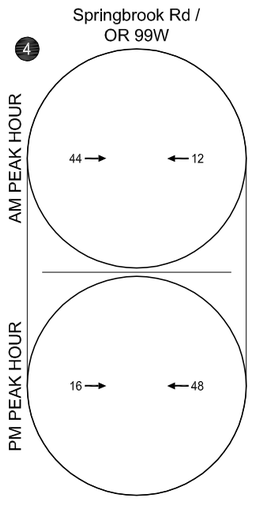


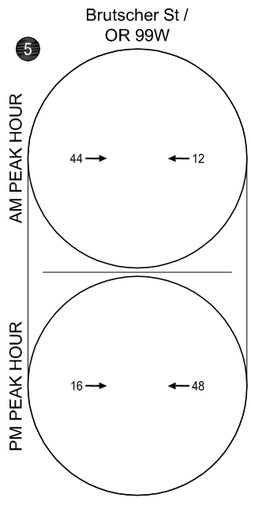


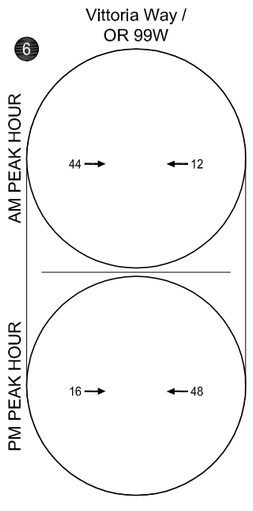


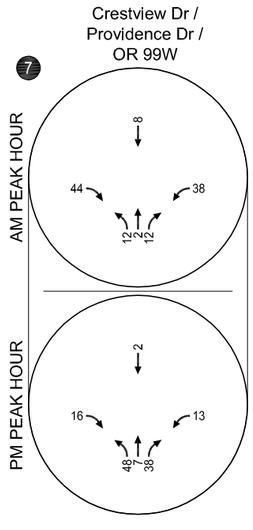


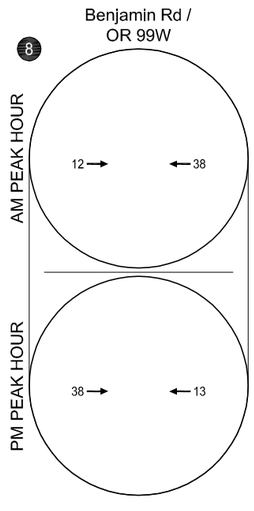












In Process Trips
Weekday AM and PM Peak Hours
Newberg, Oregon

Figure
E-1

Traffic Impact Analysis
Newberg Ambulatory Surgical Center

Newberg, Oregon

March 9, 2017

completed with
Anderson Dabrowski Architects, LLC
Portland, Oregon

Prepared by:
Associated Transportation Engineering & Planning, Inc.
Salem, Oregon
March 6, 2017
ATEP 17-346

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Newberg, Oregon

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Introduction:

The Oregon Clinic intends to develop a 17,510 sq. ft. Ambulatory Surgery Center on 3 acres of tax lot 2001 of tax map 3S2W16 in Newberg, Oregon. The site is west of Providence Drive and south of the Providence Hospital in Newberg. The facility will be developed with access to Providence Dr.

Figure 1 - Vicinity Map

The Newberg Ambulatory Surgical Center will use the Newberg transportation system and add traffic to the roadways. This analysis will consider the traffic impacts at the intersection of 1) Providence Dr at Hwy 99W, 2) Hayes St at Werth Blvd. 3) Hayes St at Brutscher St and 4) Site Access at Providence Dr. Brutscher St at Fernwood Rd was closed while this study was conducted, diverting traffic to other intersections. Crash data was provided by the ODOT Crash Data Unit for the most recent 5 years.

Summary of Findings:

The Newberg Ambulatory Surgical Center will generate an estimated 633 trips each day. 42 of those trips will be in the AM Peak hour and 62 trips will be in the PM Peak hour. The performance metrics at the studied intersections are shown in the following table upon opening in 2017.

	AM Peak hour		PM Peak hour	
	LOS	v/c	LOS	v/c
Hwy 99W at Providence Dr	A	0.661	B	0.721
Hayes at Werth	A		A	
Hayes at Brutscher	A		A	
Site Access at Providence Dr	A	0.012	B	0.067

Crash data from ODOT Crash Data Unit identifies 9 crashes at the studied intersections in the last 5 years. None were fatal crashes, 4 were injury crashes and 5 were property damage only crashes.

History and Existing Conditions:

The site has been vacant in the recent past and was is adjacent to the Providence Medical Center. The site is zoned Residential/Specific Plan (R R/SP). Traffic from the planned ambulatory surgery center will travel north or south on Providence Dr to access the transportation system. The intersection of Providence

Dr at Hwy 99 W is signal controlled, the intersections of Hayes at Brutscher are roundabouts, and the site access is two way stop controlled.

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 99W at Providence Dr	Signalized	HCM 6th Edition	NWB Right	0.652	5.0	A
3	Brutsher St at Hayes St	Roundabout	HCM 6th Edition	NB Thru		3.8	A
4	Hayes at Werth	Roundabout	HCM 6th Edition	EB Thru		3.2	A

Existing AM Peak Hour Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 99W at Providence Dr	Signalized	HCM 6th Edition	SWB Left	0.714	10.7	B
3	Brutsher St at Hayes St	Roundabout	HCM 6th Edition	SB Right		4.6	A
4	Hayes at Werth	Roundabout	HCM 6th Edition	WB Thru		3.5	A

Existing PM Peak Hour Summary

Figure 2 - Existing Traffic Conditions

Traffic Conditions when Newberg Surgical Center is Complete:

Newberg Ambulatory Surgical Center will add 42 trips to the AM Peak hour traffic and 62 trips to the PM Peak hour traffic. This study will assume that 60% of the traffic will travel north of the site then toward Newberg, 30% north on Providence Dr then toward Sherwood and 10% to the south of the site. The study assumed that traffic volumes will increase linearly 1% per year to estimate the 2017 and 2032 performance metrics.

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 99W at Providence Dr	Signalized	HCM 6th Edition	NWB Right	0.661	5.4	A
3	Brutsher St at Hayes St	Roundabout	HCM 6th Edition	NB Thru		3.8	A
4	Hayes at Werth	Roundabout	HCM 6th Edition	EB Thru		3.2	A
5	Site Access at Providence Dr.	Two-way stop	HCM 6th Edition	EB Left	0.012	9.3	A

2017 AM Peak Hour Summary with Newberg Surgical Center

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 99W at Providence Dr	Signalized	HCM 6th Edition	SWB Left	0.731	12.0	B
3	Brutsher St at Hayes St	Roundabout	HCM 6th Edition	SB Right		4.6	A
4	Hayes at Werth	Roundabout	HCM 6th Edition	WB Thru		3.5	A
5	Site Access at Providence Dr.	Two-way stop	HCM 6th Edition	EB Left	0.067	10.1	B

2017 PM Peak Hour Summary with Newberg Surgical Center

Figure 3 – 2017 Traffic Conditions with Newberg Surgical Center

It is anticipated traffic will continue to increase at a rate of 1% / year. The following tables estimate the performance metrics and traffic volumes in the intersections in 15 years (2032) for planning purposes.

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 99W at Providence Dr	Signalized	HCM 6th Edition	NWB Right	0.758	7.7	A
3	Brutsher St at Hayes St	Roundabout	HCM 6th Edition	NB Thru		4.0	A
4	Hayes at Werth	Roundabout	HCM 6th Edition	EB Thru		3.3	A
5	Site Access at Providence Dr.	Two-way stop	HCM 6th Edition	EB Left	0.012	9.4	A

2032 AM Peak Hour Summary with Newberg Surgical Center

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 99W at Providence Dr	Signalized	HCM 6th Edition	SWB Left	0.839	17.6	B
3	Brutsher St at Hayes St	Roundabout	HCM 6th Edition	SB Right		5.0	A
4	Hayes at Werth	Roundabout	HCM 6th Edition	WB Thru		3.6	A
5	Site Access at Providence Dr.	Two-way stop	HCM 6th Edition	EB Left	0.069	10.3	B

2032 PM Peak Hour Summary with Newberg Surgical Center

Figure 4 – 2032 Traffic Conditions with Newberg Surgical Center

Crash Data:

The ODOT Crash Data Unit provided information about reported crashes at the shown intersections for the past 5 years.

Intersection	Fatal	Injury	Property Damage	Total Crashes
Hwy 99W at Providence Dr	0	3	5	8
Hayes at Werth	0	0	0	0
Hayes at Brutscher	0	1	0	1

Figure 5 – Reported Crashes at Studied Intersections in 2010-2014

Summary:

The development of the planned Newberg Ambulatory Surgical Center in Newberg will add traffic to the transportation system. This study finds there is and will continue to be adequate capacity at the studied intersections when it is completed. Crash data does not indicate significant safety problems at the intersections.

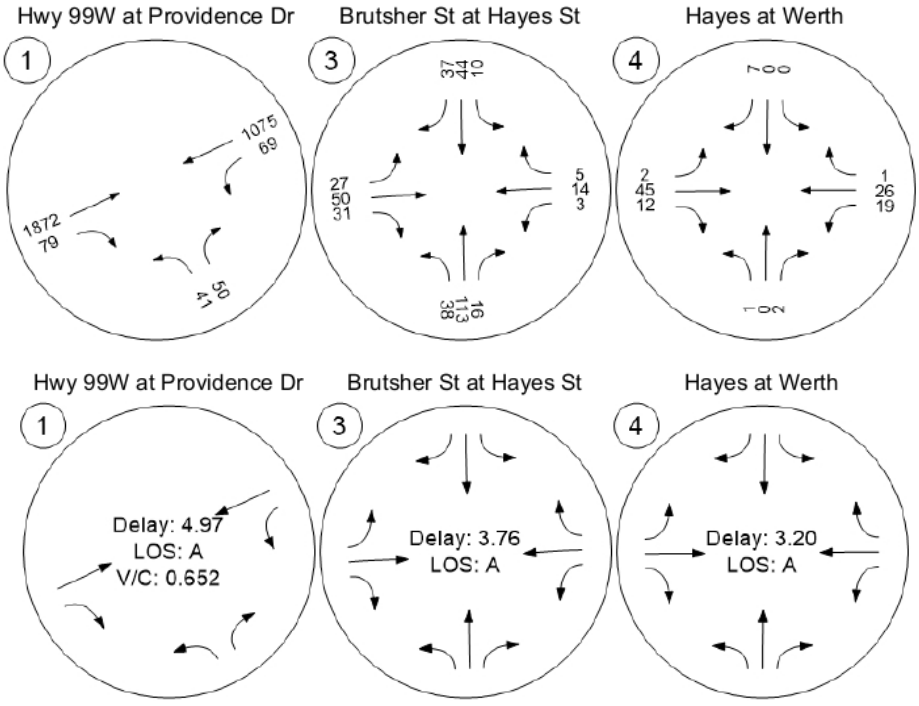


Figure 6 - Existing AM Peak hour Counts and Performance Metrics

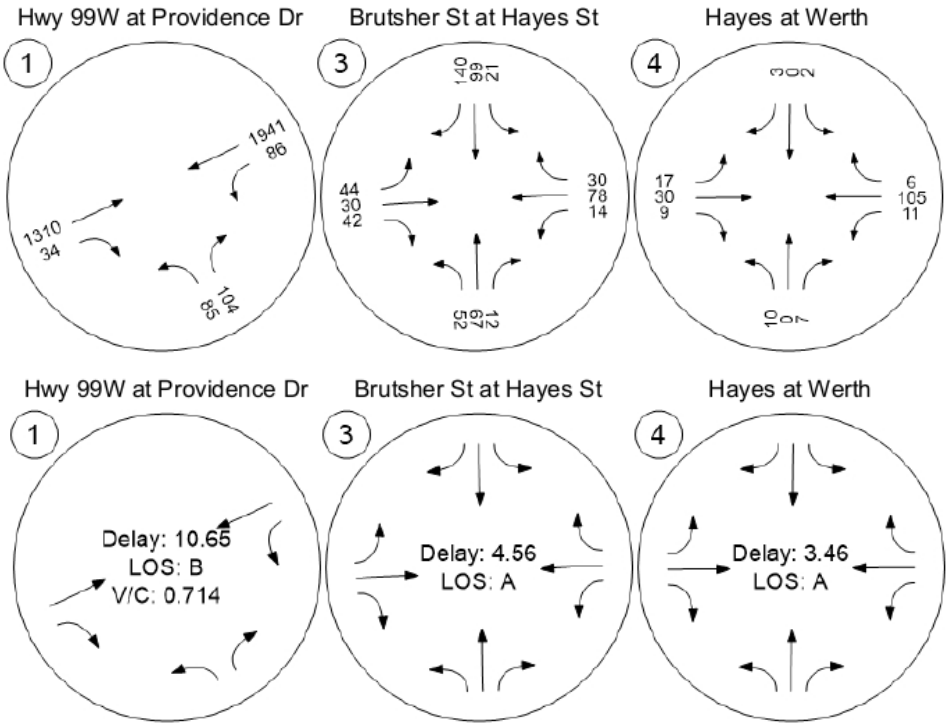


Figure 7 - Existing PM Peak hour Counts and Performance Metrics

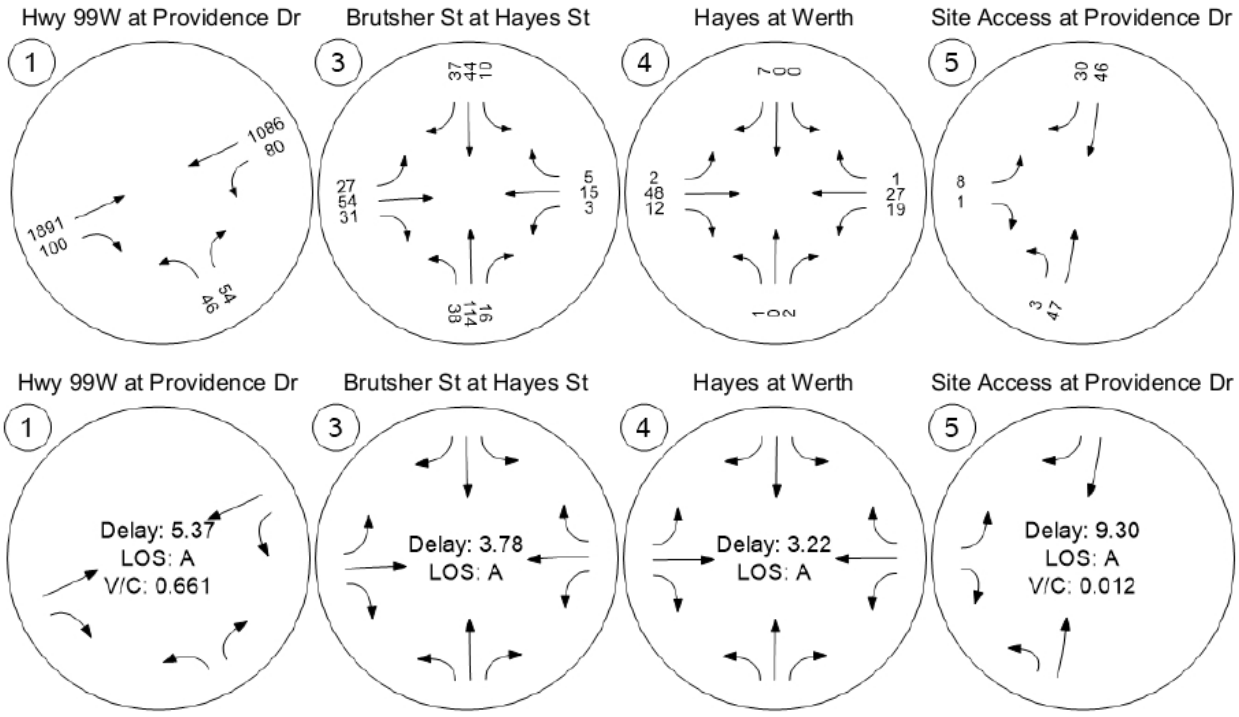


Figure 8 - 2017 AM Counts and Performance Metrics with Newberg Surgical Center

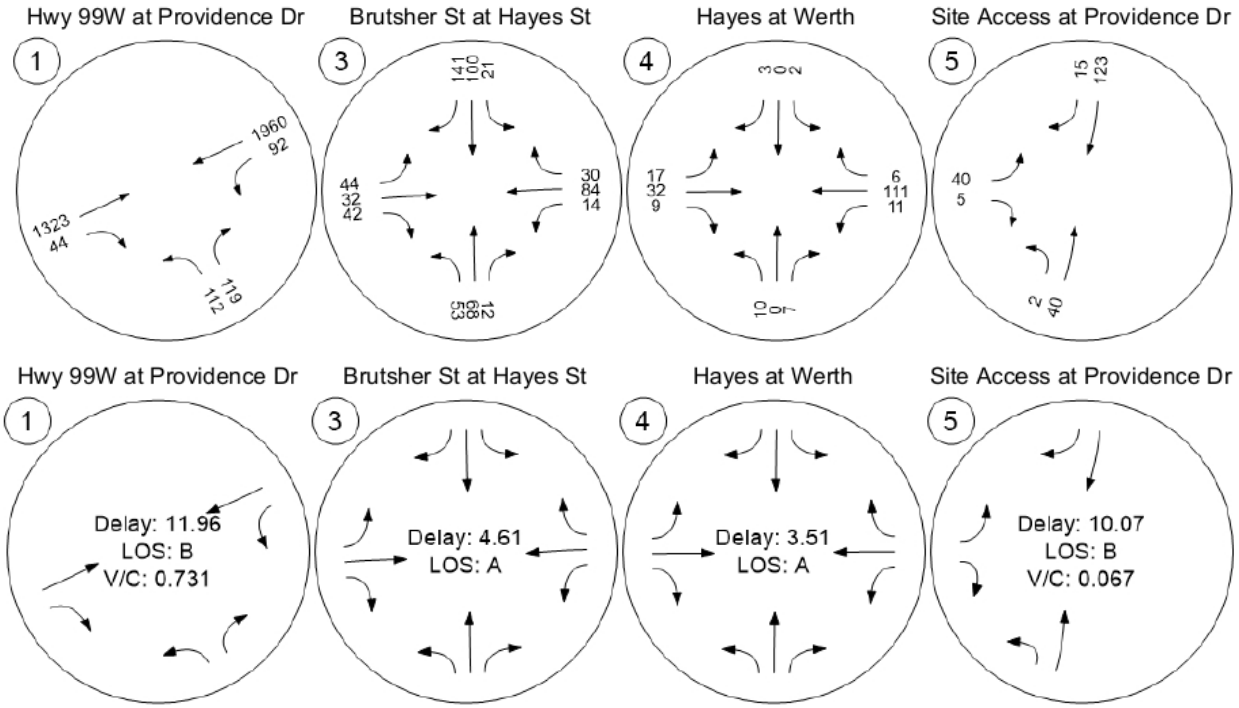


Figure 9 - 2017 PM Counts and Performance Metrics with Newberg Surgical Center

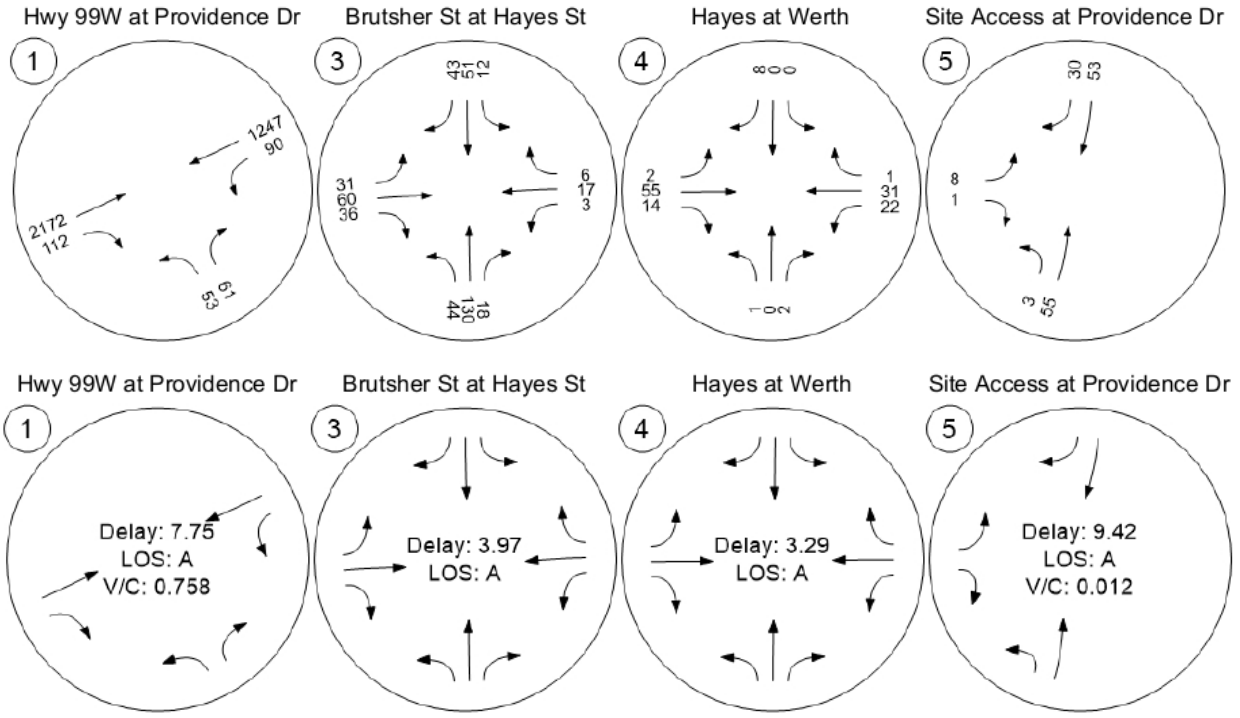


Figure 10 - 2032 AM Counts and Performance Metrics with Newberg Surgical Center

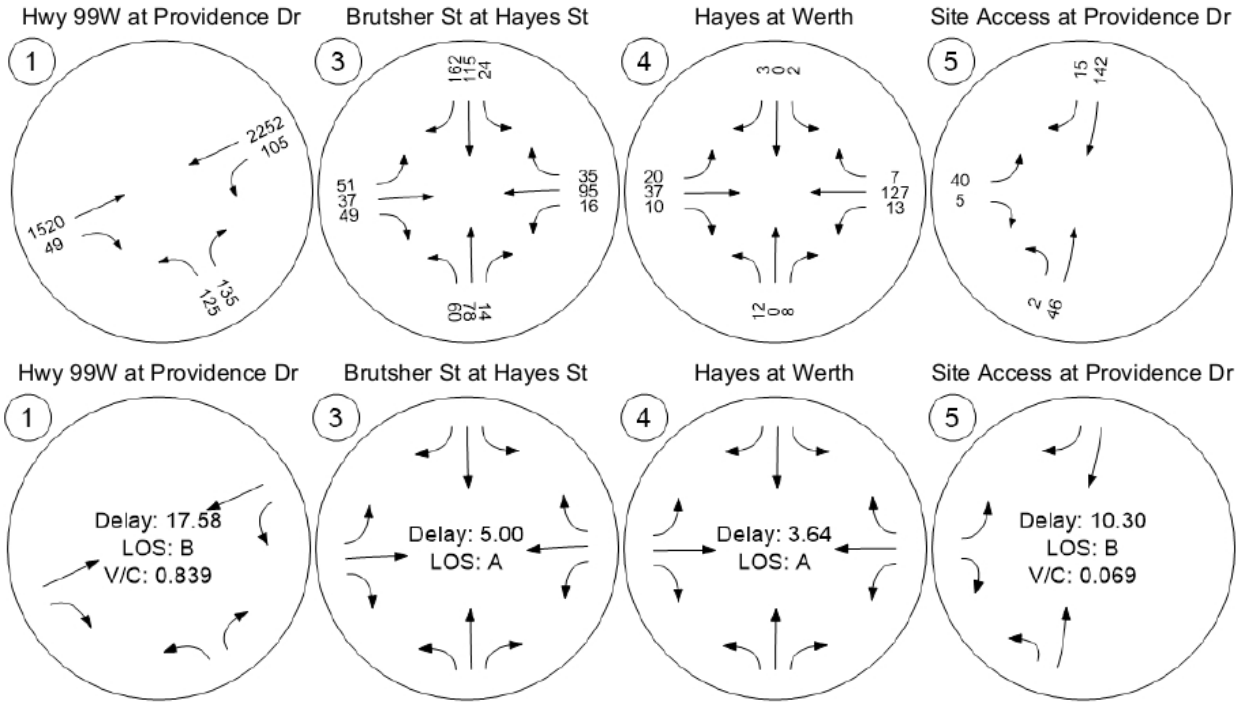


Figure 11 - 2032 PM Counts and Performance Metrics with Newberg Surgical Center

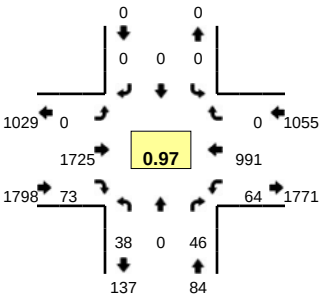
Type of peak hour being reported: Intersection Peak

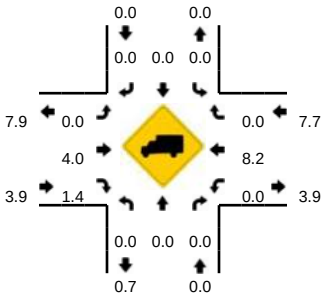
Method for determining peak hour: Total Entering Volume

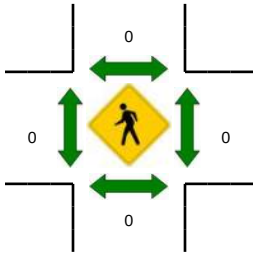
LOCATION: Providence Dr -- OR-99W
CITY/STATE: Newberg, OR

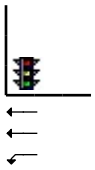
QC JOB #: 14233601
DATE: Tue, Feb 21 2017

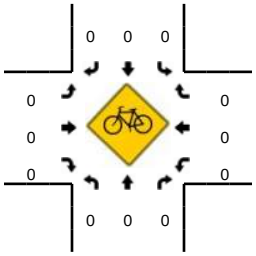
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

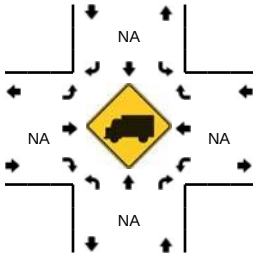


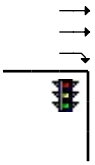


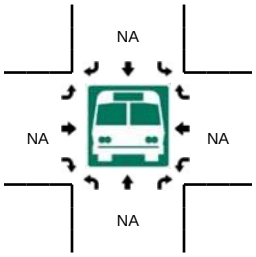












5-Min Count Period Beginning At	Providence Dr (Northbound)				Providence Dr (Southbound)				OR-99W (Eastbound)				OR-99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	1	0	0	0	0	0	0	171	5	0	5	68	0	0	250	
7:05 AM	1	0	4	0	0	0	0	0	0	169	6	0	4	73	0	0	257	
7:10 AM	3	0	3	0	0	0	0	0	0	132	3	0	3	88	0	0	232	
7:15 AM	1	0	1	0	0	0	0	0	0	143	2	0	10	74	0	0	231	
7:20 AM	3	0	4	0	0	0	0	0	0	176	6	0	4	77	0	0	270	
7:25 AM	4	0	8	0	0	0	0	0	0	128	3	0	3	79	0	0	225	
7:30 AM	7	0	7	0	0	0	0	0	0	141	6	0	4	87	0	0	252	
7:35 AM	1	0	6	0	0	0	0	0	0	146	7	0	10	77	0	0	247	
7:40 AM	4	0	1	0	0	0	0	0	0	134	7	0	2	70	0	0	218	
7:45 AM	6	0	5	0	0	0	0	0	0	135	4	0	7	100	0	0	257	
7:50 AM	4	0	5	0	0	0	0	0	0	129	11	0	6	96	0	0	251	
7:55 AM	4	0	1	0	0	0	0	0	0	121	13	0	6	102	0	0	247	2937
8:00 AM	3	0	7	0	0	0	0	0	0	119	5	0	4	83	0	0	221	2908
8:05 AM	1	0	4	0	0	0	0	0	0	102	4	0	7	77	0	0	195	2846
8:10 AM	4	0	3	0	0	0	0	0	0	97	4	0	3	79	0	0	190	2804
8:15 AM	6	0	2	0	0	0	0	0	0	109	7	0	2	68	0	0	194	2767
8:20 AM	4	0	5	0	0	0	0	0	0	113	7	0	9	75	0	0	213	2710
8:25 AM	4	0	5	0	0	0	0	0	0	120	1	0	2	69	0	0	201	2686
8:30 AM	2	0	4	0	0	0	0	0	0	105	4	0	5	69	0	0	189	2623
8:35 AM	5	0	3	0	0	0	0	0	0	114	6	0	3	87	0	0	218	2594
8:40 AM	7	0	3	0	0	0	0	0	0	75	4	0	4	59	0	0	152	2528
8:45 AM	11	0	6	0	0	0	0	0	0	113	5	0	6	51	0	0	192	2463
8:50 AM	9	0	2	0	0	0	0	0	0	91	4	0	3	89	0	0	198	2410
8:55 AM	7	0	0	0	0	0	0	0	0	100	5	0	3	56	0	0	171	2334

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	56	0	44	0	0	0	0	0	0	1540	112	0	76	1192	0	0	3020
Heavy Trucks	0	0	0		0	0	0		0	48	4		0	84	0		136
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 2/28/2017 2:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

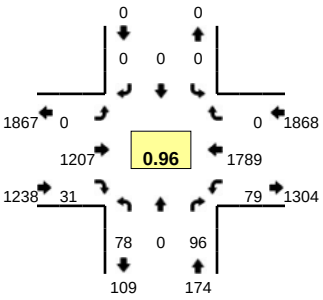
Type of peak hour being reported: Intersection Peak

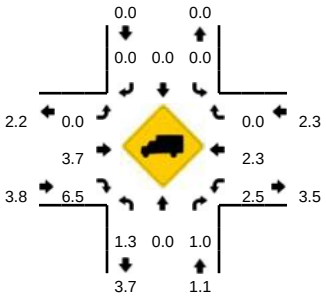
Method for determining peak hour: Total Entering Volume

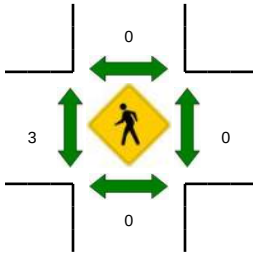
LOCATION: Providence Dr -- OR-99W
CITY/STATE: Newberg, OR

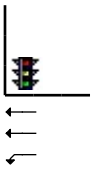
QC JOB #: 14233602
DATE: Tue, Feb 21 2017

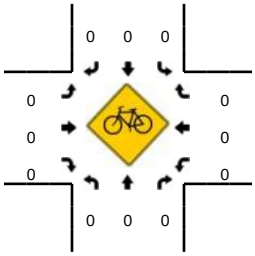
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:40 PM -- 4:55 PM

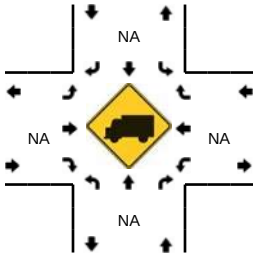


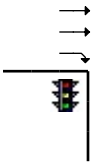


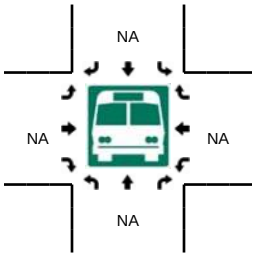












5-Min Count Period Beginning At	Providence Dr (Northbound)				Providence Dr (Southbound)				OR-99W (Eastbound)				OR-99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	0	4	0	0	0	0	0	0	88	0	0	7	149	0	1	253	
4:05 PM	12	0	9	0	0	0	0	0	0	91	2	0	4	145	0	0	263	
4:10 PM	6	0	8	0	0	0	0	0	0	100	3	0	11	166	0	0	294	
4:15 PM	8	0	4	0	0	0	0	0	0	92	3	0	6	146	0	0	259	
4:20 PM	9	0	6	0	0	0	0	0	0	81	4	0	7	151	0	0	258	
4:25 PM	9	0	5	0	0	0	0	0	0	97	4	0	2	114	0	0	231	
4:30 PM	5	0	6	0	0	0	0	0	0	82	5	0	2	167	0	0	267	
4:35 PM	16	0	15	0	0	0	0	0	0	86	4	0	2	133	0	0	256	
4:40 PM	1	0	7	0	0	0	0	0	0	106	3	0	8	179	0	1	305	
4:45 PM	5	0	8	0	0	0	0	0	0	90	2	0	7	147	0	0	259	
4:50 PM	6	0	10	0	0	0	0	0	0	111	4	0	6	156	0	0	293	
4:55 PM	3	0	9	0	0	0	0	0	0	105	1	0	8	151	0	0	277	3215
5:00 PM	4	0	9	0	0	0	0	0	0	82	2	0	10	138	0	0	245	3207
5:05 PM	13	0	9	0	0	0	0	0	0	121	1	0	11	120	0	0	275	3219
5:10 PM	5	0	6	0	0	0	0	0	0	123	3	0	9	132	0	0	278	3203
5:15 PM	7	0	10	0	0	0	0	0	0	96	3	0	3	146	0	0	265	3209
5:20 PM	7	0	6	0	0	0	0	0	0	94	2	0	9	167	0	0	285	3236
5:25 PM	6	0	1	0	0	0	0	0	0	111	1	0	3	153	0	0	275	3280
5:30 PM	6	0	6	0	0	0	0	0	0	98	1	0	7	140	0	0	258	3271
5:35 PM	5	0	4	0	0	0	0	0	0	84	2	0	5	151	0	1	252	3267
5:40 PM	7	0	5	0	0	0	0	0	0	101	3	0	10	149	0	0	275	3237
5:45 PM	8	0	5	0	0	0	0	0	0	86	0	0	4	142	0	0	245	3223
5:50 PM	2	0	4	0	0	0	0	0	0	84	3	0	8	147	0	0	248	3178
5:55 PM	1	0	3	0	0	0	0	0	0	108	3	0	1	145	0	0	261	3162

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	48	0	100	0	0	0	0	0	0	1228	36	0	84	1928	0	4	3428
Heavy Trucks	0	0	0		0	0	0		0	48	4		4	56	0		112
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 2/28/2017 2:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

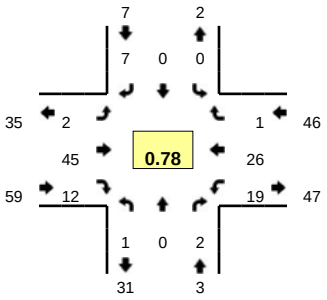
Type of peak hour being reported: Intersection Peak

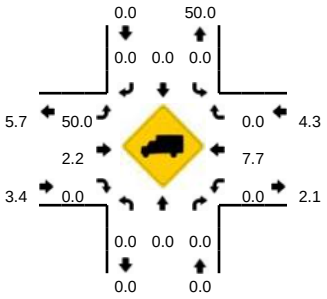
Method for determining peak hour: Total Entering Volume

LOCATION: Werth Blvd -- Hayes St
CITY/STATE: Newberg, OR

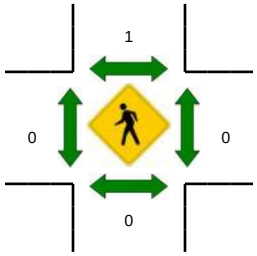
QC JOB #: 14233603
DATE: Tue, Feb 21 2017

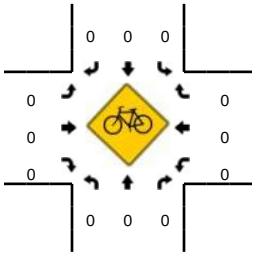
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM

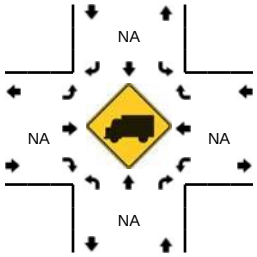


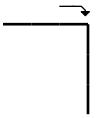


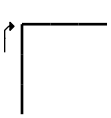
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

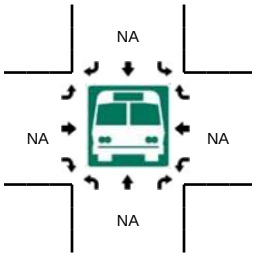












5-Min Count Period Beginning At	Werth Blvd (Northbound)				Werth Blvd (Southbound)				Hayes St (Eastbound)				Hayes St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	1	0	0	0	0	0	0	1	0	0	1	2	0	0	5	
7:05 AM	0	0	1	0	1	0	0	0	1	4	1	0	0	1	0	0	9	
7:10 AM	0	0	0	0	0	1	0	0	0	4	0	0	0	3	0	0	8	
7:15 AM	0	0	1	0	1	0	0	0	0	4	1	0	1	1	0	0	9	
7:20 AM	0	0	0	0	0	0	0	0	0	8	0	0	0	3	0	0	11	
7:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	
7:30 AM	0	0	0	0	1	0	0	0	0	7	0	0	1	0	0	0	9	
7:35 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	5	
7:40 AM	0	0	0	0	0	0	0	0	0	4	2	1	0	3	0	0	10	
7:45 AM	0	0	0	0	0	0	0	0	0	10	1	0	0	1	0	0	12	
7:50 AM	0	0	0	0	0	0	0	0	0	6	1	0	0	0	0	0	7	
7:55 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	4	91
8:00 AM	0	0	0	0	0	0	0	0	0	8	0	0	0	3	0	0	11	97
8:05 AM	0	0	0	0	0	0	0	0	0	4	1	0	0	1	0	0	6	94
8:10 AM	1	0	0	0	0	0	0	0	0	1	1	0	3	1	0	0	7	93
8:15 AM	0	0	0	0	0	0	0	0	0	3	0	0	4	1	1	0	9	93
8:20 AM	0	0	0	0	0	0	0	0	0	1	1	0	3	3	0	0	8	90
8:25 AM	0	0	0	0	0	0	1	0	0	5	0	0	1	1	0	0	8	96
8:30 AM	0	0	0	0	0	0	1	0	0	6	1	0	1	3	0	0	12	99
8:35 AM	0	0	0	0	0	0	2	0	0	3	2	0	1	5	0	0	13	107
8:40 AM	0	0	0	0	0	0	0	0	0	0	1	0	2	1	0	0	4	101
8:45 AM	0	0	0	0	0	0	1	0	0	6	1	0	1	2	0	0	11	100
8:50 AM	0	0	1	0	0	0	1	0	1	5	2	0	0	4	0	0	14	107
8:55 AM	0	0	1	0	0	0	1	0	0	3	2	1	3	1	0	0	12	115

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	8	0	0	0	12	0	4	56	20	4	16	28	0	0	148
Heavy Trucks	0	0	0		0	0	0		4	0	0		0	4	0		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 2/28/2017 2:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Werth Blvd -- Hayes St

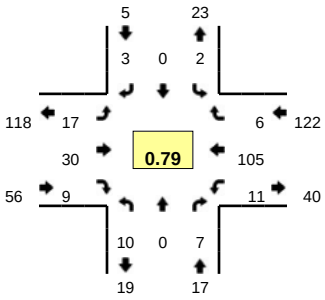
CITY/STATE: Newberg, OR

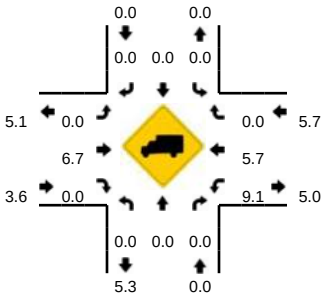
QC JOB #: 14233604

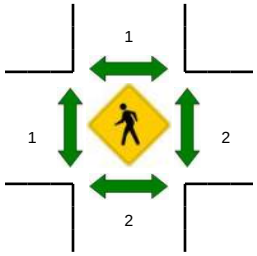
DATE: Tue, Feb 21 2017

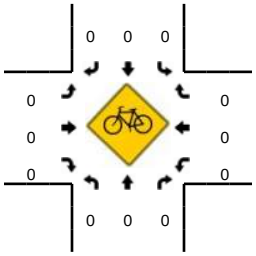
Peak-Hour: 4:10 PM -- 5:10 PM

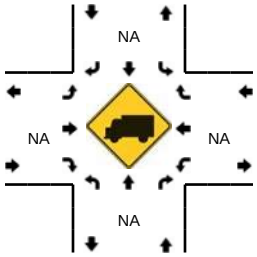
Peak 15-Min: 4:55 PM -- 5:10 PM

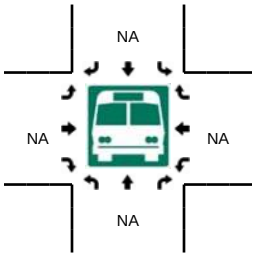












5-Min Count Period Beginning At	Werth Blvd (Northbound)				Werth Blvd (Southbound)				Hayes St (Eastbound)				Hayes St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	2	0	1	0	0	0	0	0	1	2	0	0	1	9	1	0	17	
4:05 PM	1	0	1	0	0	0	0	0	2	2	2	0	0	8	0	0	16	
4:10 PM	0	0	0	0	0	0	0	0	2	2	2	0	0	8	2	0	16	
4:15 PM	0	0	0	0	0	0	1	0	2	2	2	0	1	9	1	0	18	
4:20 PM	1	0	0	0	0	0	0	0	2	1	0	0	0	11	0	0	15	
4:25 PM	0	0	2	0	0	0	1	0	6	3	2	0	2	5	1	0	22	
4:30 PM	2	0	2	0	0	0	0	0	0	1	0	0	2	4	1	0	12	
4:35 PM	1	0	1	0	0	0	0	0	1	2	0	0	0	10	0	1	16	
4:40 PM	0	0	0	0	0	0	0	0	0	4	0	0	0	6	0	0	10	
4:45 PM	2	0	1	0	0	0	0	0	0	3	2	0	1	12	0	0	21	
4:50 PM	0	0	0	0	0	0	1	0	1	2	0	0	1	2	0	0	7	
4:55 PM	0	0	0	0	0	0	0	0	0	4	0	0	1	14	0	0	19	189
5:00 PM	2	0	0	0	0	0	0	0	1	2	0	0	1	12	1	0	19	191
5:05 PM	2	0	1	0	2	0	0	0	2	4	1	0	1	12	0	0	25	200
5:10 PM	0	0	1	0	0	0	0	0	0	3	0	0	1	7	1	0	13	197
5:15 PM	0	0	1	0	0	0	1	0	0	5	1	0	0	5	0	0	13	192
5:20 PM	3	0	1	0	1	0	0	0	1	2	0	0	1	9	0	0	18	195
5:25 PM	0	0	0	0	1	0	1	0	0	3	0	0	2	8	0	0	15	188
5:30 PM	0	0	1	0	0	0	0	0	0	2	1	0	0	5	0	0	9	185
5:35 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	8	0	0	9	178
5:40 PM	0	0	1	0	0	0	3	0	1	4	2	0	0	8	1	0	20	188
5:45 PM	1	0	0	0	1	0	0	0	0	2	0	0	0	5	0	0	9	176
5:50 PM	2	0	0	0	0	0	0	0	0	1	2	0	0	2	0	0	7	176
5:55 PM	0	0	0	0	0	0	0	0	0	4	1	0	0	4	0	0	9	166

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	0	4	0	8	0	0	0	12	40	4	0	12	152	4	0	252
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	4	0		4
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 2/28/2017 2:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Brutscher St -- Hayes St

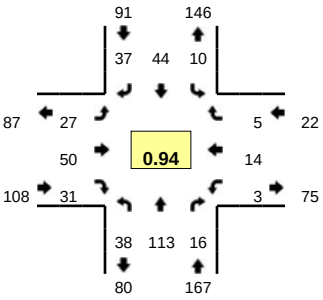
CITY/STATE: Newberg, OR

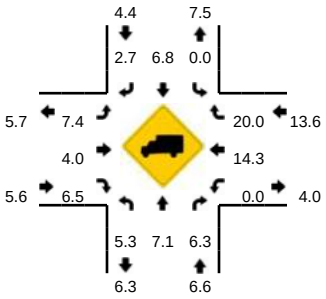
QC JOB #: 14233605

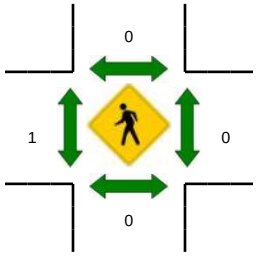
DATE: Tue, Feb 21 2017

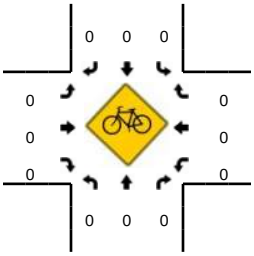
Peak-Hour: 7:15 AM -- 8:15 AM

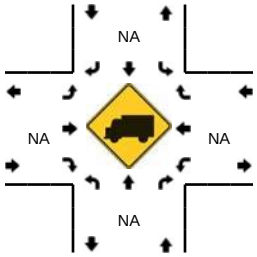
Peak 15-Min: 7:35 AM -- 7:50 AM

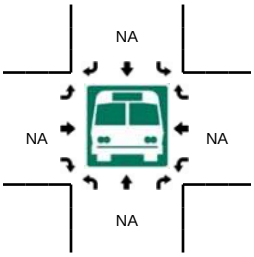












5-Min Count Period Beginning At	Brutscher St (Northbound)				Brutscher St (Southbound)				Hayes St (Eastbound)				Hayes St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	4	0	0	0	1	2	0	4	1	0	0	1	0	2	0	18	
7:05 AM	4	5	1	0	0	1	0	0	0	5	1	0	0	1	0	0	18	
7:10 AM	3	6	1	0	0	3	1	0	0	4	1	0	0	2	1	0	22	
7:15 AM	6	14	2	0	1	1	4	0	3	3	2	0	0	1	0	0	37	
7:20 AM	3	14	2	0	1	1	1	1	1	5	0	0	1	0	2	0	32	
7:25 AM	4	12	0	1	0	2	1	0	1	3	2	0	0	2	0	0	28	
7:30 AM	3	6	1	0	3	5	1	0	3	6	4	0	0	1	0	0	33	
7:35 AM	0	10	0	0	0	1	6	0	2	3	5	0	0	2	0	0	29	
7:40 AM	4	7	1	0	1	5	3	0	2	6	2	0	2	2	1	0	36	
7:45 AM	3	8	3	0	1	4	5	0	3	7	4	0	0	0	0	0	38	
7:50 AM	2	4	1	0	1	4	3	0	4	6	1	0	0	1	0	0	27	
7:55 AM	3	8	3	0	0	4	2	0	2	2	1	0	0	1	0	0	26	344
8:00 AM	1	4	1	1	1	6	3	0	1	4	4	0	0	2	1	0	29	355
8:05 AM	6	13	0	0	0	3	4	0	5	5	4	0	0	1	0	0	41	378
8:10 AM	1	13	2	0	0	8	4	0	0	0	2	0	0	1	1	0	32	388
8:15 AM	4	8	3	0	0	4	3	1	1	0	2	0	0	1	1	0	28	379
8:20 AM	5	9	1	0	0	6	2	0	2	2	2	0	0	0	2	0	31	378
8:25 AM	2	6	0	0	1	10	0	1	5	5	2	0	1	1	0	0	34	384
8:30 AM	4	6	3	0	0	4	1	0	3	3	2	0	0	2	2	0	30	381
8:35 AM	3	6	1	0	1	4	3	0	2	3	2	0	1	2	3	0	31	383
8:40 AM	1	3	1	0	0	6	4	0	1	3	3	0	0	2	1	0	25	372
8:45 AM	3	5	1	0	2	5	0	0	2	5	3	0	0	1	2	0	29	363
8:50 AM	2	1	0	0	3	8	4	0	3	3	5	0	1	2	3	0	35	371
8:55 AM	6	7	0	0	4	6	1	0	1	2	7	0	0	1	1	0	36	381

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	100	16	0	8	40	56	0	28	64	44	0	8	16	4	0	412
Heavy Trucks	0	4	0		0	0	0		4	4	4		0	0	0		16
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 2/28/2017 2:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

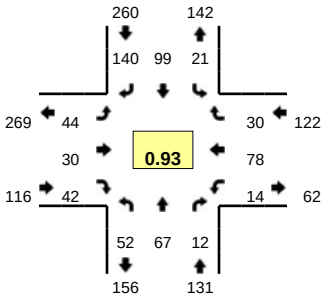
LOCATION: Brutscher St -- Hayes St

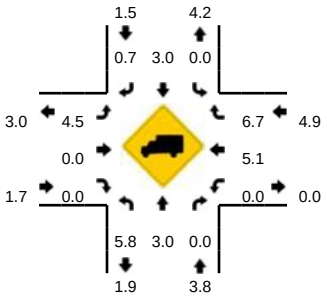
CITY/STATE: Newberg, OR

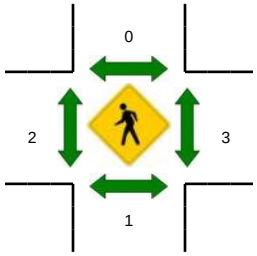
QC JOB #: 14233606

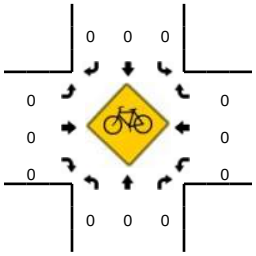
DATE: Tue, Feb 21 2017

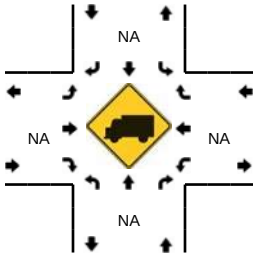
Peak-Hour: 4:20 PM -- 5:20 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

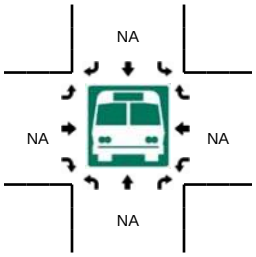












5-Min Count Period Beginning At	Brutscher St (Northbound)				Brutscher St (Southbound)				Hayes St (Eastbound)				Hayes St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	3	0	0	2	10	7	0	2	2	3	0	3	7	4	0	47	
4:05 PM	8	7	1	0	0	4	12	1	2	4	4	0	0	9	1	0	53	
4:10 PM	5	4	1	0	4	10	5	0	3	3	1	0	0	5	4	0	45	
4:15 PM	4	5	1	0	4	5	10	0	3	2	2	0	1	5	0	0	42	
4:20 PM	3	4	1	0	5	6	13	0	4	2	2	0	2	9	4	0	55	
4:25 PM	2	8	0	0	7	9	10	0	2	2	1	0	0	4	3	0	48	
4:30 PM	5	7	1	0	0	12	16	0	7	0	2	0	0	4	2	0	56	
4:35 PM	5	5	0	0	2	5	11	0	4	1	2	0	2	9	3	0	49	
4:40 PM	4	7	2	0	1	4	7	0	3	3	4	0	0	6	1	0	42	
4:45 PM	8	5	0	0	0	15	11	0	6	4	1	0	2	7	3	0	62	
4:50 PM	8	5	0	1	1	5	16	0	2	2	5	0	1	3	3	0	52	
4:55 PM	5	3	2	0	0	5	13	0	3	1	4	0	1	7	1	0	45	596
5:00 PM	1	9	3	0	2	6	6	0	2	3	4	0	1	14	3	0	54	603
5:05 PM	4	3	1	0	2	8	19	0	4	4	9	0	1	7	3	0	65	615
5:10 PM	3	4	0	0	0	13	8	0	4	4	5	0	3	5	2	0	51	621
5:15 PM	3	7	2	0	0	11	10	1	3	4	3	0	1	3	2	0	50	629
5:20 PM	0	4	1	0	1	5	14	0	3	2	2	0	1	12	0	0	45	619
5:25 PM	8	6	0	0	1	4	9	0	1	1	6	0	1	9	1	0	47	618
5:30 PM	2	2	0	0	1	9	11	0	4	2	2	0	1	3	2	0	39	601
5:35 PM	6	6	0	0	1	12	10	1	4	1	4	0	0	6	1	0	52	604
5:40 PM	0	4	2	0	0	6	12	0	4	4	1	0	1	13	0	0	47	609
5:45 PM	0	10	0	0	0	15	10	0	2	2	4	1	1	3	2	0	50	597
5:50 PM	5	9	0	0	1	8	7	0	0	3	7	0	1	3	0	0	44	589
5:55 PM	7	10	1	0	1	4	6	0	0	2	3	0	2	2	0	0	38	582

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	64	16	0	16	108	132	0	40	44	72	0	20	104	32	0	680
Heavy Trucks	0	4	0		0	4	0		4	0	0		0	0	0		12
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 2/28/2017 2:22 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Providence Dr & 99W Pacifice Highway (091)
January 1, 2010 through December 31, 2014

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2014														
REAR-END	0	0	2	2	0	0	0	2	0	2	0	2	0	0
2014 TOTAL	0	0	2	2	0	0	0	2	0	2	0	2	0	0
YEAR: 2013														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2013 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2012														
REAR-END	0	2	1	3	0	3	0	2	1	3	0	3	0	0
2012 TOTAL	0	2	1	3	0	3	0	2	1	3	0	3	0	0
YEAR: 2011														
REAR-END	0	0	1	1	0	0	0	0	1	1	0	1	0	0
2011 TOTAL	0	0	1	1	0	0	0	0	1	1	0	1	0	0
YEAR: 2010														
REAR-END	0	1	0	1	0	2	0	1	0	1	0	1	0	0
2010 TOTAL	0	1	0	1	0	2	0	1	0	1	0	1	0	0
FINAL TOTAL	0	3	5	8	0	5	0	6	2	8	0	8	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Hayes St & Brutscher St

January 1, 2010 through December 31, 2014

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2013														
NON-COLLISION	0	1	0	1	0	1	0	1	0	0	1	1	0	0
2013 TOTAL	0	1	0	1	0	1	0	1	0	0	1	1	0	0
FINAL TOTAL	0	1	0	1	0	1	0	1	0	0	1	1	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

17-346 Newberg Surg. Ctr TIA

Vistro File: J:\...\17-346 Newberg Ambulatory Surgery TIA.vistro

Scenario 1 AM Existing 17-346

Report File: J:\...\17-346 Existing AM.pdf

3/2/2017

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 99W at Providence Dr	Signalized	HCM 6th Edition	NWB Right	0.652	5.0	A
3	Brutsher St at Hayes St	Roundabout	HCM 6th Edition	NB Thru		3.8	A
4	Hayes at Werth	Roundabout	HCM 6th Edition	EB Thru		3.2	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Hwy 99W at Providence Dr

Control Type:	Signalized	Delay (sec / veh):	5.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.652

Intersection Setup

Name	Hwy 99W		Hwy 99W		Providence Dr	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	1	0
Pocket Length [ft]	100.00	75.00	100.00	100.00	150.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Hwy 99W		Hwy 99W		Providence Dr	
Base Volume Input [veh/h]	1725	73	64	991	38	46
Base Volume Adjustment Factor	1.0850	1.0850	1.0850	1.0850	1.0850	1.0850
Heavy Vehicles Percentage [%]	4.50	4.50	4.50	4.50	4.50	4.50
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1872	79	69	1075	41	50
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	482	20	18	277	11	13
Total Analysis Volume [veh/h]	1930	81	71	1108	42	52
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	8	0	0	4	5	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	19	0	0	19	101	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	106	106	106	106	6	6
g / C, Green / Cycle	0.88	0.88	0.88	0.88	0.05	0.05
(v / s)_i Volume / Saturation Flow Rate	0.61	0.06	0.35	0.35	0.03	0.04
s, saturation flow rate [veh/h]	3140	1402	203	3140	1571	1402
c, Capacity [veh/h]	2765	1234	195	2765	83	74
d1, Uniform Delay [s]	2.22	0.91	10.29	1.32	55.27	55.86
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.49	0.10	5.16	0.43	4.72	11.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.07	0.36	0.40	0.51	0.70
d, Delay for Lane Group [s/veh]	3.71	1.01	15.45	1.76	59.99	67.32
Lane Group LOS	A	A	B	A	E	E
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.61	0.07	1.11	0.52	1.36	1.80
50th-Percentile Queue Length [ft]	40.21	1.77	27.64	13.03	33.90	44.91
95th-Percentile Queue Length [veh]	2.90	0.13	1.99	0.94	2.44	3.23
95th-Percentile Queue Length [ft]	72.38	3.18	49.75	23.46	61.02	80.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.71	1.01	15.45	1.76	59.99	67.32
Movement LOS	A	A	B	A	E	E
d_A, Approach Delay [s/veh]	3.60		2.58		64.04	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	4.97					
Intersection LOS	A					
Intersection V/C	0.652					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.299	3.240	2.123
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	5.791	5.105	4.132
Bicycle LOS	F	F	D

Sequence

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Brutsher St at Hayes St

Control Type:	Roundabout	Delay (sec / veh):	3.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Brutscher St			Brutscher St			Hayes St			Hayes St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brutscher St			Brutscher St			Hayes St			Hayes St		
Base Volume Input [veh/h]	38	113	16	10	44	37	27	50	31	3	14	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	113	16	10	44	37	27	50	31	3	14	5
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	30	4	3	12	10	7	13	8	1	4	1
Total Analysis Volume [veh/h]	40	120	17	11	47	39	29	53	33	3	15	5
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	94			59			62			192		
Exiting Flow Rate [veh/h]	65			56			51			151		
Demand Flow Rate [veh/h]	38	113	16	10	44	37	27	50	31	3	14	5
Adjusted Demand Flow Rate [veh/h]	40	120	17	11	47	39	29	53	33	3	15	5

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	180	99	117	24
Capacity of Entry and Bypass Lanes [veh/h]	1254	1300	1296	1135
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1234	1280	1276	1117
X, volume / capacity	0.14	0.08	0.09	0.02

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.50	0.25	0.30	0.06
95th-Percentile Queue Length [ft]	12.52	6.14	7.42	1.58
Approach Delay [s/veh]	4.12	3.42	3.55	3.39
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	3.76			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 4: Hayes at Werth

Control Type:	Roundabout	Delay (sec / veh):	3.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Werth			Werth			Hayes St			Providence Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Werth			Werth			Hayes St			Providence Dr		
Base Volume Input [veh/h]	1	0	2	0	0	7	2	45	12	19	26	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	2	0	0	7	2	45	12	19	26	1
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	0	0	2	1	14	4	6	8	0
Total Analysis Volume [veh/h]	1	0	3	0	0	9	3	58	15	24	33	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	64			61			25			4		
Exiting Flow Rate [veh/h]	61			36			25			3		
Demand Flow Rate [veh/h]	1	0	2	0	0	7	2	45	12	19	26	1
Adjusted Demand Flow Rate [veh/h]	1	0	3	0	0	9	3	58	15	24	33	1

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.95	0.95	0.95	0.95
Entry Flow Rate [veh/h]	5	10	81	62
Capacity of Entry and Bypass Lanes [veh/h]	1293	1297	1345	1375
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1227	1231	1276	1304
X, volume / capacity	0.00	0.01	0.06	0.04

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.01	0.02	0.19	0.14
95th-Percentile Queue Length [ft]	0.25	0.55	4.74	3.49
Approach Delay [s/veh]	2.96	2.98	3.30	3.11
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	3.20			
Intersection LOS	A			

17-346 Newberg Surg. Ctr TIA

Vistro File: J:\...\17-346 Newberg Ambulatory Surgery TIA.vistro

Scenario 1 AM Existing 17-346

Report File: J:\...\17-346 Existing AM.pdf

3/2/2017

Turning Movement Volume: Summary

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Hwy 99W at Providence Dr	1872	79	69	1075	41	50	3186

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Brutsher St at Hayes St	38	113	16	10	44	37	27	50	31	3	14	5	388

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Hayes at Werth	1	0	2	0	0	7	2	45	12	19	26	1	115

17-346 Newberg Surg. Ctr TIA

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Scenario 1 AM Existing 17-346

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3/2/2017

Turning Movement Volume: Detail

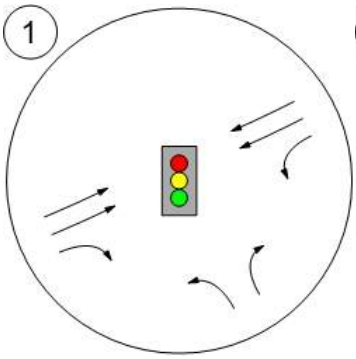
ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
1	Hwy 99W at Providence Dr	Final Base	1872	79	69	1075	41	50	3186
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		Future Total	**1872**	**79**	**69**	**1075**	**41**	**50**	**3186**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Brutsher St at Hayes St	Final Base	38	113	16	10	44	37	27	50	31	3	14	5	388
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**38**	**113**	**16**	**10**	**44**	**37**	**27**	**50**	**31**	**3**	**14**	**5**	**388**

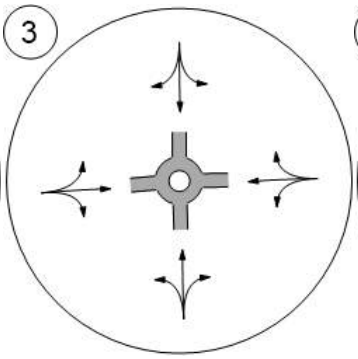
ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Hayes at Werth	Final Base	1	0	2	0	0	7	2	45	12	19	26	1	115
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**1**	**0**	**2**	**0**	**0**	**7**	**2**	**45**	**12**	**19**	**26**	**1**	**115**

Report Figure 1: Lane Configuration and Traffic Control

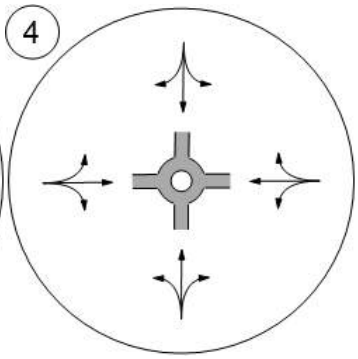
Hwy 99W at Providence Dr



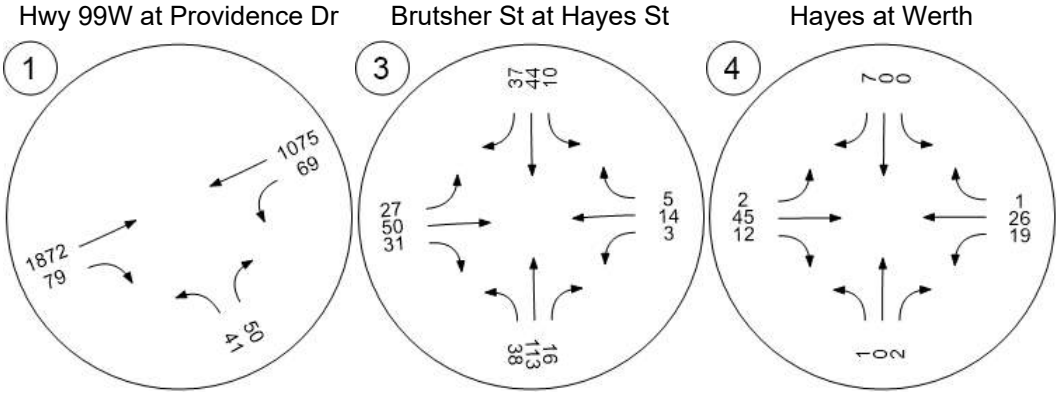
Brutsher St at Hayes St



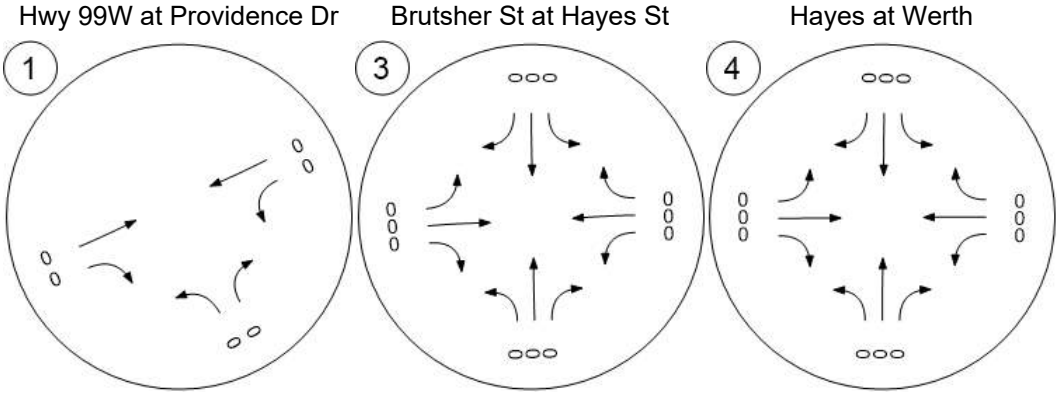
Hayes at Werth



Report Figure 2a: Traffic Volume - Base Volume

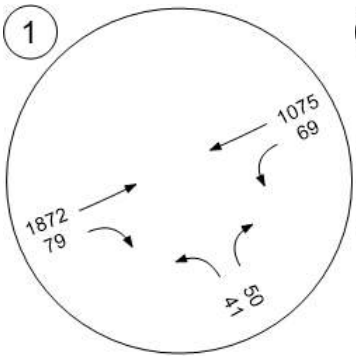


Report Figure 2c: Traffic Volume - Net New Site Trips

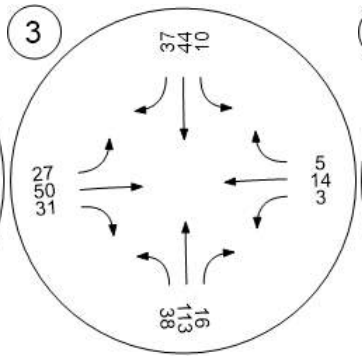


Report Figure 2e: Traffic Volume - Future Total Volume

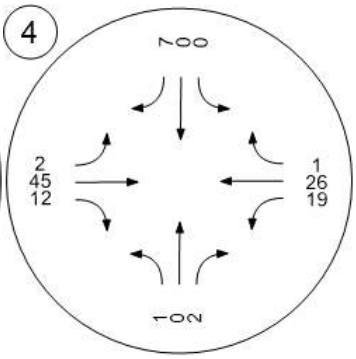
Hwy 99W at Providence Dr



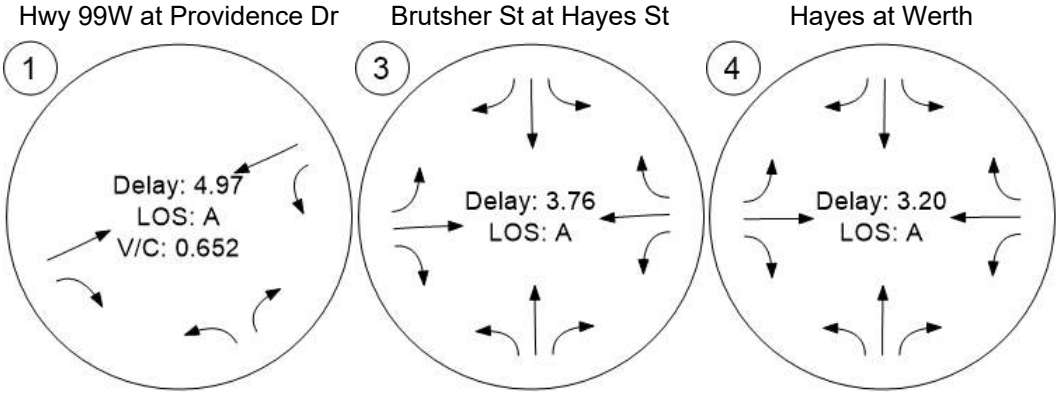
Brutsher St at Hayes St



Hayes at Werth



Report Figure 3: Traffic Conditions



17-346 Newberg Surg. Ctr TIA

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Scenario 2 PM Existing 17-346

Report File: J:\...\17-346 Existing PM.pdf

3/6/2017

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 99W at Providence Dr	Signalized	HCM 6th Edition	SWB Left	0.714	10.7	B
3	Brutsher St at Hayes St	Roundabout	HCM 6th Edition	SB Right		4.6	A
4	Hayes at Werth	Roundabout	HCM 6th Edition	WB Thru		3.5	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Hwy 99W at Providence Dr

Control Type:	Signalized	Delay (sec / veh):	10.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.714

Intersection Setup

Name	Hwy 99W		Hwy 99W		Providence Dr	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	1	0
Pocket Length [ft]	100.00	75.00	100.00	100.00	150.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Hwy 99W		Hwy 99W		Providence Dr	
Base Volume Input [veh/h]	1207	31	79	1789	78	96
Base Volume Adjustment Factor	1.0850	1.0850	1.0850	1.0850	1.0850	1.0850
Heavy Vehicles Percentage [%]	3.27	3.27	3.27	3.27	3.27	3.27
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1310	34	86	1941	85	104
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	341	9	22	505	22	27
Total Analysis Volume [veh/h]	1365	35	90	2022	89	108
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	8	0	7	4	5	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	27	0	44	71	19	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	63	63	6	73	9	9
g / C, Green / Cycle	0.70	0.70	0.07	0.81	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.43	0.02	0.06	0.64	0.06	0.08
s, saturation flow rate [veh/h]	3172	1416	1587	3172	1587	1416
c, Capacity [veh/h]	2204	984	115	2575	158	141
d1, Uniform Delay [s]	7.35	4.29	41.06	4.40	38.70	39.54
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.32	0.07	10.96	2.49	3.16	8.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.04	0.78	0.79	0.57	0.77
d, Delay for Lane Group [s/veh]	8.67	4.36	52.02	6.89	41.86	48.03
Lane Group LOS	A	A	D	A	D	D
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	5.25	0.16	2.22	4.05	2.01	2.65
50th-Percentile Queue Length [ft]	131.22	4.09	55.60	101.13	50.30	66.37
95th-Percentile Queue Length [veh]	9.01	0.29	4.00	7.28	3.62	4.78
95th-Percentile Queue Length [ft]	225.15	7.36	100.08	182.04	90.54	119.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.67	4.36	52.02	6.89	41.86	48.03
Movement LOS	A	A	D	A	D	D
d_A, Approach Delay [s/veh]	8.56		8.81		45.24	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	10.65					
Intersection LOS	B					
Intersection V/C	0.714					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45
l_p,int, Pedestrian LOS Score for Intersection	3.455	3.350	2.029
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	45.00	45.00	45.00
l_b,int, Bicycle LOS Score for Intersection	5.287	5.875	4.132
Bicycle LOS	F	F	D

Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Brutsher St at Hayes St

Control Type:	Roundabout	Delay (sec / veh):	4.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Brutscher St			Brutscher St			Hayes St			Hayes St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brutscher St			Brutscher St			Hayes St			Hayes St		
Base Volume Input [veh/h]	52	67	12	21	99	140	44	30	42	14	78	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	67	12	21	99	140	44	30	42	14	78	30
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	18	3	6	27	38	12	8	11	4	21	8
Total Analysis Volume [veh/h]	56	72	13	23	106	151	47	32	45	15	84	32
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	104			158			147			178		
Exiting Flow Rate [veh/h]	56			142			123			121		
Demand Flow Rate [veh/h]	52	67	12	21	99	140	44	30	42	14	78	30
Adjusted Demand Flow Rate [veh/h]	56	72	13	23	106	151	47	32	45	15	84	32

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	144	285	127	134
Capacity of Entry and Bypass Lanes [veh/h]	1242	1175	1189	1151
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1220	1155	1168	1131
X, volume / capacity	0.12	0.24	0.11	0.12

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.39	0.95	0.36	0.39
95th-Percentile Queue Length [ft]	9.77	23.80	8.89	9.80
Approach Delay [s/veh]	3.91	5.33	3.98	4.18
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	4.56			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 4: Hayes at Werth

Control Type:	Roundabout	Delay (sec / veh):	3.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Werth			Werth			Hayes St			Providence Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Werth			Werth			Hayes St			Providence Dr		
Base Volume Input [veh/h]	10	0	7	2	0	3	17	30	9	11	105	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	0	7	2	0	3	17	30	9	11	105	6
Peak Hour Factor	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	0	2	1	0	1	5	9	3	3	33	2
Total Analysis Volume [veh/h]	13	0	9	3	0	4	22	38	11	14	133	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	64			163			17			36		
Exiting Flow Rate [veh/h]	42			148			14			22		
Demand Flow Rate [veh/h]	10	0	7	2	0	3	17	30	9	11	105	6
Adjusted Demand Flow Rate [veh/h]	13	0	9	3	0	4	22	38	11	14	133	8

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	23	8	73	158
Capacity of Entry and Bypass Lanes [veh/h]	1293	1170	1356	1331
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1273	1151	1335	1311
X, volume / capacity	0.02	0.01	0.05	0.12

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.05	0.02	0.17	0.40
95th-Percentile Queue Length [ft]	1.32	0.46	4.21	10.04
Approach Delay [s/veh]	2.97	3.18	3.11	3.71
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	3.46			
Intersection LOS	A			

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Scenario 2 PM Existing 17-346

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Turning Movement Volume: Summary

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Hwy 99W at Providence Dr	1310	34	86	1941	85	104	3560

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Brutsher St at Hayes St	52	67	12	21	99	140	44	30	42	14	78	30	629

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Hayes at Werth	10	0	7	2	0	3	17	30	9	11	105	6	200

17-346 Newberg Surg. Ctr TIA

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Scenario 2 PM Existing 17-346

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3/6/2017

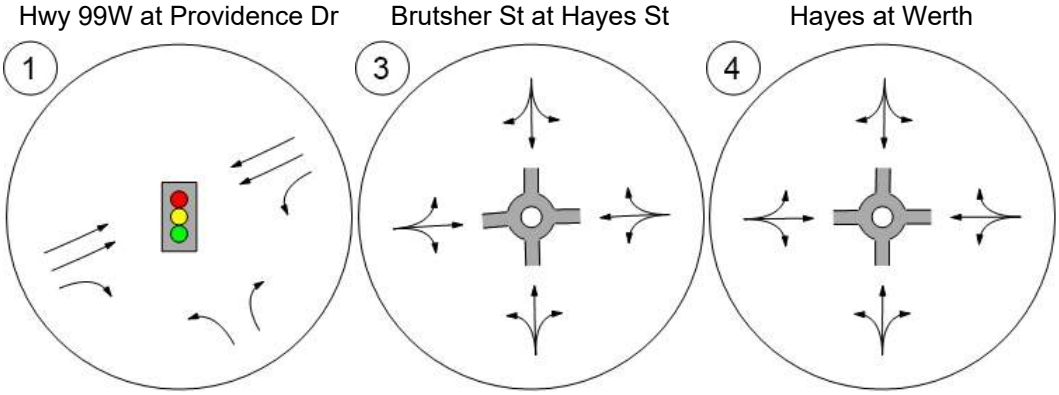
Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
1	Hwy 99W at Providence Dr	Final Base	1310	34	86	1941	85	104	3560
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		Future Total	**1310**	**34**	**86**	**1941**	**85**	**104**	**3560**

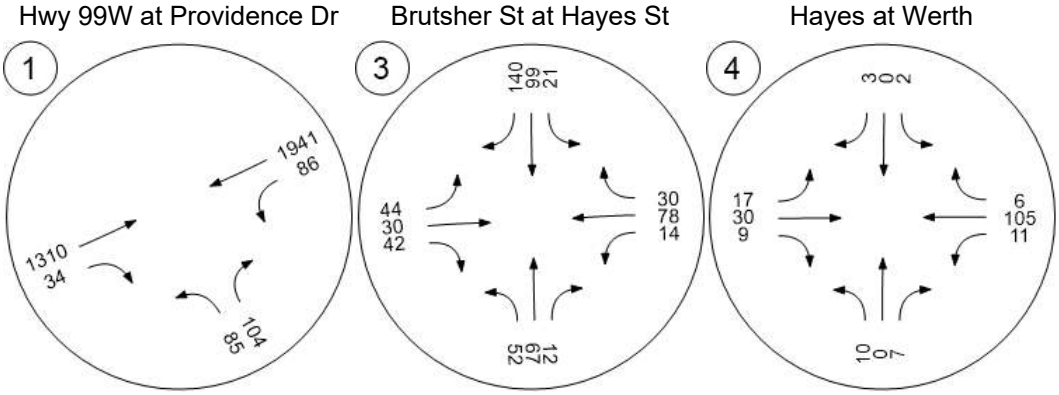
ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Brutsher St at Hayes St	Final Base	52	67	12	21	99	140	44	30	42	14	78	30	629
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**52**	**67**	**12**	**21**	**99**	**140**	**44**	**30**	**42**	**14**	**78**	**30**	**629**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Hayes at Werth	Final Base	10	0	7	2	0	3	17	30	9	11	105	6	200
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**10**	**0**	**7**	**2**	**0**	**3**	**17**	**30**	**9**	**11**	**105**	**6**	**200**

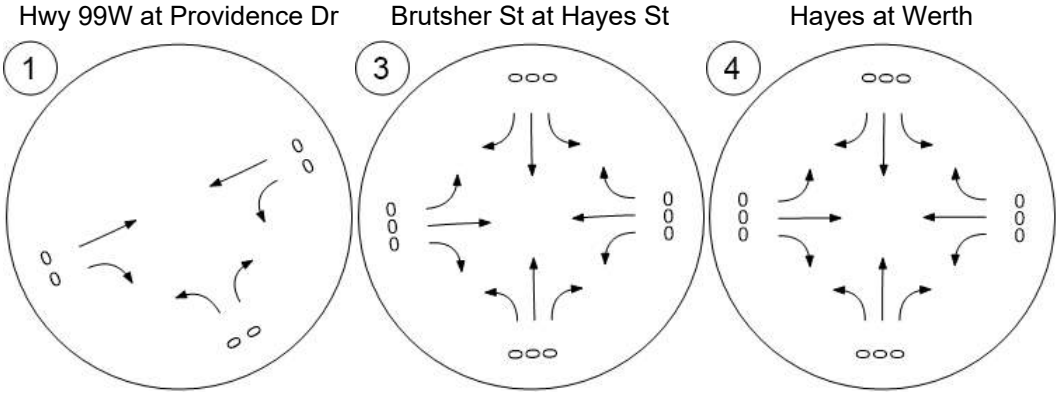
Report Figure 1: Lane Configuration and Traffic Control



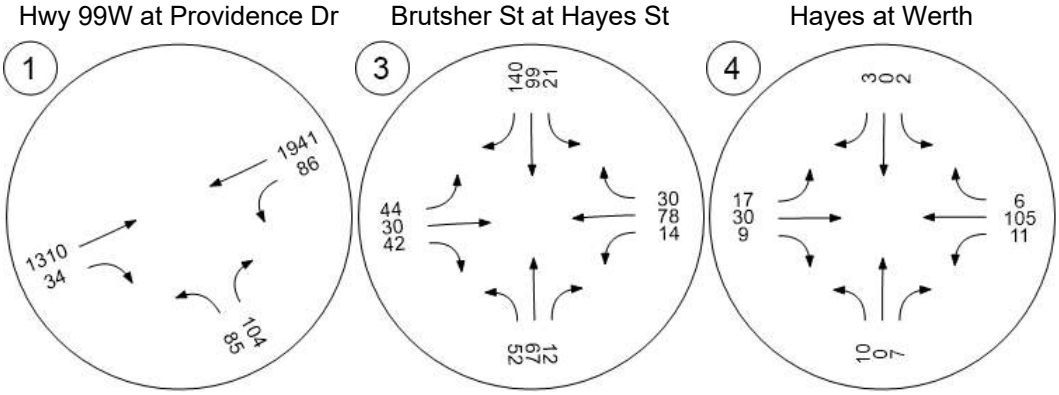
Report Figure 2a: Traffic Volume - Base Volume



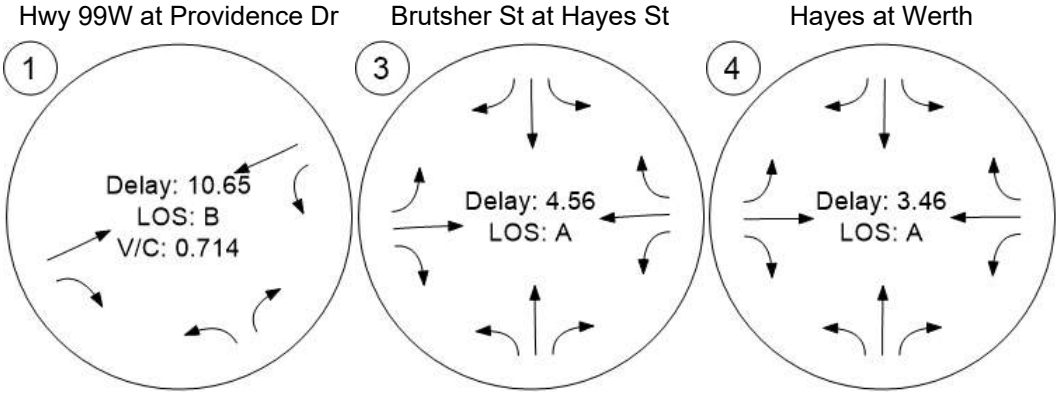
Report Figure 2c: Traffic Volume - Net New Site Trips



Report Figure 2e: Traffic Volume - Future Total Volume



Report Figure 3: Traffic Conditions



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Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 99W at Providence Dr	Signalized	HCM 6th Edition	NWB Right	0.661	5.4	A
3	Brutsher St at Hayes St	Roundabout	HCM 6th Edition	NB Thru		3.8	A
4	Hayes at Werth	Roundabout	HCM 6th Edition	EB Thru		3.2	A
5	Site Access at Providence Dr.	Two-way stop	HCM 6th Edition	EB Left	0.012	9.3	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Hwy 99W at Providence Dr

Control Type:	Signalized	Delay (sec / veh):	5.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.661

Intersection Setup

Name	Hwy 99W		Hwy 99W		Providence Dr	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	1	0
Pocket Length [ft]	100.00	75.00	100.00	100.00	150.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Hwy 99W		Hwy 99W		Providence Dr	
Base Volume Input [veh/h]	1725	73	64	991	38	46
Base Volume Adjustment Factor	1.0850	1.0850	1.0850	1.0850	1.0850	1.0850
Heavy Vehicles Percentage [%]	4.50	4.50	4.50	4.50	4.50	4.50
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	10	0	5	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1891	100	80	1086	46	54
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	487	26	21	280	12	14
Total Analysis Volume [veh/h]	1949	103	82	1120	47	56
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	8	0	0	4	5	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	19	0	0	19	101	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	105	105	105	105	7	7
g / C, Green / Cycle	0.88	0.88	0.88	0.88	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.62	0.07	0.41	0.36	0.03	0.04
s, saturation flow rate [veh/h]	3140	1402	200	3140	1571	1402
c, Capacity [veh/h]	2754	1229	190	2754	88	79
d1, Uniform Delay [s]	2.39	0.98	12.32	1.41	55.04	55.62
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.56	0.13	6.98	0.45	4.89	11.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.08	0.43	0.41	0.53	0.71
d, Delay for Lane Group [s/veh]	3.95	1.11	19.31	1.86	59.93	66.76
Lane Group LOS	A	A	B	A	E	E
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.96	0.10	1.49	0.63	1.51	1.92
50th-Percentile Queue Length [ft]	49.00	2.62	37.15	15.81	37.87	48.08
95th-Percentile Queue Length [veh]	3.53	0.19	2.67	1.14	2.73	3.46
95th-Percentile Queue Length [ft]	88.20	4.71	66.86	28.46	68.17	86.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.95	1.11	19.31	1.86	59.93	66.76
Movement LOS	A	A	B	A	E	E
d_A, Approach Delay [s/veh]	3.81		3.05		63.65	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	5.37					
Intersection LOS	A					
Intersection V/C	0.661					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.324	3.253	2.150
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	5.825	5.124	4.132
Bicycle LOS	F	F	D

Sequence

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Brutsher St at Hayes St

Control Type:	Roundabout	Delay (sec / veh):	3.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Brutscher St			Brutscher St			Hayes St			Hayes St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brutscher St			Brutscher St			Hayes St			Hayes St		
Base Volume Input [veh/h]	38	113	16	10	44	37	27	50	31	3	14	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	3	0	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	114	16	10	44	37	27	54	31	3	15	5
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	30	4	3	12	10	7	14	8	1	4	1
Total Analysis Volume [veh/h]	40	121	17	11	47	39	29	57	33	3	16	5
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	99			60			62			193		
Exiting Flow Rate [veh/h]	69			57			51			152		
Demand Flow Rate [veh/h]	38	114	16	10	44	37	27	54	31	3	15	5
Adjusted Demand Flow Rate [veh/h]	40	121	17	11	47	39	29	57	33	3	16	5

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	181	99	121	25
Capacity of Entry and Bypass Lanes [veh/h]	1249	1299	1296	1134
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1229	1278	1276	1116
X, volume / capacity	0.14	0.08	0.09	0.02

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.51	0.25	0.31	0.07
95th-Percentile Queue Length [ft]	12.66	6.15	7.70	1.65
Approach Delay [s/veh]	4.15	3.43	3.58	3.41
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	3.78			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 4: Hayes at Werth

Control Type:	Roundabout	Delay (sec / veh):	3.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Werth			Werth			Hayes St			Providence Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Werth			Werth			Hayes St			Providence Dr		
Base Volume Input [veh/h]	1	0	2	0	0	7	2	45	12	19	26	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	3	0	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	2	0	0	7	2	48	12	19	27	1
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	0	0	2	1	15	4	6	9	0
Total Analysis Volume [veh/h]	1	0	3	0	0	9	3	62	15	24	35	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	69			63			25			4		
Exiting Flow Rate [veh/h]	65			38			25			3		
Demand Flow Rate [veh/h]	1	0	2	0	0	7	2	48	12	19	27	1
Adjusted Demand Flow Rate [veh/h]	1	0	3	0	0	9	3	62	15	24	35	1

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.95	0.95	0.95	0.95
Entry Flow Rate [veh/h]	5	10	85	64
Capacity of Entry and Bypass Lanes [veh/h]	1287	1294	1345	1375
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1221	1228	1276	1304
X, volume / capacity	0.00	0.01	0.06	0.05

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.01	0.02	0.20	0.14
95th-Percentile Queue Length [ft]	0.25	0.55	5.01	3.61
Approach Delay [s/veh]	2.97	2.99	3.32	3.12
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	3.22			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 5: Site Access at Providence Dr.

Control Type:	Two-way stop	Delay (sec / veh):	9.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Providence Dr		Providence Dr		Site Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Providence Dr		Providence Dr		Site Access	
Base Volume Input [veh/h]	0	47	46	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.54	0.54	0.54	0.54	0.54	0.54
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	0	30	8	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	47	46	30	8	1
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	15	15	10	3	0
Total Analysis Volume [veh/h]	4	60	59	38	10	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	7.40	0.00	0.00	0.00	9.30	8.70
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.13	0.13	0.00	0.00	0.04	0.04
95th-Percentile Queue Length [ft]	3.33	3.33	0.00	0.00	0.97	0.97
d_A, Approach Delay [s/veh]	0.46		0.00		9.25	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.76					
Intersection LOS	A					

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Turning Movement Volume: Summary

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Hwy 99W at Providence Dr	1891	100	80	1086	46	54	3257

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Brutsher St at Hayes St	38	114	16	10	44	37	27	54	31	3	15	5	394

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Hayes at Werth	1	0	2	0	0	7	2	48	12	19	27	1	119

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
5	Site Access at Providence Dr.	3	47	46	30	8	1	135

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Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
1	Hwy 99W at Providence Dr	Final Base	1872	79	69	1075	41	50	3186
		Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	20	10	0	5	3	38
		Other	0	0	0	0	0	0	0
		Future Total	**1891**	**100**	**80**	**1086**	**46**	**54**	**3257**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Brutsher St at Hayes St	Final Base	38	113	16	10	44	37	27	50	31	3	14	5	388
		Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	3	0	0	1	0	4
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**38**	**114**	**16**	**10**	**44**	**37**	**27**	**54**	**31**	**3**	**15**	**5**	**394**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Hayes at Werth	Final Base	1	0	2	0	0	7	2	45	12	19	26	1	115
		Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	3	0	0	1	0	4
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**1**	**0**	**2**	**0**	**0**	**7**	**2**	**48**	**12**	**19**	**27**	**1**	**119**

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
5	Site Access at Providence Dr.	Final Base	0	47	46	0	0	0	93
		Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	3	0	0	30	8	1	42
		Other	0	0	0	0	0	0	0
		Future Total	**3**	**47**	**46**	**30**	**8**	**1**	**135**

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Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
7: Newberg Surgery Ctr	Med/Dental Office Bldg	ITE 720	ksf	2.390	17.500	79.00	21.00	33	9	42	100.00
					Added Trips Total			**33**	**9**	**42**	**100.00**

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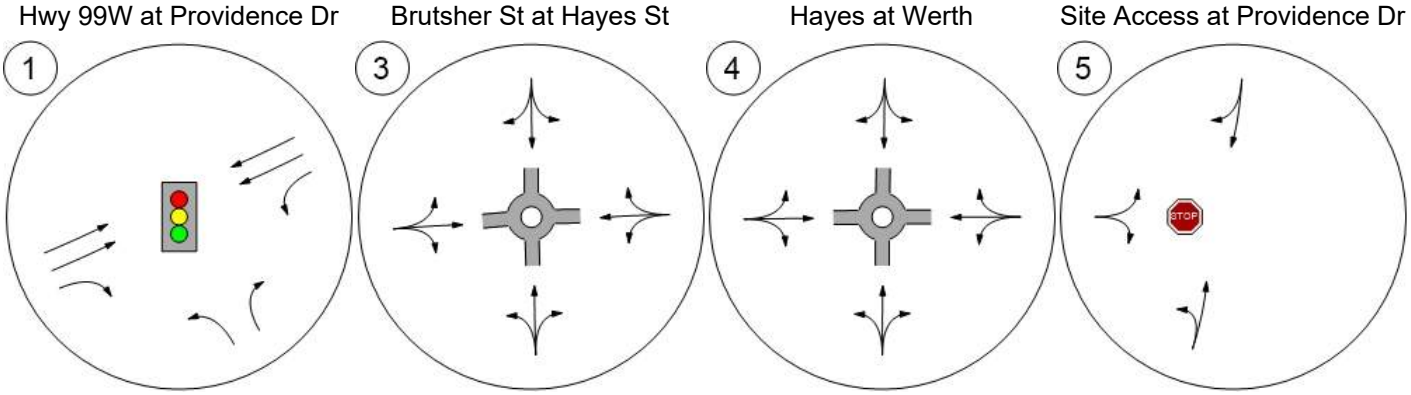
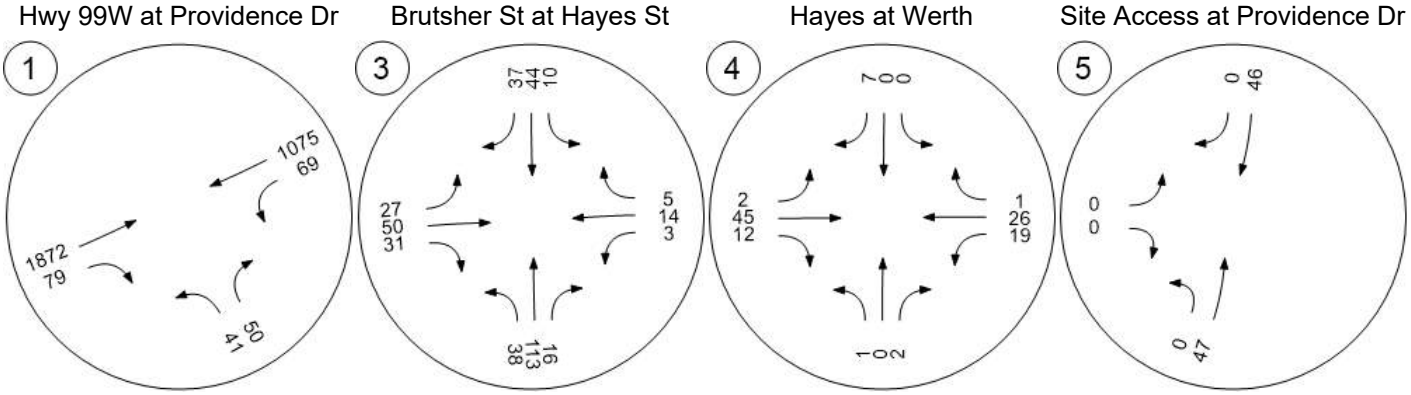
Trip Distribution summary

Zone / Gate	Zone 7: Newberg Surgery Ctr			
	To Newberg Surgery Ctr:		From Newberg Surgery Ctr:	
	Share %	Trips	Share %	Trips
1: Gate	60.00	20	60.00	5
2: Gate	30.00	10	30.00	3
3: Gate	10.00	3	10.00	1
4: Gate	0.00	0	0.00	0
5: Gate	0.00	0	0.00	0
6: Gate	0.00	0	0.00	0
8: Gate	0.00	0	0.00	0
9: Gate	0.00	0	0.00	0
Total	**100.00**	**33**	**100.00**	**9**

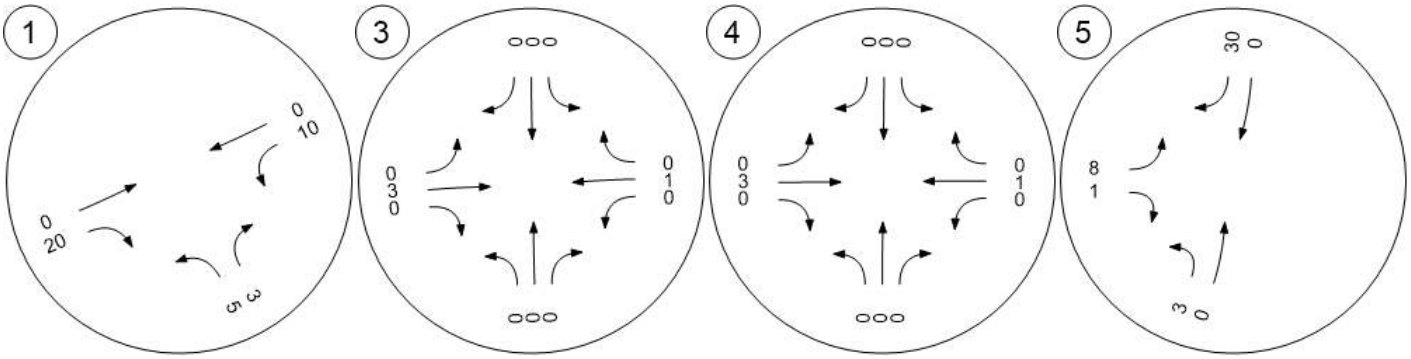
Report Figure 1: Lane Configuration and Traffic Control



Report Figure 2a: Traffic Volume - Base Volume

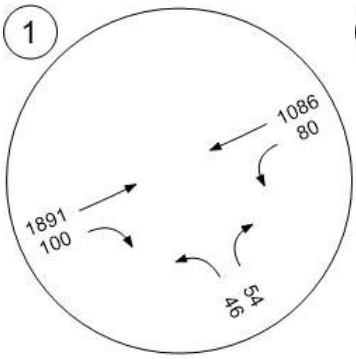


Report Figure 2c: Traffic Volume - Net New Site Trips

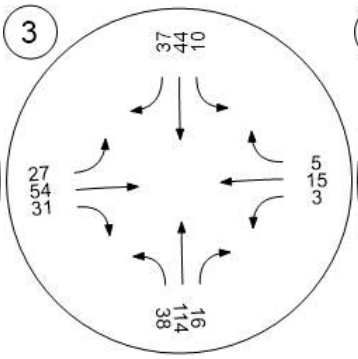


Report Figure 2e: Traffic Volume - Future Total Volume

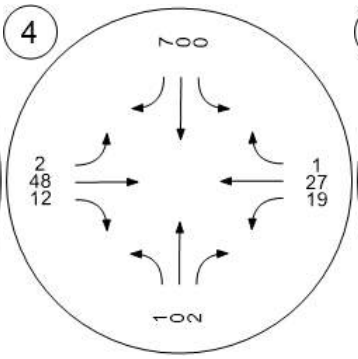
Hwy 99W at Providence Dr



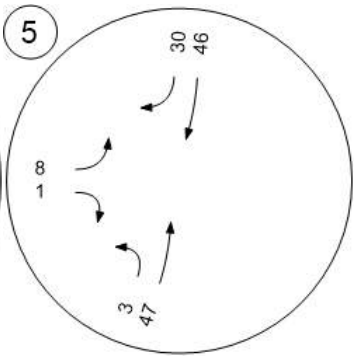
Brutsher St at Hayes St



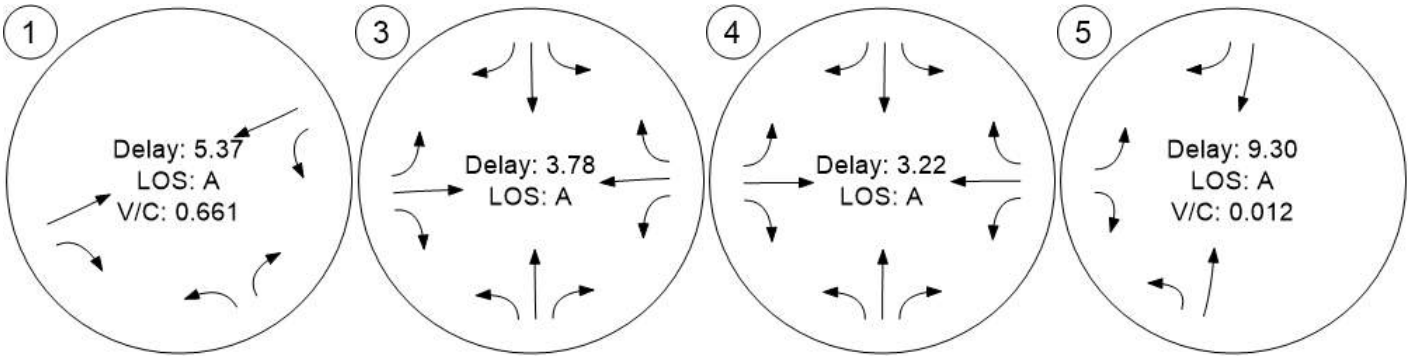
Hayes at Werth



Site Access at Providence Dr



Report Figure 3: Traffic Conditions



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Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 99W at Providence Dr	Signalized	HCM 6th Edition	SWB Left	0.731	12.0	B
3	Brutsher St at Hayes St	Roundabout	HCM 6th Edition	SB Right		4.6	A
4	Hayes at Werth	Roundabout	HCM 6th Edition	WB Thru		3.5	A
5	Site Access at Providence Dr.	Two-way stop	HCM 6th Edition	EB Left	0.067	10.1	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Hwy 99W at Providence Dr

Control Type:	Signalized	Delay (sec / veh):	12.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.731

Intersection Setup

Name	Hwy 99W		Hwy 99W		Providence Dr	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	1	0
Pocket Length [ft]	100.00	75.00	100.00	100.00	150.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Hwy 99W		Hwy 99W		Providence Dr	
Base Volume Input [veh/h]	1207	31	79	1789	78	96
Base Volume Adjustment Factor	1.0850	1.0850	1.0850	1.0850	1.0850	1.0850
Heavy Vehicles Percentage [%]	3.27	3.27	3.27	3.27	3.27	3.27
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	5	0	26	14
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1323	44	92	1960	112	119
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	345	11	24	510	29	31
Total Analysis Volume [veh/h]	1378	46	96	2042	117	124
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	8	0	7	4	5	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	27	0	44	71	19	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	61	61	7	72	10	10
g / C, Green / Cycle	0.68	0.68	0.08	0.80	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.43	0.03	0.06	0.64	0.07	0.09
s, saturation flow rate [veh/h]	3172	1416	1587	3172	1587	1416
c, Capacity [veh/h]	2152	961	122	2538	176	157
d1, Uniform Delay [s]	8.22	4.81	40.82	5.05	38.41	38.99
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.47	0.09	10.48	2.83	4.24	8.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.05	0.79	0.80	0.66	0.79
d, Delay for Lane Group [s/veh]	9.70	4.90	51.30	7.88	42.65	47.46
Lane Group LOS	A	A	D	A	D	D
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	5.87	0.24	2.35	5.09	2.68	3.03
50th-Percentile Queue Length [ft]	146.70	5.92	58.78	127.16	67.02	75.77
95th-Percentile Queue Length [veh]	9.84	0.43	4.23	8.78	4.83	5.46
95th-Percentile Queue Length [ft]	246.02	10.66	105.80	219.62	120.64	136.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.70	4.90	51.30	7.88	42.65	47.46
Movement LOS	A	A	D	A	D	D
d_A, Approach Delay [s/veh]	9.54		9.83		45.13	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	11.96					
Intersection LOS	B					
Intersection V/C	0.731					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45
l_p,int, Pedestrian LOS Score for Intersection	3.516	3.366	2.045
Crosswalk LOS	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	45.00	45.00	45.00
l_b,int, Bicycle LOS Score for Intersection	5.307	5.896	4.132
Bicycle LOS	F	F	D

Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Brutsher St at Hayes St

Control Type:	Roundabout	Delay (sec / veh):	4.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Brutscher St			Brutscher St			Hayes St			Hayes St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brutscher St			Brutscher St			Hayes St			Hayes St		
Base Volume Input [veh/h]	52	67	12	21	99	140	44	30	42	14	78	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	2	0	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	68	12	21	100	141	44	32	42	14	84	30
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	18	3	6	27	38	12	9	11	4	23	8
Total Analysis Volume [veh/h]	57	73	13	23	108	152	47	34	45	15	90	32
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	106			165			149			180		
Exiting Flow Rate [veh/h]	58			150			125			122		
Demand Flow Rate [veh/h]	53	68	12	21	100	141	44	32	42	14	84	30
Adjusted Demand Flow Rate [veh/h]	57	73	13	23	108	152	47	34	45	15	90	32

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	146	288	129	140
Capacity of Entry and Bypass Lanes [veh/h]	1239	1167	1186	1149
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1218	1147	1166	1129
X, volume / capacity	0.12	0.25	0.11	0.12

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.40	0.97	0.36	0.41
95th-Percentile Queue Length [ft]	9.95	24.37	9.07	10.33
Approach Delay [s/veh]	3.94	5.40	4.00	4.24
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	4.61			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 4: Hayes at Werth

Control Type:	Roundabout	Delay (sec / veh):	3.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Werth			Werth			Hayes St			Providence Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Werth			Werth			Hayes St			Providence Dr		
Base Volume Input [veh/h]	10	0	7	2	0	3	17	30	9	11	105	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	2	0	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	0	7	2	0	3	17	32	9	11	111	6
Peak Hour Factor	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	0	2	1	0	1	5	10	3	3	35	2
Total Analysis Volume [veh/h]	13	0	9	3	0	4	22	41	11	14	141	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	67			171			17			36		
Exiting Flow Rate [veh/h]	45			156			14			22		
Demand Flow Rate [veh/h]	10	0	7	2	0	3	17	32	9	11	111	6
Adjusted Demand Flow Rate [veh/h]	13	0	9	3	0	4	22	41	11	14	141	8

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	23	8	76	166
Capacity of Entry and Bypass Lanes [veh/h]	1289	1160	1356	1331
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1269	1142	1335	1311
X, volume / capacity	0.02	0.01	0.06	0.12

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.05	0.02	0.18	0.43
95th-Percentile Queue Length [ft]	1.32	0.46	4.40	10.63
Approach Delay [s/veh]	2.97	3.20	3.13	3.76
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	3.51			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 5: Site Access at Providence Dr.

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.067

Intersection Setup

Name	Providence Dr		Providence Dr		Site Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Providence Dr		Providence Dr		Site Access	
Base Volume Input [veh/h]	0	40	122	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.59	1.59	1.59	1.59	1.59	1.59
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	0	15	40	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	40	123	15	40	5
Peak Hour Factor	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	13	39	5	13	2
Total Analysis Volume [veh/h]	3	51	156	19	51	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.07	0.01
d_M, Delay for Movement [s/veh]	7.57	0.00	0.00	0.00	10.07	9.46
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.12	0.12	0.00	0.00	0.24	0.24
95th-Percentile Queue Length [ft]	3.00	3.00	0.00	0.00	5.93	5.93
d_A, Approach Delay [s/veh]	0.42		0.00		10.01	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.07					
Intersection LOS	B					

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Turning Movement Volume: Summary

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Hwy 99W at Providence Dr	1323	44	92	1960	112	119	3650

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Brutsher St at Hayes St	53	68	12	21	100	141	44	32	42	14	84	30	641

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Hayes at Werth	10	0	7	2	0	3	17	32	9	11	111	6	208

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
5	Site Access at Providence Dr.	2	40	123	15	40	5	225

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Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
1	Hwy 99W at Providence Dr	Final Base	1310	34	86	1941	85	104	3560
		Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	10	5	0	26	14	55
		Other	0	0	0	0	0	0	0
		Future Total	**1323**	**44**	**92**	**1960**	**112**	**119**	**3650**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Brutsher St at Hayes St	Final Base	52	67	12	21	99	140	44	30	42	14	78	30	629
		Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	2	0	0	5	0	7
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**53**	**68**	**12**	**21**	**100**	**141**	**44**	**32**	**42**	**14**	**84**	**30**	**641**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Hayes at Werth	Final Base	10	0	7	2	0	3	17	30	9	11	105	6	200
		Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	2	0	0	5	0	7
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**10**	**0**	**7**	**2**	**0**	**3**	**17**	**32**	**9**	**11**	**111**	**6**	**208**

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
5	Site Access at Providence Dr.	Final Base	0	40	122	0	0	0	162
		Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	2	0	0	15	40	5	62
		Other	0	0	0	0	0	0	0
		Future Total	**2**	**40**	**123**	**15**	**40**	**5**	**225**

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Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
7: Newberg Sugery Ctr	Med/Dental Office	ITE 720	ksf	3.570	17.500	28.00	72.00	17	45	62	100.00
					Added Trips Total			**17**	**45**	**62**	**100.00**

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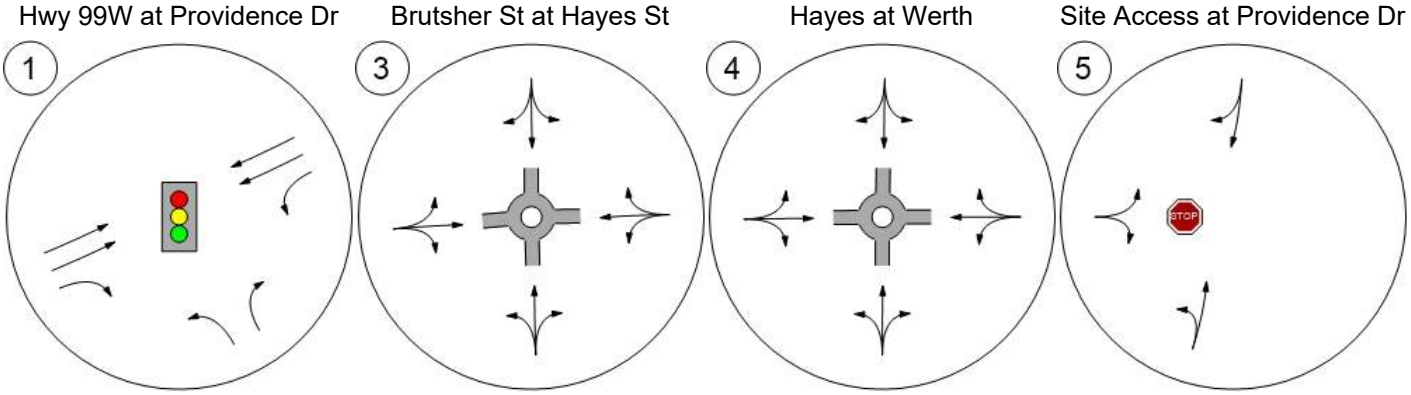
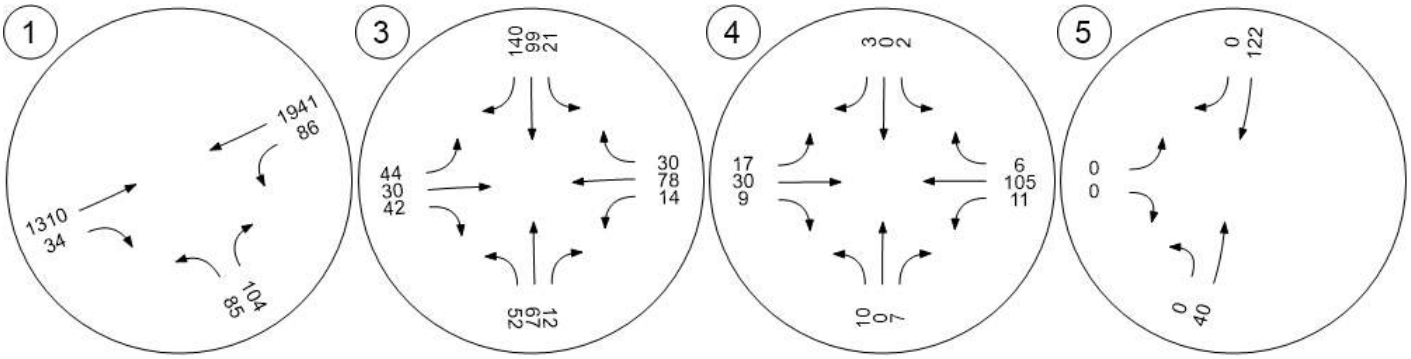
Trip Distribution summary

Zone / Gate	Zone 7: Newberg Sugery Ctr			
	To Newberg Sugery Ctr:		From Newberg Sugery Ctr:	
	Share %	Trips	Share %	Trips
1: Gate	60.00	10	60.00	26
2: Gate	30.00	5	30.00	14
3: Gate	10.00	2	10.00	5
4: Gate	0.00	0	0.00	0
5: Gate	0.00	0	0.00	0
6: Gate	0.00	0	0.00	0
8: Gate	0.00	0	0.00	0
9: Gate	0.00	0	0.00	0
Total	**100.00**	**17**	**100.00**	**45**

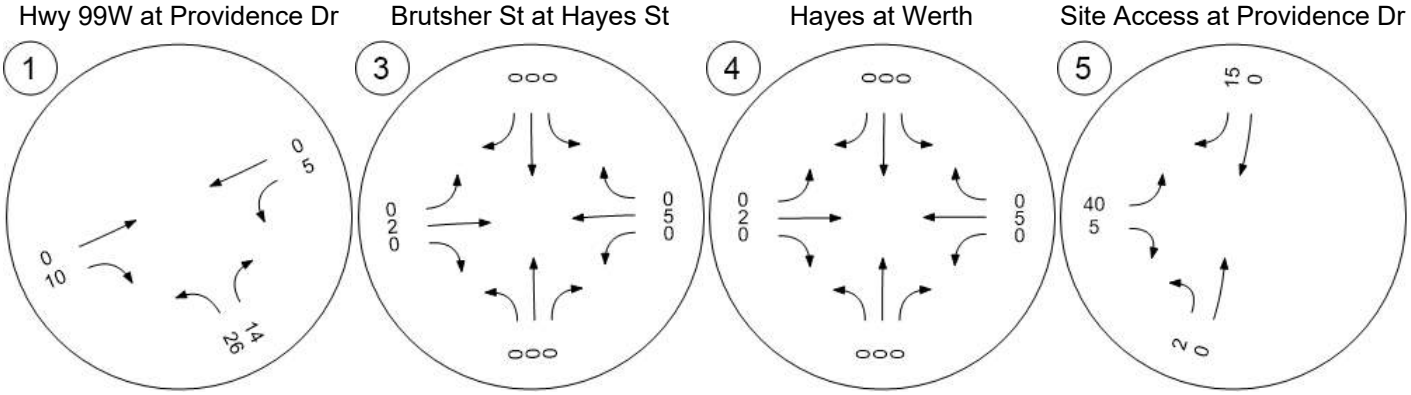
Report Figure 1: Lane Configuration and Traffic Control



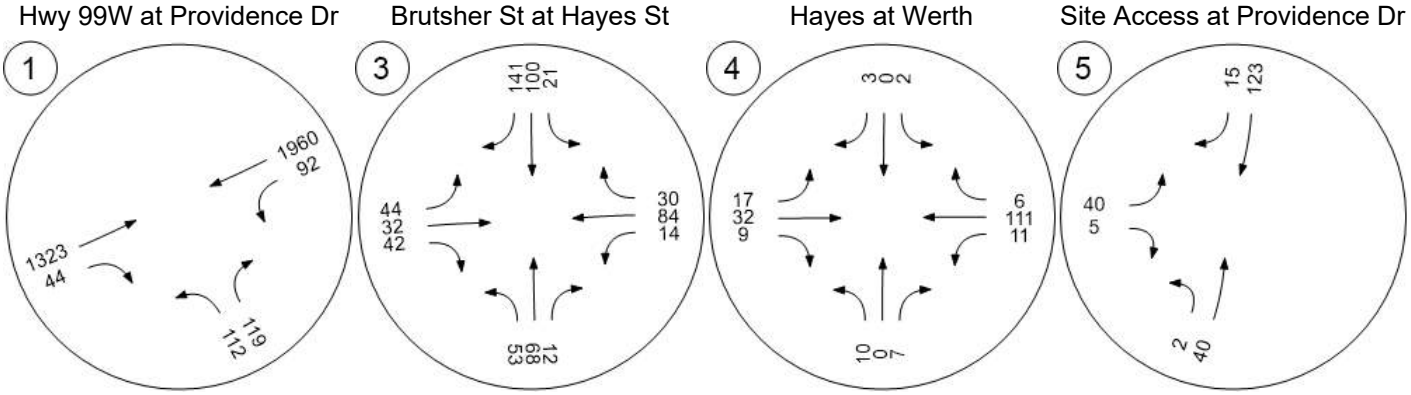
Report Figure 2a: Traffic Volume - Base Volume



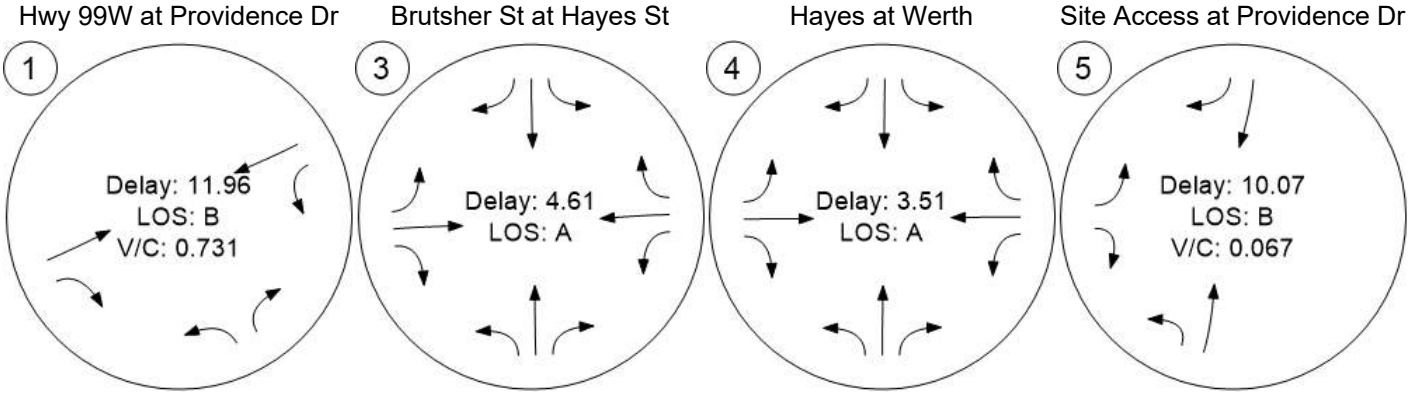
Report Figure 2c: Traffic Volume - Net New Site Trips



Report Figure 2e: Traffic Volume - Future Total Volume



Report Figure 3: Traffic Conditions



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Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 99W at Providence Dr	Signalized	HCM 6th Edition	NWB Right	0.758	7.7	A
3	Brutsher St at Hayes St	Roundabout	HCM 6th Edition	NB Thru		4.0	A
4	Hayes at Werth	Roundabout	HCM 6th Edition	EB Thru		3.3	A
5	Site Access at Providence Dr.	Two-way stop	HCM 6th Edition	EB Left	0.012	9.4	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Hwy 99W at Providence Dr

Control Type:	Signalized	Delay (sec / veh):	7.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.758

Intersection Setup

Name	Hwy 99W		Hwy 99W		Providence Dr	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	1	0
Pocket Length [ft]	100.00	75.00	100.00	100.00	150.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Hwy 99W		Hwy 99W		Providence Dr	
Base Volume Input [veh/h]	1725	73	64	991	38	46
Base Volume Adjustment Factor	1.0850	1.0850	1.0850	1.0850	1.0850	1.0850
Heavy Vehicles Percentage [%]	4.50	4.50	4.50	4.50	4.50	4.50
Growth Rate	1.16	1.16	1.16	1.16	1.16	1.16
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	10	0	5	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2172	112	90	1247	53	61
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	560	29	23	321	14	16
Total Analysis Volume [veh/h]	2239	115	93	1286	55	63
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	8	0	0	4	5	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	19	0	0	19	101	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	105	105	105	105	7	7
g / C, Green / Cycle	0.87	0.87	0.87	0.87	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.71	0.08	0.62	0.41	0.04	0.04
s, saturation flow rate [veh/h]	3140	1402	150	3140	1571	1402
c, Capacity [veh/h]	2736	1221	139	2736	97	87
d1, Uniform Delay [s]	3.46	1.08	33.04	1.68	54.66	55.23
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.86	0.15	22.61	0.58	5.05	10.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.09	0.67	0.47	0.56	0.72
d, Delay for Lane Group [s/veh]	6.33	1.24	55.65	2.26	59.71	66.05
Lane Group LOS	A	A	E	A	E	E
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.91	0.14	3.64	1.01	1.77	2.15
50th-Percentile Queue Length [ft]	97.75	3.56	91.04	25.22	44.16	53.69
95th-Percentile Queue Length [veh]	7.04	0.26	6.55	1.82	3.18	3.87
95th-Percentile Queue Length [ft]	175.95	6.42	163.87	45.40	79.49	96.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.33	1.24	55.65	2.26	59.71	66.05
Movement LOS	A	A	E	A	E	E
d_A, Approach Delay [s/veh]	6.08		5.87		63.09	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	7.75					
Intersection LOS	A					
Intersection V/C	0.758					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.474	3.392	2.176
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	6.074	5.270	4.132
Bicycle LOS	F	F	D

Sequence

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Brutsher St at Hayes St

Control Type:	Roundabout	Delay (sec / veh):	4.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Brutscher St			Brutscher St			Hayes St			Hayes St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brutscher St			Brutscher St			Hayes St			Hayes St		
Base Volume Input [veh/h]	38	113	16	10	44	37	27	50	31	3	14	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59
Growth Rate	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	3	0	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	130	18	12	51	43	31	60	36	3	17	6
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	35	5	3	14	11	8	16	10	1	5	2
Total Analysis Volume [veh/h]	47	138	19	13	54	46	33	64	38	3	18	6
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	112			69			71			221		
Exiting Flow Rate [veh/h]	78			66			58			174		
Demand Flow Rate [veh/h]	44	130	18	12	51	43	31	60	36	3	17	6
Adjusted Demand Flow Rate [veh/h]	47	138	19	13	54	46	33	64	38	3	18	6

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	208	115	138	28
Capacity of Entry and Bypass Lanes [veh/h]	1232	1287	1284	1101
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1213	1266	1264	1084
X, volume / capacity	0.17	0.09	0.11	0.02

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.60	0.29	0.36	0.08
95th-Percentile Queue Length [ft]	15.11	7.34	8.95	1.92
Approach Delay [s/veh]	4.41	3.57	3.72	3.53
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	3.97			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 4: Hayes at Werth

Control Type:	Roundabout	Delay (sec / veh):	3.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Werth			Werth			Hayes St			Providence Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Werth			Werth			Hayes St			Providence Dr		
Base Volume Input [veh/h]	1	0	2	0	0	7	2	45	12	19	26	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40
Growth Rate	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	3	0	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	2	0	0	8	2	55	14	22	31	1
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	0	0	3	1	18	4	7	10	0
Total Analysis Volume [veh/h]	1	0	3	0	0	10	3	71	18	28	40	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	78			73			30			4		
Exiting Flow Rate [veh/h]	75			43			30			3		
Demand Flow Rate [veh/h]	1	0	2	0	0	8	2	55	14	22	31	1
Adjusted Demand Flow Rate [veh/h]	1	0	3	0	0	10	3	71	18	28	40	1

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.95	0.95	0.95	0.95
Entry Flow Rate [veh/h]	5	11	97	73
Capacity of Entry and Bypass Lanes [veh/h]	1275	1282	1340	1375
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1210	1216	1271	1304
X, volume / capacity	0.00	0.01	0.07	0.05

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.01	0.02	0.23	0.17
95th-Percentile Queue Length [ft]	0.25	0.62	5.85	4.19
Approach Delay [s/veh]	3.00	3.03	3.42	3.18
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	3.29			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 5: Site Access at Providence Dr.

Control Type:	Two-way stop	Delay (sec / veh):	9.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Providence Dr		Providence Dr		Site Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Providence Dr		Providence Dr		Site Access	
Base Volume Input [veh/h]	0	47	46	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.54	0.54	0.54	0.54	0.54	0.54
Growth Rate	1.16	1.16	1.16	1.16	1.16	1.16
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	0	30	8	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	55	53	30	8	1
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	18	17	10	3	0
Total Analysis Volume [veh/h]	4	71	68	38	10	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	7.42	0.00	0.00	0.00	9.42	8.75
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.16	0.16	0.00	0.00	0.04	0.04
95th-Percentile Queue Length [ft]	3.96	3.96	0.00	0.00	1.00	1.00
d_A, Approach Delay [s/veh]	0.40		0.00		9.36	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.69					
Intersection LOS	A					

17-346 Newberg Surg. Ctr TIA

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Scenario 6 AM Future 17-346

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3/6/2017

Turning Movement Volume: Summary

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Hwy 99W at Providence Dr	2172	112	90	1247	53	61	3735

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Brutsher St at Hayes St	44	130	18	12	51	43	31	60	36	3	17	6	451

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Hayes at Werth	1	0	2	0	0	8	2	55	14	22	31	1	136

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
5	Site Access at Providence Dr.	3	55	53	30	8	1	150

17-346 Newberg Surg. Ctr TIA

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Scenario 6 AM Future 17-346

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3/6/2017

Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
1	Hwy 99W at Providence Dr	Final Base	1872	79	69	1075	41	50	3186
		Growth Rate	1.16	1.16	1.16	1.16	1.16	1.16	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	20	10	0	5	3	38
		Other	0	0	0	0	0	0	0
		Future Total	**2172**	**112**	**90**	**1247**	**53**	**61**	**3735**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Brutsher St at Hayes St	Final Base	38	113	16	10	44	37	27	50	31	3	14	5	388
		Growth Rate	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	3	0	0	1	0	4
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**44**	**130**	**18**	**12**	**51**	**43**	**31**	**60**	**36**	**3**	**17**	**6**	**451**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Hayes at Werth	Final Base	1	0	2	0	0	7	2	45	12	19	26	1	115
		Growth Rate	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	3	0	0	1	0	4
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**1**	**0**	**2**	**0**	**0**	**8**	**2**	**55**	**14**	**22**	**31**	**1**	**136**

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
5	Site Access at Providence Dr.	Final Base	0	47	46	0	0	0	93
		Growth Rate	1.16	1.16	1.16	1.16	1.16	1.16	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	3	0	0	30	8	1	42
		Other	0	0	0	0	0	0	0
		Future Total	**3**	**55**	**53**	**30**	**8**	**1**	**150**

17-346 Newberg Surg. Ctr TIA

Vistro File: J:\...\17-346 Newberg Ambulatory Surgery TIA.vistro

Scenario 6 AM Future 17-346

Report File: J:\...\17-346 Future 2032 AM.pdf

3/6/2017

Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
7: Newberg Surgery Ctr	Med/Dental Office Bldg	ITE 720	ksf	2.390	17.500	79.00	21.00	33	9	42	100.00
					Added Trips Total			**33**	**9**	**42**	**100.00**

17-346 Newberg Surg. Ctr TIA

Vistro File: J:\...\17-346 Newberg Ambulatory Surgery TIA.vistro

Scenario 6 AM Future 17-346

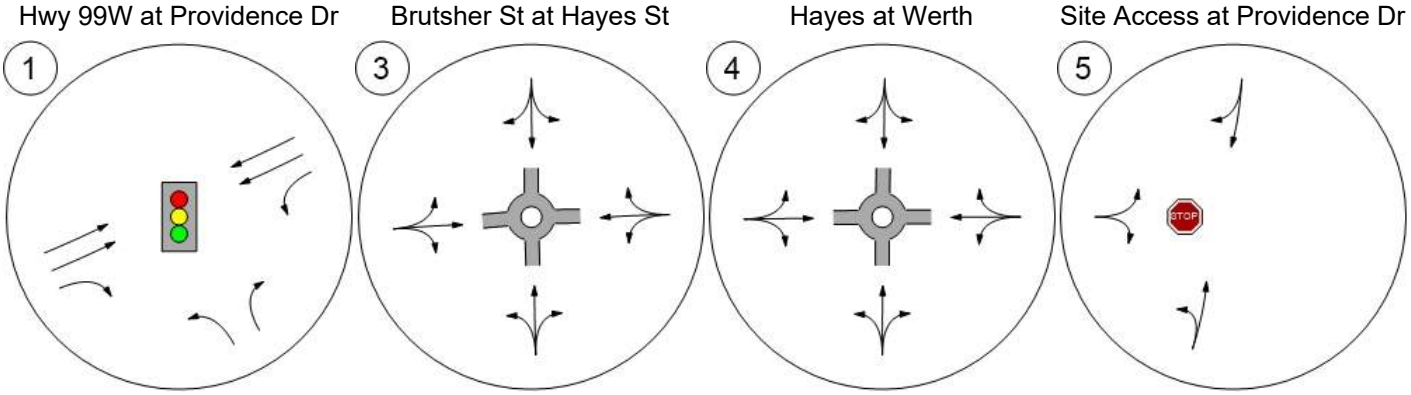
Report File: J:\...\17-346 Future 2032 AM.pdf

3/6/2017

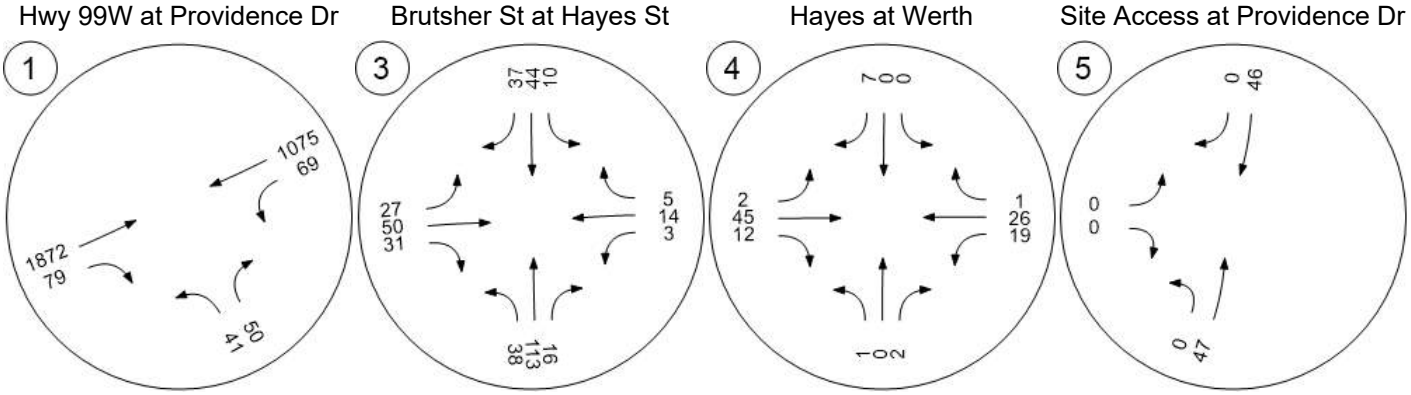
Trip Distribution summary

Zone / Gate	Zone 7: Newberg Surgery Ctr			
	To Newberg Surgery Ctr:		From Newberg Surgery Ctr:	
	Share %	Trips	Share %	Trips
1: Gate	60.00	20	60.00	5
2: Gate	30.00	10	30.00	3
3: Gate	10.00	3	10.00	1
4: Gate	0.00	0	0.00	0
5: Gate	0.00	0	0.00	0
6: Gate	0.00	0	0.00	0
8: Gate	0.00	0	0.00	0
9: Gate	0.00	0	0.00	0
Total	**100.00**	**33**	**100.00**	**9**

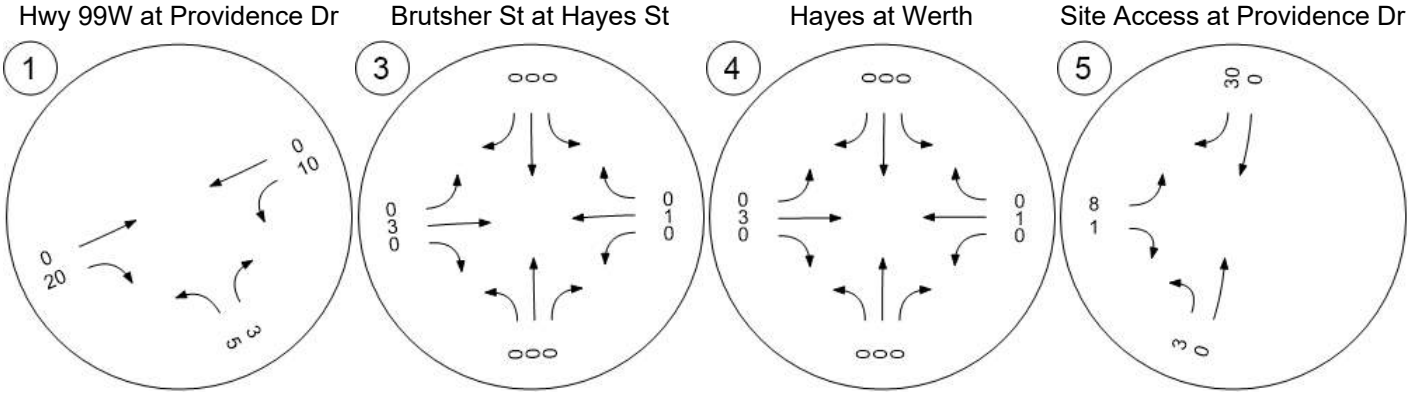
Report Figure 1: Lane Configuration and Traffic Control



Report Figure 2a: Traffic Volume - Base Volume

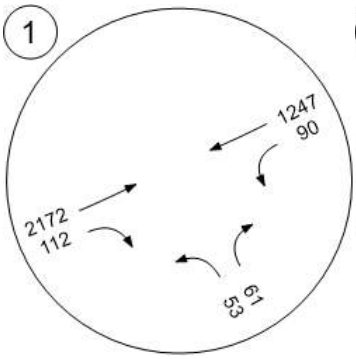


Report Figure 2c: Traffic Volume - Net New Site Trips

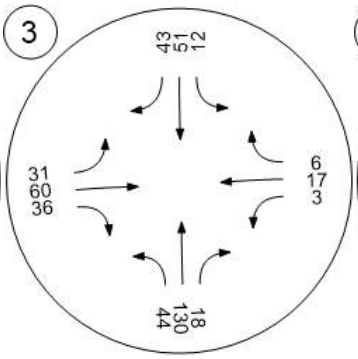


Report Figure 2e: Traffic Volume - Future Total Volume

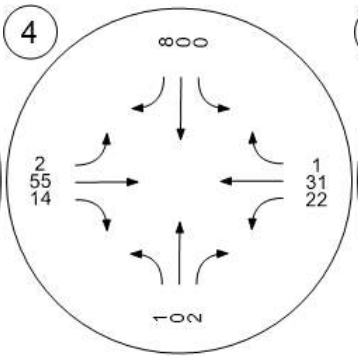
Hwy 99W at Providence Dr



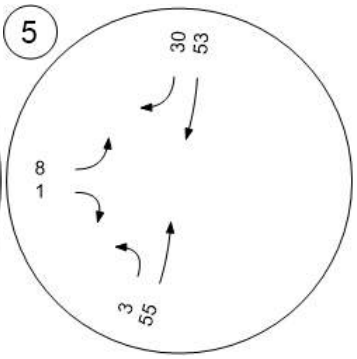
Brutsher St at Hayes St



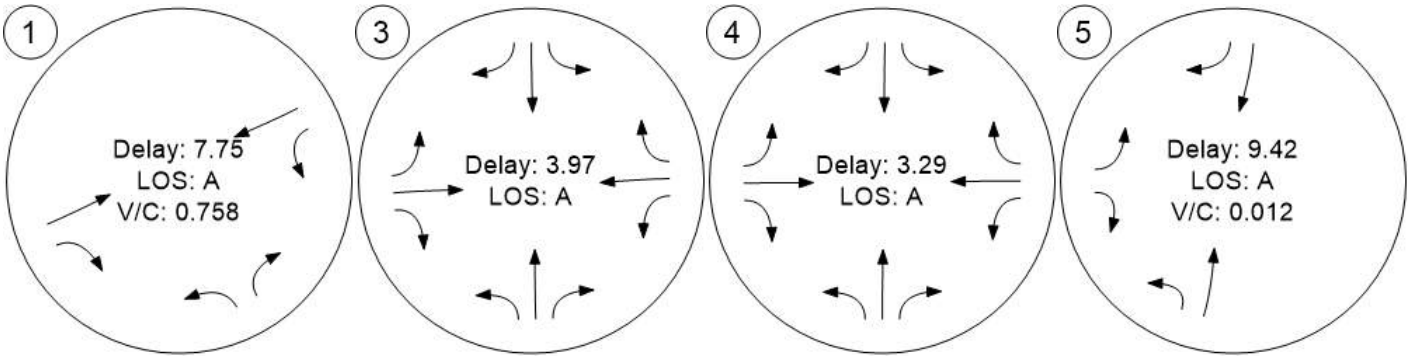
Hayes at Werth



Site Access at Providence Dr



Report Figure 3: Traffic Conditions



17-346 Newberg Surg. Ctr TIA

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Scenario 5 PM Future 17-346

Report File: J:\...\17-346 Future 2032 PM.pdf

3/6/2017

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 99W at Providence Dr	Signalized	HCM 6th Edition	SWB Left	0.839	17.6	B
3	Brutsher St at Hayes St	Roundabout	HCM 6th Edition	SB Right		5.0	A
4	Hayes at Werth	Roundabout	HCM 6th Edition	WB Thru		3.6	A
5	Site Access at Providence Dr.	Two-way stop	HCM 6th Edition	EB Left	0.069	10.3	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Hwy 99W at Providence Dr

Control Type:	Signalized	Delay (sec / veh):	17.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.839

Intersection Setup

Name	Hwy 99W		Hwy 99W		Providence Dr	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	1	0
Pocket Length [ft]	100.00	75.00	100.00	100.00	150.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Hwy 99W		Hwy 99W		Providence Dr	
Base Volume Input [veh/h]	1207	31	79	1789	78	96
Base Volume Adjustment Factor	1.0850	1.0850	1.0850	1.0850	1.0850	1.0850
Heavy Vehicles Percentage [%]	3.27	3.27	3.27	3.27	3.27	3.27
Growth Rate	1.16	1.16	1.16	1.16	1.16	1.16
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	5	0	26	14
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1520	49	105	2252	125	135
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	396	13	27	586	33	35
Total Analysis Volume [veh/h]	1583	51	109	2346	130	141
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	8	0	7	4	5	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	27	0	44	71	19	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	59	59	8	71	11	11
g / C, Green / Cycle	0.66	0.66	0.09	0.79	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.50	0.04	0.07	0.74	0.08	0.10
s, saturation flow rate [veh/h]	3172	1416	1587	3172	1587	1416
c, Capacity [veh/h]	2084	930	138	2500	195	174
d1, Uniform Delay [s]	10.57	5.49	40.31	7.75	37.73	38.47
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.66	0.11	9.70	8.40	3.90	8.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.05	0.79	0.94	0.67	0.81
d, Delay for Lane Group [s/veh]	13.23	5.60	50.01	16.15	41.63	47.16
Lane Group LOS	B	A	D	B	D	D
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	8.66	0.29	2.63	10.67	2.94	3.44
50th-Percentile Queue Length [ft]	216.56	7.33	65.69	266.81	73.54	85.99
95th-Percentile Queue Length [veh]	13.49	0.53	4.73	16.03	5.30	6.19
95th-Percentile Queue Length [ft]	337.24	13.19	118.25	400.75	132.38	154.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.23	5.60	50.01	16.15	41.63	47.16
Movement LOS	B	A	D	B	D	D
d_A, Approach Delay [s/veh]	13.00		17.65		44.51	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	17.58					
Intersection LOS	B					
Intersection V/C	0.839					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45
l_p,int, Pedestrian LOS Score for Intersection	3.688	3.524	2.058
Crosswalk LOS	D	D	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	45.00	45.00	45.00
l_b,int, Bicycle LOS Score for Intersection	5.480	6.158	4.132
Bicycle LOS	F	F	D

Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Brutsher St at Hayes St

Control Type:	Roundabout	Delay (sec / veh):	5.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Brutscher St			Brutscher St			Hayes St			Hayes St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brutscher St			Brutscher St			Hayes St			Hayes St		
Base Volume Input [veh/h]	52	67	12	21	99	140	44	30	42	14	78	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76
Growth Rate	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	2	0	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	78	14	24	115	162	51	37	49	16	95	35
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	21	4	6	31	44	14	10	13	4	26	9
Total Analysis Volume [veh/h]	65	84	15	26	124	174	55	40	53	17	102	38
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	123			187			170			208		
Exiting Flow Rate [veh/h]	67			170			143			141		
Demand Flow Rate [veh/h]	60	78	14	24	115	162	51	37	49	16	95	35
Adjusted Demand Flow Rate [veh/h]	65	84	15	26	124	174	55	40	53	17	102	38

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	167	330	151	160
Capacity of Entry and Bypass Lanes [veh/h]	1218	1141	1161	1117
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1197	1121	1141	1098
X, volume / capacity	0.14	0.29	0.13	0.14

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.47	1.21	0.45	0.50
95th-Percentile Queue Length [ft]	11.87	30.15	11.15	12.47
Approach Delay [s/veh]	4.17	5.96	4.28	4.54
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	5.00			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 4: Hayes at Werth

Control Type:	Roundabout	Delay (sec / veh):	3.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Werth			Werth			Hayes St			Providence Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Werth			Werth			Hayes St			Providence Dr		
Base Volume Input [veh/h]	10	0	7	2	0	3	17	30	9	11	105	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59
Growth Rate	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	2	0	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	0	8	2	0	3	20	37	10	13	127	7
Peak Hour Factor	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	0	3	1	0	1	6	12	3	4	40	2
Total Analysis Volume [veh/h]	15	0	10	3	0	4	25	47	13	16	161	9
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	76			195			19			41		
Exiting Flow Rate [veh/h]	51			179			16			25		
Demand Flow Rate [veh/h]	12	0	8	2	0	3	20	37	10	13	127	7
Adjusted Demand Flow Rate [veh/h]	15	0	10	3	0	4	25	47	13	16	161	9

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	26	8	87	189
Capacity of Entry and Bypass Lanes [veh/h]	1277	1132	1354	1324
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1257	1114	1332	1304
X, volume / capacity	0.02	0.01	0.06	0.14

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.06	0.02	0.20	0.50
95th-Percentile Queue Length [ft]	1.52	0.47	5.11	12.44
Approach Delay [s/veh]	3.02	3.29	3.21	3.94
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	3.64			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 5: Site Access at Providence Dr.

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.069

Intersection Setup

Name	Providence Dr		Providence Dr		Site Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Providence Dr		Providence Dr		Site Access	
Base Volume Input [veh/h]	0	40	122	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.59	1.59	1.59	1.59	1.59	1.59
Growth Rate	1.16	1.16	1.16	1.16	1.16	1.16
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	0	15	40	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	46	142	15	40	5
Peak Hour Factor	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	15	45	5	13	2
Total Analysis Volume [veh/h]	3	58	180	19	51	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.07	0.01
d_M, Delay for Movement [s/veh]	7.62	0.00	0.00	0.00	10.30	9.62
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.14	0.14	0.00	0.00	0.25	0.25
95th-Percentile Queue Length [ft]	3.48	3.48	0.00	0.00	6.19	6.19
d_A, Approach Delay [s/veh]	0.37		0.00		10.23	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.91					
Intersection LOS	B					

17-346 Newberg Surg. Ctr TIA

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Scenario 5 PM Future 17-346

Report File: J:\...\17-346 Future 2032 PM.pdf

3/6/2017

Turning Movement Volume: Summary

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Hwy 99W at Providence Dr	1520	49	105	2252	125	135	4186

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Brutsher St at Hayes St	60	78	14	24	115	162	51	37	49	16	95	35	736

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Hayes at Werth	12	0	8	2	0	3	20	37	10	13	127	7	239

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
5	Site Access at Providence Dr.	2	46	142	15	40	5	250

17-346 Newberg Surg. Ctr TIA

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Scenario 5 PM Future 17-346

Report File: J:\...\17-346 Future 2032 PM.pdf

3/6/2017

Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
1	Hwy 99W at Providence Dr	Final Base	1310	34	86	1941	85	104	3560
		Growth Rate	1.16	1.16	1.16	1.16	1.16	1.16	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	10	5	0	26	14	55
		Other	0	0	0	0	0	0	0
		Future Total	**1520**	**49**	**105**	**2252**	**125**	**135**	**4186**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Brutsher St at Hayes St	Final Base	52	67	12	21	99	140	44	30	42	14	78	30	629
		Growth Rate	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	2	0	0	5	0	7
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**60**	**78**	**14**	**24**	**115**	**162**	**51**	**37**	**49**	**16**	**95**	**35**	**736**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Hayes at Werth	Final Base	10	0	7	2	0	3	17	30	9	11	105	6	200
		Growth Rate	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	2	0	0	5	0	7
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**12**	**0**	**8**	**2**	**0**	**3**	**20**	**37**	**10**	**13**	**127**	**7**	**239**

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
5	Site Access at Providence Dr.	Final Base	0	40	122	0	0	0	162
		Growth Rate	1.16	1.16	1.16	1.16	1.16	1.16	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	2	0	0	15	40	5	62
		Other	0	0	0	0	0	0	0
		Future Total	**2**	**46**	**142**	**15**	**40**	**5**	**250**

17-346 Newberg Surg. Ctr TIA

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Scenario 5 PM Future 17-346

Report File: J:\...\17-346 Future 2032 PM.pdf

3/6/2017

Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
7: Newberg Sugery Ctr	Med/Dental Office	ITE 720	ksf	3.570	17.500	28.00	72.00	17	45	62	100.00
					Added Trips Total			**17**	**45**	**62**	**100.00**

17-346 Newberg Surg. Ctr TIA

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Scenario 5 PM Future 17-346

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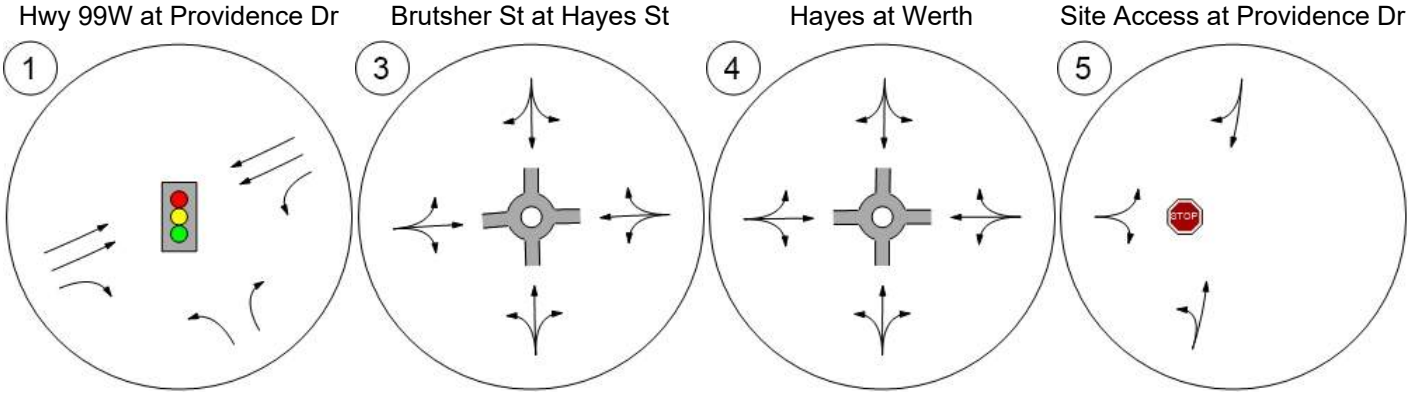
3/6/2017

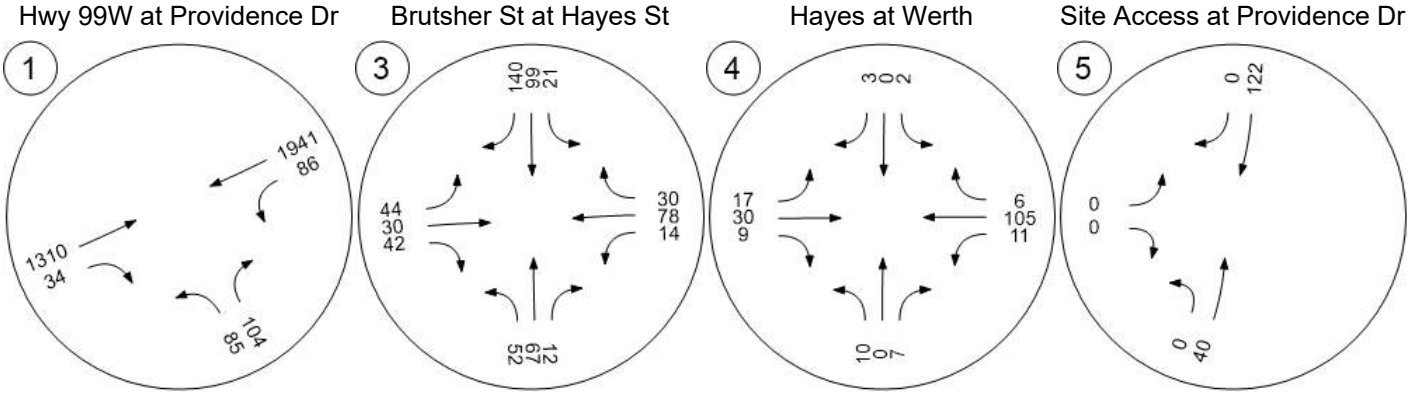
Trip Distribution summary

Zone / Gate	Zone 7: Newberg Sugery Ctr			
	To Newberg Sugery Ctr:		From Newberg Sugery Ctr:	
	Share %	Trips	Share %	Trips
1: Gate	60.00	10	60.00	26
2: Gate	30.00	5	30.00	14
3: Gate	10.00	2	10.00	5
4: Gate	0.00	0	0.00	0
5: Gate	0.00	0	0.00	0
6: Gate	0.00	0	0.00	0
8: Gate	0.00	0	0.00	0
9: Gate	0.00	0	0.00	0
Total	**100.00**	**17**	**100.00**	**45**

Report Figure 1: Lane Configuration and Traffic Control

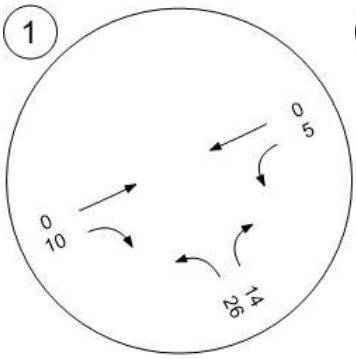


Report Figure 2a: Traffic Volume - Base Volume

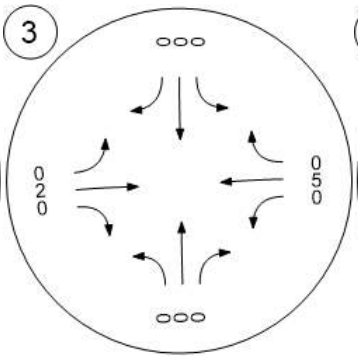


Report Figure 2c: Traffic Volume - Net New Site Trips

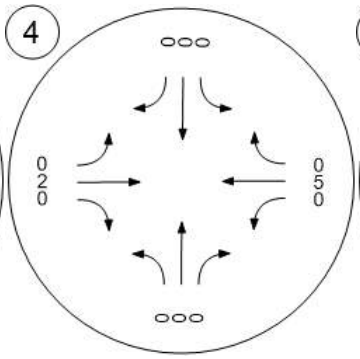
Hwy 99W at Providence Dr



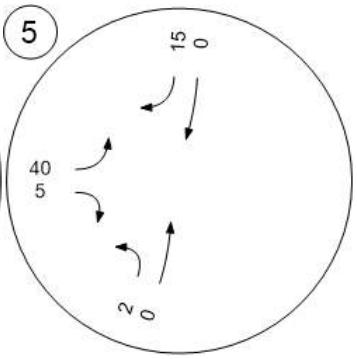
Brutsher St at Hayes St



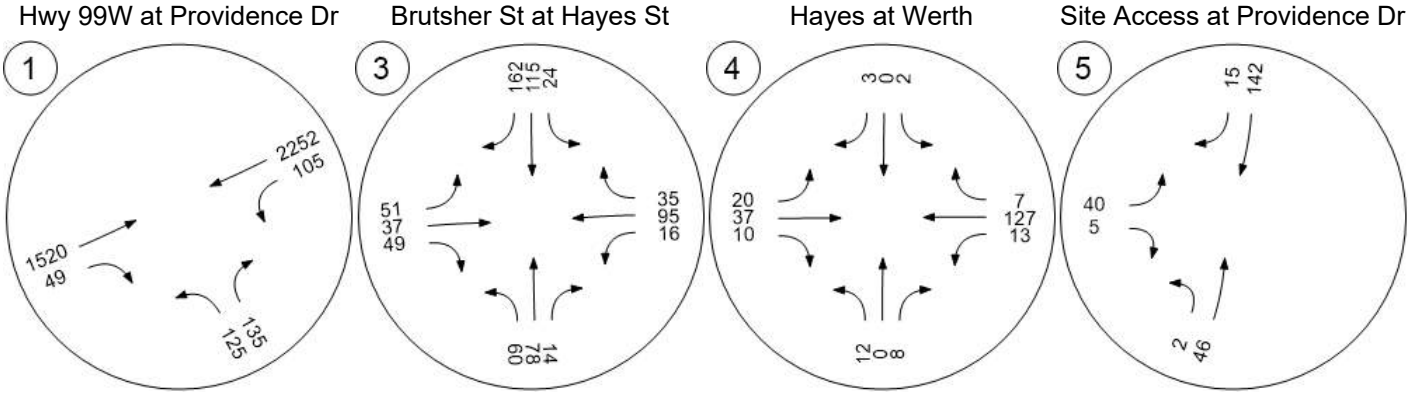
Hayes at Werth



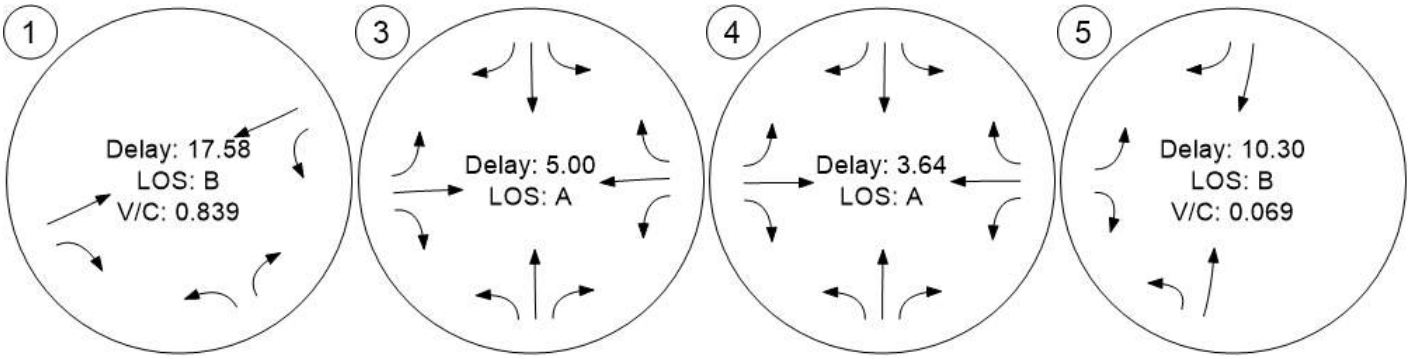
Site Access at Providence Dr



Report Figure 2e: Traffic Volume - Future Total Volume



Report Figure 3: Traffic Conditions



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P 503.228.5230 F 503.273.8169

TRAFFIC IMPACT STUDY

Date: March 27, 2018 Project #: 22340

To: Doug Rux & Kaaren Hofman, City of Newberg
Weston York, Providence Health & Services
Scott Harris & Tom Wesel, JRJ

From: Chris Brehmer, PE and Jacki Gulczynski
Project: Providence Medical Office Building
Subject: Traffic Analysis

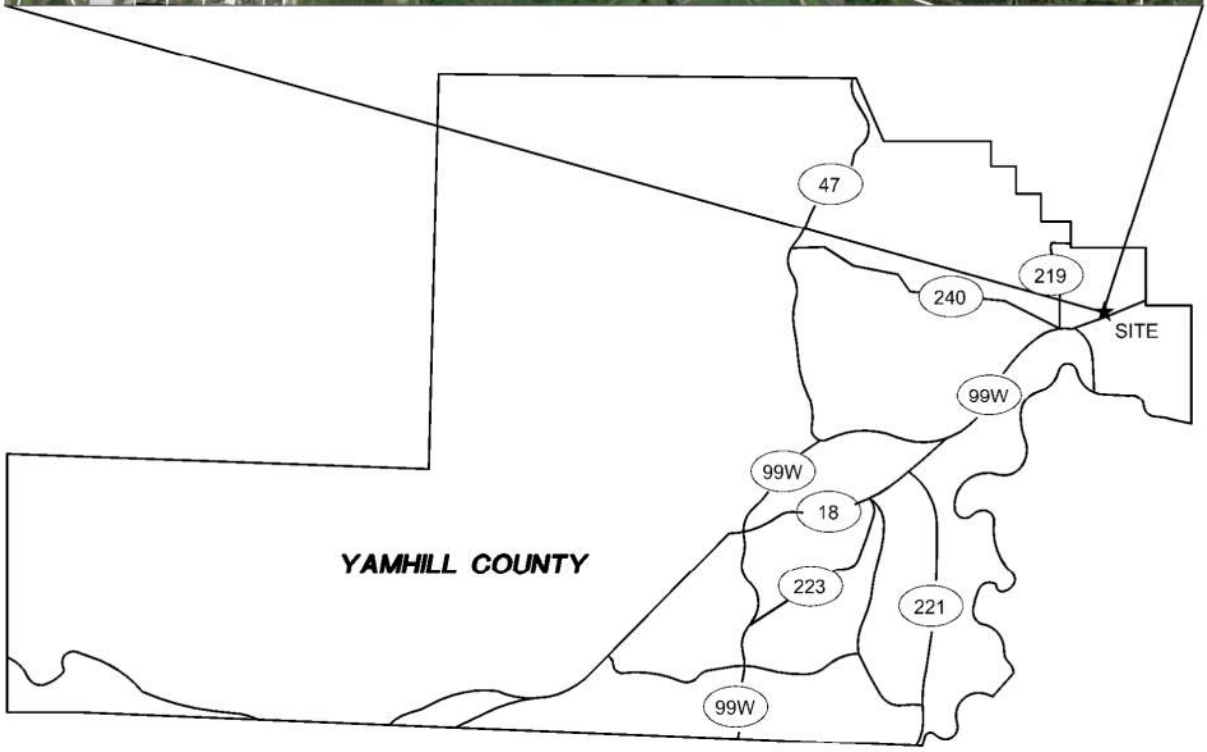
Providence Health & Services (herein referred to as "Providence") is proposing a 63,000 square feet expansion to its existing Medical Center in Newberg. As proposed, the new building would be constructed to the east of the existing campus, across Providence Drive. The property is currently vacant and to the north of the Chehalem Glenn Golf Course and south of Oregon 99W. The new building is anticipated to be constructed and occupied in 2019. This traffic study addresses the transportation-related impacts associated with the new building, in compliance with the Chapter 5 of the City of Newberg's Public Works Design and Construction Standards.

Based on the analysis herein, there are no off-site capacity needs associated with the new building and a southbound left-turn lane is not warranted at the proposed Providence Drive site driveways. We recommend that Providence locate and maintain all future landscaping, above-ground utilities, and site signage to ensure minimum required sight lines are provided at all site access points, internal intersections, and at the potential mid-block pedestrian crossing of Providence Drive.

At the request of City staff, we evaluated the need for an eastbound right-turn deceleration lane at the existing right-in, left-in access on Oregon 99W to the Medical Center. Although not warranted by the occupancy of the new building, the existing volumes at the access meet ODOT guidance for installation of a right-turn deceleration lane.

INTRODUCTION

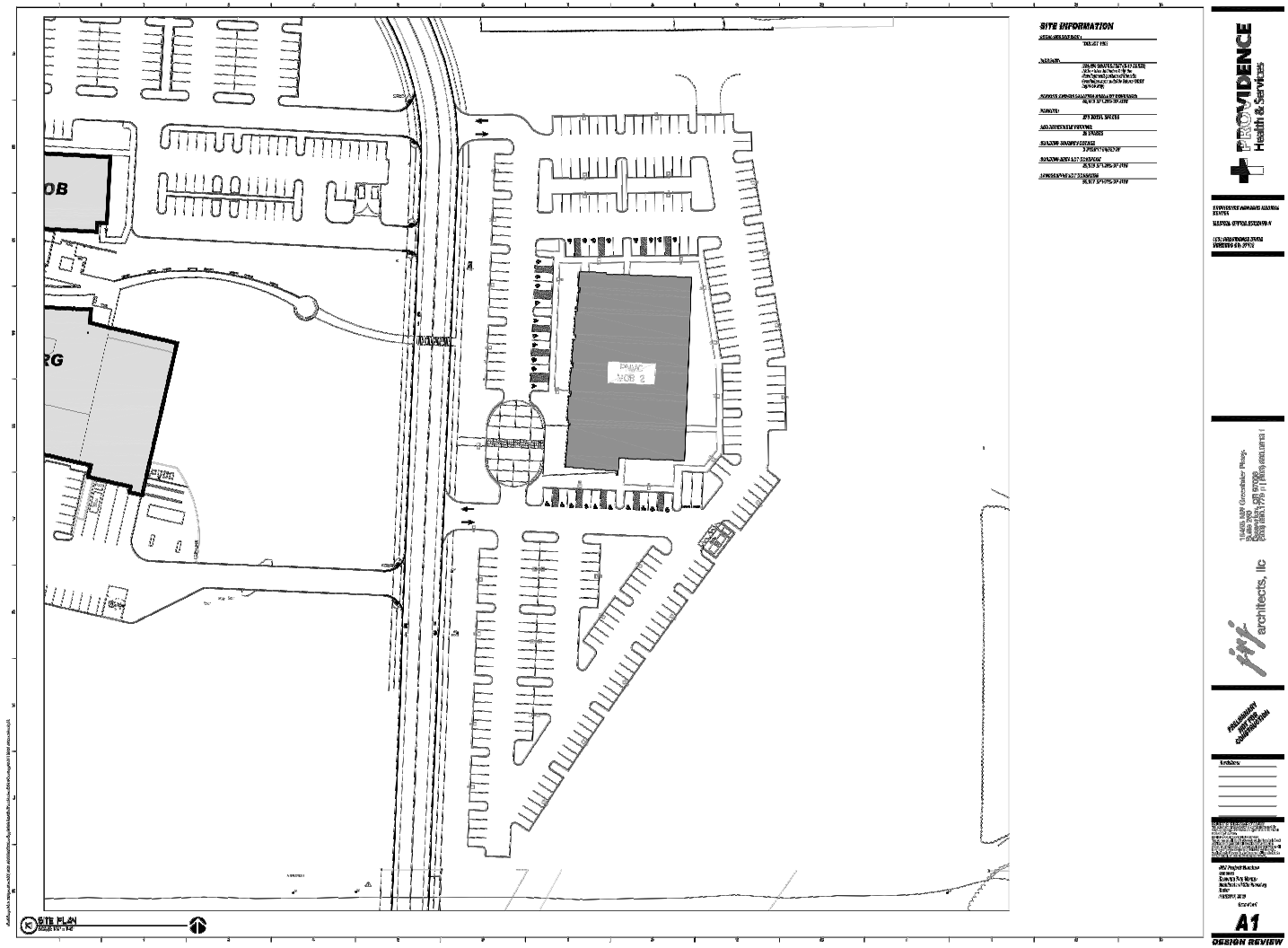
Providence is proposing up to 63,000 square feet expansion to its existing Newberg Medical Center (PNMC). Today, the campus is located to the west of Providence Drive and south of Oregon 99W and includes 180,080 square feet of hospital and medical office space. PNMC is currently served by a right-in, left-in access on Oregon 99W and four full accesses along Providence Drive. The new building will be located to the east of Providence Drive and will be served by two access points, one of which will align with an existing campus access. Figure 1 shows the site vicinity of the campus and Figure 2 shows the proposed site plan for the campus.



● # - Study Intersection

Site Vicinity
Newberg, Oregon

Figure
1



Site Plan Provided by JRJ Architects, LLC 03/20/2017

Proposed Site Plan
Newberg, Oregon

Figure
2

SCOPE OF THE REPORT

This report identifies the transportation-related impacts associated with the proposed PNMC campus expansion and was prepared in accordance with City of Newberg Traffic Analysis requirements (per Section 5.4 of the Public Works Design and Construction standards). Per City requirements, a traffic analysis is required when a development is anticipated to generate more than 40 weekday PM peak hour trips and must include the following:

- Executive summary;
- Description of site and study area roadways (as defined by those expected to experience a traffic volume increase of 5% due to the development);
- Bike, pedestrian, and transit needs;
- Off-site traffic evaluation of affected intersections (conducted for the weekday AM and PM peak hour under existing and year 2019 conditions);
- On-site traffic evaluation of accesses, circulation and parking;
- Recommendations for public improvements; and,
- The need for access management, as appropriate.

Based on scoping direction provided by the City of Newberg and Oregon Department of Transportation (ODOT) staff, the affected intersections included in this study are:

1. Oregon 99W/Providence Drive
2. Providence Drive/Existing PNMC North Driveway
3. Providence Drive/Existing PNMC Middle Driveway/Proposed Campus Expansion Access
4. Providence Drive/Existing PNMC South Driveway
5. Providence Drive/Campus Expansion Access
6. Providence Drive/Existing PNMC Shipping and Receiving Driveway
7. Oregon 99W/PNMC right-in, left-in access
8. Providence Drive-Hayes Street/Werth Boulevard
9. Brutscher Street/Werth Boulevard
10. E Fernwood Road/Brutscher Street

Analysis Methodology

The intersection operational analyses presented in this report were prepared following *Highway Capacity Manual 2000* (Reference 1) analysis procedures using Synchro 9 software (ODOT requires *Highway Capacity Manual 2000* analysis of signalized intersections on ODOT facilities). The unsignalized Highway 99W right-in, left-in only access and the Providence Drive-Hayes Street/Werth Boulevard roundabout were analyzed following the *Highway Capacity Manual 2010*.

Operating Standards

Intersection performance measures reported in this study include level of service (LOS), volume-to-capacity ratio (v/c), and delay. Queuing at the proposed accesses for the expansion area are also assessed. Intersection operating standards adopted by the respective transportation review authorities for the facilities they operate and maintain are summarized in this section.

City of Newberg

The City requires level of service "D" with maximum volume to capacity (v/c) ratio of 0.90. All study intersections are under City jurisdiction except Oregon 99W/Providence Drive.

ODOT

ODOT classifies Oregon 99W as a statewide freight route. With a 45 mile per hour posted speed, the applicable mobility target for the Oregon 99W/Providence Drive intersection is a v/c ratio of 0.80 per the Oregon Highway Plan.

EXISTING CONDITIONS

This section summarizes the existing characteristics of the transportation system and adjacent land uses near the PNMC campus, including an inventory of the existing multimodal transportation facilities and options, an evaluation of existing intersection operations for motor vehicles at the study intersections, and a summary of recent crash history.

Site Conditions and Adjacent Land Uses

The campus is located adjacent to Providence Drive and south of Oregon 99W. The expansion will occur east of Providence Drive. Commercial uses are located to the west of the campus whereas the Chehalem Glenn golf course and residential uses are located to the south.

Transportation Facilities

Table 1 summarizes the study area roadways. Figure 3 illustrates the existing lane configurations and traffic control at the study intersections.

Table 1. Street Characteristics in Site Vicinity

Street	Classification[1]	Vehicle Travel Lanes	Posted Speed (mph)	Pedestrian Facilities	Bicycle Facilities
Oregon 99W	Statewide Freight Route	5	45	South side	Yes
Providence Drive	Major Collector	2	25	Yes	Yes
Brutscher Street	Major Collector	2 – 3	25	Yes	Yes
Hayes Street	Major Collector	2	25	Yes	No
Werth Boulevard	Local Street	2	25	West side	No
Fernwood Road	Major Collector	2	25	North side	No

[1]Per the City of Newberg Transportation System Plan (Reference 2).

Pedestrian Facilities

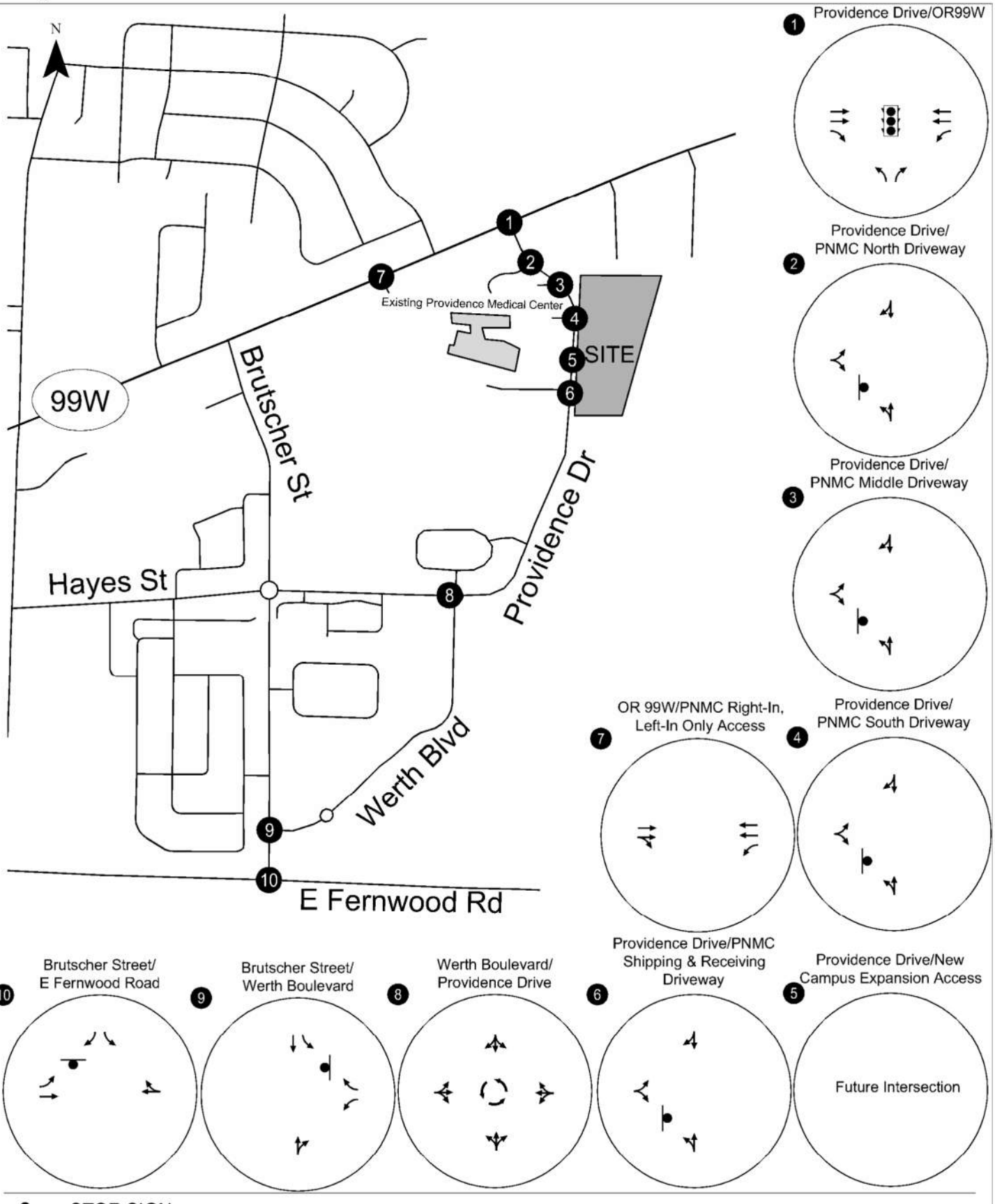
As shown in Table 1, sidewalks are generally provided along the study area roadways connecting the hospital campus to the adjacent commercial and residential areas. In addition, marked crossings are provided along Providence Drive near the campus access points as well as at key points along other study area roadways, such as Brutscher Street.

Bicycle Facilities

Bike lanes are generally provided along study area roadways. No modifications to the existing bicycle infrastructure is anticipated as part of the campus expansion.

Transit Facilities

Yamhill County Transit (YCTA) operates fixed transit route and dial-a-ride service in Newberg. Route 7 includes a stop within the Providence campus, providing convenient transit access for Providence employees, patients, and visitors. Service is provided on hourly headways between 7 AM and 7 PM on weekdays only.



Study Intersections & Traffic Control Devices
Newberg, Oregon

Figure 3

Existing Conditions Operational Analysis

Manual turning movement counts were collected at the study intersections on a mid-week day in February 2018 when school was in session and no inclement weather conditions occurred that would affect typical traffic patterns. These counts were collected approximately one month after the first phase of the Newberg-Dundee Bypass was opened to traffic. Per scoping directions, the traffic counts were conducted during the morning (7:00 AM to 9:00 AM) and evening (4:00 PM to 6:00 PM) peak time periods. Further, per ODOT Analysis Procedures Manual (APM, Reference 3) requirements, the traffic counts were seasonally adjusted. Figures 4 and 5 summarize the seasonally adjusted traffic volumes at the study intersections during the weekday AM and PM peak hours, respectively. *Appendix "A" contains the traffic count worksheets.*

The figures also reflect the operational analysis for the study intersections during the weekday AM and PM peak hours. As shown, all City intersections and PNMC accesses operate acceptably today during the weekday AM and PM peak hours. The Providence Drive/Oregon 99W exceeds ODOT's mobility target of 0.80 and operates with a v/c ratio of 0.82 during both peak hours. *Appendix "B" includes the operations analysis worksheets for the Existing Conditions analysis.*

Traffic Safety

The crash history of each study intersection was reviewed to identify potential intersection safety issues. Crash data for the study intersections was obtained from the Oregon Department of Transportation (ODOT) for the five-year period from January 1, 2011 through December 31, 2015. Table 2 summarizes the crashes reported at the study intersections. *Appendix "C" contains the ODOT crash data.*

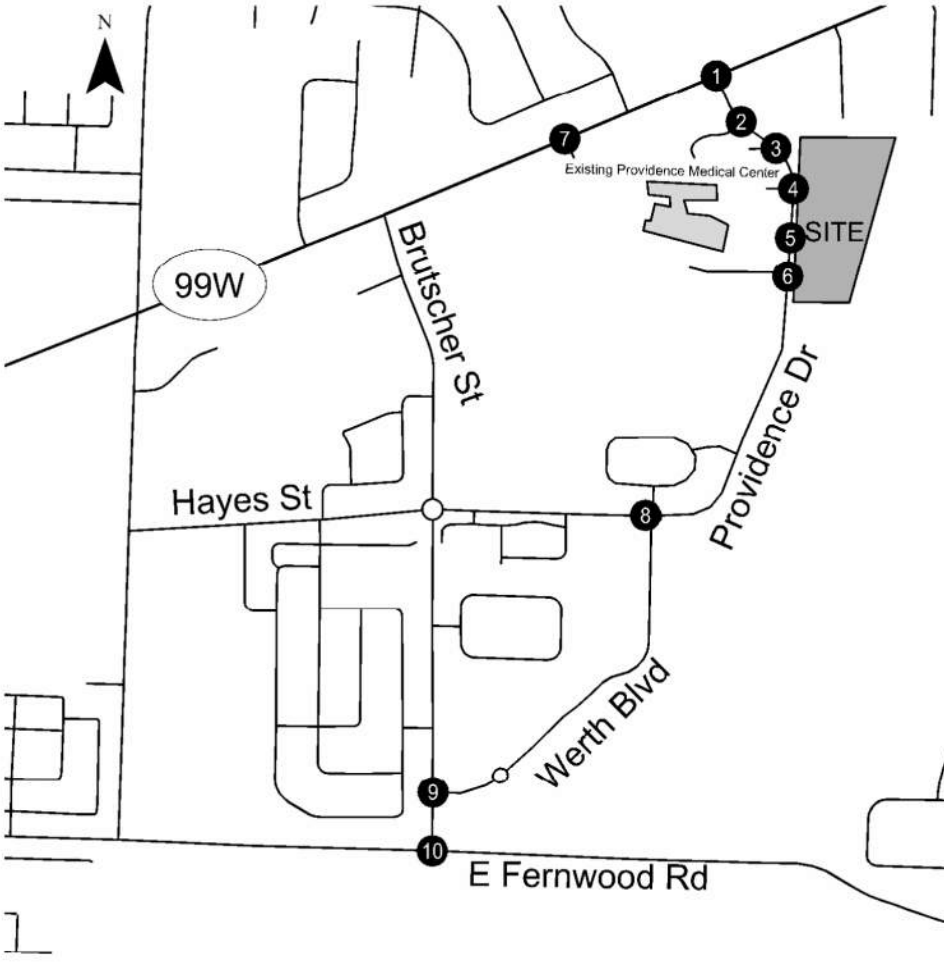
Table 2. Intersection Crash History (January 1, 2011 through December 31, 2015)

Location	Collision Type					Severity		Total Crashes	Crash Rate[2]	Statewide 90th-percentile Crash Rate[4]	Observed Crash Rate > Statewide 90th-percentile?
	Turning	Fixed Object	Rear End	Sideswipe	Angle	PDO[1]	Injury				
Oregon 99W/ Providence Drive	0	0	11	0	0	8	3	11	0.17	0.87	No
Providence Drive/ Hayes Street	0	0	0	0	0	0	0	0	0.0	1.53	No
Brutscher Street/ Werth Boulevard	0	0	0	0	0	0	0	0	0.0	1.53	No
Fernwood Road/ Brutscher Street	1	0	0	0	0	1	0	1	0.11	1.53	No

[1]PDO – Property damage only

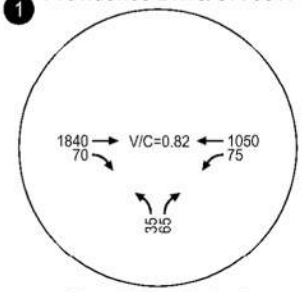
[2]Crash rate per million entering vehicles

As shown in Table 2, the observed crash rate at each intersection was compared to the statewide 90th-percentile crash rate for similar intersection types, consistent with the ODOT APM. None of the observed crash rates at the study intersections exceed the statewide 90th-percentile crash rates. As such, no safety-related mitigation measures are recommended as part of the campus expansion.

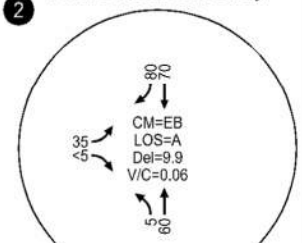


CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = CRITICAL MOVEMENT LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL CRITICAL VOLUME-TO-CAPACITY RATIO

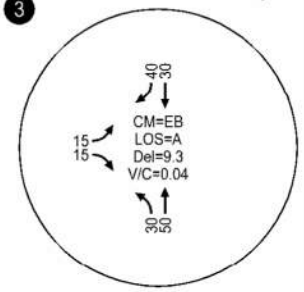
1 Providence Drive/OR 99W



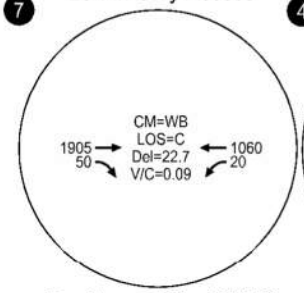
2 Providence Drive/ PNMC North Driveway



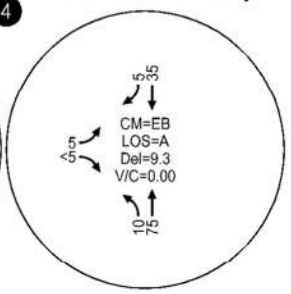
3 Providence Drive/ PNMC Middle Driveway



7 OR 99W/PNMC Right-In, Left-In Only Access



4 Providence Drive/ PNMC South Driveway



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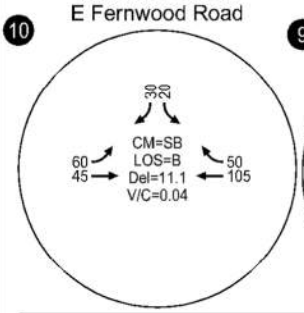

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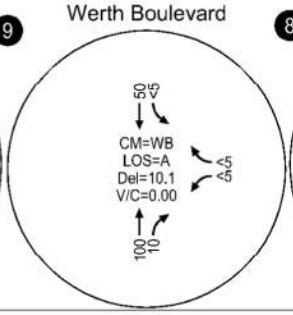

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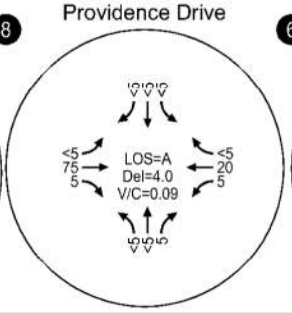

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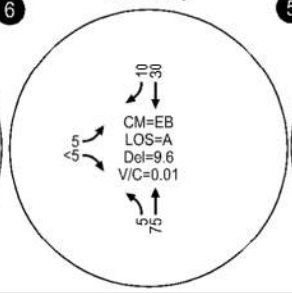
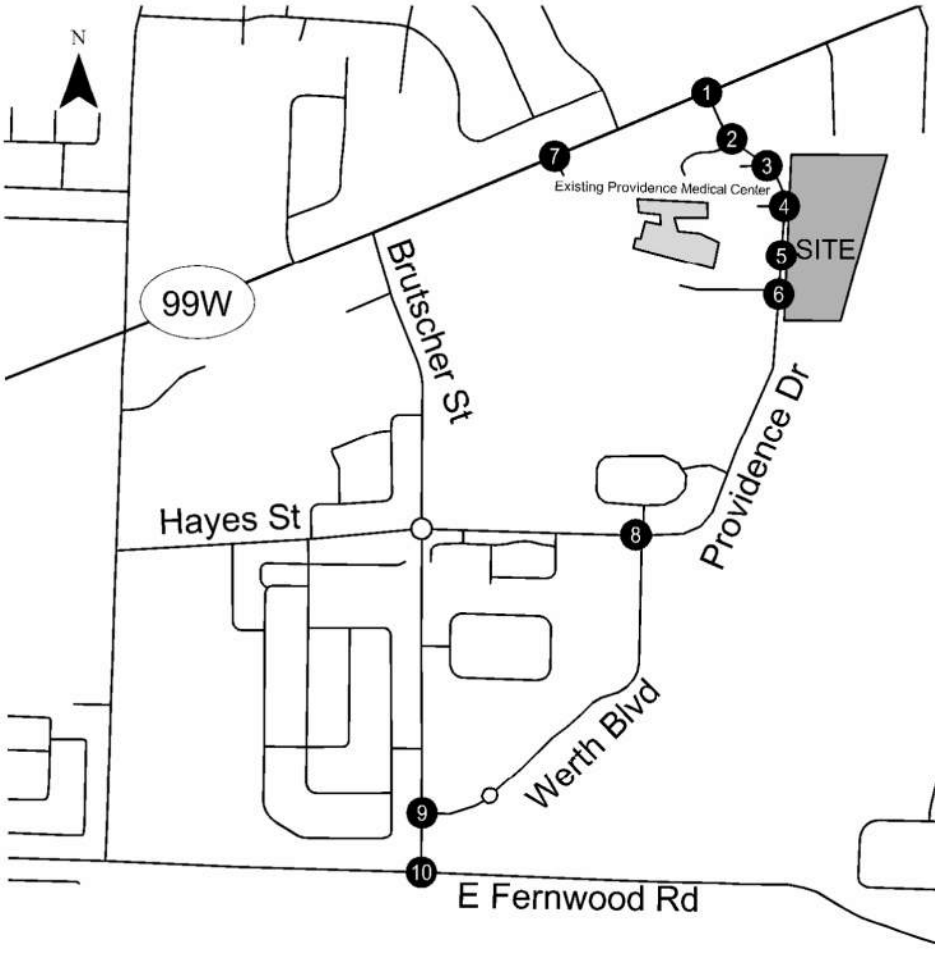


5 Providence Drive/New Campus Expansion Access

Future Intersection

Existing Traffic Conditions, Weekday AM Peak Hour
Newberg, Oregon

Figure 4



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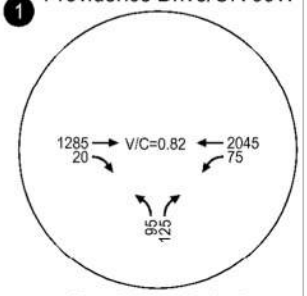
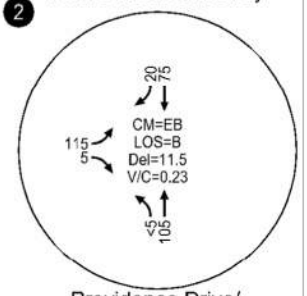
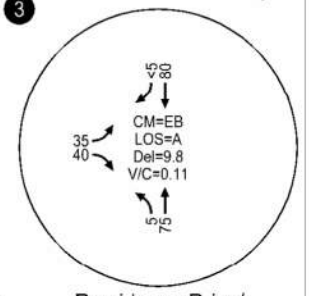
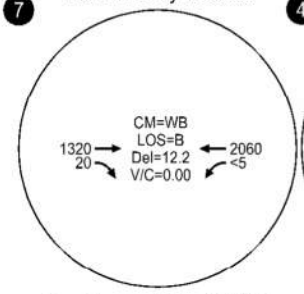
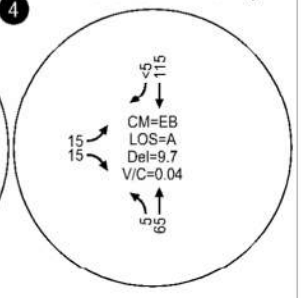
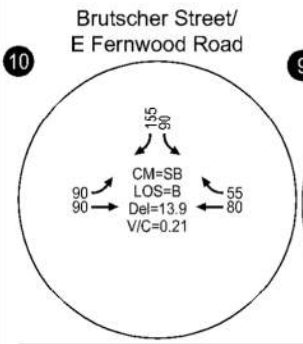


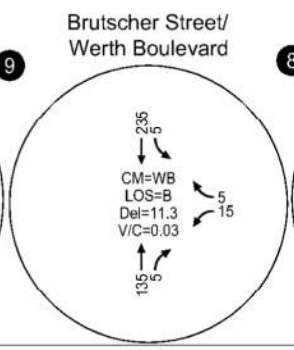


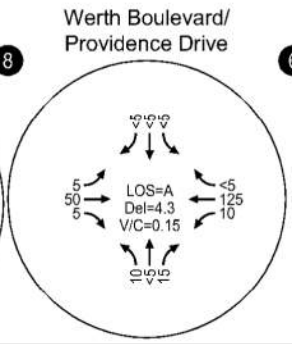


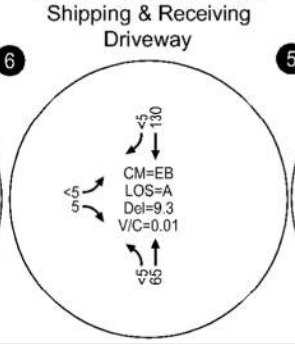


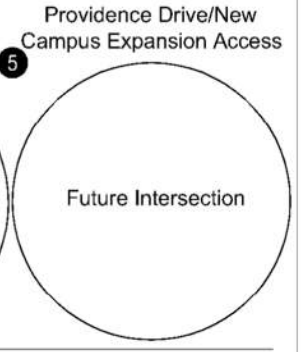












Existing Traffic Conditions, Weekday PM Peak Hour
Newberg, Oregon

Figure 5

TRAFFIC IMPACT ANALYSIS

The traffic impact analysis identifies how the study area's transportation system will operate in 2019 when the new building is expected to be occupied. This section of the report addresses the following elements:

- Build-out year 2019 background traffic conditions during the weekday AM and PM peak periods, considering in-process developments and planned transportation improvements in the study area;
- Trip generation and distribution estimates for the proposed campus expansion;
- Build-out year 2019 total traffic conditions during the weekday AM and PM peak assuming occupancy of the proposed expansion;
- Site access and circulation evaluation (including turn lane warrants);
- Providence Drive pedestrian crosswalk evaluation; and,
- Recommended improvements/intersection considerations.

2019 Background Operational Analysis

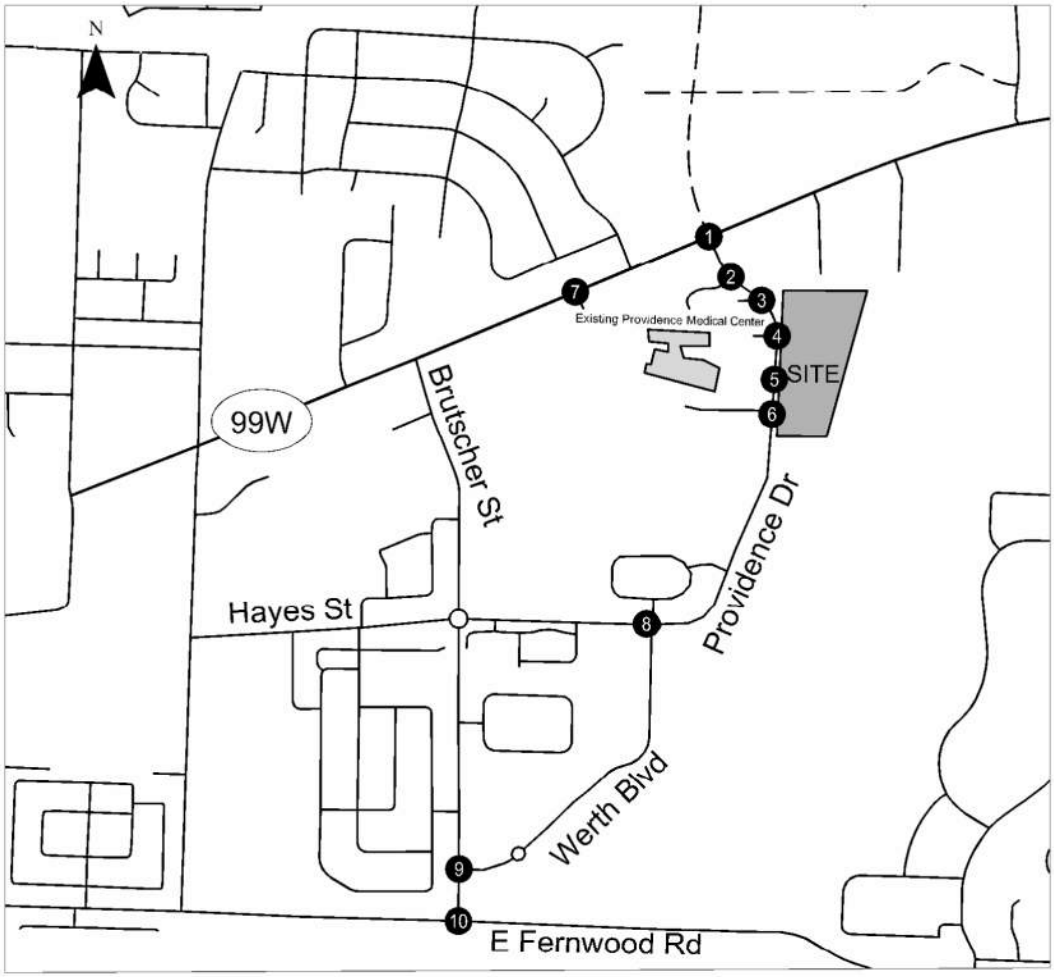
Background traffic volumes include trips from new development in the vicinity as well as general regional growth. The year 2019 analyses include a background annual growth rate of two percent at each study intersection, as well as traffic generated by two in-process developments identified by City and ODOT staff, including:

- Oregon Clinic; and,
- Crestview Crossing.

As part of the Crestview Crossing development, JT Smith will be extending Crestview Drive to the intersection of Oregon 99W/Providence Drive. Per direction from City staff, this improvement was also included in the analysis of year 2019 background conditions.

Figures 6 and 7 summarize the background traffic volumes at the study intersections during the weekday AM and PM peak hours, respectively. These figures also summarize the operational analysis for the study intersections during the weekday AM and PM peak hours. As shown, all City intersections and PNMC accesses are forecast to continue operating acceptably during both peak hours. With the Crestview Drive extension to Oregon 99W and the increase in background traffic volumes, the intersection of Providence Drive/Oregon 99W/Crestview Drive is forecast to operate at a v/c ratio of 0.95 during the weekday AM peak hour and 0.98 during the weekday PM peak hour.

Appendix "D" includes the operations analysis worksheets for the 2019 Background Conditions analysis, as well as a summary of the in-process traffic volumes and assumptions associated with the extension of Crestview Drive to the Oregon 99W/Providence Drive intersection.



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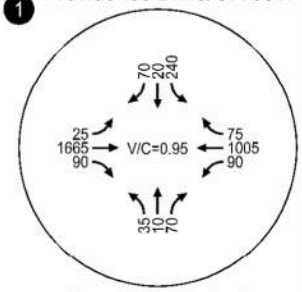

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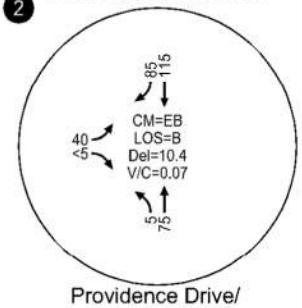

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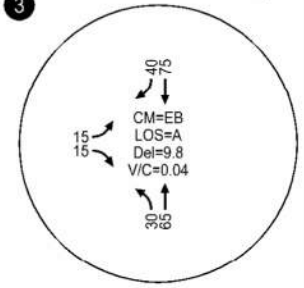

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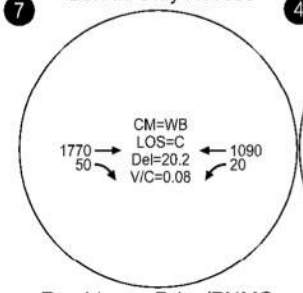

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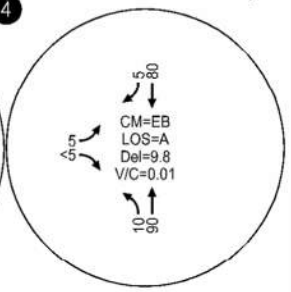

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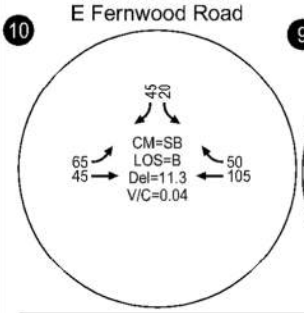

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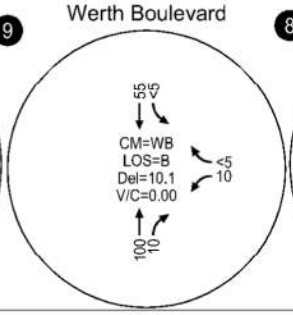

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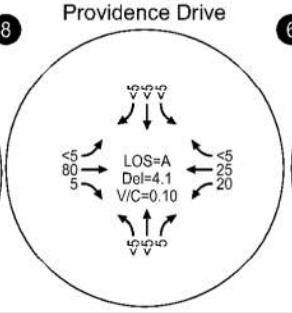

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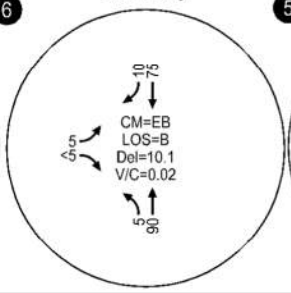
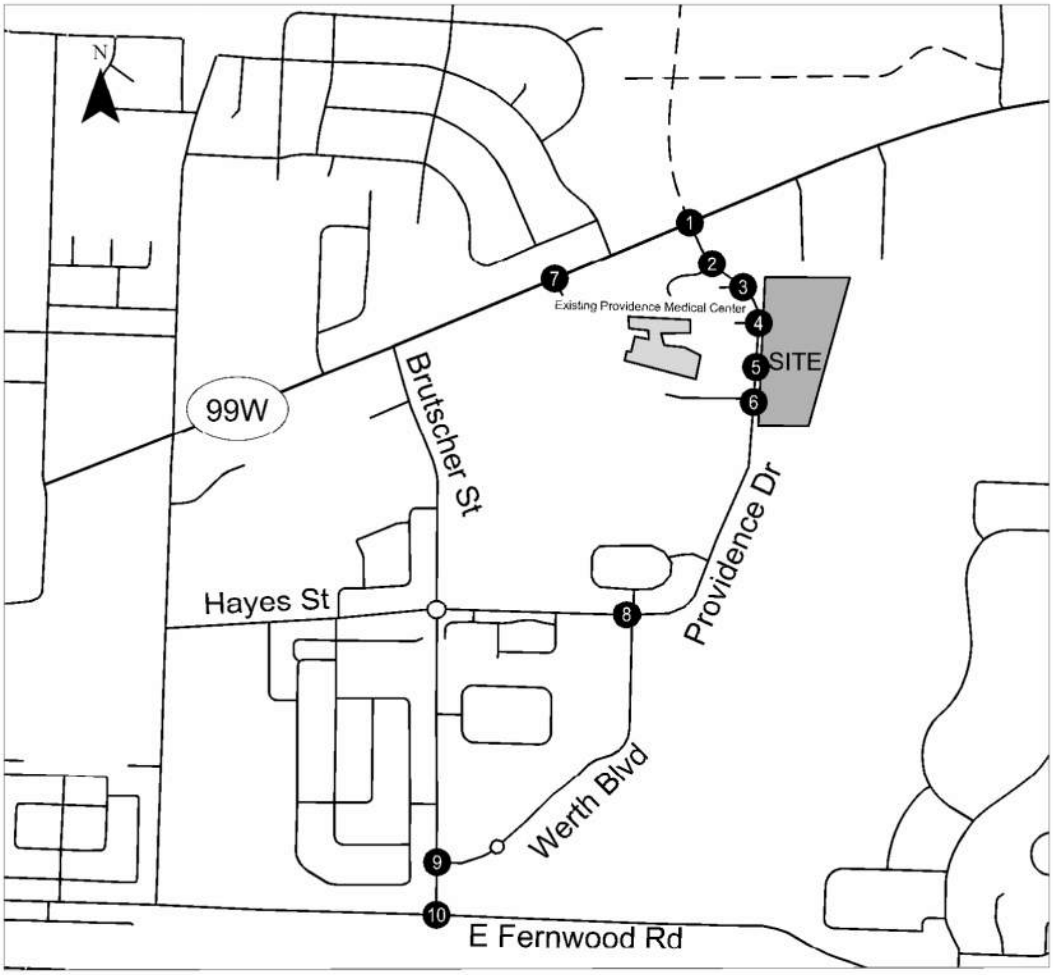


5 Providence Drive/New Campus Expansion Access

Future Intersection

Background Traffic Conditions, Weekday AM Peak Hour
Newberg, Oregon

Figure 6



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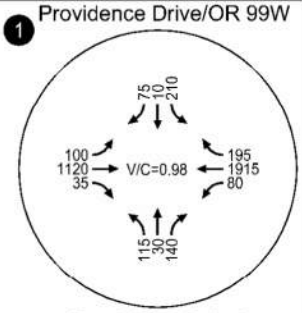
1 Providence Drive/OR 99W



Providence Drive/ PNMC North Driveway

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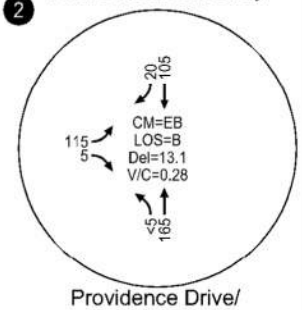

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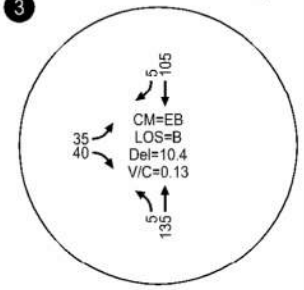

OR 99W/ PNMC Right-In, Left-In Only Access

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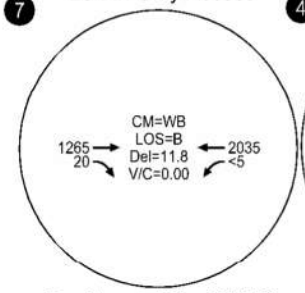

Providence Drive/ PNMC South Driveway

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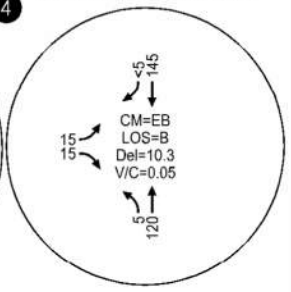

Brutscher Street/ E Fernwood Road

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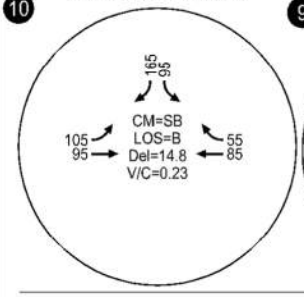

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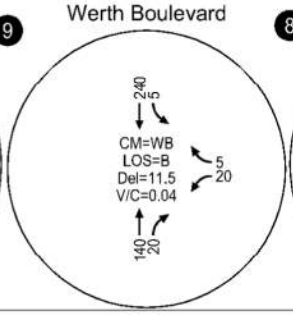

Werth Boulevard/ Providence Drive

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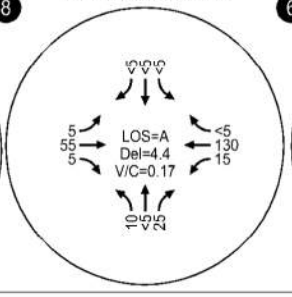

Providence Drive/PNMC Shipping & Receiving Driveway

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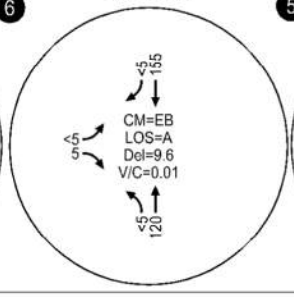


Providence Drive/New Campus Expansion Access

5

Future Intersection

Background Traffic Conditions, Weekday PM Peak Hour
Newberg, Oregon

Figure 7

Trip Generation Estimate

Recent studies conducted at other hospital campuses in the state have shown that it is most appropriate to identify an overall hospital campus rate, rather than trying to separate out the trip generation by use (e.g., hospital, medical office building, administrative office, etc.). These studies have shown that there is a synergy and efficiency that is gained by a campus between the main hospital, medical office buildings and ancillary uses[1].

We used the traffic counts at the four existing campus accesses along Providence Drive and the right-in, left-in access on Oregon 99W during the weekday AM (7 – 9 AM) and PM (4 – 6 PM) peak periods to determine the current campus trip rate for PNMC. An existing PNMC trip generation rate was developed by dividing the total number of vehicles observed at the driveways by the total size of the existing buildings (i.e., 180,080 square feet). This rate was applied to the new building for purposes of the traffic impact analysis. Table 3 summarizes the existing campus rate whereas Table 4 shows the estimated trip generation for the expansion area.[2]

Table 3. Existing Campus Trip Generation

Land Use	Data Source	Size (square feet)	Total Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total Trips	In	Out	Total Trips	In	Out
Existing Campus	Based on Driveway Counts	180,080	Not Measured	291 (1.62 trips per 1,000 sq. ft.)	222 (76% in)	69 (24% out)	246 (1.37 trips per 1,000 sq. ft.)	53 (22% in)	193 (78% out)

Table 4. Estimated Trip Generation for Campus Expansion

Land Use	Site Rates	Size	Total Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total Trips	In	Out	Total Trips	In	Out
Hospital Expansion	N/A	63,000	n/a	102	78	24	86	19	67

[1] Sources: *Portland Providence Medical Center Transportation Impact Analysis*, June 2011; *Providence Willamette Falls Medical Center Transportation Impact Analysis*, August 2011; *PeaceHealth Southwest Public Facilities Master Plan*, February 2015; *Adventist Medical Center Conditional Use Master Plan*, February 2018.

[2] For reference purposes, the hospital trip generation rates in *Trip Generation Manual* (10th Edition, Institute of Transportation Engineers) reflect a weekday AM peak hour rate of 0.89 trips per 1,000 square feet and a weekday PM peak hour rate of 0.97 trips per 1,000 square feet versus the PNMC measured rates of 1.62 weekday AM and 1.37 weekday PM trips per 1,000 square feet.

Trip Distribution and Assignment

Figure 8 illustrates the estimated trip distribution pattern, as well as the assignment of site-generated trips during the weekday AM and PM peak hours. The trip distribution pattern was calculated based on existing traffic patterns associated with PNMC. To ensure a conservative analysis of site-generated trip capacity impacts to off-site study intersections, no vehicle trips were assumed between the proposed building and the existing Providence campus.

2019 Total Traffic Operational Analysis

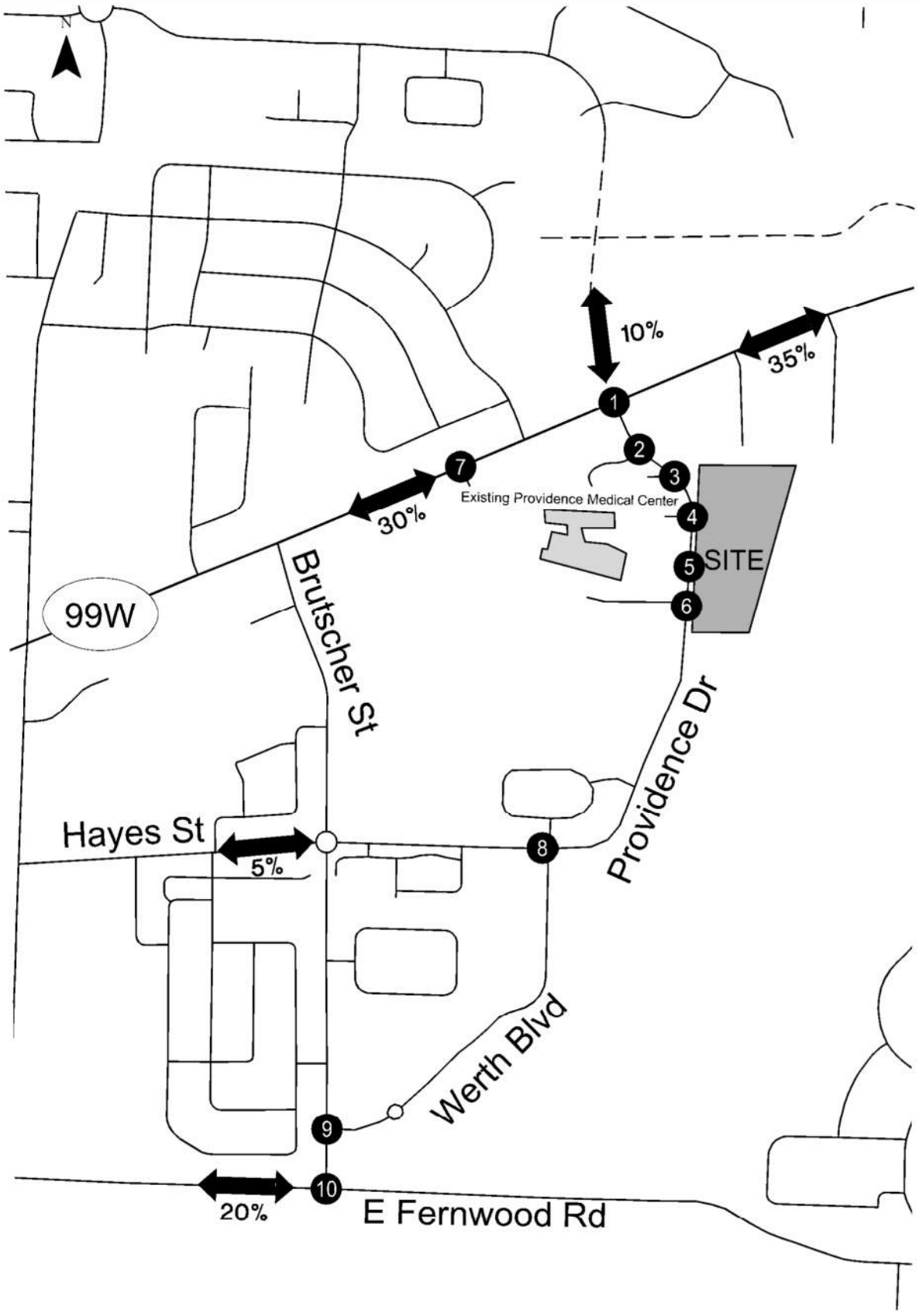
Total traffic volumes include the site-generated trips in addition to the 2019 background traffic volumes. The background traffic volumes shown in Figures 6 and 7 were added to the site-generated trips shown in Figure 8 arrive at the 2019 total traffic volumes shown in Figures 9 and 10 for the weekday AM and PM peak hours, respectively. These figures also summarize the operational analysis for the study intersections during the weekday AM and PM peak hours.

As shown, all City intersections are forecast to continue operating acceptably during both peak hours. With the addition of the traffic from the new building, the intersection of Providence Drive/Oregon 99W/Crestview Drive is forecast to operate at a v/c ratio of 0.96 during the weekday AM peak hour and 0.98 during the weekday PM peak hour. A comparison of the operational results shown in Figures 6 and 7 with those reflected in Figures 9 and 10 reveals that the v/c ratio during the weekday AM peak hour is anticipated to increase by 0.01 as a result of the new building whereas the v/c ratio during the PM peak hour is anticipated to remain the same as background conditions (although a small increase in delay is anticipated upon occupancy of the new building). Per ODOT policy guidance, when an intersection exceeds mobility targets, but the v/c ratio increases by less than 0.03 due to development, the impacts are not considered significant[3]. Based on this policy, no mitigation measures are warranted at this intersection. *Appendix "E" includes the year 2019 total traffic operations worksheets.*

Left-Turn Lane Warrant Analysis

As discussed above, two accesses are proposed to serve the new building along Providence Drive. One will align with the Middle PNMC access (i.e., Intersection 3 in the figures) and one will be located between the South access (Intersection 4 in the figures) and the PNMC Shipping and Receiving access (Intersection 5 in the figures). Based on scoping direction from the City, we evaluated the need for a southbound left-turn lane at both new access points. Based on year 2019 traffic volumes and APM procedures, a southbound left-turn-lane is not warranted at either location. *Appendix "F" includes the turn lane warrant analysis worksheets.*

[3] Source: May 25, 20011 Oregon Department of Transportation Memorandum from Matthew Garrett, Director. Subject: Oregon Highway Plan Policy Intent Statements



Providence Drive/OR 99W

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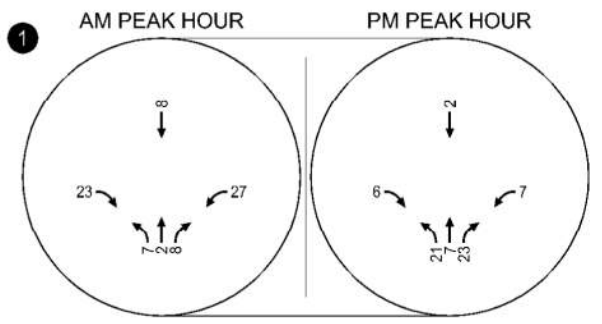

Providence Drive/PNMC North Driveway

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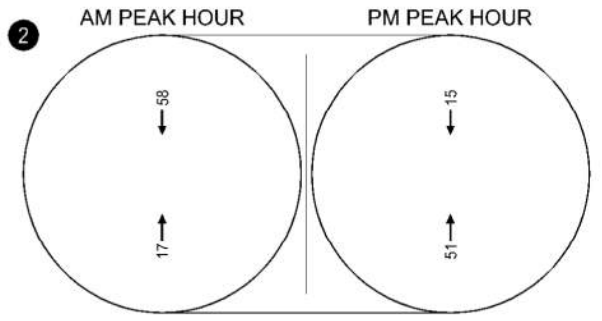

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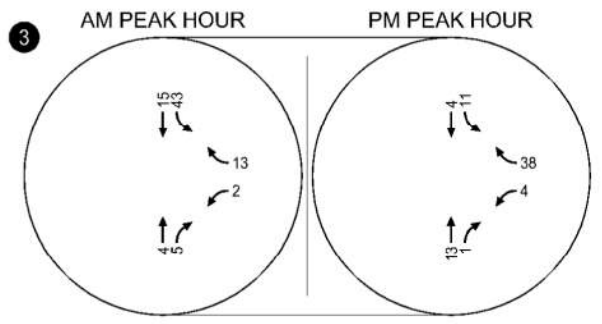

Providence Drive/PNMC South Driveway

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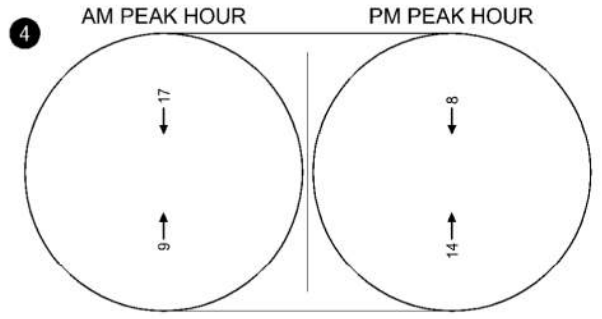
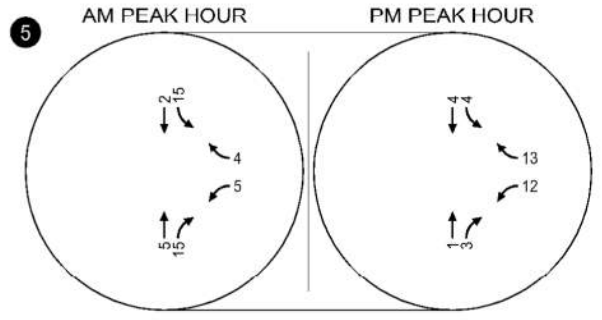


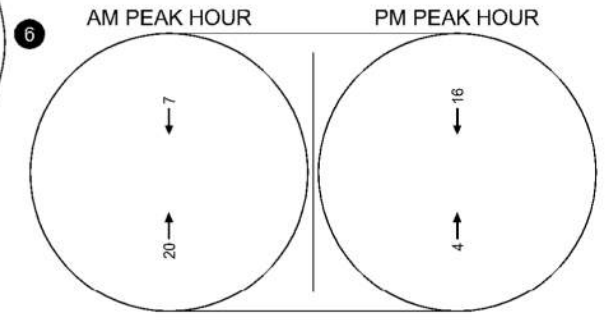
Providence Drive/New Campus Expansion

5



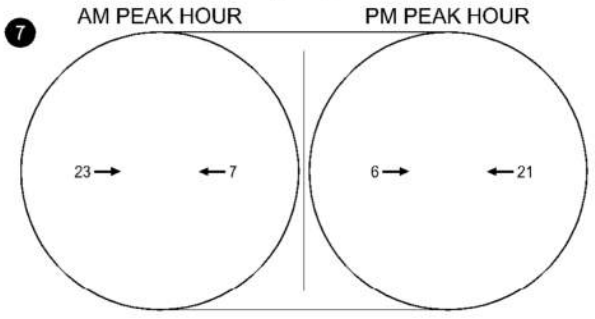
Providence Drive/PNMC Shipping & Receiving Driveway

6



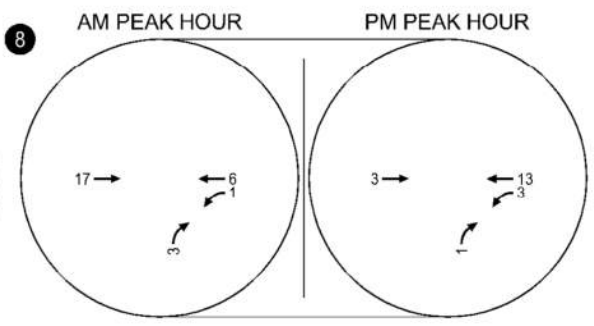
OR 99W/PNMC Right-In, Left-In Only Access

7



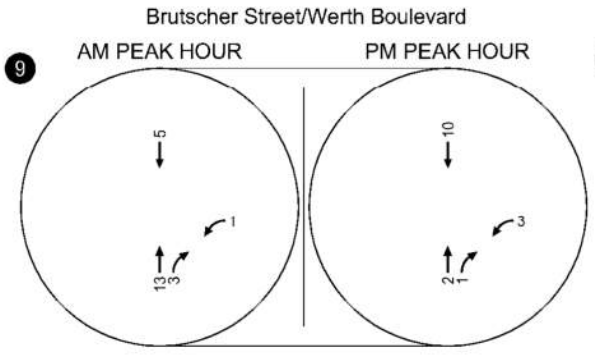
Werth Boulevard/Providence Drive

8



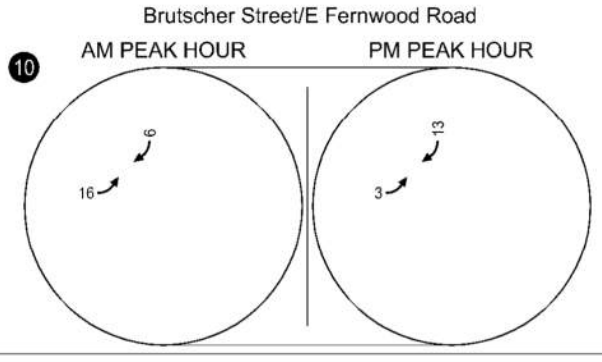
Brutscher Street/Werth Boulevard

9



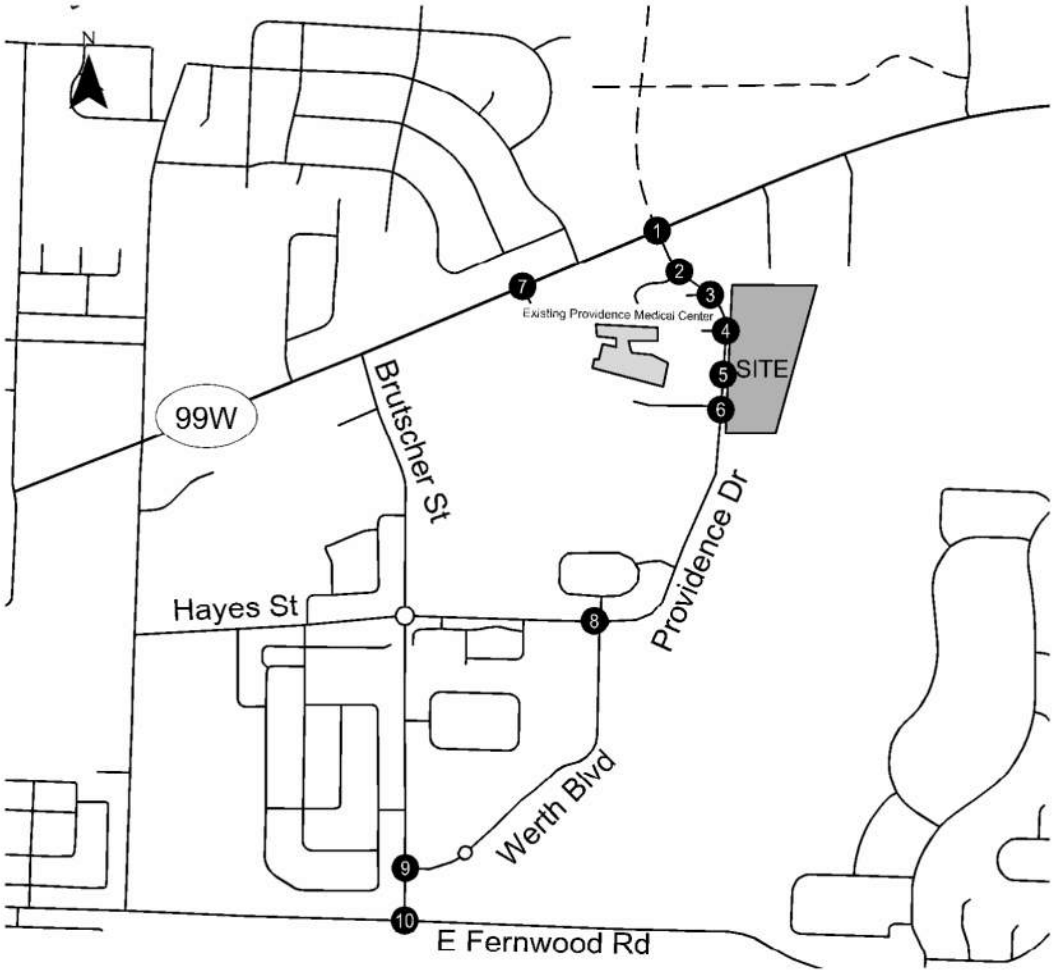
Brutscher Street/E Fernwood Road

10



Estimated Trip Distribution Pattern and Assignment
Newberg, Oregon

Figure
8



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LOS = CRITICAL MOVEMENT LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
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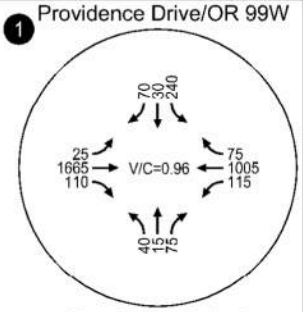
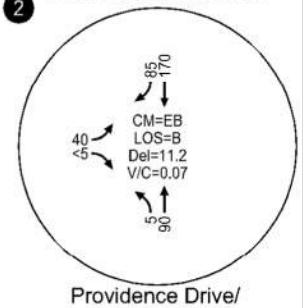
V/C = CRITICAL CRITICAL VOLUME-TO-CAPACITY RATIO

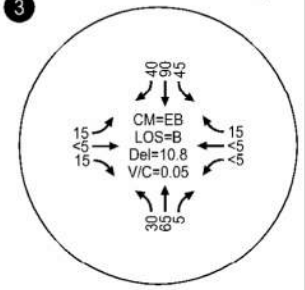
1 Providence Drive/OR 99W



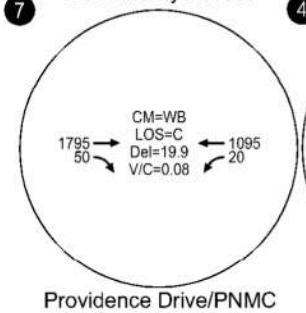
Providence Drive/ PNMC North Driveway



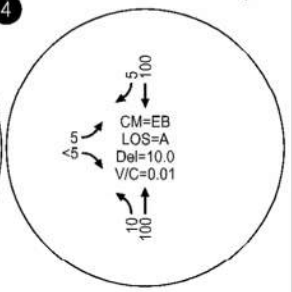
Providence Drive/ PNMC Middle Driveway



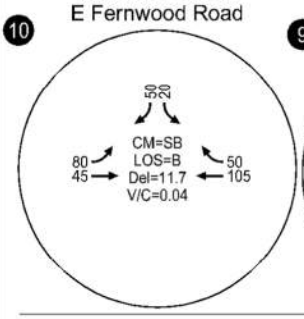
7 OR 99W/ PNMC Right-In, Left-In Only Access



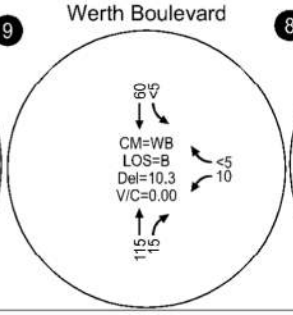
4 Providence Drive/ PNMC South Driveway



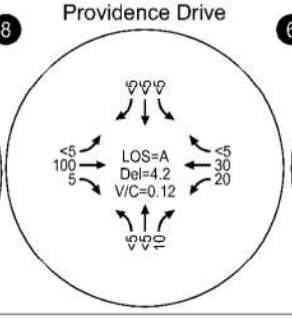
10 Brutscher Street/ E Fernwood Road



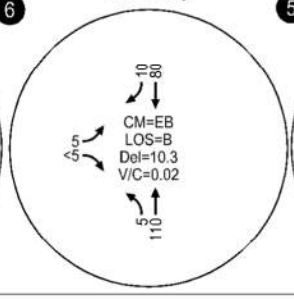
9 Brutscher Street/ Werth Boulevard



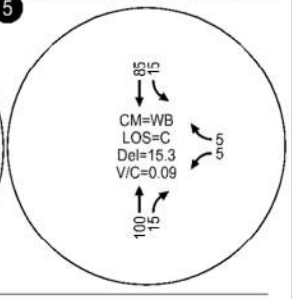
8 Werth Boulevard/ Providence Drive



6 Providence Drive/PNMC Shipping & Receiving Driveway

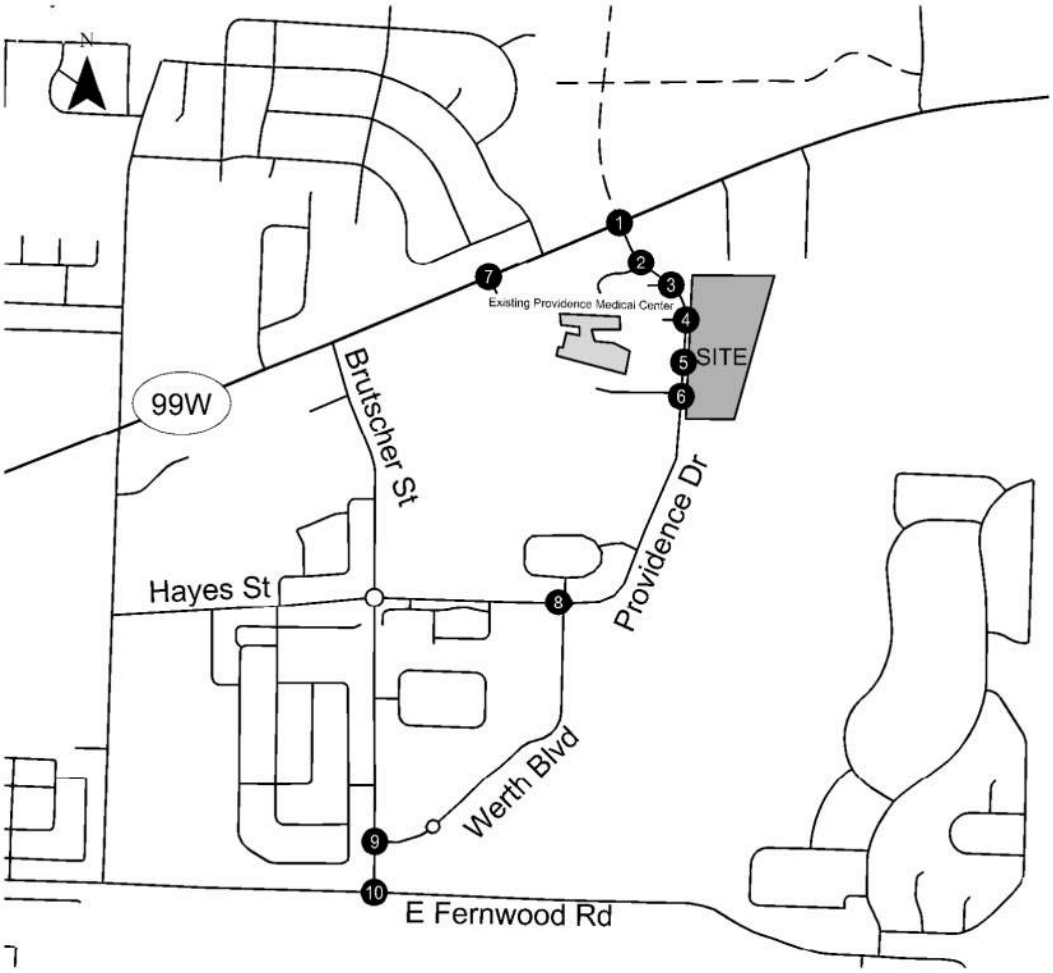


5 Providence Drive/New Campus Expansion Access



Total Traffic Conditions, Weekday AM Peak Hour
Newberg, Oregon

Figure 9



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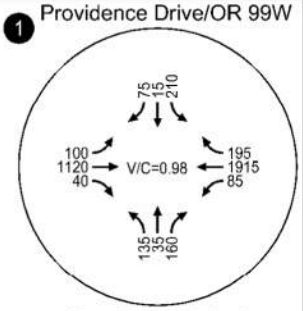
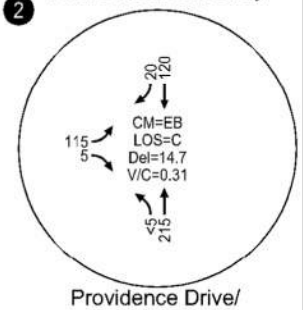


2 Providence Drive/ PNMC North Driveway



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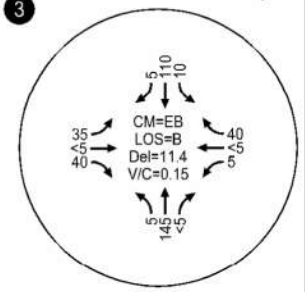
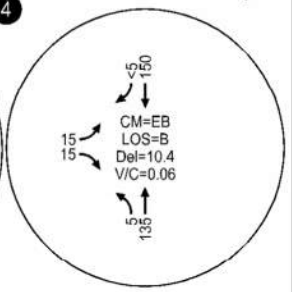
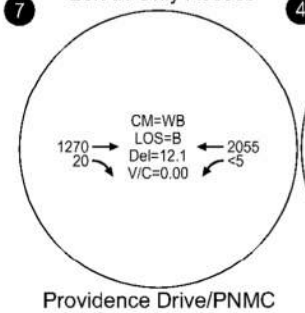


4 Providence Drive/ PNMC South Driveway



7 OR 99W/ PNMC Right-In, Left-In Only Access



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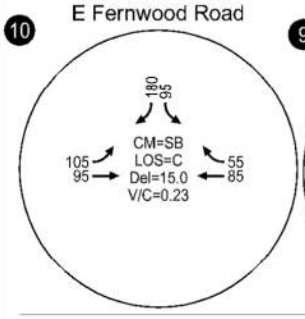
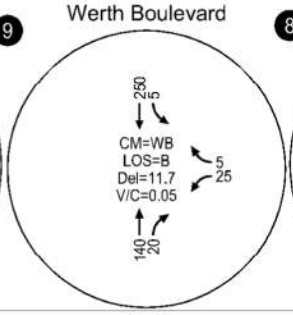
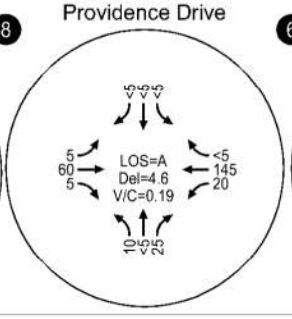


9 Brutscher Street/ Werth Boulevard



8 Werth Boulevard/ Providence Drive



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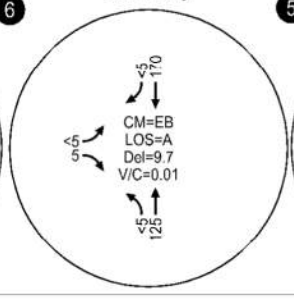

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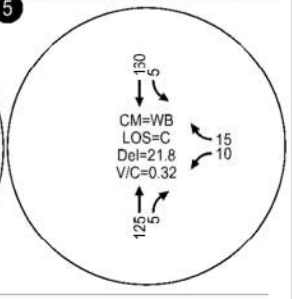

Total Traffic Conditions, Weekday PM Peak Hour
Newberg, Oregon

Figure 10

Oregon 99W Right-Turn Lane Warrant Analysis

At the request of City staff, we evaluated the need for an eastbound right-turn deceleration lane at the PNMC right-in, left-in access on Oregon 99W. Although not warranted by the occupancy of the new building, the existing volumes at the access meet ODOT APM guidance for installation of a deceleration lane. We recommend Providence work with the City and ODOT to determine, if and, when to construct this deceleration lane, especially in consideration of any planned construction of the next phase of the Newberg-Dundee Bypass and its effect on Oregon 99W traffic volumes. *Appendix "F" includes the turn lane warrant analysis worksheets.*

Queuing Analyses

Table 5 identifies the projected 95th percentile queuing at the two access points proposed to serve the campus expansion area along Providence Drive intersection assuming full occupancy of the new building. We worked with the project team to ensure that adequate queue storage can be provided within the parking area proposed to serve the campus expansion and that no queue spillback would occur onto Providence Drive at either location. Further, because the proposed driveways are stop-controlled on the side-street approaches and uncontrolled along Providence Drive, the driveway queues will have no impact to a potential mid-block pedestrian crossing on Providence Drive.

Table 5. 95th Percentile Queues at New Campus Accesses on Providence Drive

Location	Movement	95th-percentile Queue (ft)	
		Total AM	Total PM
Existing Middle PNMC Access/ Campus Expansion Access	Westbound	<25	<25
	Southbound	<25	<25
Campus Expansion Access (southern)	Westbound	<25	50
	Southbound	<25	<25

On-Site Circulation

The project team has provided for adequate vehicular, pedestrian and bicycle circulation and access within the campus expansion area. Further, both access points are expected to operate acceptably under stop control.

Crosswalk Assessment

The National Cooperative Highway Research Program (NCHRP) *Report 562 Improving Pedestrian Safety at Unsignalized Crossings* recommends an engineering study method for evaluating the appropriate levels of crosswalk protection. The Report 562 method was applied to determine if a striped crosswalk might be needed between the existing hospital and the new building.

Approximately 160 staff are expected to be on-site in the new building, plus visitors and patients. Some walking trips between the proposed new building and the hospital campus west of Providence Drive are

expected to be made by employees and/or visitors. The number of pedestrian crossings per day is likely to vary based on considerations including weather, time of day, and the extent of services/amenities that require trips between buildings (for example, some staff and visitors may walk to the existing hospital campus cafeteria, though a coffee/snack bar will be provided in the lobby of the proposed new building).

The NCHRP 562 analysis procedure suggests a crosswalk treatment for facilities like Providence Drive where 20 or more pedestrians cross per hour. Based on conversations with Providence staff, it is estimated that fewer than 20 pedestrian trips per hour are likely to use the pedestrian crossing (equivalent to 10 persons making a round trip between buildings in one hour). Accordingly, a striped crosswalk does not appear to be warranted and the projected traffic and pedestrian volumes also do not warrant an "active or enhanced" treatment per the NCHRP Report 562 thresholds. The need for such treatments or provision of a marked crosswalk could be re-evaluated in the future as necessary.

Providence should provide street lighting along the site frontage and ensure that all landscaping, above-ground utilities, and site signage are located to ensure a clear line of sight for vehicles on Providence Drive to detect and yield to pedestrians.

Appendix G contains the worksheet used in the crosswalk evaluation.

Intersection Sight Distance

Providence should locate and maintain all future landscaping, above-ground utilities, and site signage to ensure minimum intersection required sight lines are provided at all site accesses, as well as internal intersections in accordance with City standards.

Access Management

Per Newberg Municipal Code Section 15.505.030.R.2 and R.3, driveways along Major Collector roadways must be located 150 feet from adjacent street intersections and more than one driveway is permitted along a site frontage provided 100 feet is provided between access points. The site plan has been designed to meet these standards and as such, no access management measures are needed.

Note that the proposed north access location was chosen to align with an existing access to the west. At some point in the future, a new east-west public street is expected to be constructed along the north side of the proposed development site by ODOT to facilitate extension of the Newberg-Dundee Bypass. At that time, the north site access is expected to be closed and relocated to interface with the new east-west roadway at a location at least 150 feet east of Providence Drive. The site parking lot has been designed to accommodate this potential future access change.

RECOMMENDATIONS

Based on the analysis herein, the following recommendations are associated with the proposed campus expansion:

- Providence should locate and maintain all future landscaping, above-ground utilities, and site signage to ensure minimum required sight lines are provided at the site accesses, at all internal site intersections, and at any future mid-block pedestrian crossing of Providence Drive between the two buildings.
- Providence should work with the City and ODOT to determine, if and, when to construct an eastbound right-turn deceleration lane at the existing PNMC Oregon 99W right-in, left-in access, especially in consideration of any planned construction of the next phase of the Newberg-Dundee Bypass and its effect on Oregon 99W traffic volumes.

Please contact us at (503) 228-5230 if you have any questions regarding this study or the findings and recommendations presented.

REFERENCES

1. Transportation Research Board. *2000 Highway Capacity Manual.* 2000.
2. Newberg Transportation System Plan Update. 2016.
3. Oregon Department of Transportation. *Analysis Procedures Manual Version 2.* 2016.

APPENDICES

A. Traffic Counts

B. Existing Traffic Conditions Worksheets

C. ODOT Crash Data

D. Year 2019 Background Traffic Conditions Worksheets

E. Year 2019 Total Traffic Conditions Worksheets

F. Warrant Analysis Worksheets

G. Pedestrian Crossing Worksheets

Appendix A Traffic Counts

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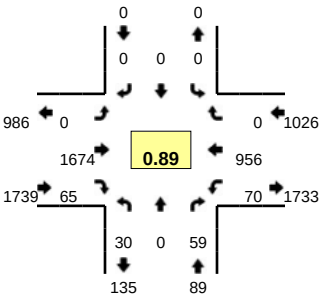
Type of peak hour being reported: User-Defined

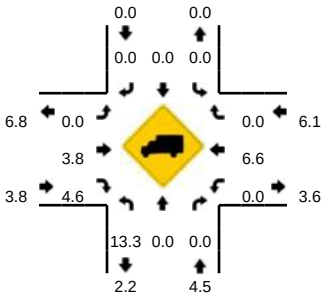
Method for determining peak hour: Total Entering Volume

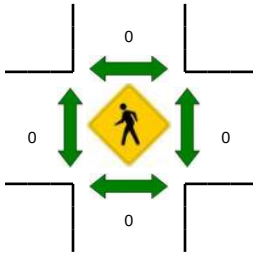
LOCATION: Providence Dr -- N Hwy 99W
CITY/STATE: Newberg, OR

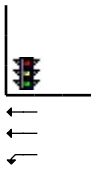
QC JOB #: 14609601
DATE: Tue, Feb 06 2018

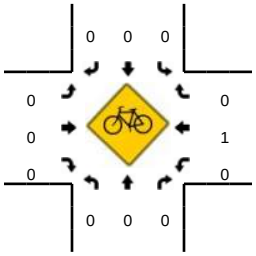
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:15 AM -- 7:30 AM

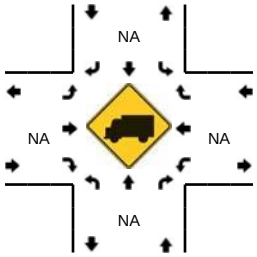


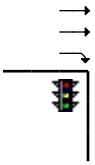


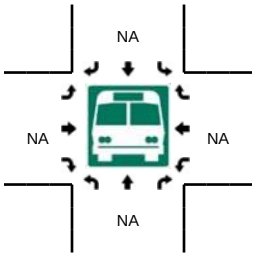












5-Min Count Period Beginning At	Providence Dr (Northbound)				Providence Dr (Southbound)				N Hwy 99W (Eastbound)				N Hwy 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	3	0	0	0	0	0	0	133	8	0	8	77	0	0	229	
7:05 AM	1	0	3	0	0	0	0	0	0	180	6	0	4	73	0	0	267	
7:10 AM	3	0	5	0	0	0	0	0	0	133	2	0	5	73	0	0	221	
7:15 AM	3	0	4	0	0	0	0	0	0	160	6	0	10	57	0	0	240	
7:20 AM	1	0	3	0	0	0	0	0	0	175	3	0	3	81	0	0	266	
7:25 AM	3	0	7	0	0	0	0	0	0	170	8	0	5	104	0	0	297	
7:30 AM	3	0	8	0	0	0	0	0	0	118	1	0	2	76	0	0	208	
7:35 AM	4	0	2	0	0	0	0	0	0	154	3	0	5	68	0	0	236	
7:40 AM	5	0	6	0	0	0	0	0	0	120	8	0	4	75	0	0	218	
7:45 AM	2	0	7	0	0	0	0	0	0	117	9	0	9	80	0	0	224	
7:50 AM	2	0	7	0	0	0	0	0	0	92	6	0	7	97	0	0	211	
7:55 AM	3	0	4	0	0	0	0	0	0	122	5	0	8	95	0	0	237	2854
8:00 AM	3	0	8	0	0	0	0	0	0	104	5	0	7	75	0	0	202	2827
8:05 AM	6	0	5	0	0	0	0	0	0	87	6	0	8	90	0	0	202	2762
8:10 AM	4	0	5	0	0	0	0	0	0	118	1	0	7	77	0	0	212	2753
8:15 AM	1	0	9	0	0	0	0	0	0	123	6	0	5	70	0	0	214	2727
8:20 AM	5	0	6	0	0	0	0	0	0	112	3	0	6	97	0	0	229	2690
8:25 AM	7	0	2	0	0	0	0	0	0	95	1	0	5	80	0	0	190	2583
8:30 AM	3	0	1	0	0	0	0	0	0	96	4	0	2	77	0	0	183	2558
8:35 AM	6	0	3	0	0	0	0	0	0	90	4	0	1	82	0	0	186	2508
8:40 AM	5	0	2	0	0	0	0	0	0	116	5	0	9	68	0	0	205	2495
8:45 AM	4	0	4	0	0	0	0	0	0	87	5	0	6	85	0	0	191	2462
8:50 AM	6	0	4	0	0	0	0	0	0	110	3	0	8	91	0	0	222	2473
8:55 AM	8	0	8	0	0	0	0	0	0	69	1	0	1	56	0	0	143	2379

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	0	56	0	0	0	0	0	0	2020	68	0	72	968	0	0	3212
Heavy Trucks	8	0	0		0	0	0		0	80	4		0	52	0		144
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/22/2018 10:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

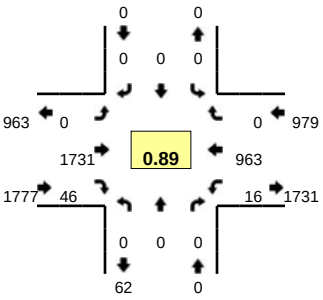
Type of peak hour being reported: User-Defined

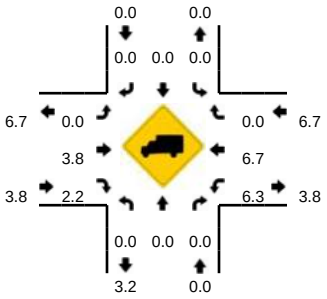
Method for determining peak hour: Total Entering Volume

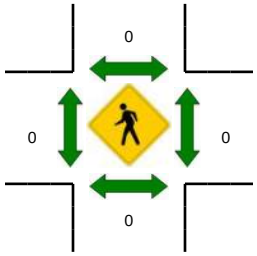
LOCATION: PNMC West Dwy -- N Hwy 99W
CITY/STATE: Newberg, OR

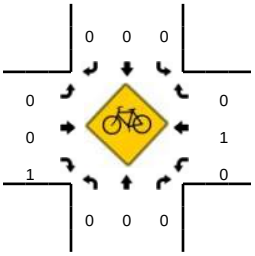
QC JOB #: 14609603
DATE: Tue, Feb 06 2018

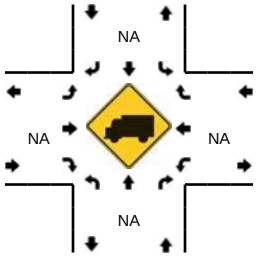
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:15 AM -- 7:30 AM

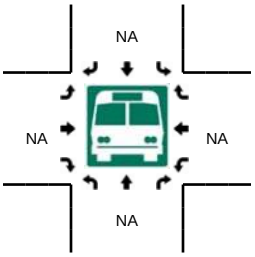












5-Min Count Period Beginning At	PNMC West Dwy (Northbound)				PNMC West Dwy (Southbound)				N Hwy 99W (Eastbound)				N Hwy 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	144	2	0	4	72	0	0	222	
7:05 AM	0	0	0	0	0	0	0	0	0	188	1	0	1	74	0	0	264	
7:10 AM	0	0	0	0	0	0	0	0	0	134	1	0	1	73	0	0	209	
7:15 AM	0	0	0	0	0	0	0	0	0	173	5	0	0	62	0	0	240	
7:20 AM	0	0	0	0	0	0	0	0	0	160	5	0	1	76	0	0	242	
7:25 AM	0	0	0	0	0	0	0	0	0	174	7	0	0	109	0	0	290	
7:30 AM	0	0	0	0	0	0	0	0	0	121	3	0	2	76	0	0	202	
7:35 AM	0	0	0	0	0	0	0	0	0	161	5	0	1	75	0	0	242	
7:40 AM	0	0	0	0	0	0	0	0	0	127	2	0	1	77	0	0	207	
7:45 AM	0	0	0	0	0	0	0	0	0	125	5	0	2	78	0	0	210	
7:50 AM	0	0	0	0	0	0	0	0	0	98	6	0	3	95	0	0	202	
7:55 AM	0	0	0	0	0	0	0	0	0	126	4	0	0	96	0	0	226	2756
8:00 AM	0	0	0	0	0	0	0	0	0	108	9	0	2	72	0	0	191	2725
8:05 AM	0	0	0	0	0	0	0	0	0	93	2	0	2	95	0	0	192	2653
8:10 AM	0	0	0	0	0	0	0	0	0	122	8	0	0	74	0	0	204	2648
8:15 AM	0	0	0	0	0	0	0	0	0	127	3	0	2	71	0	0	203	2611
8:20 AM	0	0	0	0	0	0	0	0	0	113	2	0	3	98	0	0	216	2585
8:25 AM	0	0	0	0	0	0	0	0	0	94	2	0	1	81	0	0	178	2473
8:30 AM	0	0	0	0	0	0	0	0	0	101	4	0	0	81	0	0	186	2457
8:35 AM	0	0	0	0	0	0	0	0	0	94	5	0	1	91	0	0	191	2406
8:40 AM	0	0	0	0	0	0	0	0	0	121	6	0	0	77	0	0	204	2403
8:45 AM	0	0	0	0	0	0	0	0	0	89	5	0	0	89	0	0	183	2376
8:50 AM	0	0	0	0	0	0	0	0	0	112	5	0	0	98	0	0	215	2389
8:55 AM	0	0	0	0	0	0	0	0	0	75	6	0	3	55	0	0	139	2302

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	0	0	0	2028	68	0	4	988	0	0	3088
Heavy Trucks	0	0	0		0	0	0		0	84	0		0	60	0		144
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	1		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/22/2018 10:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

LOCATION: Providence Dr -- PNMC North Dwy

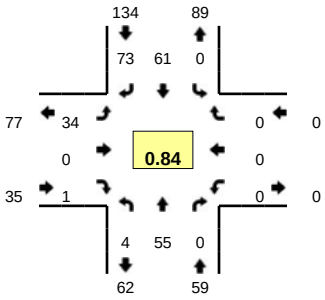
CITY/STATE: Newberg, OR

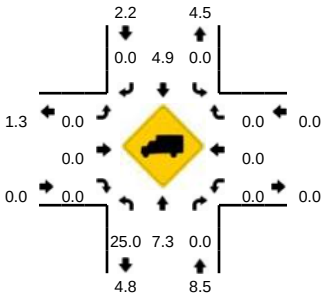
QC JOB #: 14609605

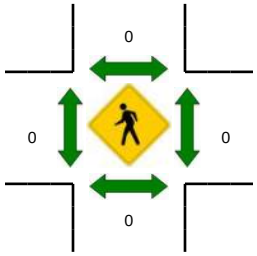
DATE: Tue, Feb 06 2018

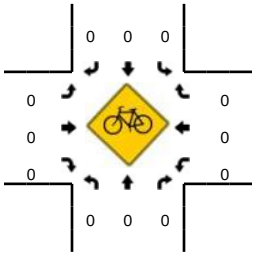
Peak-Hour: 7:00 AM -- 8:00 AM

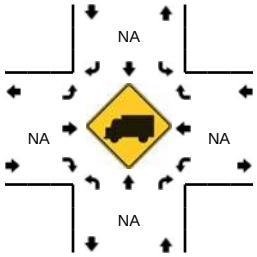
Peak 15-Min: 7:40 AM -- 7:55 AM

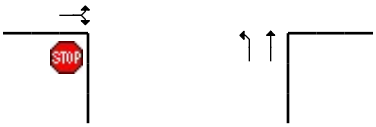


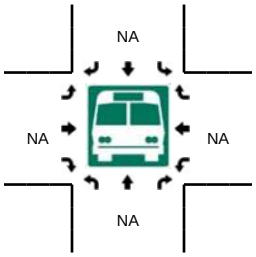












5-Min Count Period Beginning At	Providence Dr (Northbound)				Providence Dr (Southbound)				PNMC North Dwy (Eastbound)				PNMC North Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	3	0	0	0	8	8	0	0	0	0	0	0	0	0	0	19	
7:05 AM	0	3	0	0	0	7	3	0	1	0	0	0	0	0	0	0	14	
7:10 AM	0	3	0	0	0	4	3	0	6	0	0	0	0	0	0	0	16	
7:15 AM	1	6	0	0	0	7	9	0	0	0	0	0	0	0	0	0	23	
7:20 AM	0	4	0	0	0	3	3	0	1	0	1	0	0	0	0	0	12	
7:25 AM	0	8	0	0	0	7	6	0	3	0	0	0	0	0	0	0	24	
7:30 AM	1	5	0	0	0	2	1	0	4	0	0	0	0	0	0	0	13	
7:35 AM	0	4	0	0	0	2	6	0	6	0	0	0	0	0	0	0	18	
7:40 AM	1	5	0	0	0	3	9	0	3	0	0	0	0	0	0	0	21	
7:45 AM	0	6	0	0	0	5	13	0	4	0	0	0	0	0	0	0	28	
7:50 AM	0	6	0	0	0	8	4	0	1	0	0	0	0	0	0	0	19	
7:55 AM	1	2	0	0	0	5	8	0	5	0	0	0	0	0	0	0	21	228
8:00 AM	1	9	0	0	0	5	7	0	2	0	0	0	0	0	0	0	24	233
8:05 AM	0	5	0	0	0	6	8	0	4	0	1	0	0	0	0	0	24	243
8:10 AM	0	7	0	0	0	4	3	0	4	0	1	0	0	0	0	0	19	246
8:15 AM	1	6	0	0	0	5	4	0	1	0	0	0	0	0	0	0	17	240
8:20 AM	1	7	0	0	0	7	6	0	4	0	1	0	0	0	0	0	26	254
8:25 AM	0	4	0	0	0	3	3	0	5	0	1	0	0	0	0	0	16	246
8:30 AM	0	4	0	0	0	3	3	0	1	0	0	0	0	0	0	0	11	244
8:35 AM	1	4	0	0	0	3	2	0	5	0	0	0	0	0	0	0	15	241
8:40 AM	0	5	0	0	0	8	5	0	3	0	0	0	0	0	0	0	21	241
8:45 AM	3	6	0	0	0	2	10	0	2	0	1	0	0	0	0	0	24	237
8:50 AM	1	6	0	0	0	5	6	0	3	0	0	0	0	0	0	0	21	239
8:55 AM	2	11	0	0	0	0	2	0	7	0	0	0	0	0	0	0	22	240

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	68	0	0	0	64	104	0	32	0	0	0	0	0	0	0	272
Heavy Trucks	0	4	0		0	8	0		0	0	0		0	0	0		12
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/22/2018 10:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

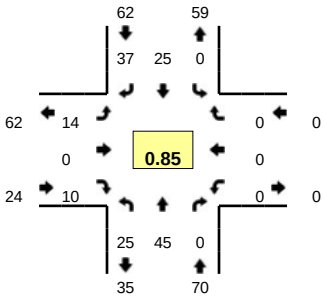
LOCATION: Providence Dr -- PNMC North-Central Dwy

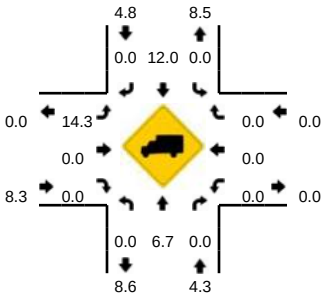
CITY/STATE: Newberg, OR

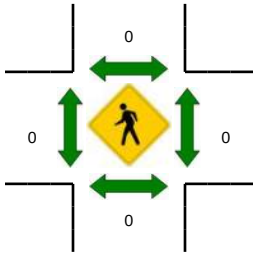
QC JOB #: 14609607

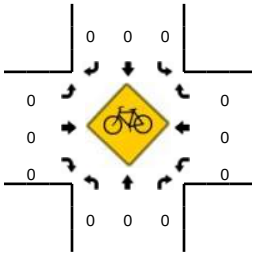
DATE: Tue, Feb 06 2018

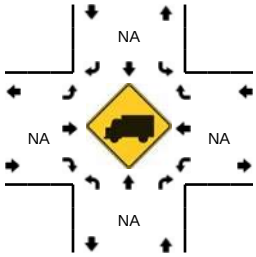
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:25 AM -- 7:40 AM

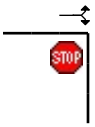


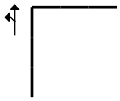


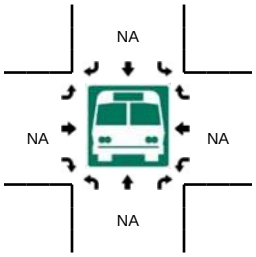












5-Min Count Period Beginning At	Providence Dr (Northbound)				Providence Dr (Southbound)				PNMC North-Central Dwy (Eastbound)				PNMC North-Central Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	3	0	0	0	2	5	0	0	0	0	0	0	0	0	0	10	
7:05 AM	4	2	0	0	0	1	6	0	1	0	0	0	0	0	0	0	14	
7:10 AM	0	3	0	0	0	3	2	0	1	0	1	0	0	0	0	0	10	
7:15 AM	1	4	0	0	0	4	3	0	2	0	0	0	0	0	0	0	14	
7:20 AM	3	2	0	0	0	1	2	0	2	0	0	0	0	0	0	0	10	
7:25 AM	4	5	0	0	0	3	4	0	3	0	1	0	0	0	0	0	20	
7:30 AM	2	6	0	0	0	2	1	0	0	0	3	0	0	0	0	0	14	
7:35 AM	2	2	0	0	0	0	2	0	3	0	3	0	0	0	0	0	12	
7:40 AM	1	5	0	0	0	2	1	0	0	0	0	0	0	0	0	0	9	
7:45 AM	4	5	0	0	0	0	5	0	1	0	1	0	0	0	0	0	16	
7:50 AM	4	5	0	0	0	4	4	0	1	0	1	0	0	0	0	0	19	
7:55 AM	0	3	0	0	0	3	2	0	0	0	0	0	0	0	0	0	8	156
8:00 AM	2	6	0	0	0	3	2	0	5	0	2	0	0	0	0	0	20	166
8:05 AM	0	2	0	0	0	4	3	0	2	0	0	0	0	0	0	0	11	163
8:10 AM	1	6	0	0	0	4	1	0	1	0	4	0	0	0	0	0	17	170
8:15 AM	1	5	0	0	0	5	0	0	3	0	0	0	0	0	0	0	14	170
8:20 AM	1	5	0	0	0	4	2	0	2	0	1	0	0	0	0	0	15	175
8:25 AM	0	1	0	0	0	5	1	0	3	0	1	0	0	0	0	0	11	166
8:30 AM	1	2	0	0	0	3	0	0	2	0	0	0	0	0	0	0	8	160
8:35 AM	1	4	0	0	0	2	1	0	1	0	3	0	0	0	0	0	12	160
8:40 AM	2	2	0	0	0	6	2	0	4	0	0	0	0	0	0	0	16	167
8:45 AM	3	7	0	0	0	2	1	0	1	0	1	0	0	0	0	0	15	166
8:50 AM	0	4	0	0	0	4	1	0	3	0	0	0	0	0	0	0	12	159
8:55 AM	0	10	0	0	0	0	0	0	4	0	1	0	0	0	0	0	15	166

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	52	0	0	0	20	28	0	24	0	28	0	0	0	0	0	184
Heavy Trucks	0	0	0		0	4	0		4	0	0		0	0	0		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/22/2018 10:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

LOCATION: Providence Dr -- PNMC South-Central Dwy

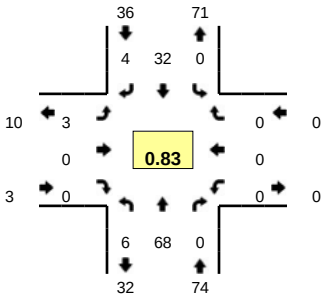
CITY/STATE: Newberg, OR

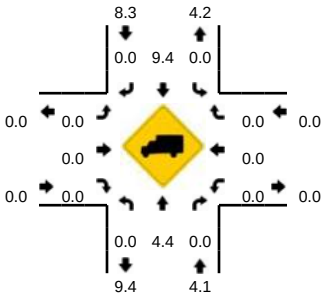
QC JOB #: 14609609

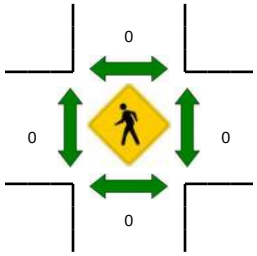
DATE: Tue, Feb 06 2018

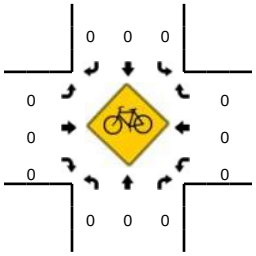
Peak-Hour: 7:00 AM -- 8:00 AM

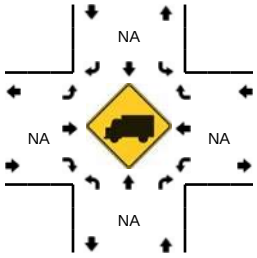
Peak 15-Min: 7:40 AM -- 7:55 AM

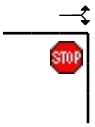


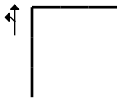


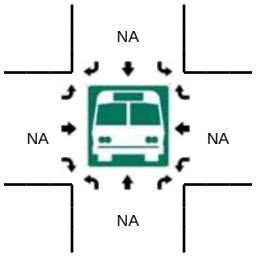












5-Min Count Period Beginning At	Providence Dr (Northbound)				Providence Dr (Southbound)				PNMC South-Central Dwy (Eastbound)				PNMC South-Central Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	3	0	0	0	1	2	0	0	0	0	0	0	0	0	0	6	
7:05 AM	0	7	0	0	0	1	0	0	0	0	0	0	0	0	0	0	8	
7:10 AM	2	2	0	0	0	3	1	0	1	0	0	0	0	0	0	0	9	
7:15 AM	0	5	0	0	0	3	1	0	0	0	0	0	0	0	0	0	9	
7:20 AM	0	6	0	0	0	1	0	0	0	0	0	0	0	0	0	0	7	
7:25 AM	0	8	0	0	0	4	0	0	0	0	0	0	0	0	0	0	12	
7:30 AM	0	8	0	0	0	5	0	0	0	0	0	0	0	0	0	0	13	
7:35 AM	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	8	
7:40 AM	0	7	0	0	0	2	0	0	0	0	0	0	0	0	0	0	9	
7:45 AM	0	8	0	0	0	1	0	0	0	0	0	0	0	0	0	0	9	
7:50 AM	3	8	0	0	0	4	0	0	1	0	0	0	0	0	0	0	16	
7:55 AM	1	2	0	0	0	3	0	0	1	0	0	0	0	0	0	0	7	113
8:00 AM	0	8	0	0	0	5	0	0	0	0	0	0	0	0	0	0	13	120
8:05 AM	0	2	0	0	0	4	0	0	0	0	0	0	0	0	0	0	6	118
8:10 AM	1	6	0	0	0	7	1	0	1	0	0	0	0	0	0	0	16	125
8:15 AM	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0	0	11	127
8:20 AM	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0	0	11	131
8:25 AM	0	1	0	0	0	6	0	0	0	0	0	0	0	0	0	0	7	126
8:30 AM	1	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	6	119
8:35 AM	0	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	10	121
8:40 AM	0	4	0	0	0	6	0	0	0	0	0	0	0	0	0	0	10	122
8:45 AM	0	8	0	0	0	3	0	0	2	0	0	0	0	0	0	0	13	126
8:50 AM	0	5	0	0	0	4	0	0	0	0	0	0	0	0	0	0	9	119
8:55 AM	1	8	0	0	0	1	0	0	1	0	0	0	0	0	0	0	11	123

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	12	92	0	0	0	28	0	0	4	0	0	0	0	0	0	0	136
Heavy Trucks	0	4	0		0	4	0		0	0	0		0	0	0		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/22/2018 10:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

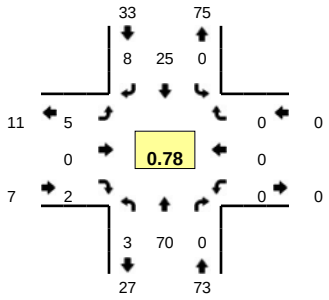
Type of peak hour being reported: User-Defined

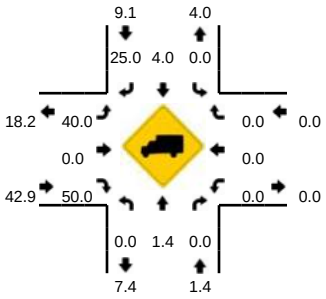
Method for determining peak hour: Total Entering Volume

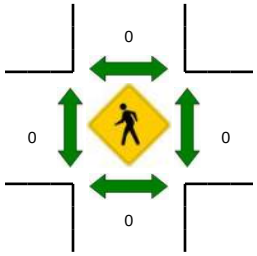
LOCATION: Providence Dr -- PNMC South Dwy
CITY/STATE: Newberg, OR

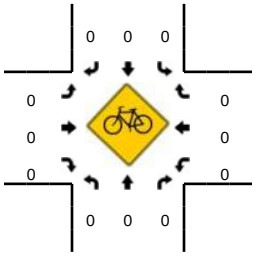
QC JOB #: 14609611
DATE: Tue, Feb 06 2018

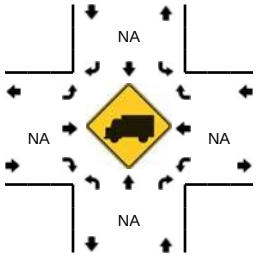
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

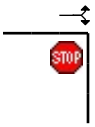


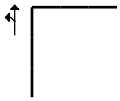


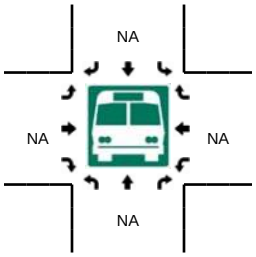












5-Min Count Period Beginning At	Providence Dr (Northbound)				Providence Dr (Southbound)				PNMC South Dwy (Eastbound)				PNMC South Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4	
7:05 AM	0	7	0	0	0	0	1	0	0	0	0	0	0	0	0	0	8	
7:10 AM	1	4	0	0	0	2	0	0	1	0	0	0	0	0	0	0	8	
7:15 AM	0	4	0	0	0	2	2	0	0	0	0	0	0	0	0	0	8	
7:20 AM	0	6	0	0	0	1	0	0	0	0	0	0	0	0	0	0	7	
7:25 AM	0	8	0	0	0	2	2	0	0	0	0	0	0	0	0	0	12	
7:30 AM	2	8	0	0	0	4	1	0	0	0	0	0	0	0	0	0	15	
7:35 AM	0	3	0	0	0	3	0	0	1	0	1	0	0	0	0	0	8	
7:40 AM	0	6	0	0	0	1	1	0	1	0	1	0	0	0	0	0	10	
7:45 AM	0	10	0	0	0	1	0	0	0	0	0	0	0	0	0	0	11	
7:50 AM	0	9	0	0	0	4	1	0	1	0	0	0	0	0	0	0	15	
7:55 AM	0	2	0	0	0	4	0	0	1	0	0	0	0	0	0	0	7	113
8:00 AM	0	6	0	0	0	4	1	0	2	0	0	0	0	0	0	0	13	122
8:05 AM	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5	119
8:10 AM	0	7	0	0	0	7	1	0	0	0	0	0	0	0	0	0	15	126
8:15 AM	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0	0	11	129
8:20 AM	0	6	0	0	0	3	2	0	0	0	0	0	0	0	0	0	11	133
8:25 AM	0	1	0	0	0	4	1	0	0	0	0	0	0	0	0	0	6	127
8:30 AM	0	2	0	0	0	3	0	0	1	0	0	0	0	0	0	0	6	118
8:35 AM	0	4	0	0	0	4	0	0	1	0	0	0	0	0	0	0	9	119
8:40 AM	0	3	0	0	0	6	1	0	0	0	0	0	0	0	0	0	10	119
8:45 AM	0	7	0	0	0	3	0	0	1	0	2	0	0	0	0	0	13	121
8:50 AM	0	6	0	0	0	3	0	0	0	0	0	0	0	0	0	0	9	115
8:55 AM	0	8	0	0	0	1	0	0	0	0	0	0	0	0	0	0	9	117

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	100	0	0	0	24	8	0	8	0	4	0	0	0	0	0	144
Heavy Trucks	0	0	0		0	4	4		4	0	4		0	0	0		16
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/22/2018 10:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

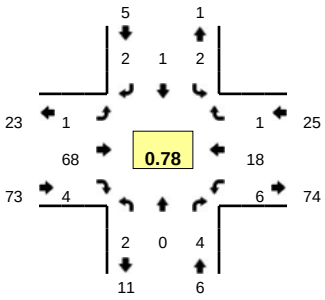
LOCATION: Werth Blvd -- Providence Dr/Hayes St

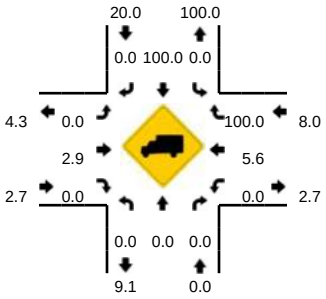
QC JOB #: 14609613

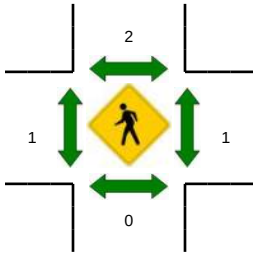
CITY/STATE: Newberg, OR

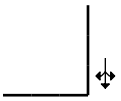
DATE: Tue, Feb 06 2018

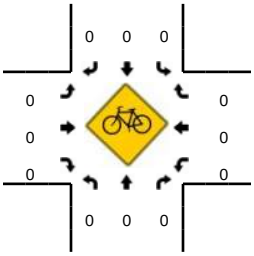
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:20 AM -- 7:35 AM

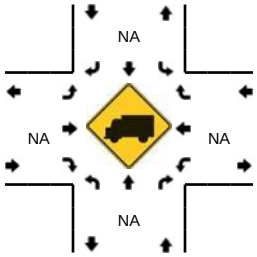


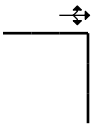


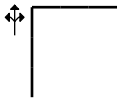


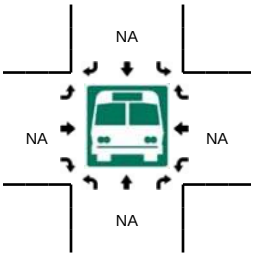












5-Min Count Period Beginning At	Werth Blvd (Northbound)				Werth Blvd (Southbound)				Providence Dr/Hayes St (Eastbound)				Providence Dr/Hayes St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5	
7:05 AM	0	0	0	0	0	0	0	0	0	5	1	0	0	0	0	0	6	
7:10 AM	0	0	1	0	0	0	0	0	0	4	0	0	0	2	0	0	7	
7:15 AM	1	0	0	0	0	0	0	0	0	5	1	0	0	0	0	0	7	
7:20 AM	1	0	0	0	1	0	0	0	0	5	0	0	0	2	0	0	9	
7:25 AM	0	0	0	0	0	0	1	0	0	7	0	0	1	2	0	0	11	
7:30 AM	0	0	0	0	0	0	0	0	0	11	0	0	1	3	0	0	15	
7:35 AM	0	0	0	0	0	0	0	0	0	4	0	1	0	3	0	0	8	
7:40 AM	0	0	1	0	0	0	0	0	0	3	0	0	0	2	1	0	7	
7:45 AM	0	0	2	0	1	0	0	0	0	8	0	0	0	0	0	0	11	
7:50 AM	0	0	0	0	0	1	1	0	0	9	1	0	1	3	0	0	16	
7:55 AM	0	0	0	0	0	0	0	0	0	2	1	0	3	1	0	0	7	109
8:00 AM	0	0	0	0	0	0	0	0	0	6	0	0	0	2	0	0	8	112
8:05 AM	0	0	0	0	0	0	0	0	0	3	0	0	1	4	0	0	8	114
8:10 AM	0	0	2	0	0	0	0	0	0	5	1	0	2	3	0	1	14	121
8:15 AM	0	0	0	0	0	0	0	0	1	4	0	0	3	3	0	0	11	125
8:20 AM	1	0	0	0	0	0	0	0	0	6	0	0	0	2	0	0	9	125
8:25 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	4	1	0	7	121
8:30 AM	0	0	0	0	0	0	1	0	0	4	2	0	1	2	0	0	10	116
8:35 AM	0	0	0	0	0	0	0	0	1	2	2	0	1	2	0	0	8	116
8:40 AM	0	0	0	0	0	0	1	0	0	3	1	0	2	3	0	0	10	119
8:45 AM	0	0	0	0	0	0	2	0	1	7	0	0	4	3	0	0	17	125
8:50 AM	0	0	1	0	1	0	0	0	0	6	1	1	1	1	0	0	12	121
8:55 AM	0	0	1	0	1	0	0	0	0	5	0	0	1	2	0	0	10	124

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	0	0	0	4	0	4	0	0	92	0	0	8	28	0	0	140
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/22/2018 10:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

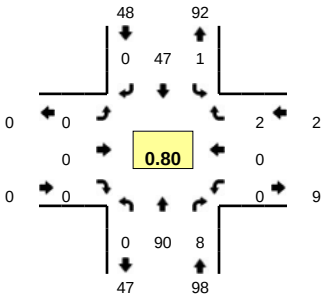
LOCATION: Brutscher St -- Werth Blvd

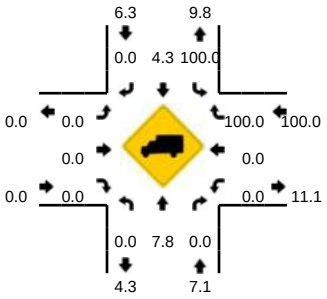
QC JOB #: 14609615

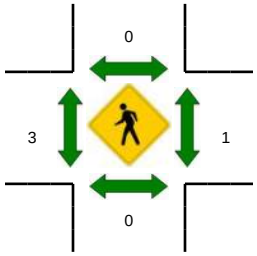
CITY/STATE: Newberg, OR

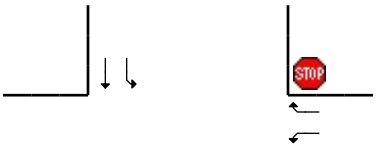
DATE: Tue, Feb 06 2018

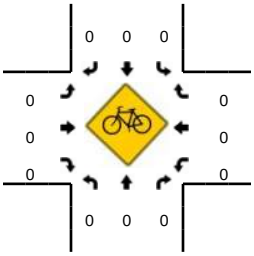
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:10 AM -- 7:25 AM

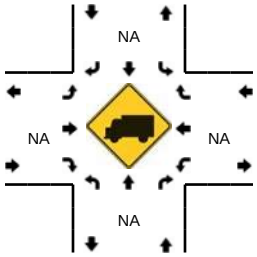


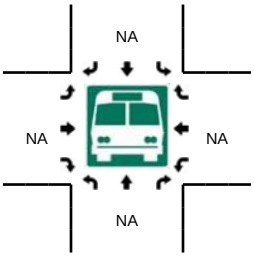












5-Min Count Period Beginning At	Brutscher St (Northbound)				Brutscher St (Southbound)				Werth Blvd (Eastbound)				Werth Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	9	0	0	0	6	0	0	0	0	0	0	0	0	0	0	15	
7:05 AM	0	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	8	
7:10 AM	0	8	0	0	1	7	0	0	0	0	0	0	0	0	0	0	16	
7:15 AM	0	11	0	0	0	5	0	0	0	0	0	0	0	0	1	0	17	
7:20 AM	0	8	3	0	0	2	0	0	0	0	0	0	0	0	0	0	13	
7:25 AM	0	10	0	0	0	2	0	0	0	0	0	0	0	0	0	0	12	
7:30 AM	0	9	0	0	0	4	0	0	0	0	0	0	0	0	0	0	13	
7:35 AM	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0	0	9	
7:40 AM	0	4	1	0	0	6	0	0	0	0	0	0	0	0	0	0	11	
7:45 AM	0	7	1	0	0	4	0	0	0	0	0	0	0	0	0	0	12	
7:50 AM	0	8	1	0	0	4	0	0	0	0	0	0	0	0	0	0	13	
7:55 AM	0	5	1	0	0	2	0	0	0	0	0	0	0	0	1	0	9	148
8:00 AM	0	7	1	0	1	5	0	0	0	0	0	0	0	0	0	0	14	147
8:05 AM	0	11	0	0	1	7	0	0	0	0	0	0	0	0	0	0	19	158
8:10 AM	0	5	2	0	2	10	0	0	0	0	0	0	1	0	0	0	20	162
8:15 AM	0	10	1	0	1	5	0	0	0	0	0	0	0	0	1	0	18	163
8:20 AM	0	9	0	0	0	5	0	0	0	0	0	0	1	0	0	0	15	165
8:25 AM	0	10	0	0	0	6	0	0	0	0	0	0	0	0	0	0	16	169
8:30 AM	0	5	0	0	1	8	0	0	0	0	0	0	1	0	0	0	15	171
8:35 AM	0	6	0	0	1	15	0	0	0	0	0	0	0	0	0	0	22	184
8:40 AM	0	5	0	0	1	6	0	0	0	0	0	0	1	0	0	0	13	186
8:45 AM	0	10	2	0	0	5	0	0	0	0	0	0	0	0	1	0	18	192
8:50 AM	0	6	0	0	2	8	0	0	0	0	0	0	1	0	0	0	17	196
8:55 AM	0	4	1	0	1	6	0	0	0	0	0	0	0	0	0	0	12	199

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	108	12	0	4	56	0	0	0	0	0	0	0	0	4	0	184
Heavy Trucks	0	8	0		4	0	0		0	0	0		0	0	4		16
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/22/2018 10:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

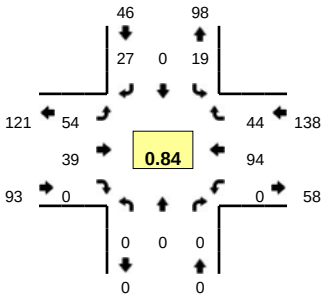
LOCATION: Brutscher St -- E Fernwood Rd

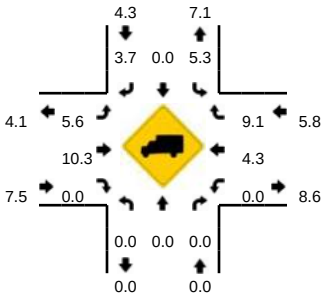
CITY/STATE: Newberg, OR

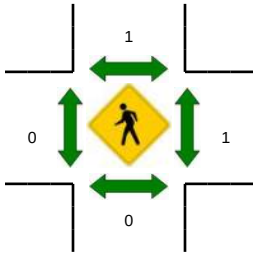
QC JOB #: 14609617

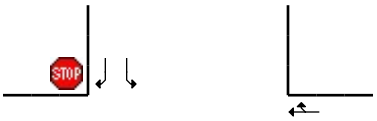
DATE: Tue, Feb 06 2018

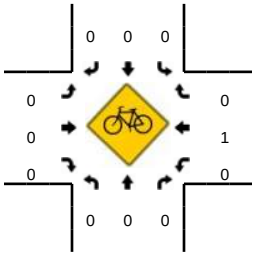
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:10 AM -- 7:25 AM

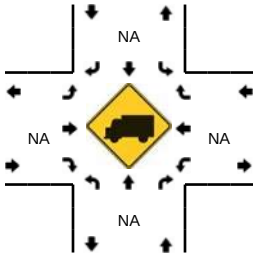


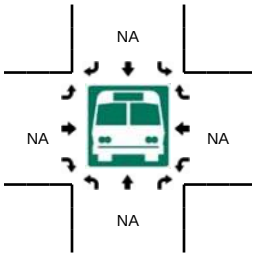












5-Min Count Period Beginning At	Brutscher St (Northbound)				Brutscher St (Southbound)				E Fernwood Rd (Eastbound)				E Fernwood Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	3	0	3	0	5	0	0	0	0	1	4	0	16	
7:05 AM	0	0	0	0	0	0	0	0	5	4	0	0	0	5	3	0	17	
7:10 AM	0	0	0	0	1	0	5	0	3	2	0	0	0	10	5	0	26	
7:15 AM	0	0	0	0	3	0	3	0	4	0	0	0	0	8	7	0	25	
7:20 AM	0	0	0	0	0	0	2	0	5	5	0	0	0	13	6	0	31	
7:25 AM	0	0	0	0	0	0	2	0	5	3	0	0	0	11	5	0	26	
7:30 AM	0	0	0	0	0	0	4	0	4	4	0	0	0	6	4	0	22	
7:35 AM	0	0	0	0	3	0	2	0	3	8	0	0	0	7	1	0	24	
7:40 AM	0	0	0	0	4	0	2	0	3	5	0	0	0	6	2	0	22	
7:45 AM	0	0	0	0	1	0	2	0	6	3	0	0	0	9	4	0	25	
7:50 AM	0	0	0	0	3	0	2	0	8	3	0	0	0	7	0	0	23	
7:55 AM	0	0	0	0	1	0	0	0	3	2	0	0	0	11	3	0	20	277
8:00 AM	0	0	0	0	3	0	3	0	5	5	0	0	0	3	3	0	22	283
8:05 AM	0	0	0	0	5	0	2	0	4	1	0	0	0	6	7	0	25	291
8:10 AM	0	0	0	0	4	0	7	0	3	5	0	0	0	11	4	0	34	299
8:15 AM	0	0	0	0	2	0	3	0	4	5	0	0	0	7	7	0	28	302
8:20 AM	0	0	0	0	3	0	2	0	4	2	0	0	0	3	5	0	19	290
8:25 AM	0	0	0	0	4	0	2	0	6	4	0	0	0	14	4	0	34	298
8:30 AM	0	0	0	0	8	0	2	0	2	2	0	0	0	2	2	0	18	294
8:35 AM	0	0	0	0	8	0	7	0	3	1	0	0	0	3	3	0	25	295
8:40 AM	0	0	0	0	3	0	3	0	1	4	0	0	0	6	4	0	21	294
8:45 AM	0	0	0	0	2	0	4	0	9	5	0	0	0	6	4	0	30	299
8:50 AM	0	0	0	0	6	0	3	0	3	3	0	0	0	4	3	0	22	298
8:55 AM	0	0	0	0	1	0	4	0	1	1	0	0	0	3	4	0	14	292

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	16	0	40	0	48	28	0	0	0	124	72	0	328
Heavy Trucks	0	0	0		0	0	0		4	4	0		0	4	4		16
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/22/2018 10:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

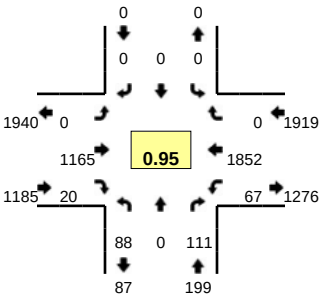
Type of peak hour being reported: User-Defined

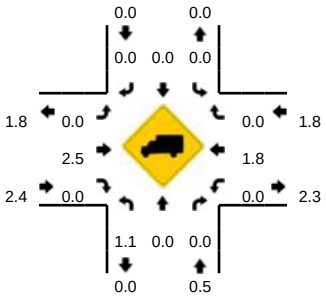
Method for determining peak hour: Total Entering Volume

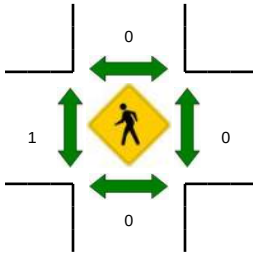
LOCATION: Providence Dr -- N Hwy 99W
CITY/STATE: Newberg, OR

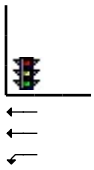
QC JOB #: 14609602
DATE: Tue, Feb 06 2018

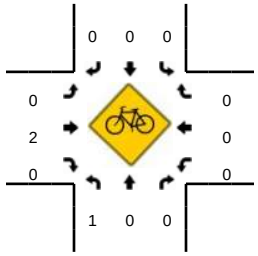
Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

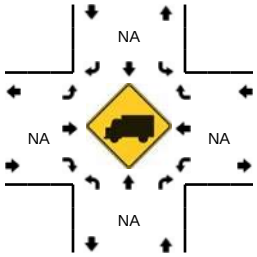


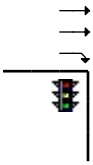


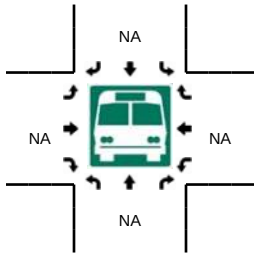












5-Min Count Period Beginning At	Providence Dr (Northbound)				Providence Dr (Southbound)				N Hwy 99W (Eastbound)				N Hwy 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	5	0	7	0	0	0	0	0	0	79	1	0	5	167	0	0	264	
4:05 PM	7	0	9	0	0	0	0	0	0	97	2	0	3	148	0	0	266	
4:10 PM	7	0	8	0	0	0	0	0	0	86	0	0	10	148	0	0	259	
4:15 PM	9	0	7	0	0	0	0	0	0	88	3	0	8	150	0	0	265	
4:20 PM	12	0	5	0	0	0	0	0	0	110	4	0	3	155	0	0	289	
4:25 PM	8	0	8	0	0	0	0	0	0	86	2	0	7	153	0	0	264	
4:30 PM	5	0	8	0	0	0	0	0	0	99	4	0	7	137	0	0	260	
4:35 PM	16	0	11	0	0	0	0	0	0	82	2	0	5	135	0	0	251	
4:40 PM	7	0	6	0	0	0	0	0	0	92	3	0	3	169	0	0	280	
4:45 PM	9	0	7	0	0	0	0	0	0	83	1	0	7	151	0	0	258	
4:50 PM	6	0	8	0	0	0	0	0	0	89	2	0	7	150	0	0	262	
4:55 PM	6	0	6	0	0	0	0	0	0	94	3	0	6	158	0	0	273	3191
5:00 PM	7	0	11	0	0	0	0	0	0	117	1	0	9	152	0	0	297	3224
5:05 PM	7	0	11	0	0	0	0	0	0	107	2	0	8	163	0	0	298	3256
5:10 PM	13	0	17	0	0	0	0	0	0	82	0	0	5	160	0	0	277	3274
5:15 PM	8	0	12	0	0	0	0	0	0	113	1	0	8	145	0	0	287	3296
5:20 PM	4	0	10	0	0	0	0	0	0	88	3	0	7	148	0	0	260	3267
5:25 PM	10	0	7	0	0	0	0	0	0	94	1	0	1	134	0	0	247	3250
5:30 PM	5	0	8	0	0	0	0	0	0	94	1	0	4	166	0	0	278	3268
5:35 PM	6	0	8	0	0	0	0	0	0	112	2	0	2	156	0	0	286	3303
5:40 PM	3	0	4	0	0	0	0	0	0	108	2	0	5	145	0	0	267	3290
5:45 PM	1	0	10	0	0	0	0	0	0	82	2	0	0	129	0	0	224	3256
5:50 PM	4	0	9	0	0	0	0	0	0	107	3	0	8	156	0	0	287	3281
5:55 PM	3	0	9	0	0	0	0	0	0	72	2	0	5	129	0	0	220	3228

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	108	0	156	0	0	0	0	0	0	1224	12	0	88	1900	0	0	3488
Heavy Trucks	0	0	0		0	0	0		0	32	0		0	16	0		48
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/22/2018 10:36 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

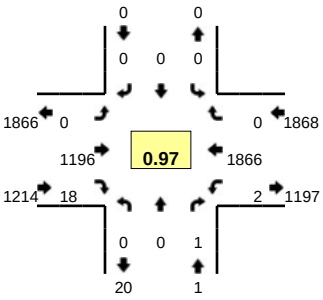
Type of peak hour being reported: User-Defined

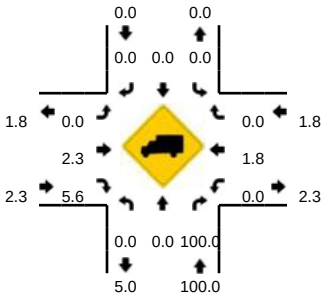
Method for determining peak hour: Total Entering Volume

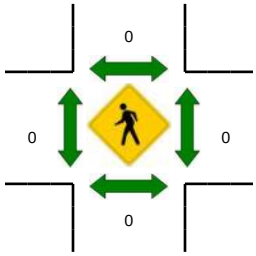
LOCATION: PNMC West Dwy -- N Hwy 99W
CITY/STATE: Newberg, OR

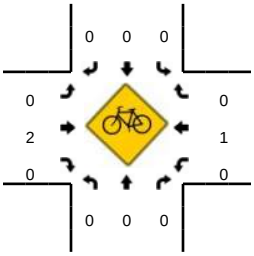
QC JOB #: 14609604
DATE: Tue, Feb 06 2018

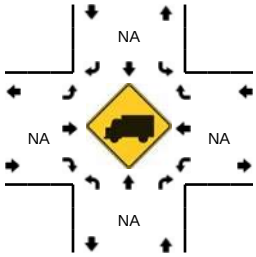
Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 4:50 PM -- 5:05 PM

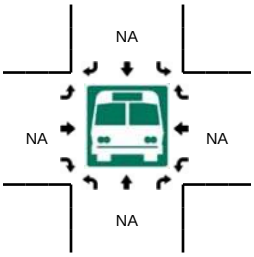












5-Min Count Period Beginning At	PNMC West Dwy (Northbound)				PNMC West Dwy (Southbound)				N Hwy 99W (Eastbound)				N Hwy 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	0	0	0	80	0	0	1	148	0	0	229	
4:05 PM	0	0	0	0	0	0	0	0	0	97	3	0	0	163	0	0	263	
4:10 PM	0	0	0	0	0	0	0	0	0	86	1	0	0	153	0	0	240	
4:15 PM	0	0	0	0	0	0	0	0	0	91	1	0	0	148	0	0	240	
4:20 PM	0	0	0	0	0	0	0	0	0	115	3	0	0	163	0	0	281	
4:25 PM	0	0	0	0	0	0	0	0	0	88	3	0	0	156	0	0	247	
4:30 PM	0	0	0	0	0	0	0	0	0	102	1	0	0	145	0	0	248	
4:35 PM	0	0	0	0	0	0	0	0	0	84	3	0	0	142	0	0	229	
4:40 PM	0	0	0	0	0	0	0	0	0	95	1	0	2	166	0	0	264	
4:45 PM	0	0	0	0	0	0	0	0	0	83	2	0	0	156	0	0	241	
4:50 PM	0	0	0	0	0	0	0	0	0	91	2	0	0	155	0	0	248	
4:55 PM	0	0	0	0	0	0	0	0	0	100	3	0	0	160	0	0	263	2993
5:00 PM	0	0	0	0	0	0	0	0	0	122	3	0	0	156	0	0	281	3045
5:05 PM	0	0	0	0	0	0	0	0	0	81	1	0	0	147	0	0	229	3011
5:10 PM	0	0	0	0	0	0	0	0	0	115	0	0	0	167	0	0	282	3053
5:15 PM	0	0	0	0	0	0	0	0	0	95	1	0	0	151	0	0	247	3060
5:20 PM	0	0	0	0	0	0	0	0	0	96	2	0	0	140	0	0	238	3017
5:25 PM	0	0	0	0	0	0	0	0	0	94	3	0	0	144	0	0	241	3011
5:30 PM	0	0	1	0	0	0	0	0	0	109	0	0	0	169	0	0	279	3042
5:35 PM	0	0	0	0	0	0	0	0	0	115	0	0	0	155	0	0	270	3083
5:40 PM	0	0	0	0	0	0	0	0	0	96	0	0	0	140	0	0	236	3055
5:45 PM	0	0	0	0	0	0	0	0	0	99	0	0	0	133	0	0	232	3046
5:50 PM	0	0	0	0	0	0	0	0	0	98	3	0	0	150	0	0	251	3049
5:55 PM	0	0	0	0	0	0	0	0	0	72	2	0	0	135	0	0	209	2995

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	0	0	0	1252	32	0	0	1884	0	0	3168
Heavy Trucks	0	0	0		0	0	0		0	20	4		0	24	0		48
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/22/2018 10:36 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

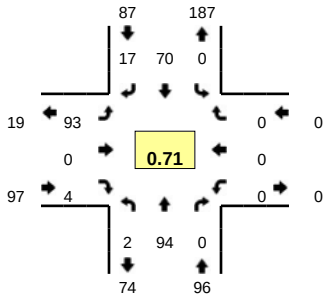
Type of peak hour being reported: User-Defined

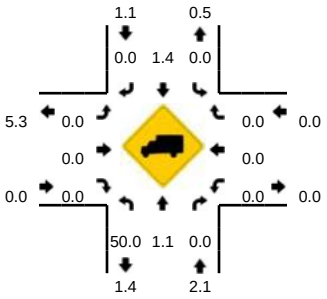
Method for determining peak hour: Total Entering Volume

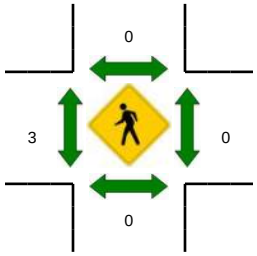
LOCATION: Providence Dr -- PNMC North Dwy
CITY/STATE: Newberg, OR

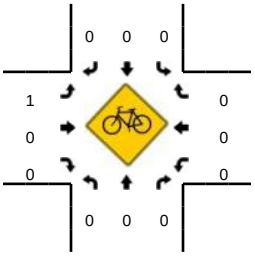
QC JOB #: 14609606
DATE: Tue, Feb 06 2018

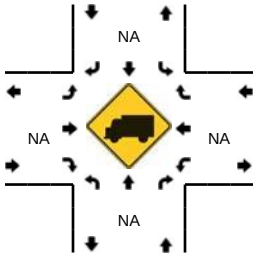
Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

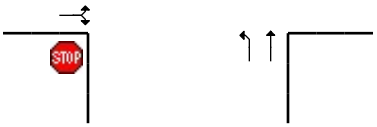


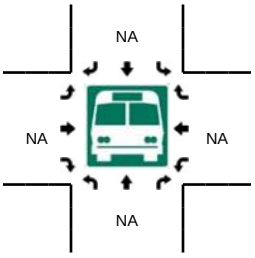












5-Min Count Period Beginning At	Providence Dr (Northbound)				Providence Dr (Southbound)				PNMC North Dwy (Eastbound)				PNMC North Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	7	0	0	0	5	0	0	6	0	0	0	0	0	0	0	18	
4:05 PM	0	7	0	0	0	4	1	0	8	0	0	0	0	0	0	0	20	
4:10 PM	0	6	0	0	0	5	2	0	9	0	0	0	0	0	0	0	22	
4:15 PM	2	10	0	0	0	8	5	0	5	0	0	0	0	0	0	0	30	
4:20 PM	1	10	0	0	0	3	5	0	7	0	1	0	0	0	0	0	27	
4:25 PM	0	5	0	0	0	6	3	0	12	0	0	0	0	0	0	0	26	
4:30 PM	0	5	0	0	0	4	7	0	13	0	1	0	0	0	0	0	30	
4:35 PM	0	15	0	0	0	5	2	0	9	0	4	0	0	0	0	0	35	
4:40 PM	0	6	0	0	0	1	5	0	7	0	0	0	0	0	0	0	19	
4:45 PM	0	6	0	0	0	7	1	0	5	0	0	0	0	0	0	0	19	
4:50 PM	1	7	0	0	0	7	2	0	8	0	1	0	0	0	0	0	26	
4:55 PM	0	3	0	0	0	8	1	0	8	0	0	0	0	0	0	0	20	292
5:00 PM	0	8	0	0	0	8	2	0	14	0	0	0	0	0	0	0	32	306
5:05 PM	0	18	0	0	0	8	1	0	17	0	1	0	0	0	0	0	45	331
5:10 PM	0	6	0	0	0	6	0	0	7	0	2	0	0	0	0	0	21	330
5:15 PM	0	7	0	0	0	11	0	0	10	0	0	0	0	0	0	0	28	328
5:20 PM	1	10	0	0	0	6	0	0	3	0	0	0	0	0	0	0	20	321
5:25 PM	0	9	0	0	0	3	1	0	3	0	0	0	0	0	0	0	16	311
5:30 PM	0	8	0	0	0	4	2	0	7	0	0	0	0	0	0	0	21	302
5:35 PM	0	6	0	0	0	1	2	0	4	0	0	0	0	0	0	0	13	280
5:40 PM	1	5	0	0	0	3	5	0	6	0	2	0	0	0	0	0	22	283
5:45 PM	0	9	0	0	0	3	0	0	4	0	0	0	0	0	0	0	16	280
5:50 PM	0	9	0	0	0	5	5	0	6	0	0	0	0	0	0	0	25	279
5:55 PM	0	9	0	0	0	3	2	0	3	0	0	0	0	0	0	0	17	276

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	128	0	0	0	88	12	0	152	0	12	0	0	0	0	0	392
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				8				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/22/2018 10:36 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

LOCATION: Providence Dr -- PNMC North-Central Dwy

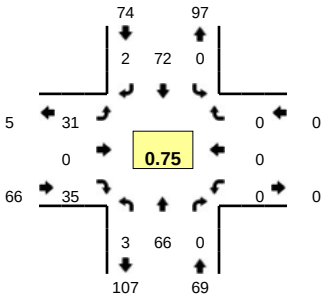
CITY/STATE: Newberg, OR

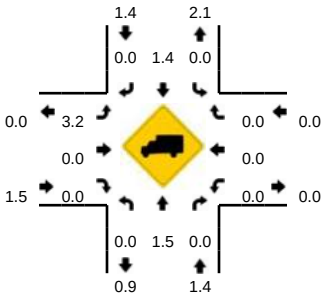
QC JOB #: 14609608

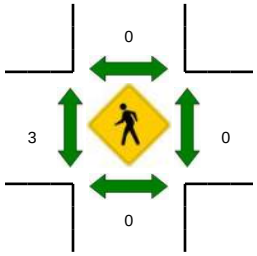
DATE: Tue, Feb 06 2018

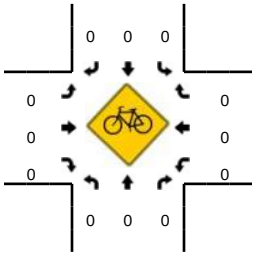
Peak-Hour: 4:40 PM -- 5:40 PM

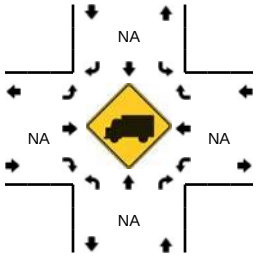
Peak 15-Min: 5:05 PM -- 5:20 PM

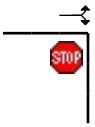


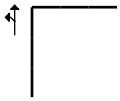


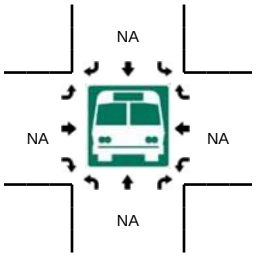












5-Min Count Period Beginning At	Providence Dr (Northbound)				Providence Dr (Southbound)				PNMC North-Central Dwy (Eastbound)				PNMC North-Central Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	7	0	0	0	5	0	0	0	0	1	0	0	0	0	0	14	
4:05 PM	1	3	0	0	0	4	0	0	4	0	3	0	0	0	0	0	15	
4:10 PM	0	5	0	0	0	5	0	0	1	0	1	0	0	0	0	0	12	
4:15 PM	0	7	0	0	0	5	0	0	6	0	1	0	0	0	0	0	19	
4:20 PM	1	9	0	0	0	6	1	0	2	0	4	0	0	0	0	0	23	
4:25 PM	2	1	0	0	0	5	1	0	4	0	5	0	0	0	0	0	18	
4:30 PM	0	4	0	0	0	5	0	0	2	0	1	0	0	0	0	0	12	
4:35 PM	1	10	0	0	0	9	0	0	3	0	6	0	0	0	0	0	29	
4:40 PM	0	2	0	0	0	1	0	0	6	0	3	0	0	0	0	0	12	
4:45 PM	0	2	0	0	0	7	0	0	2	0	2	0	0	0	0	0	13	
4:50 PM	0	7	0	0	0	7	0	0	1	0	8	0	0	0	0	0	23	
4:55 PM	0	1	0	0	0	9	0	0	2	0	4	0	0	0	0	0	16	206
5:00 PM	0	5	0	0	0	8	0	0	3	0	1	0	0	0	0	0	17	209
5:05 PM	0	10	0	0	0	9	0	0	8	0	4	0	0	0	0	0	31	225
5:10 PM	0	6	0	0	0	8	0	0	0	0	4	0	0	0	0	0	18	231
5:15 PM	1	6	0	0	0	11	0	0	1	0	2	0	0	0	0	0	21	233
5:20 PM	0	9	0	0	0	6	0	0	4	0	1	0	0	0	0	0	20	230
5:25 PM	0	6	0	0	0	2	1	0	1	0	3	0	0	0	0	0	13	225
5:30 PM	0	9	0	0	0	3	1	0	0	0	1	0	0	0	0	0	14	227
5:35 PM	2	3	0	0	0	1	0	0	3	0	2	0	0	0	0	0	11	209
5:40 PM	2	4	0	0	0	4	0	0	2	0	1	0	0	0	0	0	13	210
5:45 PM	0	3	0	0	0	3	1	0	6	0	0	0	0	0	0	0	13	210
5:50 PM	1	6	0	0	0	5	0	0	2	0	0	0	0	0	0	0	14	201
5:55 PM	0	4	0	0	0	3	0	0	5	0	2	0	0	0	0	0	14	199

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	88	0	0	0	112	0	0	36	0	40	0	0	0	0	0	280
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/22/2018 10:36 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

LOCATION: Providence Dr -- PNMC South-Central Dwy

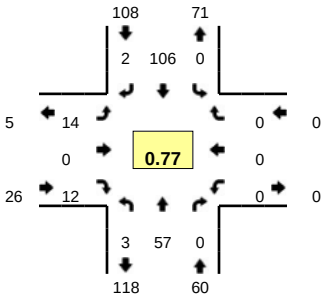
CITY/STATE: Newberg, OR

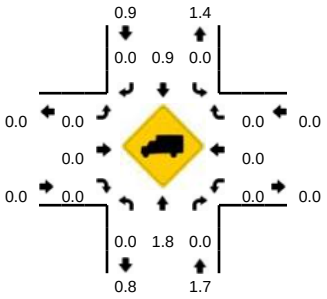
QC JOB #: 14609610

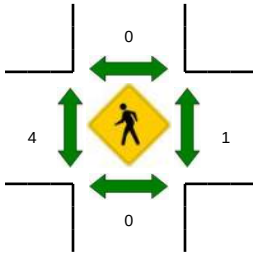
DATE: Tue, Feb 06 2018

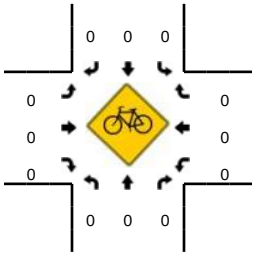
Peak-Hour: 4:40 PM -- 5:40 PM

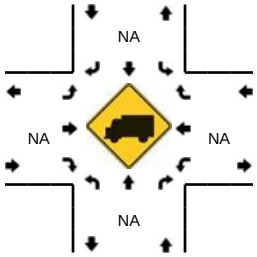
Peak 15-Min: 5:05 PM -- 5:20 PM

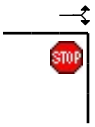


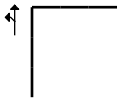


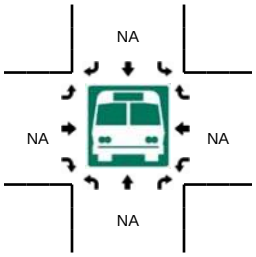












5-Min Count Period Beginning At	Providence Dr (Northbound)				Providence Dr (Southbound)				PNMC South-Central Dwy (Eastbound)				PNMC South-Central Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	6	0	0	0	6	0	0	2	0	0	0	0	0	0	0	15	
4:05 PM	0	4	0	0	0	6	0	0	0	0	0	0	0	0	0	0	10	
4:10 PM	0	5	0	0	0	7	0	0	0	0	0	0	0	0	0	0	12	
4:15 PM	0	7	0	0	0	6	0	0	0	0	0	0	0	0	0	0	13	
4:20 PM	1	10	0	0	0	10	0	0	0	0	1	0	0	0	0	0	22	
4:25 PM	0	3	0	0	0	9	1	0	0	0	1	0	0	0	0	0	14	
4:30 PM	0	3	0	0	0	6	0	0	0	0	0	0	0	0	0	0	9	
4:35 PM	0	10	0	0	0	15	0	0	1	0	0	0	0	0	0	0	26	
4:40 PM	0	2	0	0	0	3	0	0	1	0	1	0	0	0	0	0	7	
4:45 PM	0	2	0	0	0	9	0	0	0	0	0	0	0	0	0	0	11	
4:50 PM	0	7	0	0	0	16	0	0	1	0	1	0	0	0	0	0	25	
4:55 PM	0	1	0	0	0	14	1	0	0	0	0	0	0	0	0	0	16	180
5:00 PM	1	5	0	0	0	9	0	0	0	0	2	0	0	0	0	0	17	182
5:05 PM	0	6	0	0	0	13	0	0	4	0	1	0	0	0	0	0	24	196
5:10 PM	1	6	0	0	0	12	0	0	0	0	0	0	0	0	0	0	19	203
5:15 PM	0	7	0	0	0	11	1	0	0	0	1	0	0	0	0	0	20	210
5:20 PM	0	9	0	0	0	7	0	0	0	0	0	0	0	0	0	0	16	204
5:25 PM	1	4	0	0	0	5	0	0	2	0	2	0	0	0	0	0	14	204
5:30 PM	0	4	0	0	0	4	0	0	5	0	2	0	0	0	0	0	15	210
5:35 PM	0	4	0	0	0	3	0	0	1	0	2	0	0	0	0	0	10	194
5:40 PM	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0	0	11	198
5:45 PM	0	2	0	0	0	3	0	0	1	0	2	0	0	0	0	0	8	195
5:50 PM	0	7	0	0	0	5	0	0	0	0	0	0	0	0	0	0	12	182
5:55 PM	0	4	0	0	0	4	0	0	1	0	1	0	0	0	0	0	10	176

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	76	0	0	0	144	4	0	16	0	8	0	0	0	0	0	252
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				8				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/22/2018 10:36 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

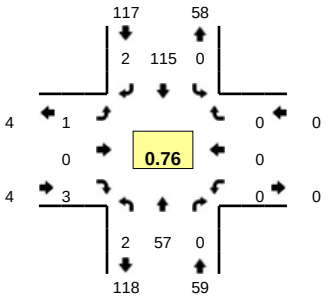
Method for determining peak hour: Total Entering Volume

LOCATION: Providence Dr -- PNMC South Dwy

CITY/STATE: Newberg, OR

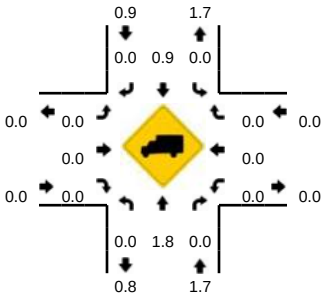
QC JOB #: 14609612

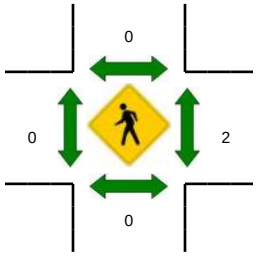
DATE: Tue, Feb 06 2018

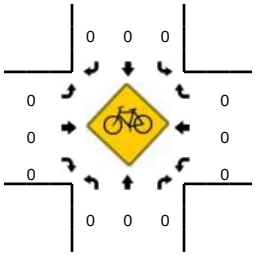


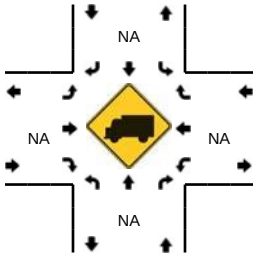
Peak-Hour: 4:40 PM -- 5:40 PM

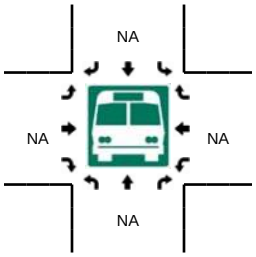
Peak 15-Min: 5:05 PM -- 5:20 PM











5-Min Count Period Beginning At	Providence Dr (Northbound)				Providence Dr (Southbound)				PNMC South Dwy (Eastbound)				PNMC South Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	6	0	0	0	5	0	0	1	0	0	0	0	0	0	0	12	
4:05 PM	0	4	0	0	0	6	0	0	0	0	0	0	0	0	0	0	10	
4:10 PM	0	5	0	0	0	8	0	0	0	0	1	0	0	0	0	0	14	
4:15 PM	0	6	0	0	0	6	0	0	1	0	0	0	0	0	0	0	13	
4:20 PM	0	11	0	0	0	12	0	0	0	0	0	0	0	0	0	0	23	
4:25 PM	0	2	0	0	0	9	0	0	1	0	0	0	0	0	0	0	12	
4:30 PM	0	4	0	0	0	7	0	0	1	0	0	0	0	0	0	0	12	
4:35 PM	0	9	0	0	0	15	0	0	0	0	0	0	0	0	0	0	24	
4:40 PM	0	1	0	0	0	5	0	0	0	0	0	0	0	0	0	0	6	
4:45 PM	0	2	0	0	0	9	0	0	0	0	0	0	0	0	0	0	11	
4:50 PM	1	6	0	0	0	16	0	0	0	0	0	0	0	0	0	0	23	
4:55 PM	1	2	0	0	0	12	0	0	0	0	0	0	0	0	0	0	15	175
5:00 PM	0	5	0	0	0	11	0	0	0	0	0	0	0	0	0	0	16	179
5:05 PM	0	7	0	0	0	13	1	0	0	0	0	0	0	0	0	0	21	190
5:10 PM	0	6	0	0	0	12	0	0	0	0	0	0	0	0	0	0	18	194
5:15 PM	0	7	0	0	0	11	1	0	1	0	0	0	0	0	0	0	20	201
5:20 PM	0	8	0	0	0	8	0	0	0	0	0	0	0	0	0	0	16	194
5:25 PM	0	5	0	0	0	7	0	0	0	0	1	0	0	0	0	0	13	195
5:30 PM	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0	0	9	192
5:35 PM	0	4	0	0	0	6	0	0	0	0	2	0	0	0	0	0	12	180
5:40 PM	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0	0	11	185
5:45 PM	0	2	0	0	0	3	2	0	0	0	0	0	0	0	0	0	7	181
5:50 PM	0	6	0	0	0	5	0	0	1	0	0	0	0	0	0	0	12	170
5:55 PM	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0	0	9	164

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	80	0	0	0	144	8	0	4	0	0	0	0	0	0	0	236
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/22/2018 10:36 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

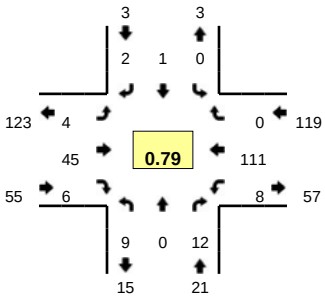
LOCATION: Werth Blvd -- Providence Dr/Hayes St

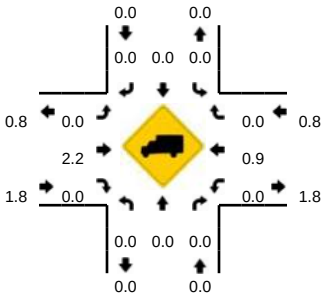
QC JOB #: 14609614

CITY/STATE: Newberg, OR

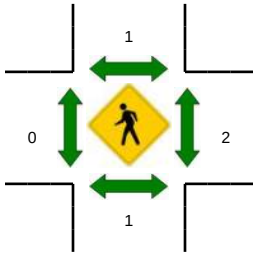
DATE: Tue, Feb 06 2018

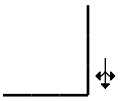
Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

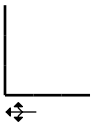


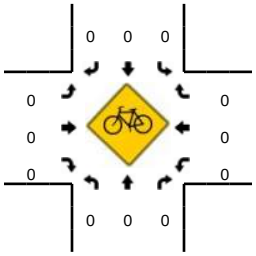


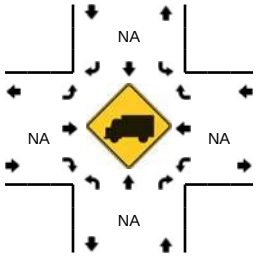
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

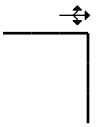


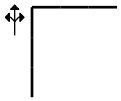


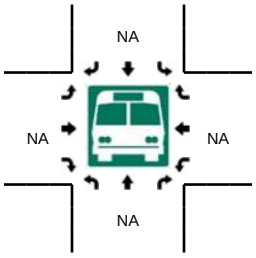












5-Min Count Period Beginning At	Werth Blvd (Northbound)				Werth Blvd (Southbound)				Providence Dr/Hayes St (Eastbound)				Providence Dr/Hayes St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	3	0	0	0	1	0	0	3	2	0	0	6	0	0	15	
4:05 PM	0	0	0	0	0	0	1	0	0	3	0	0	0	6	0	0	10	
4:10 PM	0	0	1	0	0	1	0	0	0	5	0	0	2	5	0	0	14	
4:15 PM	0	1	1	0	0	0	2	0	1	4	2	0	0	7	0	0	18	
4:20 PM	1	0	0	0	0	0	0	0	1	11	1	0	1	7	1	0	23	
4:25 PM	0	0	0	0	0	0	1	0	0	3	1	0	0	10	0	0	15	
4:30 PM	0	0	1	0	0	0	1	0	0	3	0	0	0	8	0	0	13	
4:35 PM	2	0	2	0	0	0	1	0	1	5	0	0	0	13	1	0	25	
4:40 PM	1	0	1	0	0	0	1	0	0	1	1	0	0	7	0	0	12	
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	2	7	0	0	10	
4:50 PM	0	0	1	0	0	0	0	0	1	5	0	0	2	14	0	0	23	
4:55 PM	2	0	2	0	0	0	0	0	0	2	0	0	1	9	0	0	16	194
5:00 PM	0	0	3	0	0	1	0	0	0	1	0	0	0	12	0	0	17	196
5:05 PM	2	0	1	0	0	0	0	0	1	5	0	0	1	6	0	0	16	202
5:10 PM	0	0	2	0	0	0	0	0	0	3	1	0	0	19	0	0	25	213
5:15 PM	0	0	1	0	0	0	0	0	0	6	1	1	1	10	0	0	20	215
5:20 PM	0	0	0	0	0	0	0	0	1	8	1	0	1	7	0	0	18	210
5:25 PM	2	0	1	0	0	0	1	0	0	6	1	0	0	7	0	0	18	213
5:30 PM	0	0	0	0	0	0	0	0	0	2	1	0	0	5	0	0	8	208
5:35 PM	2	0	0	0	0	0	0	0	0	5	0	0	0	8	0	0	15	198
5:40 PM	2	0	1	0	0	0	0	0	0	4	0	0	0	6	0	0	13	199
5:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	1	0	5	194
5:50 PM	1	0	1	0	0	1	1	0	1	6	3	0	0	5	0	0	19	190
5:55 PM	0	0	2	0	0	0	1	0	1	2	0	0	0	5	0	0	11	185

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	12	0	0	0	0	0	4	68	12	4	8	144	0	0	252
Heavy Trucks	0	0	0		0	0	0		0	4	0		0	0	0		4
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/22/2018 10:36 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

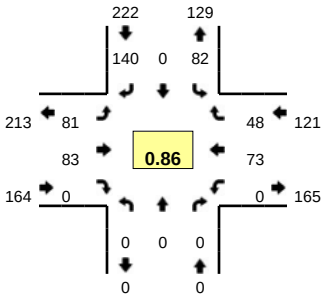
Type of peak hour being reported: User-Defined

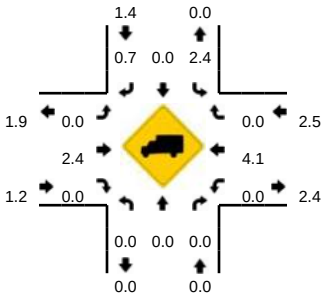
Method for determining peak hour: Total Entering Volume

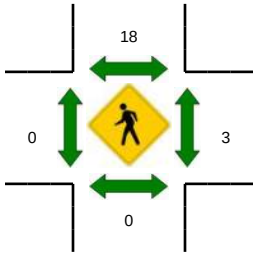
LOCATION: Brutscher St -- E Fernwood Rd
CITY/STATE: Newberg, OR

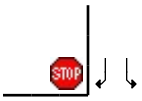
QC JOB #: 14609618
DATE: Tue, Feb 06 2018

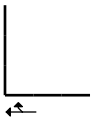
Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

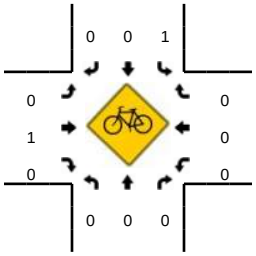


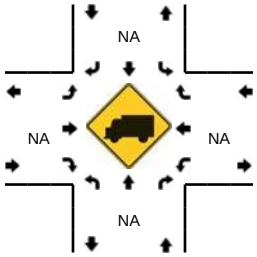


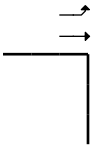


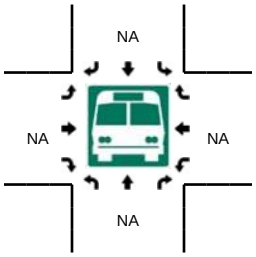












5-Min Count Period Beginning At	Brutscher St (Northbound)				Brutscher St (Southbound)				E Fernwood Rd (Eastbound)				E Fernwood Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	5	0	10	0	6	2	0	0	0	10	3	0	36	
4:05 PM	0	0	0	0	6	0	9	0	11	2	0	0	0	5	6	0	39	
4:10 PM	0	0	0	0	6	0	10	0	7	4	0	0	0	8	4	0	39	
4:15 PM	0	0	0	0	12	0	5	0	8	5	0	0	0	10	5	0	45	
4:20 PM	0	0	0	0	5	0	4	0	4	6	0	0	0	13	5	0	37	
4:25 PM	0	0	0	0	6	0	16	0	3	5	0	0	0	5	6	0	41	
4:30 PM	0	0	0	0	10	0	8	0	5	5	0	0	0	12	4	0	44	
4:35 PM	0	0	0	0	6	0	10	0	6	4	0	0	0	9	7	0	42	
4:40 PM	0	0	0	0	8	0	8	0	9	5	0	0	0	9	5	0	44	
4:45 PM	0	0	0	0	5	0	9	0	6	4	0	0	0	5	3	0	32	
4:50 PM	0	0	0	0	3	0	18	0	5	10	0	0	0	8	6	0	50	
4:55 PM	0	0	0	0	12	0	13	0	2	9	0	0	0	1	6	0	43	492
5:00 PM	0	0	0	0	1	0	14	0	3	7	0	0	0	7	2	0	34	490
5:05 PM	0	0	0	0	11	0	15	0	7	7	0	0	0	8	3	0	51	502
5:10 PM	0	0	0	0	9	0	11	0	6	5	0	0	0	6	7	0	44	507
5:15 PM	0	0	0	0	5	0	14	0	11	8	0	0	0	10	2	0	50	512
5:20 PM	0	0	0	0	9	0	10	0	11	13	0	0	0	8	2	0	53	528
5:25 PM	0	0	0	0	6	0	10	0	7	5	0	0	0	4	4	0	36	523
5:30 PM	0	0	0	0	8	0	7	0	6	5	0	0	0	3	7	0	36	515
5:35 PM	0	0	0	0	5	0	11	0	8	5	0	0	0	4	1	0	34	507
5:40 PM	0	0	0	0	8	0	10	0	2	4	0	0	0	6	3	0	33	496
5:45 PM	0	0	0	0	4	0	9	0	6	5	0	0	0	11	5	0	40	504
5:50 PM	0	0	0	0	6	0	7	0	14	9	0	0	0	7	6	0	49	503
5:55 PM	0	0	0	0	3	0	7	0	7	4	0	0	0	6	4	0	31	491

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	92	0	140	0	112	104	0	0	0	96	44	0	588
Heavy Trucks	0	0	0		0	0	0		0	4	0		0	8	0		12
Pedestrians		0				36				0				8			44
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/22/2018 10:36 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix B Existing Traffic Conditions

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Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	2069	81	87	1182	37	73
v/c Ratio	1.02	0.09	0.52	0.51	0.15	0.24
Control Delay	50.6	8.3	61.6	6.8	44.2	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.6	8.3	61.6	6.8	44.2	11.7
Queue Length 50th (ft)	~930	18	65	165	25	0
Queue Length 95th (ft)	#1080	42	115	200	56	41
Internal Link Dist (ft)	676			463	180	
Turn Bay Length (ft)		80	115		150	
Base Capacity (vph)	2020	904	212	2319	247	310
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.09	0.41	0.51	0.15	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1841	72	77	1052	33	65
Future Volume (vph)	1841	72	77	1052	33	65
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Grade (%)	-3%			2%	3%	
Total Lost time (s)	6.0	6.0	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3245	1438	1646	3076	1449	1465
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3245	1438	1646	3076	1449	1465
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	2069	81	87	1182	37	73
RTOR Reduction (vph)	0	8	0	0	0	61
Lane Group Flow (vph)	2069	73	87	1182	37	12
Heavy Vehicles (%)	4%	5%	0%	7%	13%	0%
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Actuated Green, G (s)	73.8	73.8	10.7	90.5	20.5	20.5
Effective Green, g (s)	73.8	73.8	10.7	90.5	20.5	20.5
Actuated g/C Ratio	0.61	0.61	0.09	0.75	0.17	0.17
Clearance Time (s)	6.0	6.0	4.5	4.5	4.5	4.5
Vehicle Extension (s)	5.0	5.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	1995	884	146	2319	247	250
v/s Ratio Prot	c0.64		0.05	c0.38	c0.03	
v/s Ratio Perm		0.05				0.01
v/c Ratio	1.04	0.08	0.60	0.51	0.15	0.05
Uniform Delay, d1	23.1	9.4	52.6	5.9	42.3	41.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	30.5	0.2	7.4	0.8	1.3	0.4
Delay (s)	53.6	9.5	60.0	6.7	43.6	42.0
Level of Service	D	A	E	A	D	D
Approach Delay (s)	51.9			10.3	42.5	
Approach LOS	D			B	D	

Intersection Summary			
HCM 2000 Control Delay	36.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	37	1	4	61	68	81
Future Volume (Veh/h)	37	1	4	61	68	81
Sign Control	Stop			Free	Free	
Grade	0%			3%	-3%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	44	1	5	73	81	96
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					260	
pX, platoon unblocked						
vC, conflicting volume	212	129	177			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	212	129	177			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	94	100	100			
cM capacity (veh/h)	778	926	1272			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	45	78	177
Volume Left	44	5	0
Volume Right	1	0	96
cSH	781	1272	1700
Volume to Capacity	0.06	0.00	0.10
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.9	0.5	0.0
Lane LOS	A	A	
Approach Delay (s)	9.9	0.5	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	18.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	13	28	50	28	41
Future Volume (Veh/h)	15	13	28	50	28	41
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	18	15	33	59	33	48
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					680	
pX, platoon unblocked						
vC, conflicting volume	182	57	81			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	182	57	81			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.2			
p0 queue free %	98	99	98			
cM capacity (veh/h)	764	1015	1529			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	33	92	81
Volume Left	18	33	0
Volume Right	15	0	48
cSH	861	1529	1700
Volume to Capacity	0.04	0.02	0.05
Queue Length 95th (ft)	3	2	0
Control Delay (s)	9.3	2.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	2.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	20.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	0	8	75	37	4
Future Volume (Veh/h)	3	0	8	75	37	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	4	0	10	90	45	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					793	
pX, platoon unblocked						
vC, conflicting volume	158	48	50			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	158	48	50			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	99			
cM capacity (veh/h)	833	1027	1570			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	4	100	50
Volume Left	4	10	0
Volume Right	0	0	5
cSH	833	1570	1700
Volume to Capacity	0.00	0.01	0.03
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.3	0.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	0.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	20.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	2	3	77	28	9
Future Volume (Veh/h)	6	2	3	77	28	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	8	3	4	99	36	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					1143	
pX, platoon unblocked						
vC, conflicting volume	149	42	48			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	149	42	48			
tC, single (s)	6.8	6.7	4.1			
tC, 2 stage (s)						
tF (s)	3.9	3.8	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	760	907	1572			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	11	103	48
Volume Left	8	4	0
Volume Right	3	0	12
cSH	795	1572	1700
Volume to Capacity	0.01	0.00	0.03
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.6	0.3	0.0
Lane LOS	A	A	
Approach Delay (s)	9.6	0.3	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	16.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCS 2010 Two-Way Stop Control Summary Report

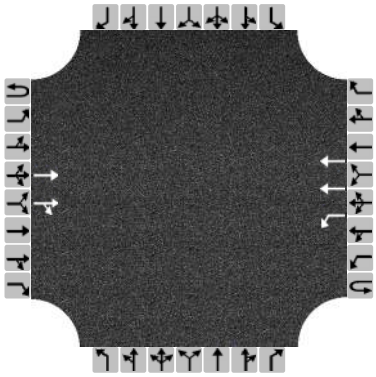
General Information

Analyst	Kittelson & Associates
Agency/Co.	City of Newberg
Date Performed	3/7/2018
Analysis Year	2018
Time Analyzed	Existing AM
Intersection Orientation	East-West
Project Description	Newberg Providence Medical Center

Site Information

Intersection	OR 99 W/PNMC Access
Jurisdiction	Newberg, Oregon
East/West Street	OR 99W
North/South Street	Right-In, Left-Out Access
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		0	0	0		0	0	0
Configuration			T	TR		L	T									
Volume (veh/h)			1904	51		18	1059									
Percent Heavy Vehicles						3										
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						20										
Capacity						234										
v/c Ratio						0.09										
95% Queue Length						0.3										
Control Delay (s/veh)						21.8										
Level of Service (LOS)						C										
Approach Delay (s/veh)					0.4											
Approach LOS																

HCS 2010 Roundabout Report

General Information

Analyst	Kittelson & Associates, Inc.
Agency or Co.	City of Newberg
Date Performed	3/6/2018
Analysis Year	2018
Time Period	Existing AM
Project Description	Newberg Providence Medical Center

Site Information

Intersection	Werth Blvd/Providence Dr/Hayes St
E/W Street Name	Providence Dr/Hayes St
N/S Street Name	Werth Blvd
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.78
Jurisdiction	Newberg, OR

Volume Adjustment and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	1	75	4	0	7	20	1	0	2	0	4	0	2	1	2
Percent Heavy Vehicles, %	0	0	3	0	0	0	6	100	0	0	0	0	0	0	100	0
Flow Rate (vPCE) pc/h	0	1	99	5	0	9	27	3	0	3	0	5	0	3	3	3
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing	1				1				0				2			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (sec)		5.1929			5.1929			5.1929			5.1929	
Follow-Up Headway (sec)		3.1858			3.1858			3.1858			3.1858	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (Ve), pc/h		105			39			8			9	
Entry Volume veh/h		102			36			8			8	
Circulating Flow (Vc), pc/h	15			4			103			39		
Exiting Flow (Vex), pc/h	107			33			4			17		
Capacity (cPCE), pc/h		1113			1126			1019			1087	
Capacity (c), veh/h		1082			1038			1019			905	
v/c Ratio (X)		0.09			0.03			0.01			0.01	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		4.1			3.8			3.6			4.1	
Lane LOS		A			A			A			A	
95% Queue		0.3			0.1			0.0			0.0	
Approach Delay, s/veh	4.1			3.8			3.6			4.1		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh / LOS	4.0						A					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	99	9	1	52
Future Volume (Veh/h)	0	2	99	9	1	52
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	0	3	124	11	1	65
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	198	130			136	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	198	130			136	
tC, single (s)	6.4	7.2			5.1	
tC, 2 stage (s)						
tF (s)	3.5	4.2			3.1	
p0 queue free %	100	100			100	
cM capacity (veh/h)	794	711			1014	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	0	3	135	1	65
Volume Left	0	0	0	1	0
Volume Right	0	3	11	0	0
cSH	1700	711	1700	1014	1700
Volume to Capacity	0.00	0.00	0.08	0.00	0.04
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	10.1	0.0	8.6	0.0
Lane LOS	A	B		A	
Approach Delay (s)	10.1		0.0	0.1	
Approach LOS	B				

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	16.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	59	43	103	49	21	31
Future Volume (Veh/h)	59	43	103	49	21	31
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	70	51	123	58	25	37
Pedestrians			1		1	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			3.5		3.5	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	182				345	153
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	182				345	153
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	95				96	96
cM capacity (veh/h)	1368				611	887

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	70	51	181	25	37
Volume Left	70	0	0	25	0
Volume Right	0	0	58	0	37
cSH	1368	1700	1700	611	887
Volume to Capacity	0.05	0.03	0.11	0.04	0.04
Queue Length 95th (ft)	4	0	0	3	3
Control Delay (s)	7.8	0.0	0.0	11.1	9.2
Lane LOS	A			B	A
Approach Delay (s)	4.5		0.0	10.0	
Approach LOS				B	

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	25.3%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
1: Providence Dr & N Hwy 99W

03/06/2018

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1355	23	78	2153	102	129
v/c Ratio	0.59	0.02	0.52	0.81	0.59	0.12
Control Delay	13.6	7.0	71.8	10.1	72.2	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.6	7.0	71.8	10.1	72.2	1.8
Queue Length 50th (ft)	311	4	69	428	90	0
Queue Length 95th (ft)	472	17	121	680	147	25
Internal Link Dist (ft)	676			463	180	
Turn Bay Length (ft)		80	115		150	
Base Capacity (vph)	2292	1026	241	2671	353	1054
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.02	0.32	0.81	0.29	0.12

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1287	22	74	2045	97	123
Future Volume (vph)	1287	22	74	2045	97	123
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Grade (%)	-3%			2%	3%	
Total Lost time (s)	6.0	6.0	4.5	4.5	4.5	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3309	1478	1646	3227	1621	1465
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3309	1478	1646	3227	1621	1465
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1355	23	78	2153	102	129
RTOR Reduction (vph)	0	2	0	0	0	40
Lane Group Flow (vph)	1355	21	78	2153	102	89
Confl. Peds. (#/hr)					1	
Confl. Bikes (#/hr)		2				
Heavy Vehicles (%)	2%	0%	0%	2%	1%	0%
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				2
Actuated Green, G (s)	97.0	97.0	12.9	115.9	15.1	97.0
Effective Green, g (s)	97.0	97.0	12.9	115.9	15.1	97.0
Actuated g/C Ratio	0.69	0.69	0.09	0.83	0.11	0.69
Clearance Time (s)	6.0	6.0	4.5	4.5	4.5	6.0
Vehicle Extension (s)	5.0	5.0	4.0	4.0	4.0	5.0
Lane Grp Cap (vph)	2292	1024	151	2671	174	1015
v/s Ratio Prot	0.41		0.05	c0.67	c0.06	
v/s Ratio Perm		0.01				0.06
v/c Ratio	0.59	0.02	0.52	0.81	0.59	0.09
Uniform Delay, d1	11.2	6.7	60.6	6.2	59.5	7.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.0	3.9	2.7	5.9	0.2
Delay (s)	12.3	6.7	64.5	9.0	65.3	7.2
Level of Service	B	A	E	A	E	A
Approach Delay (s)	12.2			10.9	32.9	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	113	5	2	107	77	19
Future Volume (Veh/h)	113	5	2	107	77	19
Sign Control	Stop			Free	Free	
Grade	0%			3%	-3%	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Hourly flow rate (vph)	159	7	3	151	108	27
Pedestrians	3					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					260	
pX, platoon unblocked						
vC, conflicting volume	282	124	138			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	282	124	138			
tC, single (s)	6.4	6.2	4.6			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.7			
p0 queue free %	78	99	100			
cM capacity (veh/h)	709	929	1194			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	166	154	135
Volume Left	159	3	0
Volume Right	7	0	27
cSH	716	1194	1700
Volume to Capacity	0.23	0.00	0.08
Queue Length 95th (ft)	22	0	0
Control Delay (s)	11.5	0.2	0.0
Lane LOS	B	A	
Approach Delay (s)	11.5	0.2	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	20.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	34	39	3	75	80	2
Future Volume (Veh/h)	34	39	3	75	80	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	45	52	4	100	107	3
Pedestrians	3					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					680	
pX, platoon unblocked						
vC, conflicting volume	220	112	113			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	220	112	113			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	94	100			
cM capacity (veh/h)	762	944	1485			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	97	104	110
Volume Left	45	4	0
Volume Right	52	0	3
cSH	850	1485	1700
Volume to Capacity	0.11	0.00	0.06
Queue Length 95th (ft)	10	0	0
Control Delay (s)	9.8	0.3	0.0
Lane LOS	A	A	
Approach Delay (s)	9.8	0.3	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	17.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	13	3	63	117	2
Future Volume (Veh/h)	15	13	3	63	117	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	19	17	4	82	152	3
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					793	
pX, platoon unblocked						
vC, conflicting volume	248	158	159			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	248	158	159			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	98	100			
cM capacity (veh/h)	740	890	1427			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	36	86	155
Volume Left	19	4	0
Volume Right	17	0	3
cSH	804	1427	1700
Volume to Capacity	0.04	0.00	0.09
Queue Length 95th (ft)	4	0	0
Control Delay (s)	9.7	0.4	0.0
Lane LOS	A	A	
Approach Delay (s)	9.7	0.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	3	2	65	128	2
Future Volume (Veh/h)	1	3	2	65	128	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	1	4	3	86	168	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					1143	
pX, platoon unblocked						
vC, conflicting volume	262	170	171			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	262	170	171			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	730	880	1418			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	5	89	171
Volume Left	1	3	0
Volume Right	4	0	3
cSH	845	1418	1700
Volume to Capacity	0.01	0.00	0.10
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.3	0.3	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	0.3	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	16.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1322	20	2	2061	0	0
Future Volume (Veh/h)	1322	20	2	2061	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1363	21	2	2125	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				756		
pX, platoon unblocked					0.21	
vC, conflicting volume			1384		2440	692
vC1, stage 1 conf vol					1374	
vC2, stage 2 conf vol					1066	
vCu, unblocked vol			1384		327	692
tC, single (s)			4.1		6.8	8.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	4.3
p0 queue free %			100		100	100
cM capacity (veh/h)			501		180	222

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3
Volume Total	909	475	2	1062	1062
Volume Left	0	0	2	0	0
Volume Right	0	21	0	0	0
cSH	1700	1700	501	1700	1700
Volume to Capacity	0.53	0.28	0.00	0.63	0.63
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	12.2	0.0	0.0
Lane LOS			B		
Approach Delay (s)	0.0		0.0		
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

HCS 2010 Roundabout Report

General Information

Analyst	Kittelson & Associates, Inc.
Agency or Co.	City of Newberg
Date Performed	3/6/2018
Analysis Year	2018
Time Period	Existing PM
Project Description	Newberg Providence Medical Center

Site Information

Intersection	Werth Blvd/Providence Dr/Hayes St
E/W Street Name	Providence Dr/Hayes St
N/S Street Name	Werth Blvd
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.79
Jurisdiction	Newberg, OR

Volume Adjustment and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	4	50	7	0	9	123	0	0	10	0	13	0	0	1	2
Percent Heavy Vehicles, %	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0
Flow Rate (vPCE) pc/h	0	5	65	9	0	11	157	0	0	13	0	16	0	0	1	3
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing	0				2				1				1			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (sec)		5.1929			5.1929			5.1929			5.1929	
Follow-Up Headway (sec)		3.1858			3.1858			3.1858			3.1858	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (Ve), pc/h		79			168			29			4	
Entry Volume veh/h		78			166			29			4	
Circulating Flow (Vc), pc/h		12			18			70			181	
Exiting Flow (Vex), pc/h		81			173			5			21	
Capacity (cPCE), pc/h		1117			1110			1054			943	
Capacity (c), veh/h		1099			1099			1053			943	
v/c Ratio (X)		0.07			0.15			0.03			0.00	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		3.9			4.6			3.7			3.9	
Lane LOS		A			A			A			A	
95% Queue		0.2			0.5			0.1			0.0	
Approach Delay, s/veh	3.9			4.6			3.7			3.9		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh / LOS	4.3						A					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	7	136	6	4	233
Future Volume (Veh/h)	14	7	136	6	4	233
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	8	148	7	4	253
Pedestrians	8					1
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	3.5					3.5
Percent Blockage	1					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	420	160			163	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	420	160			163	
tC, single (s)	6.4	6.4			4.3	
tC, 2 stage (s)						
tF (s)	3.5	3.5			2.4	
p0 queue free %	97	99			100	
cM capacity (veh/h)	587	840			1277	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	15	8	155	4	253
Volume Left	15	0	0	4	0
Volume Right	0	8	7	0	0
cSH	587	840	1700	1277	1700
Volume to Capacity	0.03	0.01	0.09	0.00	0.15
Queue Length 95th (ft)	2	1	0	0	0
Control Delay (s)	11.3	9.3	0.0	7.8	0.0
Lane LOS	B	A		A	
Approach Delay (s)	10.6		0.0	0.1	
Approach LOS	B				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	22.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	89	92	81	53	91	156
Future Volume (Veh/h)	89	92	81	53	91	156
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	103	107	94	62	106	181
Pedestrians			3		18	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			3.5		3.5	
Percent Blockage			0		2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	174				459	143
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	174				459	143
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	93				79	80
cM capacity (veh/h)	1391				508	892

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	103	107	156	106	181
Volume Left	103	0	0	106	0
Volume Right	0	0	62	0	181
cSH	1391	1700	1700	508	892
Volume to Capacity	0.07	0.06	0.09	0.21	0.20
Queue Length 95th (ft)	6	0	0	19	19
Control Delay (s)	7.8	0.0	0.0	13.9	10.1
Lane LOS	A			B	B
Approach Delay (s)	3.8		0.0	11.5	
Approach LOS				B	

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix C ODOT Crash Data

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Chris Brehmer

Subject: RE: Crash Data Request/Newberg Locations - Req #180020

From: WARD Kimberlee S <Kimberlee.S.WARD@odot.state.or.us>
Sent: Tuesday, February 06, 2018 9:46 AM
To: Chris Brehmer <CBREHMER@kittelson.com>
Cc: VOGEL Sylvia M <Sylvia.M.VOGEL@odot.state.or.us>
Subject: RE: Crash Data Request/Newberg Locations - Req #180020

Hi Chris,

I have placed your crash data on our FTP site in the folder named "Brehmer". The link is located below for your convenience:

ftp://ftp.odot.state.or.us/outgoing/Brehmer/

The segment of Providence Dr 1200 feet south of OR 99W you requested, had *no crashes reported during the time period 2011 to 2015.*

**Please see your original email below, the intersections highlighted have no crash data*.

Thank you again Chris and hope you have a good work week !

Kim

Kim Ward
Crash Reporting Technician
Crash Analysis and Reporting Unit
Transportation Data Section
555 13th Street NE, Suite 2
Salem, Oregon 97301-4178
ph: (503) 986-4237
fax: (503) 986-4249
mailto: kimberlee.s.ward@odot.state.or.us

From: Chris Brehmer [mailto:CBREHMER@kittelson.com]
Sent: Friday, January 19, 2018 9:17 AM
To: WARD Kimberlee S
Subject: Crash Data Request/Newberg Locations

Happy Friday Kim!

I'm writing to request crash data for several locations in Newberg, Oregon that we are studying for a traffic impact study. The locations are listed below and shown in the embedded image.

- OR99W/Providence Drive
- Providence Drive/Hayes Street
- Brutscher Street/Werth Boulevard
- E Fernwood Rd/Brutscher Street

- Four private driveways serving the Providence campus along Providence Drive – it may be easiest just to search Providence Drive as a segment from Highway 99W south about 1,200 feet?

Would you please research and provide this information at your convenience?

Thank you,
Chris

Christopher L. Brehmer, PE
Senior Principal Engineer

Please note our Portland office has a ***NEW ADDRESS***

Kittelson & Associates, Inc.
Transportation Engineering / Planning
851 SW 6th Avenue, Suite 600
Portland OR 97204
503.228.5230 (Portland)
503.535.7433 (direct)

Streetwise Twitter Facebook

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Brutscher St & Fernwood Rd

January 1, 2011 through December 31, 2015

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2014														
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	0	1	1	0	0
2014 TOTAL	0	0	1	1	0	0	0	1	0	0	1	1	0	0
FINAL TOTAL	0	0	1	1	0	0	0	1	0	0	1	1	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

URBAN NON-SYSTEM CRASH LISTING

CITY OF NEWBERG, YAMHILL COUNTY

Brutscher St & Fernwood Rd

January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALC	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS / RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00594	N	N	N			06/04/2014	17	BRUTSCHER ST	INTER	3-LEG	N	N	CLR	ANGL-STP	01	NONE 0	TURN-L											08
NONE						Wed 5A	0	FERNWOOD RD	N		STOP SIGN	N	DRY	TURN		PRVTE	W N										000		00
No						*45 17 56.26*	*-122 56 26.54*	1	06	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	50	F	OR-Y OR<25		002	000		08
															02	NONE 0	STOP											
																PRVTE	N S										011		00
																PSNGR CAR		01	DRVR	NONE	60	M	OR-Y OR<25		000	000		00

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
014	EMR V PKD	EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED OR DISABLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP A VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
046	W/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC
047	A/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD
052	MERGING	MERGING
055	SPRAY	BLINDED BY WATER SPRAY

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST

CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS SIG	DISREGARDED TRAFFIC SIGNAL
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
17	ILLNESS	PHYSICAL ILLNESS
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
28	NM INATT	NON-MOTORIST INATTENTION
29	F AVOID	FAILED TO AVOID VEHICLE AHEAD
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)
40	VIEW OBS	VIEW OBSCURED
50	USED MDN	IMPROPER USE OF MEDIAN OR SHOULDER
51	FAIL LN	FAILED TO MAINTAIN LANE
52	OFF RD	RAN OFF ROAD

COLLISION TYPE CODE TRANSLATION LIST

COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST

CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1 L-TURN	FROM OPPOSITE DIRECTION-ONE LEFT TURN,ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST

LIC CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)
1	OR-Y	VALID OREGON LICENSE
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY
3	SUSP	SUSPENDED/REVOKED

DRIVER RESIDENCE CODE TRANSLATION LIST

RES CODE	SHORT DESC	LONG DESCRIPTION
1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
4	N-RES	NON-RESIDENT
9	UNK	UNKNOWN IF OREGON RESIDENT

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNED FROM WRONG LANE
007	TO WRONG	TURNED INTO WRONG LANE
008	ILLEG U	U-TURNED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS)
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TOO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WORK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAY ON RD	STANDING OR LYING IN ROADWAY
071	NM IMP USE	IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST
073	ELUDING	ELUDING / ATTEMPT TO ELUDE
079	F NEG CURV	FAILED TO NEGOTIATE A CURVE
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER-CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	INDRCT PED	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	INDRCT BIK	PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK)
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHIC
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH)
047	BR ABUTMNT	BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013)
048	BR COLMN	BRIDGE PILLAR OR COLUMN
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, FALLEN OR FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
074	OVERHD OBJ	OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	LO-HI EDGE	LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ FRM MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE)
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTHR CRASH	CRASH RELATED TO ANOTHER SEPARATE CRASH
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
091	BUILDING	BUILDING OR OTHER STRUCTURE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE
093	CELL PHONE	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL WTNSD	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	FIXED OBJECT, UNKNOWN TYPE.
101	OTHER OBJ	NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE
102	TEXTING	TEXTING
103	WZ WORKER	WORK ZONE WORKER
104	ON VEHICLE	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
108	OFFICER	LAW ENFORCEMENT / POLICE OFFICER
109	SUB-BIKE	"SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC.
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
115	DSTRCT GPS	DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE
116	DSTRCT OTH	DISTRACTED BY OTHER ELECTRONIC DEVICE
117	RR GATE	RAIL CROSSING DROP-ARM GATE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
118	EXPNSN JNT	EXPANSION JOINT
119	JERSEY BAR	JERSEY BARRIER
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
121	FENCE	FENCE
123	OBJ IN VEH	LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL)
125	SHLDR	SHOULDER GAVE WAY
126	BOULDER	ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE)
127	LAND SLIDE	ROCK SLIDE OR LAND SLIDE
128	CURVE INV	CURVE PRESENT AT CRASH LOCATION
129	HILL INV	VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION
130	CURVE HID	VIEW OBSCURED BY CURVE
131	HILL HID	VIEW OBSCURED BY VERTICAL GRADE / HILL
132	WINDOW HID	VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS
133	SPRAY HID	VIEW OBSCURED BY WATER SPRAY
134	TORRENTIAL	TORRENTIAL RAIN (EXCEPTIONALLY HEAVY RAIN)

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

FUNC CLASS	DESCRIPTION
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE
02	RURAL PRINCIPAL ARTERIAL - OTHER
06	RURAL MINOR ARTERIAL
07	RURAL MAJOR COLLECTOR
08	RURAL MINOR COLLECTOR
09	RURAL LOCAL
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP
14	URBAN PRINCIPAL ARTERIAL - OTHER
16	URBAN MINOR ARTERIAL
17	URBAN MAJOR COLLECTOR
18	URBAN MINOR COLLECTOR
19	URBAN LOCAL
78	UNKNOWN RURAL SYSTEM
79	UNKNOWN RURAL NON-SYSTEM
98	UNKNOWN URBAN SYSTEM
99	UNKNOWN URBAN NON-SYSTEM

HIGHWAY COMPONENT TRANSLATION LIST

CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY
2	INJA	INCAPACITATING INJURY - BLEEDING, BROKEN BONES
3	INJB	NON-INCAPACITATING INJURY
4	INJC	POSSIBLE INJURY - COMPLAINT OF PAIN
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE

LIGHT CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY

PEDESTRIAN LOCATION CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
13	AT INTERSECTION - IN BIKE LANE
14	NOT AT INTERSECTION - IN BIKE LANE
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
16	NOT AT INTERSECTION - IN PARKING LANE

ROAD CHARACTER CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

PARTICIPANT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYA
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OB
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	UNK	UNKNOWN TYPE OF NON-MOTORIST

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING

095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

VEHICLE TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
00	PDO	NOT COLLECTED FOR PDO CRASHES
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER (STANDING)
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

WEATHER CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

OR 99W & Providence Dr
January 1, 2011 through December 31, 2015

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2015														
REAR-END	0	0	4	4	0	0	0	4	0	3	1	4	0	0
2015 TOTAL	0	0	4	4	0	0	0	4	0	3	1	4	0	0
YEAR: 2014														
REAR-END	0	0	2	2	0	0	0	2	0	2	0	2	0	0
2014 TOTAL	0	0	2	2	0	0	0	2	0	2	0	2	0	0
YEAR: 2013														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2013 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2012														
REAR-END	0	2	1	3	0	3	0	2	1	3	0	3	0	0
2012 TOTAL	0	2	1	3	0	3	0	2	1	3	0	3	0	0
YEAR: 2011														
REAR-END	0	0	1	1	0	0	0	0	1	1	0	1	0	0
2011 TOTAL	0	0	1	1	0	0	0	0	1	1	0	1	0	0
FINAL TOTAL	0	2	9	11	0	3	0	9	2	10	1	11	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

091 PACIFIC HIGHWAY WEST

OR 99W & Providence Dr
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALC	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC CONN # FIRST STREET SECOND STREET INTERSECTION SEQ#	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00144	N	N	N			02/12/2015	YAMHILL	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE						Thu 4P	NEWBERG	MN 0	PROVIDENCE DR	NE		UNKNOWN	N	DRY	REAR		UNKN	NE SW										000		00
							NEWBERG UA	21.45	PACIFIC HY 99W	06	0		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK		026	000		29
No						*45 18 36.29 -122 56 7.21*		009100100S00	1															UNK					
																02	NONE 0	STOP											
																	PRVTE	NE SW									011		00
																	PSNGR CAR		01	DRVR	NONE	24	F	OR-Y		000	000		00
																								OR<25					
00824	N	N	N	N	N	09/22/2012	YAMHILL	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											32,16,27
CITY						Sat 2P	NEWBERG	MN 0	PROVIDENCE DR	NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
							NEWBERG UA	21.46	PACIFIC HY 99W	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	20	F	OR-Y		052,016	025		32,16,27
No						*45 18 36.11 -122 56 7.77*		009100100S00	1															OR<25					
																02	NONE 0	STOP											
																	PRVTE	NE SW									011		00
																	PSNGR CAR		01	DRVR	NONE	25	F	OTH-Y		000	000		00
																								N-RES					
																			02	PSNG	INJC	23	F			000	000		00
																			03	PSNG	INJC	77	F			000	000		00
00565	N	N	N			06/12/2015	YAMHILL	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE						Fri 5P	NEWBERG	MN 0	PROVIDENCE DR	NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
							NEWBERG UA	21.46	PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	18	F	OR-Y		026	000		29
No						*45 18 36.11 -122 56 7.77*		009100100S00	1															OR<25					
																02	NONE 0	STOP											
																	PRVTE	NE SW									011		00
																	PSNGR CAR		01	DRVR	NONE	27	F	OR-Y		000	000		00
																								OR>25					
01108	N	N	N	N	N	12/30/2011	YAMHILL	1 14		INTER	3-LEG	N	N	RAIN	S-STRGHT	01	NONE 0	STRGHT											07
CITY						Fri 8A	NEWBERG	MN 0	PROVIDENCE DR	SW		TRF SIGNAL	N	WET	REAR		PRVTE	SW NE									000		00
							NEWBERG UA	21.46	PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	48	M	OR-Y		042	000		07
No						*45 18 36.11 -122 56 7.77*		009100100S00	1															OR>25					
																02	NONE 0	STRGHT											
																	PRVTE	SW NE									006		00
																	PSNGR CAR		01	DRVR	NONE	83	M	OR-Y		000	000		00
																								OR<25					
00833	N	N	N			09/25/2012	YAMHILL	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NO RPT						Tue 2P	NEWBERG	MN 0	PROVIDENCE DR	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000		00
							NEWBERG UA	21.46	PACIFIC HY 99W	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	81	F	OTH-Y		026	000		07
No						*45 18 36.11 -122 56 7.77*		009100100S00	1															N-RES					
																02	NONE 0	STOP											
																	PRVTE	SW NE									011		00
																	PSNGR CAR		01	DRVR	INJC	28	F	OR-Y		000	000		00
																								OR<25					

091 PACIFIC HIGHWAY WEST

OR 99W & Providence Dr
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	SCHL BUS	WORK ZONE	DATE / DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / MILEPNT	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00623	N	N	N	N	N	07/18/2013	YAMHILL	1	14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										27
CITY						Thu 7P	NEWBERG	MN	0	PROVIDENCE DR	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000		00
							NEWBERG UA	21.46		PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	32	M	OR-Y		026	000		27
No						*45 18 36.11 -122 56 7.77*		009100100		S00 1															OR<25					
																	02	NONE 0	STOP									011		00
																		PRVTE	SW NE											
																		PSNGR CAR		01	DRVR	NONE	40	M	OR-Y		000	000		00
																									OR<25					
00589	N	N	N			06/03/2014	YAMHILL	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	07
NONE						Tue 2P	NEWBERG	MN	0	PROVIDENCE DR	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000		00
							NEWBERG UA	21.46		PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	41	M	OR-Y		026	000		07
No						*45 18 36.11 -122 56 7.77*		009100100		S00 1															OR<25					
																	02	NONE 0	STOP									011		00
																		PRVTE	SW NE											
																		PSNGR CAR		01	DRVR	NONE	40	M	OR-Y		000	000		00
																									OR<25					
																	03	NONE 0	STOP									011		00
																		PRVTE	SW NE											
																		MTRCYCLE		01	DRVR	NONE	34	M	OR-Y		000	000		00
																									OR<25					
00725	N	N	N			07/07/2014	YAMHILL	1	14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										07
NONE						Mon 2P	NEWBERG	MN	0	PROVIDENCE DR	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000		00
							NEWBERG UA	21.46		PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	56	M	OR-Y		026	000		07
No						*45 18 36.11 -122 56 7.77*		009100100		S00 1															OR<25					
																	02	NONE 0	STOP									011		00
																		PRVTE	SW NE											
																		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		000	000		00
																									OR<25					
00658	N	N	N			07/03/2015	YAMHILL	1	14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
CITY						Fri 2P	NEWBERG	MN	0	PROVIDENCE DR	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000		00
							NEWBERG UA	21.46		PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	19	F	OR-Y		026	000		29
No						*45 18 36.11 -122 56 7.77*		009100100		S00 1															OR<25					
																	02	NONE 0	STOP									011		00
																		PRVTE	SW NE											
																		PSNGR CAR		01	DRVR	NONE	66	M	OR-Y		000	000		00
																									OR<25					
01343	N	N	N			12/21/2015	YAMHILL	1	14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE						Mon 12P	NEWBERG	MN	0	PROVIDENCE DR	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000		00
							NEWBERG UA	21.46		PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK		026	000		29
No						*45 18 36.11 -122 56 7.77*		009100100		S00 1															OR<25					

091 PACIFIC HIGHWAY WEST

OR 99W & Providence Dr
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALCHL	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	CONN #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE / PRVTE	0 STOP / SW NE										011	00
																		PSNGR CAR		01	DRVR	NONE	32	F	OR-Y / OR<25		000	000		00
00616	N	N	N			07/20/2012 / Fri 7A	YAMHILL / NEWBERG / NEWBERG UA	1 / MN / 21.46	14 / 0 / PACIFIC HY 99W	PROVIDENCE DR	INTER / W / 06	3-LEG / 0	N / TRF SIGNAL	N	N / N / N	RAIN / WET / DAY	S-1STOP / REAR / PDO	01	NONE / PRVTE	STRGHT / W E												07	
NONE																		PSNGR CAR		01	DRVR	NONE	52	M	OR-Y / OR<25		026	000		00
No						*45 18 36.11 -122 56 7.77*		009100100	S00	1																			000		07
																	02	NONE / PRVTE	0 STOP / W E										011	00
																		PSNGR CAR		01	DRVR	NONE	41	F	OR-Y / OR<25		000	000		00

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
014	EMR V PKD	EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED OR DISABLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP A VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
046	W/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC
047	A/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD
052	MERGING	MERGING
055	SPRAY	BLINDED BY WATER SPRAY

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST

CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS SIG	DISREGARDED TRAFFIC SIGNAL
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
17	ILLNESS	PHYSICAL ILLNESS
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
28	NM INATT	NON-MOTORIST INATTENTION
29	F AVOID	FAILED TO AVOID VEHICLE AHEAD
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)
40	VIEW OBS	VIEW OBSCURED
50	USED MDN	IMPROPER USE OF MEDIAN OR SHOULDER
51	FAIL LN	FAILED TO MAINTAIN LANE
52	OFF RD	RAN OFF ROAD

COLLISION TYPE CODE TRANSLATION LIST

COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST

CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1 L-TURN	FROM OPPOSITE DIRECTION-ONE LEFT TURN,ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST

LIC CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)
1	OR-Y	VALID OREGON LICENSE
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY
3	SUSP	SUSPENDED/REVOKED

DRIVER RESIDENCE CODE TRANSLATION LIST

RES CODE	SHORT DESC	LONG DESCRIPTION
1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
4	N-RES	NON-RESIDENT
9	UNK	UNKNOWN IF OREGON RESIDENT

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNED FROM WRONG LANE
007	TO WRONG	TURNED INTO WRONG LANE
008	ILLEG U	U-TURNED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS)
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TOO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WORK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAY ON RD	STANDING OR LYING IN ROADWAY
071	NM IMP USE	IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST
073	ELUDING	ELUDING / ATTEMPT TO ELUDE
079	F NEG CURV	FAILED TO NEGOTIATE A CURVE
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER-CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	INDRCT PED	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	INDRCT BIK	PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK)
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHIC
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH)
047	BR ABUTMNT	BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013)
048	BR COLMN	BRIDGE PILLAR OR COLUMN
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, FALLEN OR FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
074	OVERHD OBJ	OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	LO-HI EDGE	LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ FRM MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE)
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTHR CRASH	CRASH RELATED TO ANOTHER SEPARATE CRASH
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
091	BUILDING	BUILDING OR OTHER STRUCTURE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE
093	CELL PHONE	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL WTNSD	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	FIXED OBJECT, UNKNOWN TYPE.
101	OTHER OBJ	NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE
102	TEXTING	TEXTING
103	WZ WORKER	WORK ZONE WORKER
104	ON VEHICLE	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
108	OFFICER	LAW ENFORCEMENT / POLICE OFFICER
109	SUB-BIKE	"SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC.
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
115	DSTRCT GPS	DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE
116	DSTRCT OTH	DISTRACTED BY OTHER ELECTRONIC DEVICE
117	RR GATE	RAIL CROSSING DROP-ARM GATE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
118	EXPNSN JNT	EXPANSION JOINT
119	JERSEY BAR	JERSEY BARRIER
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
121	FENCE	FENCE
123	OBJ IN VEH	LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL)
125	SHLDR	SHOULDER GAVE WAY
126	BOULDER	ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE)
127	LAND SLIDE	ROCK SLIDE OR LAND SLIDE
128	CURVE INV	CURVE PRESENT AT CRASH LOCATION
129	HILL INV	VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION
130	CURVE HID	VIEW OBSCURED BY CURVE
131	HILL HID	VIEW OBSCURED BY VERTICAL GRADE / HILL
132	WINDOW HID	VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS
133	SPRAY HID	VIEW OBSCURED BY WATER SPRAY
134	TORRENTIAL	TORRENTIAL RAIN (EXCEPTIONALLY HEAVY RAIN)

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

FUNC CLASS	DESCRIPTION
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE
02	RURAL PRINCIPAL ARTERIAL - OTHER
06	RURAL MINOR ARTERIAL
07	RURAL MAJOR COLLECTOR
08	RURAL MINOR COLLECTOR
09	RURAL LOCAL
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP
14	URBAN PRINCIPAL ARTERIAL - OTHER
16	URBAN MINOR ARTERIAL
17	URBAN MAJOR COLLECTOR
18	URBAN MINOR COLLECTOR
19	URBAN LOCAL
78	UNKNOWN RURAL SYSTEM
79	UNKNOWN RURAL NON-SYSTEM
98	UNKNOWN URBAN SYSTEM
99	UNKNOWN URBAN NON-SYSTEM

HIGHWAY COMPONENT TRANSLATION LIST

CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY
2	INJA	INCAPACITATING INJURY - BLEEDING, BROKEN BONES
3	INJB	NON-INCAPACITATING INJURY
4	INJC	POSSIBLE INJURY - COMPLAINT OF PAIN
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE

LIGHT CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY

PEDESTRIAN LOCATION CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
13	AT INTERSECTION - IN BIKE LANE
14	NOT AT INTERSECTION - IN BIKE LANE
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
16	NOT AT INTERSECTION - IN PARKING LANE

ROAD CHARACTER CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

PARTICIPANT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYA
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OB
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	UNK	UNKNOWN TYPE OF NON-MOTORIST

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING

095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

VEHICLE TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
00	PDO	NOT COLLECTED FOR PDO CRASHES
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER (STANDING)
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

WEATHER CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH

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Appendix D Year 2019 Background Traffic Conditions

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Queues
1: Providence Dr & N Hwy 99W

03/07/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	25	1752	93	94	1057	81	35	12	73	251	22	76
v/c Ratio	0.30	1.14	0.13	0.92	0.65	0.10	0.10	0.03	0.16	0.64	0.05	0.15
Control Delay	64.9	100.9	2.7	126.2	23.8	1.6	28.0	34.0	1.6	42.8	33.8	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.9	100.9	2.7	126.2	23.8	1.6	28.0	34.0	1.6	42.8	33.8	1.9
Queue Length 50th (ft)	19	~832	0	74	326	0	18	7	0	152	13	0
Queue Length 95th (ft)	49	#971	22	#180	407	15	43	23	7	232	35	10
Internal Link Dist (ft)		676			463			180			187	
Turn Bay Length (ft)	150		100	230		300	160		160	350		150
Base Capacity (vph)	82	1541	740	102	1622	813	354	429	464	394	488	502
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	1.14	0.13	0.92	0.65	0.10	0.10	0.03	0.16	0.64	0.05	0.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	1664	88	89	1004	77	33	11	69	238	21	72
Future Volume (vph)	24	1664	88	89	1004	77	33	11	69	238	21	72
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1654	3245	1438	1646	3076	1444	1449	1690	1465	1614	1699	1444
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.74	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	1654	3245	1438	1646	3076	1444	1133	1690	1465	1192	1699	1444
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	25	1752	93	94	1057	81	35	12	73	251	22	76
RTOR Reduction (vph)	0	0	50	0	0	41	0	0	53	0	0	54
Lane Group Flow (vph)	25	1752	43	94	1057	40	35	12	20	251	22	22
Heavy Vehicles (%)	2%	4%	5%	0%	7%	2%	13%	2%	0%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	3.6	55.2	55.2	7.5	59.1	59.1	35.6	32.3	32.3	40.0	34.5	34.5
Effective Green, g (s)	3.6	55.2	55.2	7.5	59.1	59.1	35.6	32.3	32.3	40.0	34.5	34.5
Actuated g/C Ratio	0.03	0.46	0.46	0.06	0.49	0.49	0.30	0.27	0.27	0.33	0.29	0.29
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
Lane Grp Cap (vph)	49	1492	661	102	1514	711	344	454	394	416	488	415
v/s Ratio Prot	0.02	c0.54		c0.06	0.34		0.00	0.01		c0.03	0.01	
v/s Ratio Perm			0.03			0.03	0.03		0.01	c0.17		0.02
v/c Ratio	0.51	1.17	0.06	0.92	0.70	0.06	0.10	0.03	0.05	0.60	0.05	0.05
Uniform Delay, d1	57.3	32.4	18.0	56.0	23.6	15.9	30.4	32.3	32.5	33.4	30.9	30.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.4	85.8	0.2	64.9	2.7	0.2	0.1	0.1	0.2	2.5	0.1	0.1
Delay (s)	68.8	118.2	18.2	120.8	26.2	16.0	30.5	32.4	32.7	35.9	30.9	31.0
Level of Service	E	F	B	F	C	B	C	C	C	D	C	C
Approach Delay (s)		112.6			32.8			32.1			34.5	
Approach LOS		F			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	74.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	88.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	39	1	4	74	114	84
Future Volume (Veh/h)	39	1	4	74	114	84
Sign Control	Stop			Free	Free	
Grade	0%			3%	-3%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	46	1	5	88	136	100
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					260	
pX, platoon unblocked						
vC, conflicting volume	284	186	236			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	284	186	236			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	93	100	100			
cM capacity (veh/h)	708	861	1207			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	47	93	236
Volume Left	46	5	0
Volume Right	1	0	100
cSH	710	1207	1700
Volume to Capacity	0.07	0.00	0.14
Queue Length 95th (ft)	5	0	0
Control Delay (s)	10.4	0.5	0.0
Lane LOS	B	A	
Approach Delay (s)	10.4	0.5	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	21.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	13	29	63	73	42
Future Volume (Veh/h)	15	13	29	63	73	42
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	18	15	34	74	86	49
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					680	
pX, platoon unblocked						
vC, conflicting volume	252	110	135			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	252	110	135			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.2			
p0 queue free %	97	98	98			
cM capacity (veh/h)	694	948	1462			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	33	108	135
Volume Left	18	34	0
Volume Right	15	0	49
cSH	790	1462	1700
Volume to Capacity	0.04	0.02	0.08
Queue Length 95th (ft)	3	2	0
Control Delay (s)	9.8	2.5	0.0
Lane LOS	A	A	
Approach Delay (s)	9.8	2.5	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	0	8	89	82	4
Future Volume (Veh/h)	3	0	8	89	82	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	4	0	10	107	99	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					793	
pX, platoon unblocked						
vC, conflicting volume	228	102	104			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	228	102	104			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	99			
cM capacity (veh/h)	759	959	1500			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	4	117	104
Volume Left	4	10	0
Volume Right	0	0	5
cSH	759	1500	1700
Volume to Capacity	0.01	0.01	0.06
Queue Length 95th (ft)	0	1	0
Control Delay (s)	9.8	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.8	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	21.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	2	3	91	73	9
Future Volume (Veh/h)	6	2	3	91	73	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	8	3	4	117	94	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					1143	
pX, platoon unblocked						
vC, conflicting volume	225	100	106			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	225	100	106			
tC, single (s)	6.8	6.7	4.1			
tC, 2 stage (s)						
tF (s)	3.9	3.8	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	684	839	1498			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	11	121	106
Volume Left	8	4	0
Volume Right	3	0	12
cSH	721	1498	1700
Volume to Capacity	0.02	0.00	0.06
Queue Length 95th (ft)	1	0	0
Control Delay (s)	10.1	0.3	0.0
Lane LOS	B	A	
Approach Delay (s)	10.1	0.3	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCS 2010 Two-Way Stop Control Summary Report

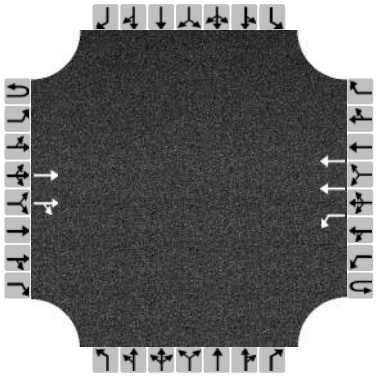
General Information

Analyst	Kittelson & Associates
Agency/Co.	City of Newberg
Date Performed	3/7/2018
Analysis Year	2020
Time Analyzed	Background AM
Intersection Orientation	East-West
Project Description	Newberg Providence Medical Center

Site Information

Intersection	OR 99 W/PNMC Access
Jurisdiction	Newberg, Oregon
East/West Street	OR 99W
North/South Street	Right-In, Left-Out Access
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		0	0	0		0	0	0
Configuration			T	TR		L	T									
Volume (veh/h)			1772	51		18	1088									
Percent Heavy Vehicles						3										
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						20										
Capacity						267										
v/c Ratio						0.07										
95% Queue Length						0.2										
Control Delay (s/veh)						19.6										
Level of Service (LOS)						C										
Approach Delay (s/veh)					0.3											
Approach LOS																

HCS 2010 Roundabout Report

General Information

Analyst	Kittelson & Associates, Inc.
Agency or Co.	City of Newberg
Date Performed	3/6/2018
Analysis Year	2020
Time Period	Background AM
Project Description	Newberg Providence Medical Center

Site Information

Intersection	Werth Blvd/Providence Dr/Hayes St
E/W Street Name	Providence Dr/Hayes St
N/S Street Name	Werth Blvd
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.78
Jurisdiction	Newberg, OR

Volume Adjustment and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	1	81	4	0	18	24	1	0	2	0	7	0	2	1	2
Percent Heavy Vehicles, %	0	0	3	0	0	0	6	100	0	0	0	0	0	0	100	0
Flow Rate (vPCE) pc/h	0	1	107	5	0	23	33	3	0	3	0	9	0	3	3	3
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing	1				1				0				2			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (sec)		5.1929			5.1929			5.1929			5.1929	
Follow-Up Headway (sec)		3.1858			3.1858			3.1858			3.1858	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (Ve), pc/h		113			59			12			9	
Entry Volume veh/h		110			56			12			8	
Circulating Flow (Vc), pc/h		29			4			111			59	
Exiting Flow (Vex), pc/h		119			39			4			31	
Capacity (cPCE), pc/h		1098			1126			1011			1065	
Capacity (c), veh/h		1067			1061			1011			887	
v/c Ratio (X)		0.10			0.05			0.01			0.01	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		4.3			3.8			3.7			4.1	
Lane LOS		A			A			A			A	
95% Queue		0.3			0.2			0.0			0.0	
Approach Delay, s/veh	4.3			3.8			3.7			4.1		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh / LOS	4.1						A					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	2	101	12	1	53
Future Volume (Veh/h)	11	2	101	12	1	53
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	14	3	126	15	1	66
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	202	134			142	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	202	134			142	
tC, single (s)	6.4	7.2			5.1	
tC, 2 stage (s)						
tF (s)	3.5	4.2			3.1	
p0 queue free %	98	100			100	
cM capacity (veh/h)	789	707			1008	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	14	3	141	1	66
Volume Left	14	0	0	1	0
Volume Right	0	3	15	0	0
cSH	789	707	1700	1008	1700
Volume to Capacity	0.02	0.00	0.08	0.00	0.04
Queue Length 95th (ft)	1	0	0	0	0
Control Delay (s)	9.6	10.1	0.0	8.6	0.0
Lane LOS	A	B		A	
Approach Delay (s)	9.7		0.0	0.1	
Approach LOS	A				

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	16.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	63	44	105	50	21	43
Future Volume (Veh/h)	63	44	105	50	21	43
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	75	52	125	60	25	51
Pedestrians			1		1	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			3.5		3.5	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	186				359	156
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	186				359	156
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	94				96	94
cM capacity (veh/h)	1363				598	884

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	75	52	185	25	51
Volume Left	75	0	0	25	0
Volume Right	0	0	60	0	51
cSH	1363	1700	1700	598	884
Volume to Capacity	0.06	0.03	0.11	0.04	0.06
Queue Length 95th (ft)	4	0	0	3	5
Control Delay (s)	7.8	0.0	0.0	11.3	9.3
Lane LOS	A			B	A
Approach Delay (s)	4.6		0.0	10.0	
Approach LOS				A	

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	25.6%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
1: Providence Dr & N Hwy 99W

03/07/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	105	1179	35	84	2018	206	121	29	146	220	12	79
v/c Ratio	0.44	0.58	0.04	0.49	1.08	0.23	0.60	0.25	0.62	1.08	0.10	0.40
Control Delay	61.9	18.1	0.1	68.5	74.4	5.8	65.3	65.7	21.0	138.9	61.1	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.9	18.1	0.1	68.5	74.4	5.8	65.3	65.7	21.0	138.9	61.1	10.6
Queue Length 50th (ft)	90	315	0	73	~1053	26	101	26	0	~222	11	0
Queue Length 95th (ft)	150	453	0	127	#1275	72	159	58	67	#350	31	28
Internal Link Dist (ft)		676			463			180			285	
Turn Bay Length (ft)	150		100	230		300	160		160	350		150
Base Capacity (vph)	238	2043	948	171	1873	912	202	369	428	203	371	393
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.58	0.04	0.49	1.08	0.23	0.60	0.08	0.34	1.08	0.03	0.20

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	1120	33	80	1917	196	115	28	139	209	11	75
Future Volume (vph)	100	1120	33	80	1917	196	115	28	139	209	11	75
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	3309	1478	1646	3227	1473	1619	1724	1465	1646	1732	1452
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00	1.00	0.72	1.00	1.00
Satd. Flow (perm)	1687	3309	1478	1646	3227	1473	1277	1724	1465	1253	1732	1452
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	1179	35	84	2018	206	121	29	146	220	12	79
RTOR Reduction (vph)	0	0	13	0	0	58	0	0	136	0	0	74
Lane Group Flow (vph)	105	1179	22	84	2018	148	121	29	10	220	12	5
Confl. Peds. (#/hr)							1					1
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	1%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	19.8	86.5	86.5	14.5	81.2	81.2	19.3	9.5	9.5	19.7	9.7	9.7
Effective Green, g (s)	19.8	86.5	86.5	14.5	81.2	81.2	19.3	9.5	9.5	19.7	9.7	9.7
Actuated g/C Ratio	0.14	0.62	0.62	0.10	0.58	0.58	0.14	0.07	0.07	0.14	0.07	0.07
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
Lane Grp Cap (vph)	238	2044	913	170	1871	854	199	116	99	204	120	100
v/s Ratio Prot	c0.06	c0.36		0.05	c0.63		0.04	0.02		c0.08	0.01	
v/s Ratio Perm			0.01			0.10	0.04		0.01	c0.07		0.00
v/c Ratio	0.44	0.58	0.02	0.49	1.08	0.17	0.61	0.25	0.10	1.08	0.10	0.05
Uniform Delay, d1	55.0	15.9	10.4	59.3	29.4	13.7	56.2	61.9	61.2	59.5	61.1	60.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	1.2	0.0	3.1	45.6	0.4	5.2	1.5	0.6	85.4	0.5	0.3
Delay (s)	56.8	17.1	10.4	62.3	75.0	14.2	61.4	63.4	61.8	144.9	61.6	61.2
Level of Service	E	B	B	E	E	B	E	E	E	F	E	E
Approach Delay (s)		20.1			69.1			61.8			120.4	
Approach LOS		C			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	57.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	116	5	2	166	104	20
Future Volume (Veh/h)	116	5	2	166	104	20
Sign Control	Stop			Free	Free	
Grade	0%			3%	-3%	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Hourly flow rate (vph)	163	7	3	234	146	28
Pedestrians	3					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					260	
pX, platoon unblocked						
vC, conflicting volume	403	163	177			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	403	163	177			
tC, single (s)	6.4	6.2	4.6			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.7			
p0 queue free %	73	99	100			
cM capacity (veh/h)	604	884	1152			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	170	237	174
Volume Left	163	3	0
Volume Right	7	0	28
cSH	612	1152	1700
Volume to Capacity	0.28	0.00	0.10
Queue Length 95th (ft)	28	0	0
Control Delay (s)	13.1	0.1	0.0
Lane LOS	B	A	
Approach Delay (s)	13.1	0.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	23.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	39	3	133	106	3
Future Volume (Veh/h)	35	39	3	133	106	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	47	52	4	177	141	4
Pedestrians	3					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					680	
pX, platoon unblocked						
vC, conflicting volume	331	146	148			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	331	146	148			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	94	100			
cM capacity (veh/h)	658	904	1442			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	99	181	145
Volume Left	47	4	0
Volume Right	52	0	4
cSH	768	1442	1700
Volume to Capacity	0.13	0.00	0.09
Queue Length 95th (ft)	11	0	0
Control Delay (s)	10.4	0.2	0.0
Lane LOS	B	A	
Approach Delay (s)	10.4	0.2	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	20.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	14	3	120	143	2
Future Volume (Veh/h)	16	14	3	120	143	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	21	18	4	156	186	3
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					793	
pX, platoon unblocked						
vC, conflicting volume	356	192	193			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	356	192	193			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	98	100			
cM capacity (veh/h)	642	852	1387			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	39	160	189
Volume Left	21	4	0
Volume Right	18	0	3
cSH	725	1387	1700
Volume to Capacity	0.05	0.00	0.11
Queue Length 95th (ft)	4	0	0
Control Delay (s)	10.3	0.2	0.0
Lane LOS	B	A	
Approach Delay (s)	10.3	0.2	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	18.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	3	2	122	155	2
Future Volume (Veh/h)	1	3	2	122	155	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	1	4	3	161	204	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					1143	
pX, platoon unblocked						
vC, conflicting volume	372	206	207			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	372	206	207			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	631	840	1376			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	5	164	207
Volume Left	1	3	0
Volume Right	4	0	3
cSH	788	1376	1700
Volume to Capacity	0.01	0.00	0.12
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.6	0.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.6	0.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCS 2010 Two-Way Stop Control Summary Report

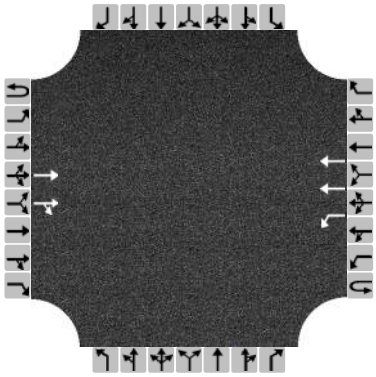
General Information

Analyst	Kittelson & Associates
Agency/Co.	City of Newberg
Date Performed	3/7/2018
Analysis Year	2020
Time Analyzed	Background PM
Intersection Orientation	East-West
Project Description	Newberg Providence Medical Center

Site Information

Intersection	OR 99 W/PNMC Access
Jurisdiction	Newberg, Oregon
East/West Street	OR 99W
North/South Street	Right-In, Left-Out Access
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		0	0	0		0	0	0
Configuration			T	TR		L	T									
Volume (veh/h)			1264	20		2	2034									
Percent Heavy Vehicles						3										
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						2										
Capacity						512										
v/c Ratio						0.00										
95% Queue Length						0.0										
Control Delay (s/veh)						12.1										
Level of Service (LOS)						B										
Approach Delay (s/veh)					0.0											
Approach LOS																

HCS 2010 Roundabout Report

General Information

Analyst	Kittelson & Associates, Inc.
Agency or Co.	City of Newberg
Date Performed	3/6/2018
Analysis Year	2020
Time Period	Background PM
Project Description	Newberg Providence Medical Center

Site Information

Intersection	Werth Blvd/Providence Dr/Hayes St
E/W Street Name	Providence Dr/Hayes St
N/S Street Name	Werth Blvd
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.79
Jurisdiction	Newberg, OR

Volume Adjustment and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	4	56	7	0	16	132	0	0	10	0	26	0	0	1	2
Percent Heavy Vehicles, %	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0
Flow Rate (vPCE) pc/h	0	5	72	9	0	20	169	0	0	13	0	33	0	0	1	3
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing	0				2				1				1			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (sec)		5.1929			5.1929			5.1929			5.1929	
Follow-Up Headway (sec)		3.1858			3.1858			3.1858			3.1858	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (Ve), pc/h		86			189			46			4	
Entry Volume veh/h		85			187			46			4	
Circulating Flow (Vc), pc/h		21			18			77			202	
Exiting Flow (Vex), pc/h		105			185			5			30	
Capacity (cPCE), pc/h		1107			1110			1046			923	
Capacity (c), veh/h		1088			1100			1046			923	
v/c Ratio (X)		0.08			0.17			0.04			0.00	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		4.0			4.8			3.8			3.9	
Lane LOS		A			A			A			A	
95% Queue		0.3			0.6			0.1			0.0	
Approach Delay, s/veh	4.0			4.8			3.8			3.9		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh / LOS	4.4						A					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	21	7	139	19	4	238
Future Volume (Veh/h)	21	7	139	19	4	238
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	8	151	21	4	259
Pedestrians	8					1
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	3.5					3.5
Percent Blockage	1					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	436	170			180	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	436	170			180	
tC, single (s)	6.4	6.4			4.3	
tC, 2 stage (s)						
tF (s)	3.5	3.5			2.4	
p0 queue free %	96	99			100	
cM capacity (veh/h)	575	829			1259	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	23	8	172	4	259
Volume Left	23	0	0	4	0
Volume Right	0	8	21	0	0
cSH	575	829	1700	1259	1700
Volume to Capacity	0.04	0.01	0.10	0.00	0.15
Queue Length 95th (ft)	3	1	0	0	0
Control Delay (s)	11.5	9.4	0.0	7.9	0.0
Lane LOS	B	A		A	
Approach Delay (s)	11.0		0.0	0.1	
Approach LOS	B				

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	22.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	104	94	83	54	93	166
Future Volume (Veh/h)	104	94	83	54	93	166
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	121	109	97	63	108	193
Pedestrians			3		18	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			3.5		3.5	
Percent Blockage			0		2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	178				500	146
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	178				500	146
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				77	78
cM capacity (veh/h)	1386				474	888

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	121	109	160	108	193
Volume Left	121	0	0	108	0
Volume Right	0	0	63	0	193
cSH	1386	1700	1700	474	888
Volume to Capacity	0.09	0.06	0.09	0.23	0.22
Queue Length 95th (ft)	7	0	0	22	21
Control Delay (s)	7.8	0.0	0.0	14.8	10.2
Lane LOS	A			B	B
Approach Delay (s)	4.1		0.0	11.8	
Approach LOS				B	

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix E Year 2019 Total Traffic Conditions

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Queues
1: Providence Dr & N Hwy 99W

03/22/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	25	1752	117	122	1057	81	42	14	81	251	31	76
v/c Ratio	0.30	1.14	0.16	1.20	0.65	0.10	0.12	0.03	0.17	0.62	0.07	0.16
Control Delay	64.4	100.9	4.4	198.8	23.8	1.6	28.3	34.1	2.6	42.2	34.7	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.4	100.9	4.4	198.8	23.8	1.6	28.3	34.1	2.6	42.2	34.7	1.9
Queue Length 50th (ft)	19	~832	3	~114	326	0	22	8	0	151	18	0
Queue Length 95th (ft)	49	#971	35	#239	407	15	49	26	14	231	44	10
Internal Link Dist (ft)		676			463			180			303	
Turn Bay Length (ft)	150		100	230		300	160		160	350		150
Base Capacity (vph)	84	1541	740	102	1622	812	352	438	464	402	469	488
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	1.14	0.16	1.20	0.65	0.10	0.12	0.03	0.17	0.62	0.07	0.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	1664	111	116	1004	77	40	13	77	238	29	72
Future Volume (vph)	24	1664	111	116	1004	77	40	13	77	238	29	72
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	3245	1438	1646	3076	1442	1449	1724	1465	1646	1732	1473
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.74	1.00	1.00	0.72	1.00	1.00
Satd. Flow (perm)	1687	3245	1438	1646	3076	1442	1124	1724	1465	1253	1732	1473
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	25	1752	117	122	1057	81	42	14	81	251	31	76
RTOR Reduction (vph)	0	0	58	0	0	41	0	0	60	0	0	55
Lane Group Flow (vph)	25	1752	59	122	1057	41	42	14	21	251	31	21
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	4%	5%	0%	7%	0%	13%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	3.6	56.1	56.1	7.5	60.0	60.0	35.8	31.4	31.4	38.0	32.5	32.5
Effective Green, g (s)	3.6	56.1	56.1	7.5	60.0	60.0	35.8	31.4	31.4	38.0	32.5	32.5
Actuated g/C Ratio	0.03	0.47	0.47	0.06	0.50	0.50	0.30	0.26	0.26	0.32	0.27	0.27
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
Lane Grp Cap (vph)	50	1517	672	102	1538	721	347	451	383	414	469	398
v/s Ratio Prot	0.01	c0.54		c0.07	0.34		0.00	0.01		c0.03	0.02	
v/s Ratio Perm			0.04			0.03	0.03		0.01	c0.16		0.01
v/c Ratio	0.50	1.15	0.09	1.20	0.69	0.06	0.12	0.03	0.06	0.61	0.07	0.05
Uniform Delay, d1	57.3	31.9	17.7	56.2	22.9	15.4	30.4	33.0	33.2	34.3	32.5	32.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.3	77.7	0.3	151.1	2.5	0.1	0.2	0.1	0.3	2.5	0.1	0.1
Delay (s)	67.6	109.6	18.0	207.3	25.4	15.6	30.6	33.1	33.5	36.8	32.6	32.4
Level of Service	E	F	B	F	C	B	C	C	C	D	C	C
Approach Delay (s)		103.4			42.4			32.5			35.5	
Approach LOS		F			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	73.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	39	1	4	91	172	84
Future Volume (Veh/h)	39	1	4	91	172	84
Sign Control	Stop			Free	Free	
Grade	0%			3%	-3%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	46	1	5	108	205	100
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					260	
pX, platoon unblocked						
vC, conflicting volume	373	255	305			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	373	255	305			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	93	100	100			
cM capacity (veh/h)	629	789	1136			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	47	113	305
Volume Left	46	5	0
Volume Right	1	0	100
cSH	632	1136	1700
Volume to Capacity	0.07	0.00	0.18
Queue Length 95th (ft)	6	0	0
Control Delay (s)	11.2	0.4	0.0
Lane LOS	B	A	
Approach Delay (s)	11.2	0.4	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	15	0	13	2	0	13	29	67	5	43	88	42
Future Volume (Veh/h)	15	0	13	2	0	13	29	67	5	43	88	42
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.92	0.85	0.92	0.92	0.92	0.85	0.85	0.92	0.92	0.85	0.85
Hourly flow rate (vph)	18	0	15	2	0	14	34	79	5	47	104	49
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											680	
pX, platoon unblocked												
vC, conflicting volume	386	374	128	387	396	82	153			84		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	386	374	128	387	396	82	153			84		
tC, single (s)	7.2	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	98	100	100	99	98			97		
cM capacity (veh/h)	521	526	927	539	512	978	1440			1513		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	33	16	118	200
Volume Left	18	2	34	47
Volume Right	15	14	5	49
cSH	651	888	1440	1513
Volume to Capacity	0.05	0.02	0.02	0.03
Queue Length 95th (ft)	4	1	2	2
Control Delay (s)	10.8	9.1	2.3	1.9
Lane LOS	B	A	A	A
Approach Delay (s)	10.8	9.1	2.3	1.9
Approach LOS	B	A		

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	23.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	0	8	98	99	4
Future Volume (Veh/h)	3	0	8	98	99	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	4	0	10	118	119	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					793	
pX, platoon unblocked						
vC, conflicting volume	260	122	124			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	260	122	124			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	99			
cM capacity (veh/h)	729	935	1475			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	4	128	124
Volume Left	4	10	0
Volume Right	0	0	5
cSH	729	1475	1700
Volume to Capacity	0.01	0.01	0.07
Queue Length 95th (ft)	0	1	0
Control Delay (s)	10.0	0.6	0.0
Lane LOS	A	A	
Approach Delay (s)	10.0	0.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	21.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	4	102	15	15	84
Future Volume (Veh/h)	5	4	102	15	15	84
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.25	0.25	0.25	0.25	0.25	0.25
Hourly flow rate (vph)	20	16	408	60	60	336
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						1093
pX, platoon unblocked						
vC, conflicting volume	894	438			468	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	894	438			468	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	97			95	
cM capacity (veh/h)	297	623			1104	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	36	468	396
Volume Left	20	0	60
Volume Right	16	60	0
cSH	387	1700	1104
Volume to Capacity	0.09	0.28	0.05
Queue Length 95th (ft)	8	0	4
Control Delay (s)	15.3	0.0	1.8
Lane LOS	C		A
Approach Delay (s)	15.3	0.0	1.8
Approach LOS	C		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	21.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	2	3	111	80	9
Future Volume (Veh/h)	6	2	3	111	80	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	8	3	4	142	103	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					1143	
pX, platoon unblocked						
vC, conflicting volume	259	109	115			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	259	109	115			
tC, single (s)	6.8	6.7	4.1			
tC, 2 stage (s)						
tF (s)	3.9	3.8	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	653	829	1487			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	11	146	115
Volume Left	8	4	0
Volume Right	3	0	12
cSH	693	1487	1700
Volume to Capacity	0.02	0.00	0.07
Queue Length 95th (ft)	1	0	0
Control Delay (s)	10.3	0.2	0.0
Lane LOS	B	A	
Approach Delay (s)	10.3	0.2	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCS 2010 Two-Way Stop Control Summary Report

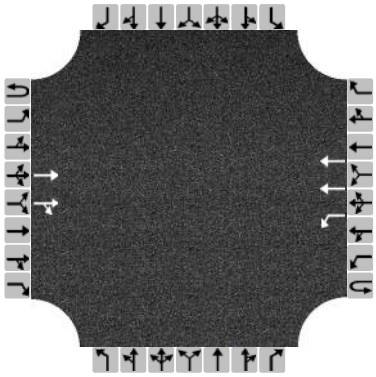
General Information

Analyst	Kittelson & Associates
Agency/Co.	City of Newberg
Date Performed	3/20/2018
Analysis Year	2020
Time Analyzed	Total Traffic AM
Intersection Orientation	East-West
Project Description	Newberg Providence Medical Center

Site Information

Intersection	OR 99 W/PNMC Access
Jurisdiction	Newberg, Oregon
East/West Street	OR 99W
North/South Street	Right-In, Left-Out Access
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		0	0	0		0	0	0
Configuration			T	TR		L	T									
Volume (veh/h)			1795	51		18	1095									
Percent Heavy Vehicles						3										
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						20										
Capacity						261										
v/c Ratio						0.08										
95% Queue Length						0.2										
Control Delay (s/veh)						19.9										
Level of Service (LOS)						C										
Approach Delay (s/veh)					0.3											
Approach LOS																

HCS 2010 Roundabout Report

General Information

Analyst	Kittelson & Associates, Inc.
Agency or Co.	City of Newberg
Date Performed	3/20/2018
Analysis Year	2020
Time Period	Total Traffic AM
Project Description	Newberg Providence Medical Center

Site Information

Intersection	Werth Blvd/Providence Dr/Hayes St
E/W Street Name	Providence Dr/Hayes St
N/S Street Name	Werth Blvd
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.78
Jurisdiction	Newberg, OR

Volume Adjustment and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	1	98	4	0	19	30	1	0	2	0	10	0	2	1	2
Percent Heavy Vehicles, %	0	0	3	0	0	0	6	100	0	0	0	0	0	0	100	0
Flow Rate (vPCE) pc/h	0	1	129	5	0	24	41	3	0	3	0	13	0	3	3	3
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing	1				1				0				2			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (sec)		5.1929			5.1929			5.1929			5.1929	
Follow-Up Headway (sec)		3.1858			3.1858			3.1858			3.1858	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (Ve), pc/h		135			68			16			9	
Entry Volume veh/h		131			64			16			8	
Circulating Flow (Vc), pc/h		30			4			133			68	
Exiting Flow (Vex), pc/h		145			47			4			32	
Capacity (cPCE), pc/h		1097			1126			989			1056	
Capacity (c), veh/h		1066			1062			989			880	
v/c Ratio (X)		0.12			0.06			0.02			0.01	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		4.5			3.9			3.8			4.2	
Lane LOS		A			A			A			A	
95% Queue		0.4			0.2			0.0			0.0	
Approach Delay, s/veh	4.5			3.9			3.8			4.2		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh / LOS	4.2						A					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	2	114	15	1	58
Future Volume (Veh/h)	12	2	114	15	1	58
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	15	3	143	19	1	73
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	228	154			163	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	228	154			163	
tC, single (s)	6.4	7.2			5.1	
tC, 2 stage (s)						
tF (s)	3.5	4.2			3.1	
p0 queue free %	98	100			100	
cM capacity (veh/h)	763	688			987	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	15	3	162	1	73
Volume Left	15	0	0	1	0
Volume Right	0	3	19	0	0
cSH	763	688	1700	987	1700
Volume to Capacity	0.02	0.00	0.10	0.00	0.04
Queue Length 95th (ft)	2	0	0	0	0
Control Delay (s)	9.8	10.3	0.0	8.7	0.0
Lane LOS	A	B		A	
Approach Delay (s)	9.9		0.0	0.1	
Approach LOS	A				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	17.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	79	44	105	50	21	49
Future Volume (Veh/h)	79	44	105	50	21	49
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	94	52	125	60	25	58
Pedestrians			1		1	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			3.5		3.5	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	186				397	156
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	186				397	156
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	93				96	93
cM capacity (veh/h)	1363				560	884

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	94	52	185	25	58
Volume Left	94	0	0	25	0
Volume Right	0	0	60	0	58
cSH	1363	1700	1700	560	884
Volume to Capacity	0.07	0.03	0.11	0.04	0.07
Queue Length 95th (ft)	6	0	0	3	5
Control Delay (s)	7.8	0.0	0.0	11.7	9.4
Lane LOS	A			B	A
Approach Delay (s)	5.0		0.0	10.1	
Approach LOS				B	

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
1: Providence Dr & N Hwy 99W

03/22/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	105	1179	41	92	2018	206	143	37	171	220	14	79
v/c Ratio	0.44	0.59	0.04	0.50	1.09	0.23	0.68	0.29	0.66	1.05	0.11	0.39
Control Delay	61.9	19.6	0.1	67.2	78.8	6.0	69.6	65.8	22.7	128.5	60.2	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.9	19.6	0.1	67.2	78.8	6.0	69.6	65.8	22.7	128.5	60.2	10.1
Queue Length 50th (ft)	90	328	0	80	~1061	26	120	33	7	~212	12	0
Queue Length 95th (ft)	150	472	0	137	#1294	74	182	68	80	#324	34	28
Internal Link Dist (ft)		676			463			180			257	
Turn Bay Length (ft)	150		100	230		300	160		160	350		150
Base Capacity (vph)	238	1995	928	185	1855	905	209	369	442	210	371	393
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.59	0.04	0.50	1.09	0.23	0.68	0.10	0.39	1.05	0.04	0.20

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	1120	39	87	1917	196	136	35	162	209	13	75
Future Volume (vph)	100	1120	39	87	1917	196	136	35	162	209	13	75
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	3309	1478	1646	3227	1473	1619	1724	1465	1646	1732	1452
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	1687	3309	1478	1646	3227	1473	1275	1724	1465	1270	1732	1452
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	1179	41	92	2018	206	143	37	171	220	14	79
RTOR Reduction (vph)	0	0	16	0	0	58	0	0	151	0	0	73
Lane Group Flow (vph)	105	1179	25	92	2018	148	143	37	20	220	14	6
Confl. Peds. (#/hr)							1					1
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	1%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	19.8	84.4	84.4	15.8	80.4	80.4	20.3	10.3	10.3	20.3	10.3	10.3
Effective Green, g (s)	19.8	84.4	84.4	15.8	80.4	80.4	20.3	10.3	10.3	20.3	10.3	10.3
Actuated g/C Ratio	0.14	0.60	0.60	0.11	0.57	0.57	0.15	0.07	0.07	0.15	0.07	0.07
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
Lane Grp Cap (vph)	238	1994	891	185	1853	845	209	126	107	211	127	106
v/s Ratio Prot	c0.06	c0.36		0.06	c0.63		0.05	0.02		c0.07	0.01	
v/s Ratio Perm			0.02			0.10	0.05		0.01	c0.08		0.00
v/c Ratio	0.44	0.59	0.03	0.50	1.09	0.17	0.68	0.29	0.19	1.04	0.11	0.05
Uniform Delay, d1	55.0	17.2	11.2	58.4	29.8	14.1	56.2	61.4	60.9	59.2	60.6	60.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	1.3	0.1	2.9	49.7	0.5	8.9	1.8	1.2	73.6	0.5	0.3
Delay (s)	56.8	18.5	11.3	61.2	79.5	14.6	65.1	63.2	62.1	132.8	61.1	60.6
Level of Service	E	B	B	E	E	B	E	E	E	F	E	E
Approach Delay (s)		21.3			73.0			63.4			111.4	
Approach LOS		C			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	59.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	116	5	2	217	119	20
Future Volume (Veh/h)	116	5	2	217	119	20
Sign Control	Stop			Free	Free	
Grade	0%			3%	-3%	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Hourly flow rate (vph)	163	7	3	306	168	28
Pedestrians	3					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					260	
pX, platoon unblocked						
vC, conflicting volume	497	185	199			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	497	185	199			
tC, single (s)	6.4	6.2	4.6			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.7			
p0 queue free %	69	99	100			
cM capacity (veh/h)	533	860	1129			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	170	309	196
Volume Left	163	3	0
Volume Right	7	0	28
cSH	542	1129	1700
Volume to Capacity	0.31	0.00	0.12
Queue Length 95th (ft)	33	0	0
Control Delay (s)	14.7	0.1	0.0
Lane LOS	B	A	
Approach Delay (s)	14.7	0.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	26.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	0	39	4	0	38	3	146	1	11	110	3
Future Volume (Veh/h)	35	0	39	4	0	38	3	146	1	11	110	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.92	0.75	0.92	0.92	0.92	0.75	0.75	0.92	0.92	0.75	0.75
Hourly flow rate (vph)	47	0	52	4	0	41	4	195	1	12	147	4
Pedestrians		3										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		3.5										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											680	
pX, platoon unblocked												
vC, conflicting volume	420	380	152	428	382	196	154			196		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	420	380	152	428	382	196	154			196		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	100	94	99	100	95	100			99		
cM capacity (veh/h)	508	544	897	500	543	846	1435			1377		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	99	45	200	163
Volume Left	47	4	4	12
Volume Right	52	41	1	4
cSH	658	797	1435	1377
Volume to Capacity	0.15	0.06	0.00	0.01
Queue Length 95th (ft)	13	4	0	1
Control Delay (s)	11.4	9.8	0.2	0.6
Lane LOS	B	A	A	A
Approach Delay (s)	11.4	9.8	0.2	0.6
Approach LOS	B	A		

Intersection Summary				
Average Delay	3.4			
Intersection Capacity Utilization	29.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	14	3	134	151	2
Future Volume (Veh/h)	16	14	3	134	151	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	21	18	4	174	196	3
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					793	
pX, platoon unblocked						
vC, conflicting volume	384	202	203			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	384	202	203			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	98	100			
cM capacity (veh/h)	619	841	1376			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	39	178	199
Volume Left	21	4	0
Volume Right	18	0	3
cSH	705	1376	1700
Volume to Capacity	0.06	0.00	0.12
Queue Length 95th (ft)	4	0	0
Control Delay (s)	10.4	0.2	0.0
Lane LOS	B	A	
Approach Delay (s)	10.4	0.2	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	19.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	13	124	3	4	161
Future Volume (Veh/h)	12	13	124	3	4	161
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.25	0.25	0.25	0.25	0.25	0.25
Hourly flow rate (vph)	48	52	496	12	16	644
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						1093
pX, platoon unblocked						
vC, conflicting volume	1178	502			508	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1178	502			508	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	77	91			99	
cM capacity (veh/h)	210	573			1067	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	100	508	660
Volume Left	48	0	16
Volume Right	52	12	0
cSH	313	1700	1067
Volume to Capacity	0.32	0.30	0.01
Queue Length 95th (ft)	34	0	1
Control Delay (s)	21.8	0.0	0.4
Lane LOS	C		A
Approach Delay (s)	21.8	0.0	0.4
Approach LOS	C		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	21.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	3	2	126	171	2
Future Volume (Veh/h)	1	3	2	126	171	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	1	4	3	166	225	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					1143	
pX, platoon unblocked						
vC, conflicting volume	398	226	228			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	398	226	228			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	610	818	1352			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	5	169	228
Volume Left	1	3	0
Volume Right	4	0	3
cSH	766	1352	1700
Volume to Capacity	0.01	0.00	0.13
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.7	0.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.7	0.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCS 2010 Two-Way Stop Control Summary Report

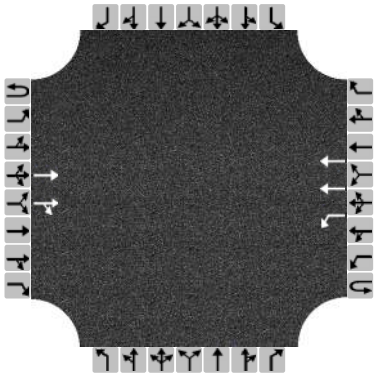
General Information

Analyst	Kittelson & Associates
Agency/Co.	City of Newberg
Date Performed	3/20/2018
Analysis Year	2020
Time Analyzed	Total Traffic PM
Intersection Orientation	East-West
Project Description	Newberg Providence Medical Center

Site Information

Intersection	OR 99 W/PNMC Access
Jurisdiction	Newberg, Oregon
East/West Street	OR 99W
North/South Street	Right-In, Left-Out Access
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		0	0	0		0	0	0
Configuration			T	TR		L	T									
Volume (veh/h)			1270	20		2	2055									
Percent Heavy Vehicles						3										
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						2										
Capacity						510										
v/c Ratio						0.00										
95% Queue Length						0.0										
Control Delay (s/veh)						12.1										
Level of Service (LOS)						B										
Approach Delay (s/veh)					0.0											
Approach LOS																

HCS 2010 Roundabout Report

General Information

Analyst	Kittelson & Associates, Inc.
Agency or Co.	City of Newberg
Date Performed	3/20/2018
Analysis Year	2020
Time Period	Total Traffic PM
Project Description	Newberg Providence Medical Center

Site Information

Intersection	Werth Blvd/Providence Dr/Hayes St
E/W Street Name	Providence Dr/Hayes St
N/S Street Name	Werth Blvd
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.79
Jurisdiction	Newberg, OR

Volume Adjustment and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	4	59	7	0	19	145	0	0	10	0	27	0	0	1	2
Percent Heavy Vehicles, %	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0
Flow Rate (vPCE) pc/h	0	5	76	9	0	24	185	0	0	13	0	34	0	0	1	3
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing	0				2				1				1			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (sec)		5.1929			5.1929			5.1929			5.1929	
Follow-Up Headway (sec)		3.1858			3.1858			3.1858			3.1858	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (Ve), pc/h		90			209			47			4	
Entry Volume veh/h		89			207			47			4	
Circulating Flow (Vc), pc/h	25			18			81			222		
Exiting Flow (Vex), pc/h	110			201			5			34		
Capacity (cPCE), pc/h		1102			1110			1042			905	
Capacity (c), veh/h		1084			1100			1042			905	
v/c Ratio (X)		0.08			0.19			0.05			0.00	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Movement	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		4.0			5.0			3.8			4.0	
Lane LOS		A			A			A			A	
95% Queue		0.3			0.7			0.1			0.0	
Approach Delay, s/veh	4.0			5.0			3.8			4.0		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh / LOS	4.6						A					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	24	7	141	20	4	248
Future Volume (Veh/h)	24	7	141	20	4	248
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	8	153	22	4	270
Pedestrians	8					1
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	3.5					3.5
Percent Blockage	1					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	450	173			183	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	450	173			183	
tC, single (s)	6.4	6.4			4.3	
tC, 2 stage (s)						
tF (s)	3.5	3.5			2.4	
p0 queue free %	95	99			100	
cM capacity (veh/h)	564	826			1255	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	26	8	175	4	270
Volume Left	26	0	0	4	0
Volume Right	0	8	22	0	0
cSH	564	826	1700	1255	1700
Volume to Capacity	0.05	0.01	0.10	0.00	0.16
Queue Length 95th (ft)	4	1	0	0	0
Control Delay (s)	11.7	9.4	0.0	7.9	0.0
Lane LOS	B	A		A	
Approach Delay (s)	11.1		0.0	0.1	
Approach LOS	B				

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	23.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	107	94	83	54	93	179
Future Volume (Veh/h)	107	94	83	54	93	179
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	124	109	97	63	108	208
Pedestrians			3		18	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			3.5		3.5	
Percent Blockage			0		2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	178				506	146
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	178				506	146
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				77	77
cM capacity (veh/h)	1386				469	888

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	124	109	160	108	208
Volume Left	124	0	0	108	0
Volume Right	0	0	63	0	208
cSH	1386	1700	1700	469	888
Volume to Capacity	0.09	0.06	0.09	0.23	0.23
Queue Length 95th (ft)	7	0	0	22	23
Control Delay (s)	7.9	0.0	0.0	15.0	10.3
Lane LOS	A			B	B
Approach Delay (s)	4.2		0.0	11.9	
Approach LOS				B	

Intersection Summary			
Average Delay	6.7		
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix F Turn Lane Warrant Worksheets

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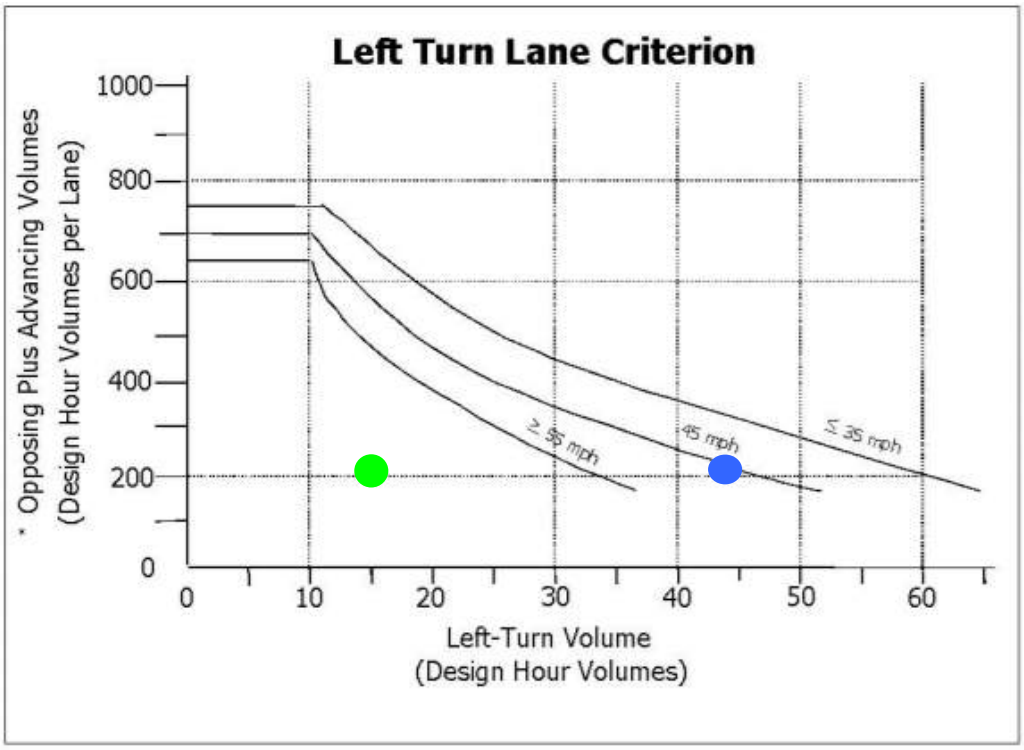
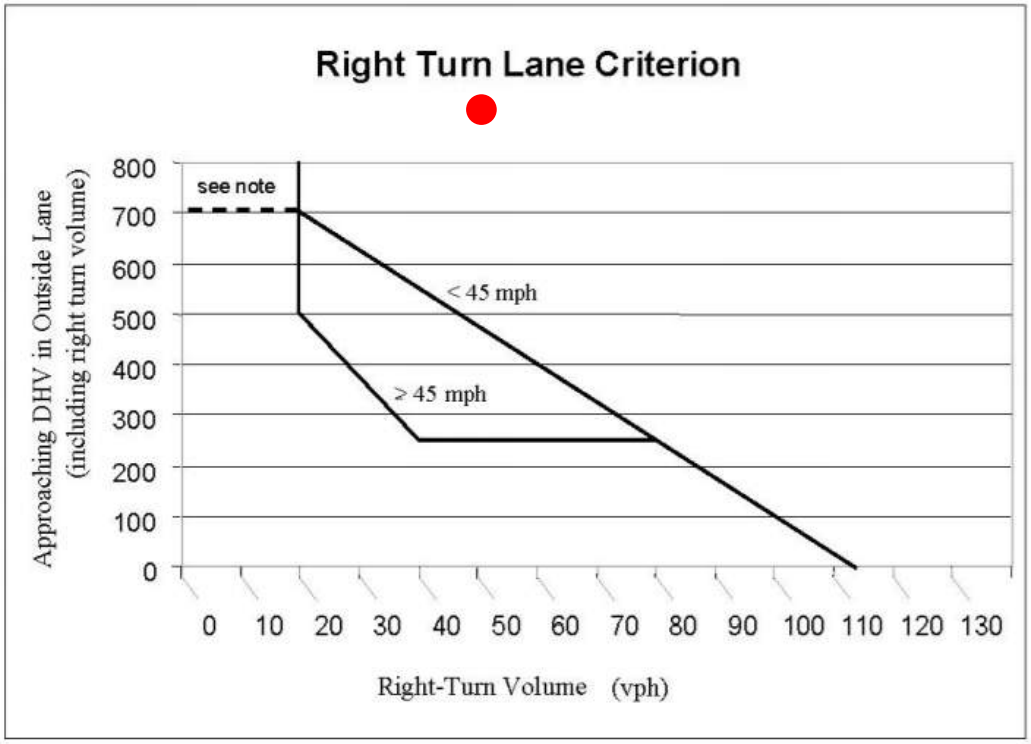
ODOT APM Turn Lane Criteria: Exhibit 7-1 & 7-2



Intersection 3: Providence Drive/PNMC Middle Driveway (AM Peak highest)

Intersection 5: Providence Drive/New Campus Expansion Access (AM Peak highest)



Intersection 7: OR 99W/ PNMC Right-In, Left-In Only Access (Above Approaching DHV limit)

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Appendix G Pedestrian Crossing Worksheets

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GUIDELINES FOR PEDESTRIAN CROSSING TREATMENTS

This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of, Appendix A documentation.

This spreadsheet is still under development, please inform TTI if errors are identified.

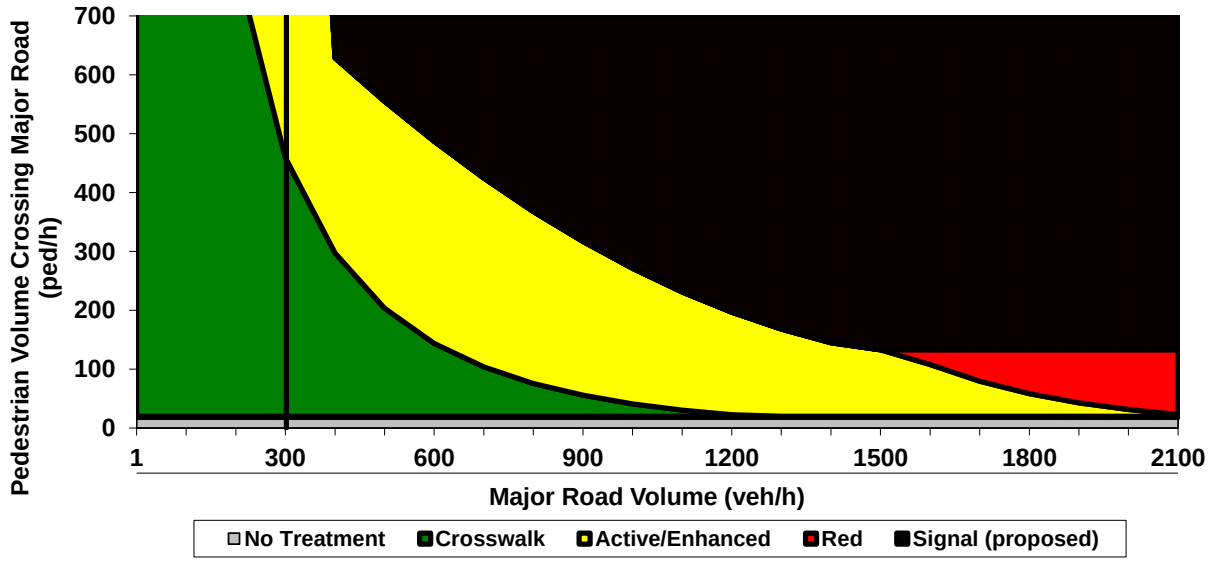
Key

- Blue fields contain descriptive information.
- Green fields are required and must be completed.
- Tan fields are adjustments that are filled out only under certain conditions (follow instructions to the left of the cell).
- Gray fields are automatically calculated and should not be edited.

Analyst and Site Information			
Analyst	Chris Brehmer	Major Street	Providence Drive
Analysis Date	March 19, 2018	Minor Street or Location	Mid-block
Data Collection Date	February 6, 2018	Peak Hour	PM

Step 1: Select worksheet:			
Posted or statutory speed limit (or 85th percentile speed) on the major street (mph)		*1a*	25
Is the population of the surrounding area <10,000? (enter ***YES*** or ***NO***)		*1b*	NO
Step 2: Does the crossing meet minimum pedestrian volumes to be considered for a traffic control device?			
Peak-hour pedestrian volume (ped/h), V_p		*2a*	18
Result: **Consider raised median islands, curb extensions, traffic calming, etc. as feasible.**			
Step 3: Does the crossing meet the pedestrian warrant for a traffic signal?			
Major road volume, total of both approaches during peak hour (veh/h), V_{maj-s}		*3a*	302
[Calculated automatically] Preliminary (before min. threshold) peak hour pedestrian volume to meet warrant		*3b*	706
[Calculated automatically] Minimum required peak hour pedestrian volume to meet traffic signal warrant		*3c*	706
Is 15th percentile crossing speed of pedestrians less than 3.5 ft/s (1.1 m/s)? (enter ***YES*** or ***NO***)		*3d*	No
If 15th percentile crossing speed of pedestrians is less than 3.5 ft/s (1.1 m/s), then reduce *3c* by up to 50%.	% rate of reduction for *3c* (up to 50%)	*3e*	
	Reduced value or *3c*	*3f*	706
Result:			
Step 4: Estimate pedestrian delay.			
Pedestrian crossing distance, curb to curb (ft), L		*4a*	35
Pedestrian walking speed (ft/s), S_p (suggested speed = 3.5 ft/s)		*4b*	3.5
Pedestrian start-up time and end clearance time (s), t_s (suggested start-up time = 3 sec)		*4c*	3
[Calculated automatically] Critical gap required for crossing pedestrian (s), t_c		*4d*	13
Major road volume, total both approaches OR approach being crossed if raised median island is present, during peak hour (veh/h), V_{maj-d}		*4e*	302
Major road flow rate (veh/s), v		*4f*	0.08
Average pedestrian delay (s/person), d_p		*4g*	10
Total pedestrian delay (h), D_p The value in 4h is the calculated estimated delay for all pedestrians crossing the major roadway without a crossing treatment (assumes 0% compliance). If the actual total pedestrian delay has been measured at the site, that value can be entered in 4i to replace the calculated value in 4h.		*4h*	0.0
		4i	
Step 5: Select treatment based up on total pedestrian delay and expected motorist compliance.			
Expected motorist compliance at pedestrian crossings in region: enter ***HIGH for High Compliance*** or ***LOW for Low Compliance***		*5a*	HIGH

Treatment Category:	**Consider raised median islands, curb extensions, traffic calming, etc. as feasible.**



This worksheet provides general recommendations on pedestrian crossing treatments to consider at unsignalized intersections; in all cases, engineering judgment should be used in selecting a specific treatment for installation. This worksheet does not apply to school crossings. In addition to the results provided by this worksheet, users should consider whether a pedestrian treatment could present an increased safety risk to pedestrians, such as where there is poor sight distance, complex geometrics, or nearby traffic signals.

Appendix F
Year 2020 Background with
Reassigned Traffic Conditions
Level of Service Worksheets

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	KAI
Date Performed	10/21/2017
Analysis Year	2020
Time Analyzed	Background with Reassigned Traffic AM
Project Description	Crestview Crossing

Site Information

Intersection	Springbrook/Crestview
E/W Street Name	Crestview Dr
N/S Street Name	Springbrook Rd
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.66
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	2	54	23	54	0	3	24	67	2	49	254	2	1	211	145	135
Percent Heavy Vehicles, %	9	9	13	3	0	0	0	0	2	2	4	0	25	25	4	7
Flow Rate (v_{PCE}), pc/h	3	89	39	84	0	5	36	102	3	76	400	3	2	400	228	219
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		215			143			482			849	
Entry Volume veh/h		200			143			465			746	
Circulating Flow (v_c), pc/h		638			573			533			123	
Exiting Flow (v_{ex}), pc/h		442			334			593			320	
Capacity (c_{pce}), pc/h		720			769			801			1217	
Capacity (c), veh/h		671			769			773			1069	
v/c Ratio (x)		0.30			0.19			0.60			0.70	

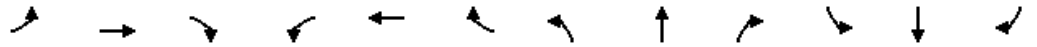
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		9.1			6.7			14.4			14.2	
Lane LOS		A			A			B			B	
95% Queue, veh		1.3			0.7			4.1			6.0	
Approach Delay, s/veh	9.1			6.7			14.4			14.2		
Approach LOS	A			A			B			B		
Intersection Delay, s/veh | LOS	12.9						B					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	221	5	8	85	6	5
Future Volume (Veh/h)	221	5	8	85	6	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	2%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	325	7	12	125	9	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			332		478	328
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			332		478	328
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.3
p0 queue free %			99		98	99
cM capacity (veh/h)			1239		515	717

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	332	137	16
Volume Left	0	12	9
Volume Right	7	0	7
cSH	1700	1239	587
Volume to Capacity	0.20	0.01	0.03
Queue Length 95th (ft)	0	1	2
Control Delay (s)	0.0	0.8	11.3
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	11.3
Approach LOS			B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	21.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	61	27	174	37	13	15	66	154	5	16	116	69
Future Volume (vph)	61	27	174	37	13	15	66	154	5	16	116	69
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	73	33	210	45	16	18	80	186	6	19	140	83

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	106	210	79	80	192	19	223
Volume Left (vph)	73	0	45	80	0	19	0
Volume Right (vph)	0	210	18	0	6	0	83
Hadj (s)	0.42	-0.65	0.05	0.58	0.09	0.72	-0.16
Departure Headway (s)	6.5	5.4	6.4	6.6	6.1	6.8	5.9
Degree Utilization, x	0.19	0.32	0.14	0.15	0.32	0.04	0.36
Capacity (veh/h)	522	625	511	520	564	501	582
Control Delay (s)	9.8	9.7	10.5	9.5	10.7	8.8	11.0
Approach Delay (s)	9.7		10.5	10.4		10.8	
Approach LOS	A		B	B		B	

Intersection Summary				
Delay	10.3			
Level of Service	B			
Intersection Capacity Utilization	36.6%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1362	75	81	812	75	179	140	99	206	120	69
Future Volume (vph)	42	1362	75	81	812	75	179	140	99	206	120	69
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			3%			0%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	3197	1430	2906	3050	1403	2997	1642	1423	3101	1577	1408
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	3197	1430	2906	3050	1403	2997	1642	1423	3101	1577	1408
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	47	1530	84	91	912	84	201	157	111	231	135	78
RTOR Reduction (vph)	0	0	37	0	0	38	0	0	96	0	0	68
Lane Group Flow (vph)	47	1530	47	91	912	46	201	157	15	231	135	10
Confl. Peds. (#/hr)							3					3
Heavy Vehicles (%)	5%	4%	4%	11%	9%	6%	6%	5%	3%	4%	11%	4%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	6.9	67.0	67.0	6.3	66.4	66.4	15.2	16.1	16.1	14.1	15.0	15.0
Effective Green, g (s)	6.9	67.0	67.0	6.3	66.4	66.4	15.2	16.1	16.1	14.1	15.0	15.0
Actuated g/C Ratio	0.06	0.56	0.56	0.05	0.55	0.55	0.13	0.13	0.13	0.12	0.12	0.12
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.3	4.2	4.2	2.3	4.0	4.0	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	91	1784	798	152	1687	776	379	220	190	364	197	176
v/s Ratio Prot	0.03	c0.48		0.03	c0.30		0.07	c0.10		c0.07	0.09	
v/s Ratio Perm			0.03			0.03			0.01			0.01
v/c Ratio	0.52	0.86	0.06	0.60	0.54	0.06	0.53	0.71	0.08	0.63	0.69	0.06
Uniform Delay, d1	54.9	22.5	12.1	55.6	17.1	12.4	49.1	49.7	45.5	50.5	50.2	46.3
Progression Factor	1.00	1.00	1.00	0.84	0.56	0.11	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	5.6	0.1	4.5	1.2	0.1	1.0	9.4	0.1	3.0	8.3	0.1
Delay (s)	57.9	28.0	12.2	51.2	10.7	1.5	50.0	59.1	45.6	53.4	58.5	46.3
Level of Service	E	C	B	D	B	A	D	E	D	D	E	D
Approach Delay (s)		28.1			13.3			52.0			53.7	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1523	43	70	915	28	58	3	87	11	5	27
Future Volume (vph)	19	1523	43	70	915	28	58	3	87	11	5	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		2%			0%			0%			-2%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1567	3165	1265	1568	3079	1273	1433	1408		1678	1361	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.73	1.00		0.56	1.00	
Satd. Flow (perm)	1567	3165	1265	1568	3079	1273	1109	1408		991	1361	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	1655	47	76	995	30	63	3	95	12	5	29
RTOR Reduction (vph)	0	0	13	0	0	7	0	86	0	0	26	0
Lane Group Flow (vph)	21	1655	34	76	995	23	63	12	0	12	8	0
Confl. Peds. (#/hr)	2					2			1	1		
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	5%	4%	14%	6%	8%	14%	16%	0%	5%	0%	40%	7%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		
Actuated Green, G (s)	3.2	86.6	86.6	9.2	92.6	92.6	11.7	11.7		11.7	11.7	
Effective Green, g (s)	3.2	86.6	86.6	9.2	92.6	92.6	11.7	11.7		11.7	11.7	
Actuated g/C Ratio	0.03	0.72	0.72	0.08	0.77	0.77	0.10	0.10		0.10	0.10	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	41	2284	912	120	2375	982	108	137		96	132	
v/s Ratio Prot	0.01	c0.52		c0.05	0.32			0.01			0.01	
v/s Ratio Perm			0.03			0.02	c0.06			0.01		
v/c Ratio	0.51	0.72	0.04	0.63	0.42	0.02	0.58	0.09		0.12	0.06	
Uniform Delay, d1	57.6	9.7	4.8	53.8	4.6	3.2	51.8	49.3		49.5	49.2	
Progression Factor	1.14	0.16	0.03	1.40	0.19	0.13	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.9	1.2	0.0	7.4	0.5	0.0	6.5	0.2		0.4	0.1	
Delay (s)	69.5	2.8	0.2	82.6	1.4	0.4	58.3	49.5		49.9	49.3	
Level of Service	E	A	A	F	A	A	E	D		D	D	
Approach Delay (s)		3.5			6.9			53.0			49.5	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	1575	1041	21	52	24
Future Volume (Veh/h)	4	1575	1041	21	52	24
Sign Control		Free	Free		Stop	
Grade		-2%	2%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	4	1694	1119	23	56	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			521			
pX, platoon unblocked	0.78				0.78	0.78
vC, conflicting volume	1142				1986	571
vC1, stage 1 conf vol					1130	
vC2, stage 2 conf vol					855	
vCu, unblocked vol	627				1704	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				80	97
cM capacity (veh/h)	755				274	854

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	4	847	847	746	396	82
Volume Left	4	0	0	0	0	56
Volume Right	0	0	0	0	23	26
cSH	755	1700	1700	1700	1700	350
Volume to Capacity	0.01	0.50	0.50	0.44	0.23	0.23
Queue Length 95th (ft)	0	0	0	0	0	22
Control Delay (s)	9.8	0.0	0.0	0.0	0.0	18.4
Lane LOS	A					C
Approach Delay (s)	0.0			0.0		18.4
Approach LOS						C

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1536	90	100	1019	69	42	8	71	214	13	1
Future Volume (vph)	1	1536	90	100	1019	69	42	8	71	214	13	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.96	
Satd. Flow (prot)	1607	3214	1480	1614	3111			1601	1465		1575	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.78	1.00		0.70	
Satd. Flow (perm)	1607	3214	1480	1614	3111			1305	1465		1153	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	1670	98	109	1108	75	46	9	77	233	14	1
RTOR Reduction (vph)	0	0	30	0	4	0	0	0	59	0	0	0
Lane Group Flow (vph)	1	1670	68	109	1179	0	0	55	18	0	248	0
Heavy Vehicles (%)	5%	5%	2%	2%	8%	5%	3%	5%	0%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8		8	4		
Actuated Green, G (s)	1.0	67.5	67.5	9.0	75.5			28.5	28.5		28.5	
Effective Green, g (s)	1.0	67.5	67.5	9.0	75.5			28.5	28.5		28.5	
Actuated g/C Ratio	0.01	0.56	0.56	0.08	0.63			0.24	0.24		0.24	
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5			4.5	4.5		4.5	
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	13	1807	832	121	1957			309	347		273	
v/s Ratio Prot	0.00	c0.52		c0.07	0.38							
v/s Ratio Perm			0.05					0.04	0.01		c0.22	
v/c Ratio	0.08	0.92	0.08	0.90	0.60			0.18	0.05		0.91	
Uniform Delay, d1	59.0	23.9	12.0	55.1	13.3			36.4	35.3		44.5	
Progression Factor	0.99	1.53	2.13	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	2.6	7.4	0.1	53.1	1.4			0.4	0.1		31.8	
Delay (s)	61.2	44.0	25.8	108.1	14.7			36.8	35.4		76.2	
Level of Service	E	D	C	F	B			D	D		E	
Approach Delay (s)		43.0			22.6			36.0			76.2	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	37.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	1816	1180	29	62	6
Future Vol, veh/h	3	1816	1180	29	62	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-2	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	33	4	7	7	3	0
Mvmt Flow	3	1912	1242	31	65	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1273	0	-	0	2219	636
Stage 1	-	-	-	-	1257	-
Stage 2	-	-	-	-	962	-
Critical Hdwy	4.76	-	-	-	6.46	6.7
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.53	-	-	-	3.53	3.3
Pot Cap-1 Maneuver	400	-	-	-	~ 47	441
Stage 1	-	-	-	-	264	-
Stage 2	-	-	-	-	366	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	400	-	-	-	~ 47	441
Mov Cap-2 Maneuver	-	-	-	-	160	-
Stage 1	-	-	-	-	264	-
Stage 2	-	-	-	-	363	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	40.8
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	400	-	-	-	170
HCM Lane V/C Ratio	0.008	-	-	-	0.421
HCM Control Delay (s)	14.1	-	-	-	40.8
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	1.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	KAI
Date Performed	10/21/2017
Analysis Year	2020
Time Analyzed	Background with Reassigned Traffic PM
Project Description	Crestview Crossing

Site Information

Intersection	Springbrook/Crestview
E/W Street Name	Crestview Dr
N/S Street Name	Springbrook Rd
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.93
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	53	2	13	0	3	2	162	0	7	374	7	2	182	263	49
Percent Heavy Vehicles, %	0	0	0	0	20	20	0	0	0	0	3	0	0	0	2	0
Flow Rate (v_{PCE}), pc/h	0	57	2	14	0	4	2	174	0	8	414	8	2	196	288	53
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		73			180			430			539	
Entry Volume veh/h		73			179			418			533	
Circulating Flow (v_c), pc/h	490			481			257			14		
Exiting Flow (v_{ex}), pc/h	206			63			647			306		
Capacity (c_{pce}), pc/h		837			845			1062			1360	
Capacity (c), veh/h		837			842			1032			1346	
v/c Ratio (x)		0.09			0.21			0.40			0.40	

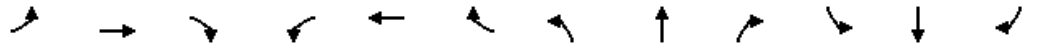
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		5.1			6.5			7.9			6.4	
Lane LOS		A			A			A			A	
95% Queue, veh		0.3			0.8			2.0			1.9	
Approach Delay, s/veh	5.1			6.5			7.9			6.4		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	6.8						A					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	179	5	9	161	8	14
Future Volume (Veh/h)	179	5	9	161	8	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	2%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	227	6	11	204	10	18
Pedestrians					2	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			235		458	232
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			235		458	232
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	98
cM capacity (veh/h)			1342		559	810

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	233	215	28
Volume Left	0	11	10
Volume Right	6	0	18
cSH	1700	1342	698
Volume to Capacity	0.14	0.01	0.04
Queue Length 95th (ft)	0	1	3
Control Delay (s)	0.0	0.5	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.5	10.4
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	27.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	83	63	219	91	68	86	136	202	5	67	181	40
Future Volume (vph)	83	63	219	91	68	86	136	202	5	67	181	40
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	86	66	228	95	71	90	142	210	5	70	189	42

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	152	228	256	142	215	70	231
Volume Left (vph)	86	0	95	142	0	70	0
Volume Right (vph)	0	228	90	0	5	0	42
Hadj (s)	0.30	-0.68	-0.12	0.53	0.03	0.53	-0.06
Departure Headway (s)	7.5	6.5	7.1	7.7	7.2	7.8	7.2
Degree Utilization, x	0.32	0.41	0.50	0.31	0.43	0.15	0.46
Capacity (veh/h)	455	525	470	432	463	431	462
Control Delay (s)	12.7	12.7	17.1	12.9	14.4	11.1	15.1
Approach Delay (s)	12.7		17.1	13.8		14.2	
Approach LOS	B		C	B		B	

Intersection Summary				
Delay	14.2			
Level of Service	B			
Intersection Capacity Utilization	53.2%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	1156	124	141	1481	150	374	179	124	217	212	84
Future Volume (vph)	98	1156	124	141	1481	150	374	179	124	217	212	84
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			3%			0%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	3137	1440	2854	3197	1423	3177	1674	1361	3193	1699	1438
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	3137	1440	2854	3197	1423	3177	1674	1361	3193	1699	1438
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	100	1180	127	144	1511	153	382	183	127	221	216	86
RTOR Reduction (vph)	0	0	63	0	0	75	0	0	109	0	0	67
Lane Group Flow (vph)	100	1180	64	144	1511	78	382	183	18	221	216	19
Confl. Peds. (#/hr)	2		9	9		2	14					14
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	5%	6%	1%	13%	4%	2%	0%	3%	6%	1%	3%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	11.0	71.0	71.0	9.9	69.9	69.9	20.5	19.9	19.9	22.7	22.1	22.1
Effective Green, g (s)	11.0	71.0	71.0	9.9	69.9	69.9	20.5	19.9	19.9	22.7	22.1	22.1
Actuated g/C Ratio	0.08	0.51	0.51	0.07	0.50	0.50	0.15	0.14	0.14	0.16	0.16	0.16
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.3	4.2	4.2	2.3	4.0	4.0	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	124	1590	730	201	1596	710	465	237	193	517	268	226
v/s Ratio Prot	c0.06	0.38		0.05	c0.47		c0.12	0.11		0.07	c0.13	
v/s Ratio Perm			0.04			0.06			0.01			0.01
v/c Ratio	0.81	0.74	0.09	0.72	0.95	0.11	0.82	0.77	0.09	0.43	0.81	0.08
Uniform Delay, d1	63.5	27.3	17.8	63.7	33.3	18.6	58.0	57.9	52.2	52.8	56.9	50.3
Progression Factor	1.00	1.00	1.00	0.95	1.04	1.63	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	29.5	3.2	0.2	6.9	9.3	0.2	10.8	13.6	0.1	0.3	15.5	0.1
Delay (s)	92.9	30.4	18.0	67.2	43.9	30.5	68.8	71.5	52.3	53.1	72.3	50.4
Level of Service	F	C	B	E	D	C	E	E	D	D	E	D
Approach Delay (s)		33.8			44.6			66.5			60.6	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	46.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1035	101	220	1500	41	243	16	134	21	10	51
Future Volume (vph)	32	1035	101	220	1500	41	243	16	134	21	10	51
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		2%			0%			0%			-2%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1646	3105	1402	1646	3197	1352	1620	1442		1674	1471	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.72	1.00		0.52	1.00	
Satd. Flow (perm)	1646	3105	1402	1646	3197	1352	1221	1442		911	1471	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	33	1078	105	229	1562	43	253	17	140	22	10	53
RTOR Reduction (vph)	0	0	43	0	0	13	0	110	0	0	42	0
Lane Group Flow (vph)	33	1078	62	229	1563	30	253	47	0	22	21	0
Confl. Peds. (#/hr)							5		3	3		5
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	6%	5%	1%	4%	10%	2%	0%	4%	0%	0%	4%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		
Actuated Green, G (s)	5.4	74.9	74.9	22.3	91.8	91.8	30.3	30.3		30.3	30.3	
Effective Green, g (s)	5.4	74.9	74.9	22.3	91.8	91.8	30.3	30.3		30.3	30.3	
Actuated g/C Ratio	0.04	0.54	0.54	0.16	0.66	0.66	0.22	0.22		0.22	0.22	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	63	1661	750	262	2096	886	264	312		197	318	
v/s Ratio Prot	0.02	c0.35		c0.14	c0.49			0.03			0.01	
v/s Ratio Perm			0.04			0.02	c0.21			0.02		
v/c Ratio	0.52	0.65	0.08	0.87	0.75	0.03	0.96	0.15		0.11	0.07	
Uniform Delay, d1	66.0	23.2	15.8	57.5	16.2	8.5	54.2	44.4		44.0	43.6	
Progression Factor	0.72	1.26	1.96	0.81	0.47	0.37	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.7	1.5	0.2	14.6	1.2	0.0	43.5	0.2		0.2	0.1	
Delay (s)	51.6	30.7	31.1	61.4	8.8	3.2	97.7	44.6		44.2	43.7	
Level of Service	D	C	C	E	A	A	F	D		D	D	
Approach Delay (s)		31.3			15.2			77.4			43.8	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	32	1173	1783	128	26	18
Future Volume (Veh/h)	32	1173	1783	128	26	18
Sign Control		Free	Free		Stop	
Grade		-2%	2%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	34	1261	1917	138	28	19
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			522			
pX, platoon unblocked	0.41				0.41	0.41
vC, conflicting volume	2055				2684	1028
vC1, stage 1 conf vol					1986	
vC2, stage 2 conf vol					698	
vCu, unblocked vol	721				2239	0
tC, single (s)	4.2				7.0	6.9
tC, 2 stage (s)					6.0	
tF (s)	2.2				3.6	3.3
p0 queue free %	91				84	96
cM capacity (veh/h)	361				181	452

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	34	630	630	1278	777	47
Volume Left	34	0	0	0	0	28
Volume Right	0	0	0	0	138	19
cSH	361	1700	1700	1700	1700	238
Volume to Capacity	0.09	0.37	0.37	0.75	0.46	0.20
Queue Length 95th (ft)	8	0	0	0	0	18
Control Delay (s)	16.0	0.0	0.0	0.0	0.0	23.8
Lane LOS	C					C
Approach Delay (s)	0.4			0.0		23.8
Approach LOS						C

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1155	38	86	1774	140	135	17	139	174	2	2
Future Volume (vph)	6	1155	38	86	1774	140	135	17	139	174	2	2
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.95	
Satd. Flow (prot)	1654	3184	1479	1646	3224			1632	1465		1617	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.78	1.00		0.49	
Satd. Flow (perm)	1654	3184	1479	1646	3224			1326	1465		826	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	6	1229	40	91	1887	149	144	18	148	185	2	2
RTOR Reduction (vph)	0	0	16	0	4	0	0	0	116	0	0	0
Lane Group Flow (vph)	6	1229	24	91	2032	0	0	162	32	0	189	0
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	6%	0%	0%	4%	2%	1%	2%	0%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8		8	4		
Actuated Green, G (s)	1.0	82.3	82.3	12.6	93.9			30.1	30.1		30.1	
Effective Green, g (s)	1.0	82.3	82.3	12.6	93.9			30.1	30.1		30.1	
Actuated g/C Ratio	0.01	0.59	0.59	0.09	0.67			0.22	0.22		0.22	
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5			4.5	4.5		4.5	
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	11	1871	869	148	2162			285	314		177	
v/s Ratio Prot	0.00	0.39		c0.06	c0.63							
v/s Ratio Perm			0.02					0.12	0.02		c0.23	
v/c Ratio	0.55	0.66	0.03	0.61	0.94			0.57	0.10		1.07	
Uniform Delay, d1	69.3	19.4	12.1	61.4	20.5			49.1	44.1		54.9	
Progression Factor	1.08	0.41	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	47.5	1.5	0.0	8.4	9.6			3.1	0.2		86.8	
Delay (s)	122.0	9.4	12.1	69.8	30.1			52.3	44.3		141.8	
Level of Service	F	A	B	E	C			D	D		F	
Approach Delay (s)		10.0			31.8			48.5			141.8	
Approach LOS		B			C			D			F	

Intersection Summary			
HCM 2000 Control Delay	31.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	31	1569	2186	75	61	17
Future Vol, veh/h	31	1569	2186	75	61	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-2	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	5	4	0	2	0
Mvmt Flow	33	1687	2351	81	66	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2431	0	-	0	3301	1216
Stage 1	-	-	-	-	2391	-
Stage 2	-	-	-	-	910	-
Critical Hdwy	4.1	-	-	-	6.44	6.7
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.2	-	-	-	3.52	3.3
Pot Cap-1 Maneuver	197	-	-	-	~ 9	188
Stage 1	-	-	-	-	71	-
Stage 2	-	-	-	-	390	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	197	-	-	-	~ 7	188
Mov Cap-2 Maneuver	-	-	-	-	~ 55	-
Stage 1	-	-	-	-	71	-
Stage 2	-	-	-	-	325	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	$ 316.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	197	-	-	-	65
HCM Lane V/C Ratio	0.169	-	-	-	1.29
HCM Control Delay (s)	27	-	-	-	$ 316.6
HCM Lane LOS	D	-	-	-	F
HCM 95th %tile Q(veh)	0.6	-	-	-	6.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Appendix G
Select Zone Analysis Results

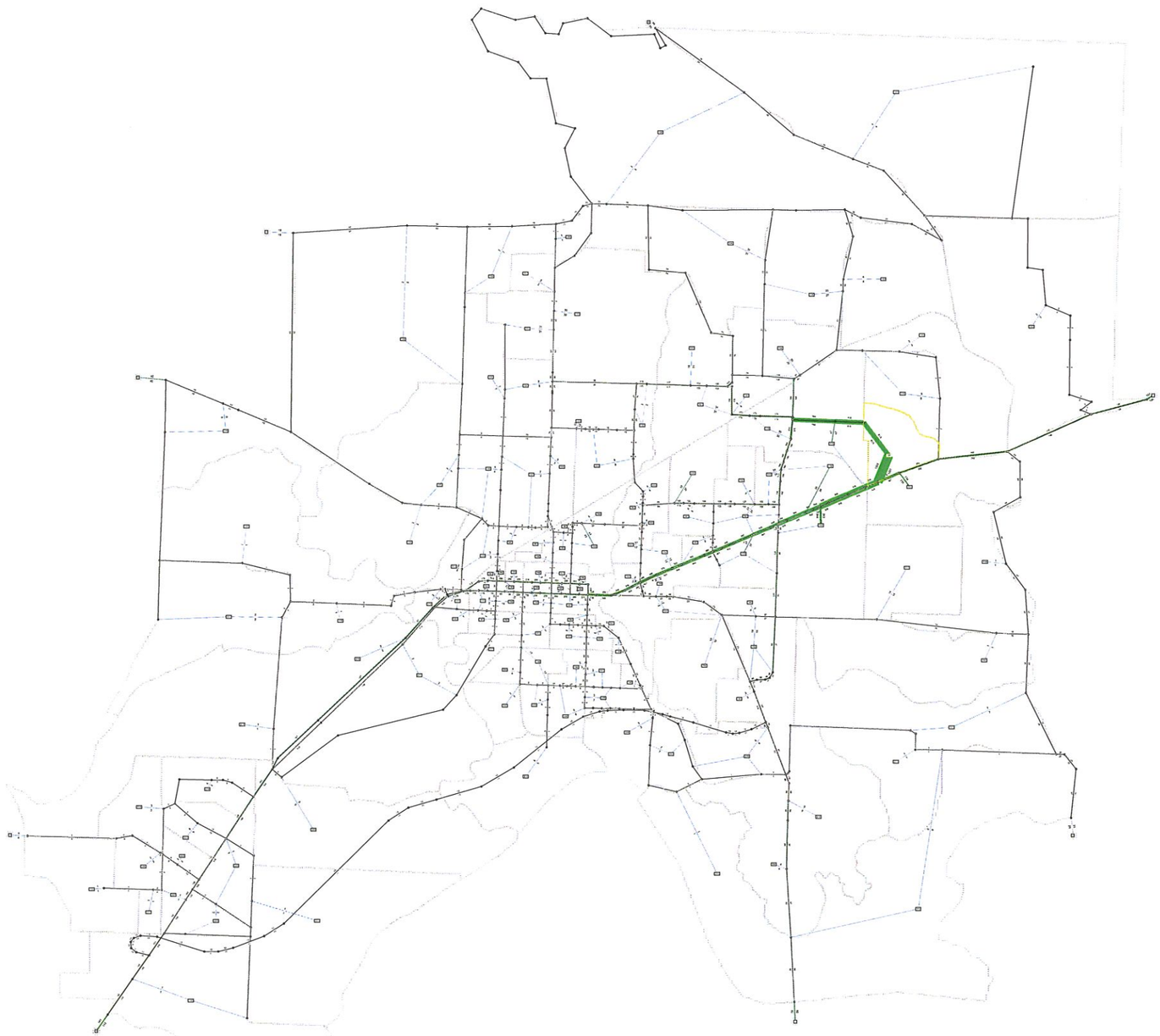
Newberg Transportation Model 2000
Select Zone 117 Daily Volumes

VISUM 16.01 PTV AG	beth.a.pickman@odot.state.or.us	Newberg_V2_2000.ver
Created on: 31.10.2017		ODOT Request 001

Newberg Transportation Model 2025
Select Zone 117 PM Peak Volumes

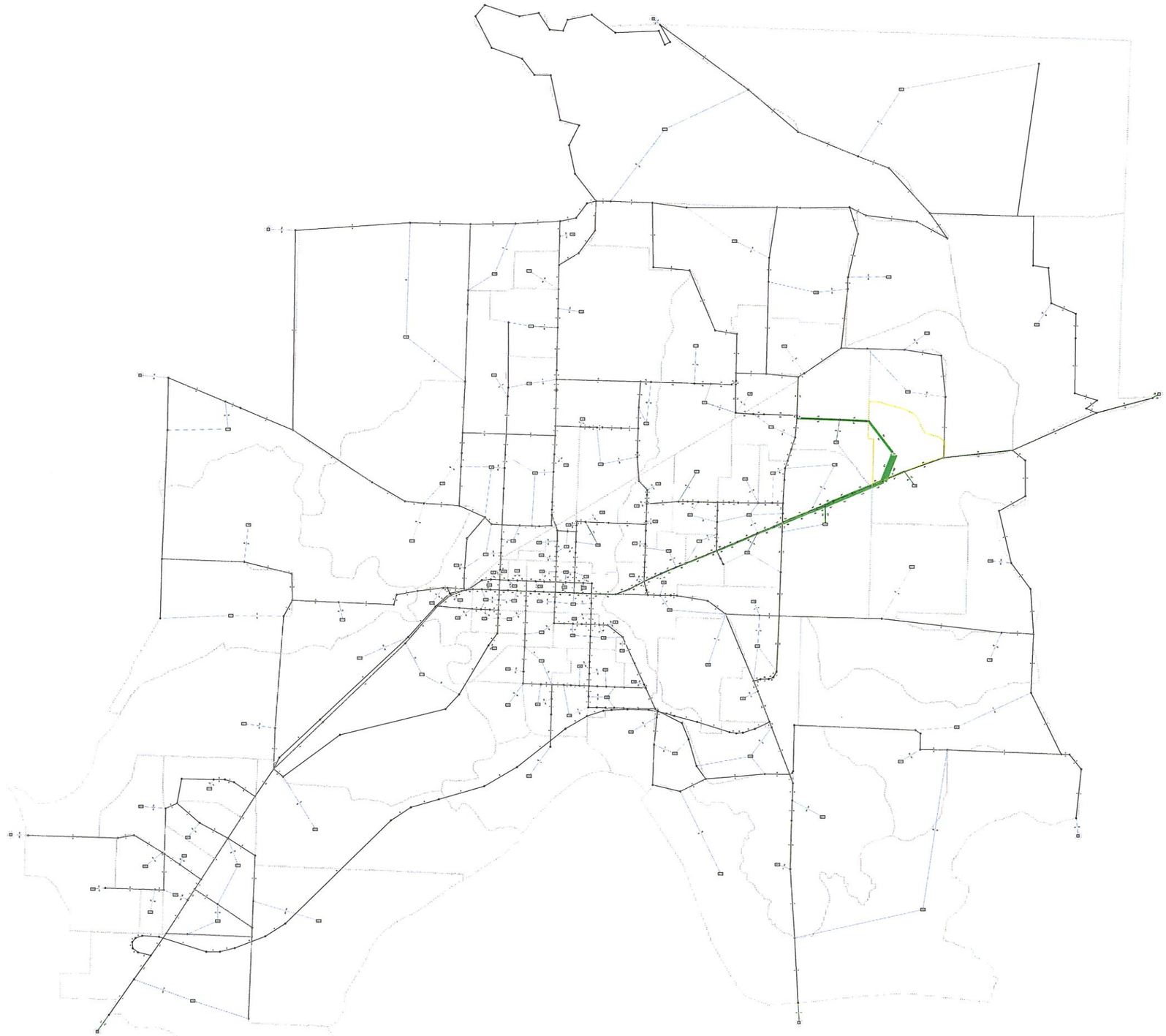
VISUM 16.01 PTV AG	beth.a.pickman@odot.state.or.us	Newberg_V2_2000.ver
Created on: 31.10.2017		ODOT Request 001

Newberg Transportation Model 2025
ODOT Request 001
Select Zone 117 Daily Volumes



VISUM 16.01 PTV AG	beth.a.pickman@odot.state.or.us	Newberg_V2_2025_Req001_w_Bypass.ver
Created on: 31.10.2017		ODOT Request 001

Newberg Transportation Model 2025
ODOT Request 001
Select Zone 117 PM Peak Volumes



VISUM 16.01 PTV AG	beth.a.pickman@odot.state.or.us	Newberg_V2_2025_Req001_w_Bypass.ver
Created on: 31.10.2017		ODOT Request 001

Appendix H
Year 2020 Total Conditions
Level of Service Worksheets

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	KAI
Date Performed	10/21/2017
Analysis Year	2020
Time Analyzed	Total AM
Project Description	Crestview Crossing

Site Information

Intersection	Springbrook/Crestview
E/W Street Name	Crestview Dr
N/S Street Name	Springbrook Rd
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.66
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	2	54	29	54	0	19	40	83	2	49	254	7	1	216	145	135
Percent Heavy Vehicles, %	9	9	13	3	0	0	0	0	2	2	4	0	25	25	4	7
Flow Rate (v_{PCE}), pc/h	3	89	50	84	0	29	61	126	3	76	400	11	2	409	228	219
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		226			216			490			858	
Entry Volume veh/h		210			216			473			753	
Circulating Flow (v_c), pc/h		671			573			553			172	
Exiting Flow (v_{ex}), pc/h		470			359			617			344	
Capacity (c_{pce}), pc/h		696			769			785			1158	
Capacity (c), veh/h		647			769			758			1016	
v/c Ratio (x)		0.32			0.28			0.62			0.74	

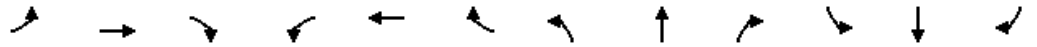
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		9.8			7.9			15.4			16.6	
Lane LOS		A			A			C			C	
95% Queue, veh		1.4			1.2			4.4			7.1	
Approach Delay, s/veh	9.8			7.9			15.4			16.6		
Approach LOS	A			A			C			C		
Intersection Delay, s/veh | LOS	14.3						B					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	237	5	8	133	6	5
Future Volume (Veh/h)	237	5	8	133	6	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	2%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	349	7	12	196	9	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			356		572	352
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			356		572	352
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.3
p0 queue free %			99		98	99
cM capacity (veh/h)			1214		452	696

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	356	208	16
Volume Left	0	12	9
Volume Right	7	0	7
cSH	1700	1214	534
Volume to Capacity	0.21	0.01	0.03
Queue Length 95th (ft)	0	1	2
Control Delay (s)	0.0	0.5	12.0
Lane LOS		A	B
Approach Delay (s)	0.0	0.5	12.0
Approach LOS			B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	61	27	179	37	13	15	82	154	5	16	116	69
Future Volume (vph)	61	27	179	37	13	15	82	154	5	16	116	69
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	73	33	216	45	16	18	99	186	6	19	140	83

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	106	216	79	99	192	19	223
Volume Left (vph)	73	0	45	99	0	19	0
Volume Right (vph)	0	216	18	0	6	0	83
Hadj (s)	0.42	-0.65	0.05	0.58	0.09	0.72	-0.16
Departure Headway (s)	6.5	5.5	6.5	6.6	6.1	6.8	5.9
Degree Utilization, x	0.19	0.33	0.14	0.18	0.33	0.04	0.37
Capacity (veh/h)	517	619	505	519	562	497	576
Control Delay (s)	9.9	9.9	10.6	9.8	10.8	8.9	11.1
Approach Delay (s)	9.9		10.6	10.5		10.9	
Approach LOS	A		B	B		B	

Intersection Summary				
Delay	10.4			
Level of Service	B			
Intersection Capacity Utilization	36.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1373	75	89	844	91	179	140	102	211	120	69
Future Volume (vph)	42	1373	75	89	844	91	179	140	102	211	120	69
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			3%			0%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	3197	1430	2906	3138	1403	2997	1642	1423	3101	1577	1408
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	3197	1430	2906	3138	1403	2997	1642	1423	3101	1577	1408
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	47	1543	84	100	948	102	201	157	115	237	135	78
RTOR Reduction (vph)	0	0	37	0	0	46	0	0	100	0	0	68
Lane Group Flow (vph)	47	1543	47	100	948	56	201	157	15	237	135	10
Confl. Peds. (#/hr)							3					3
Heavy Vehicles (%)	5%	4%	4%	11%	9%	6%	6%	5%	3%	4%	11%	4%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	6.9	66.7	66.7	6.3	66.1	66.1	15.5	16.1	16.1	14.4	15.0	15.0
Effective Green, g (s)	6.9	66.7	66.7	6.3	66.1	66.1	15.5	16.1	16.1	14.4	15.0	15.0
Actuated g/C Ratio	0.06	0.56	0.56	0.05	0.55	0.55	0.13	0.13	0.13	0.12	0.12	0.12
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.3	4.2	4.2	2.3	4.0	4.0	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	91	1776	794	152	1728	772	387	220	190	372	197	176
v/s Ratio Prot	0.03	c0.48		0.03	c0.30		0.07	c0.10		c0.08	0.09	
v/s Ratio Perm			0.03			0.04			0.01			0.01
v/c Ratio	0.52	0.87	0.06	0.66	0.55	0.07	0.52	0.71	0.08	0.64	0.69	0.06
Uniform Delay, d1	54.9	22.9	12.2	55.8	17.3	12.6	48.8	49.7	45.5	50.3	50.2	46.3
Progression Factor	1.00	1.00	1.00	0.78	0.46	0.05	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	6.1	0.1	7.7	1.2	0.2	0.7	9.4	0.1	2.9	8.3	0.1
Delay (s)	57.9	29.0	12.4	51.2	9.1	0.9	49.5	59.1	45.6	53.2	58.5	46.3
Level of Service	E	C	B	D	A	A	D	E	D	D	E	D
Approach Delay (s)		29.0			12.0			51.7			53.6	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1542	43	86	971	28	58	3	92	11	5	27
Future Volume (vph)	19	1542	43	86	971	28	58	3	92	11	5	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		2%			0%			0%			-2%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1567	3165	1265	1568	3079	1273	1433	1408		1678	1361	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.73	1.00		0.54	1.00	
Satd. Flow (perm)	1567	3165	1265	1568	3079	1273	1109	1408		951	1361	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	1676	47	93	1055	30	63	3	100	12	5	29
RTOR Reduction (vph)	0	0	13	0	0	7	0	90	0	0	26	0
Lane Group Flow (vph)	21	1676	34	93	1055	23	63	13	0	12	8	0
Confl. Peds. (#/hr)	2					2			1	1		
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	5%	4%	14%	6%	8%	14%	16%	0%	5%	0%	40%	7%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		
Actuated Green, G (s)	3.2	84.6	84.6	11.2	92.6	92.6	11.7	11.7		11.7	11.7	
Effective Green, g (s)	3.2	84.6	84.6	11.2	92.6	92.6	11.7	11.7		11.7	11.7	
Actuated g/C Ratio	0.03	0.70	0.70	0.09	0.77	0.77	0.10	0.10		0.10	0.10	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	41	2231	891	146	2375	982	108	137		92	132	
v/s Ratio Prot	0.01	c0.53		c0.06	0.34			0.01			0.01	
v/s Ratio Perm			0.03			0.02	c0.06			0.01		
v/c Ratio	0.51	0.75	0.04	0.64	0.44	0.02	0.58	0.09		0.13	0.06	
Uniform Delay, d1	57.6	11.1	5.4	52.4	4.8	3.2	51.8	49.3		49.5	49.2	
Progression Factor	1.13	0.18	0.02	1.46	0.19	0.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.8	1.4	0.0	5.5	0.5	0.0	6.5	0.2		0.5	0.1	
Delay (s)	69.2	3.3	0.2	81.9	1.3	0.0	58.3	49.5		50.0	49.3	
Level of Service	E	A	A	F	A	A	E	D		D	D	
Approach Delay (s)		4.1			7.7			52.9			49.5	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	1599	1113	21	52	24
Future Volume (Veh/h)	4	1599	1113	21	52	24
Sign Control		Free	Free		Stop	
Grade		-2%	2%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	4	1719	1197	23	56	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			521			
pX, platoon unblocked	0.74				0.74	0.74
vC, conflicting volume	1220				2076	610
vC1, stage 1 conf vol					1208	
vC2, stage 2 conf vol					868	
vCu, unblocked vol	581				1744	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				79	97
cM capacity (veh/h)	738				269	803

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	4	860	860	798	422	82
Volume Left	4	0	0	0	0	56
Volume Right	0	0	0	0	23	26
cSH	738	1700	1700	1700	1700	341
Volume to Capacity	0.01	0.51	0.51	0.47	0.25	0.24
Queue Length 95th (ft)	0	0	0	0	0	23
Control Delay (s)	9.9	0.0	0.0	0.0	0.0	18.9
Lane LOS	A					C
Approach Delay (s)	0.0			0.0		18.9
Approach LOS						C

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	1536	90	100	1019	77	42	13	71	238	29	73
Future Volume (vph)	25	1536	90	100	1019	77	42	13	71	238	29	73
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.97	
Satd. Flow (prot)	1607	3214	1480	1614	3108			1604	1465		1548	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.71	1.00		0.75	
Satd. Flow (perm)	1607	3214	1480	1614	3108			1190	1465		1208	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	1670	98	109	1108	84	46	14	77	259	32	79
RTOR Reduction (vph)	0	0	26	0	4	0	0	0	55	0	8	0
Lane Group Flow (vph)	27	1670	72	109	1188	0	0	60	22	0	362	0
Heavy Vehicles (%)	5%	5%	2%	2%	8%	5%	3%	5%	0%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8		8	4		
Actuated Green, G (s)	3.6	63.7	63.7	6.8	66.9			34.5	34.5		34.5	
Effective Green, g (s)	3.6	63.7	63.7	6.8	66.9			34.5	34.5		34.5	
Actuated g/C Ratio	0.03	0.53	0.53	0.06	0.56			0.29	0.29		0.29	
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5			4.5	4.5		4.5	
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	48	1706	785	91	1732			342	421		347	
v/s Ratio Prot	0.02	c0.52		c0.07	0.38							
v/s Ratio Perm			0.05					0.05	0.02		c0.30	
v/c Ratio	0.56	0.98	0.09	1.20	0.69			0.18	0.05		1.04	
Uniform Delay, d1	57.4	27.5	13.9	56.6	19.0			32.1	30.9		42.8	
Progression Factor	0.88	1.52	1.85	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	12.4	14.0	0.2	156.9	2.2			0.3	0.1		60.2	
Delay (s)	62.8	55.7	25.8	213.5	21.3			32.4	31.0		102.9	
Level of Service	E	E	C	F	C			C	C		F	
Approach Delay (s)		54.2			37.4			31.6			102.9	
Approach LOS		D			D			C			F	

Intersection Summary			
HCM 2000 Control Delay	52.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	92.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	1840	1188	29	62	6
Future Vol, veh/h	3	1840	1188	29	62	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	-2	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	33	4	7	7	3	0
Mvmt Flow	3	1937	1251	31	65	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1281	0	-	0	2241	641
Stage 1	-	-	-	-	1266	-
Stage 2	-	-	-	-	975	-
Critical Hdwy	4.76	-	-	-	6.46	6.7
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.53	-	-	-	3.53	3.3
Pot Cap-1 Maneuver	397	-	-	-	~ 45	438
Stage 1	-	-	-	-	261	-
Stage 2	-	-	-	-	361	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	397	-	-	-	~ 45	438
Mov Cap-2 Maneuver	-	-	-	-	158	-
Stage 1	-	-	-	-	261	-
Stage 2	-	-	-	-	358	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	41.8
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	397	-	-	-	167
HCM Lane V/C Ratio	0.008	-	-	-	0.429
HCM Control Delay (s)	14.1	-	-	-	41.8
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	1.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	KAI
Date Performed	10/21/2017
Analysis Year	2020
Time Analyzed	Total AM
Project Description	Crestview Crossing

Site Information

Intersection	Crestview/East-West Connector
E/W Street Name	East-West Connector
N/S Street Name	Crestview Dr
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.92
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	14	0	32	0	39	0	17	0	11	92	13	0	5	269	5
Percent Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0
Flow Rate (v_{PCE}), pc/h	0	15	0	35	0	42	0	18	0	12	105	14	0	5	307	5
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		50			60			131			317	
Entry Volume veh/h		50			60			126			302	
Circulating Flow (v_c), pc/h	354			132			20			54		
Exiting Flow (v_{ex}), pc/h	19			17			138			384		
Capacity (c_{pce}), pc/h		962			1206			1352			1306	
Capacity (c), veh/h		962			1206			1301			1246	
v/c Ratio (x)		0.05			0.05			0.10			0.24	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		4.2			3.4			3.5			5.0	
Lane LOS		A			A			A			A	
95% Queue, veh		0.2			0.2			0.3			1.0	
Approach Delay, s/veh	4.2			3.4			3.5			5.0		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	4.4						A					

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	KAI
Date Performed	10/21/2017
Analysis Year	2020
Time Analyzed	Total PM
Project Description	Crestview Crossing

Site Information

Intersection	Springbrook/Crestview
E/W Street Name	Crestview Dr
N/S Street Name	Springbrook Rd
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.93
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	53	20	13	0	14	13	172	0	7	374	25	2	200	263	49
Percent Heavy Vehicles, %	0	0	0	0	20	20	0	0	0	0	3	0	0	0	2	0
Flow Rate (v_{PCE}), pc/h	0	57	22	14	0	18	14	185	0	8	414	27	2	215	288	53
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		93			217			449			558	
Entry Volume veh/h		93			214			437			552	
Circulating Flow (v_c), pc/h		523			481			296			40	
Exiting Flow (v_{ex}), pc/h		264			75			658			320	
Capacity (c_{pce}), pc/h		809			845			1020			1325	
Capacity (c), veh/h		809			833			993			1311	
v/c Ratio (x)		0.11			0.26			0.44			0.42	

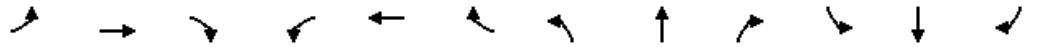
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		5.6			7.1			8.6			6.8	
Lane LOS		A			A			A			A	
95% Queue, veh		0.4			1.0			2.3			2.1	
Approach Delay, s/veh	5.6			7.1			8.6			6.8		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	7.4						A					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	233	5	9	193	8	14
Future Volume (Veh/h)	233	5	9	193	8	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	2%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	295	6	11	244	10	18
Pedestrians					2	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			303		566	300
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			303		566	300
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	98
cM capacity (veh/h)			1267		483	743

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	301	255	28
Volume Left	0	11	10
Volume Right	6	0	18
cSH	1700	1267	623
Volume to Capacity	0.18	0.01	0.04
Queue Length 95th (ft)	0	1	4
Control Delay (s)	0.0	0.4	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	11.0
Approach LOS			B

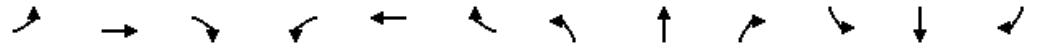
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	27.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	83	63	226	91	68	86	141	202	5	67	181	40
Future Volume (vph)	83	63	226	91	68	86	141	202	5	67	181	40
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	86	66	235	95	71	90	147	210	5	70	189	42

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	152	235	256	147	215	70	231
Volume Left (vph)	86	0	95	147	0	70	0
Volume Right (vph)	0	235	90	0	5	0	42
Hadj (s)	0.30	-0.68	-0.12	0.53	0.03	0.53	-0.06
Departure Headway (s)	7.5	6.5	7.1	7.8	7.3	7.9	7.3
Degree Utilization, x	0.32	0.42	0.51	0.32	0.43	0.15	0.47
Capacity (veh/h)	454	524	468	431	462	429	460
Control Delay (s)	12.7	13.0	17.2	13.1	14.5	11.1	15.3
Approach Delay (s)	12.9		17.2	13.9		14.3	
Approach LOS	B		C	B		B	

Intersection Summary				
Delay	14.4			
Level of Service	B			
Intersection Capacity Utilization	50.7%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	1194	124	151	1501	155	374	179	142	224	212	84
Future Volume (vph)	98	1194	124	151	1501	155	374	179	142	224	212	84
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			3%			0%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	3137	1440	2854	3288	1423	3177	1674	1361	3193	1699	1438
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	3137	1440	2854	3288	1423	3177	1674	1361	3193	1699	1438
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	100	1218	127	154	1532	158	382	183	145	229	216	86
RTOR Reduction (vph)	0	0	63	0	0	76	0	0	124	0	0	67
Lane Group Flow (vph)	100	1218	64	154	1532	82	382	183	21	229	216	19
Confl. Peds. (#/hr)	2		9	9		2	14					14
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	5%	6%	1%	13%	4%	2%	0%	3%	6%	1%	3%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	11.0	70.6	70.6	10.4	70.0	70.0	20.4	19.9	19.9	22.6	22.1	22.1
Effective Green, g (s)	11.0	70.6	70.6	10.4	70.0	70.0	20.4	19.9	19.9	22.6	22.1	22.1
Actuated g/C Ratio	0.08	0.50	0.50	0.07	0.50	0.50	0.15	0.14	0.14	0.16	0.16	0.16
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.3	4.2	4.2	2.3	4.0	4.0	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	124	1581	726	212	1644	711	462	237	193	515	268	226
v/s Ratio Prot	c0.06	0.39		0.05	c0.47		c0.12	0.11		0.07	c0.13	
v/s Ratio Perm			0.04			0.06			0.02			0.01
v/c Ratio	0.81	0.77	0.09	0.73	0.93	0.12	0.83	0.77	0.11	0.44	0.81	0.08
Uniform Delay, d1	63.5	28.1	18.0	63.4	32.8	18.6	58.1	57.9	52.3	53.0	56.9	50.3
Progression Factor	1.00	1.00	1.00	1.02	0.96	1.38	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	29.5	3.7	0.2	7.1	7.8	0.2	11.2	13.6	0.1	0.4	15.5	0.1
Delay (s)	92.9	31.8	18.2	71.6	39.1	25.9	69.3	71.5	52.5	53.4	72.3	50.4
Level of Service	F	C	B	E	D	C	E	E	D	D	E	D
Approach Delay (s)		34.9			40.7			66.4			60.6	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	45.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1098	101	231	1535	41	243	16	152	21	10	51
Future Volume (vph)	32	1098	101	231	1535	41	243	16	152	21	10	51
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		2%			0%			0%			-2%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1646	3105	1402	1646	3197	1352	1620	1438		1675	1471	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.72	1.00		0.50	1.00	
Satd. Flow (perm)	1646	3105	1402	1646	3197	1352	1221	1438		875	1471	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	33	1144	105	241	1599	43	253	17	158	22	10	53
RTOR Reduction (vph)	0	0	36	0	0	14	0	121	0	0	41	0
Lane Group Flow (vph)	33	1144	69	241	1599	29	253	54	0	22	22	0
Confl. Peds. (#/hr)							5		3	3		5
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	6%	5%	1%	4%	10%	2%	0%	4%	0%	0%	4%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		
Actuated Green, G (s)	3.9	69.3	69.3	25.6	91.0	91.0	32.6	32.6		32.6	32.6	
Effective Green, g (s)	3.9	69.3	69.3	25.6	91.0	91.0	32.6	32.6		32.6	32.6	
Actuated g/C Ratio	0.03	0.49	0.49	0.18	0.65	0.65	0.23	0.23		0.23	0.23	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	45	1536	693	300	2078	878	284	334		203	342	
v/s Ratio Prot	0.02	c0.37		0.15	c0.50			0.04			0.02	
v/s Ratio Perm			0.05			0.02	c0.21			0.03		
v/c Ratio	0.73	0.74	0.10	0.80	0.77	0.03	0.89	0.16		0.11	0.07	
Uniform Delay, d1	67.5	28.3	18.8	54.8	17.2	8.8	52.0	42.8		42.3	41.8	
Progression Factor	0.76	1.08	1.16	0.73	0.51	0.37	1.00	1.00		1.00	1.00	
Incremental Delay, d2	32.8	2.4	0.2	1.4	0.3	0.0	27.3	0.2		0.2	0.1	
Delay (s)	84.0	33.0	21.9	41.6	8.9	3.3	79.3	43.0		42.4	41.9	
Level of Service	F	C	C	D	A	A	E	D		D	D	
Approach Delay (s)		33.4			13.0			64.4			42.0	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	32	1254	1829	128	26	18
Future Volume (Veh/h)	32	1254	1829	128	26	18
Sign Control		Free	Free		Stop	
Grade		-2%	2%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	34	1348	1967	138	28	19
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			522			
pX, platoon unblocked	0.42				0.42	0.42
vC, conflicting volume	2105				2778	1052
vC1, stage 1 conf vol					2036	
vC2, stage 2 conf vol					742	
vCu, unblocked vol	848				2466	0
tC, single (s)	4.2				7.0	6.9
tC, 2 stage (s)					6.0	
tF (s)	2.2				3.6	3.3
p0 queue free %	90				82	96
cM capacity (veh/h)	324				158	454

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	34	674	674	1311	794	47
Volume Left	34	0	0	0	0	28
Volume Right	0	0	0	0	138	19
cSH	324	1700	1700	1700	1700	214
Volume to Capacity	0.10	0.40	0.40	0.77	0.47	0.22
Queue Length 95th (ft)	9	0	0	0	0	20
Control Delay (s)	17.4	0.0	0.0	0.0	0.0	26.5
Lane LOS	C					D
Approach Delay (s)	0.4			0.0		26.5
Approach LOS						D

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	1155	38	86	1774	167	135	35	139	190	13	48
Future Volume (vph)	87	1155	38	86	1774	167	135	35	139	190	13	48
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.96	
Satd. Flow (prot)	1654	3184	1479	1646	3219			1638	1465		1594	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.70	1.00		0.53	
Satd. Flow (perm)	1654	3184	1479	1646	3219			1191	1465		872	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	93	1229	40	91	1887	178	144	37	148	202	14	51
RTOR Reduction (vph)	0	0	18	0	5	0	0	0	111	0	6	0
Lane Group Flow (vph)	93	1229	22	91	2060	0	0	181	37	0	261	0
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	6%	0%	0%	4%	2%	1%	2%	0%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8		8	4		
Actuated Green, G (s)	7.0	77.5	77.5	12.6	83.1			34.9	34.9		34.9	
Effective Green, g (s)	7.0	77.5	77.5	12.6	83.1			34.9	34.9		34.9	
Actuated g/C Ratio	0.05	0.55	0.55	0.09	0.59			0.25	0.25		0.25	
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5			4.5	4.5		4.5	
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	82	1762	818	148	1910			296	365		217	
v/s Ratio Prot	c0.06	0.39		0.06	c0.64							
v/s Ratio Perm			0.01					0.15	0.03		c0.30	
v/c Ratio	1.13	0.70	0.03	0.61	1.08			0.61	0.10		1.20	
Uniform Delay, d1	66.5	22.7	14.2	61.4	28.5			46.5	40.5		52.5	
Progression Factor	1.09	0.54	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	128.1	1.8	0.0	8.4	45.4			4.2	0.2		126.7	
Delay (s)	200.5	14.0	14.2	69.8	73.9			50.8	40.6		179.2	
Level of Service	F	B	B	E	E			D	D		F	
Approach Delay (s)		26.7			73.7			46.2			179.2	
Approach LOS		C			E			D			F	

Intersection Summary			
HCM 2000 Control Delay	62.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	97.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	31	1453	2025	75	61	17
Future Vol, veh/h	31	1453	2025	75	61	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	-2	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	5	4	0	2	0
Mvmt Flow	33	1562	2177	81	66	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2258	0	-	0	3066	1129
Stage 1	-	-	-	-	2218	-
Stage 2	-	-	-	-	848	-
Critical Hdwy	4.1	-	-	-	6.44	6.7
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.2	-	-	-	3.52	3.3
Pot Cap-1 Maneuver	231	-	-	-	~ 13	214
Stage 1	-	-	-	-	88	-
Stage 2	-	-	-	-	418	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	231	-	-	-	~ 11	214
Mov Cap-2 Maneuver	-	-	-	-	68	-
Stage 1	-	-	-	-	88	-
Stage 2	-	-	-	-	358	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	207
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	231	-	-	-	80
HCM Lane V/C Ratio	0.144	-	-	-	1.048
HCM Control Delay (s)	23.2	-	-	-	207
HCM Lane LOS	C	-	-	-	F
HCM 95th %tile Q(veh)	0.5	-	-	-	5.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	KAI
Date Performed	10/21/2017
Analysis Year	2020
Time Analyzed	Total PM
Project Description	Crestview Crossing

Site Information

Intersection	Crestview/East-West Connector
E/W Street Name	East-West Connector
N/S Street Name	Crestview Dr
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.94
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	9	0	21	0	25	0	11	0	36	210	43	0	19	205	15
Percent Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
Flow Rate (v_{PCE}), pc/h	0	10	0	22	0	27	0	12	0	38	228	46	0	20	222	16
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		32			39			312			258	
Entry Volume veh/h		32			39			308			254	
Circulating Flow (v_c), pc/h	269			276			30			65		
Exiting Flow (v_{ex}), pc/h	66			54			250			271		
Capacity (c_{pce}), pc/h		1049			1041			1338			1291	
Capacity (c), veh/h		1049			1041			1319			1270	
v/c Ratio (x)		0.03			0.04			0.23			0.20	

Delay and Level of Service

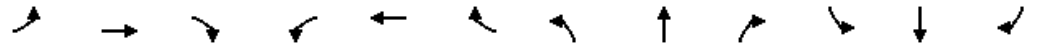
Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		3.7			3.8			4.7			4.5	
Lane LOS		A			A			A			A	
95% Queue, veh		0.1			0.1			0.9			0.7	
Approach Delay, s/veh	3.7			3.8			4.7			4.5		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	4.5						A					

Appendix I
Year 2020 Total Conditions with Mitigation Level of Service Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	1536	90	100	1019	77	42	13	71	238	29	73
Future Volume (vph)	25	1536	90	100	1019	77	42	13	71	238	29	73
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1607	3214	1480	1614	3135	1402	1590	1642	1465	1567	1650	1402
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.74	1.00	1.00	0.75	1.00	1.00
Satd. Flow (perm)	1607	3214	1480	1614	3135	1402	1232	1642	1465	1235	1650	1402
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	1670	98	109	1108	84	46	14	77	259	32	79
RTOR Reduction (vph)	0	0	30	0	0	33	0	0	59	0	0	60
Lane Group Flow (vph)	27	1670	68	109	1108	51	46	14	18	259	32	19
Heavy Vehicles (%)	5%	5%	2%	2%	8%	5%	3%	5%	0%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	3.6	67.5	67.5	9.3	73.2	73.2	28.2	28.2	28.2	28.2	28.2	28.2
Effective Green, g (s)	3.6	67.5	67.5	9.3	73.2	73.2	28.2	28.2	28.2	28.2	28.2	28.2
Actuated g/C Ratio	0.03	0.56	0.56	0.08	0.61	0.61	0.23	0.23	0.23	0.23	0.23	0.23
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	48	1807	832	125	1912	855	289	385	344	290	387	329
v/s Ratio Prot	0.02	c0.52		c0.07	c0.35			0.01			0.02	
v/s Ratio Perm			0.05			0.04	0.04		0.01	c0.21		0.01
v/c Ratio	0.56	0.92	0.08	0.87	0.58	0.06	0.16	0.04	0.05	0.89	0.08	0.06
Uniform Delay, d1	57.4	23.9	12.0	54.8	14.1	9.5	36.5	35.4	35.6	44.4	35.8	35.6
Progression Factor	0.89	1.54	2.12	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.7	7.3	0.1	45.0	1.3	0.1	0.4	0.1	0.1	27.8	0.1	0.1
Delay (s)	63.8	44.2	25.7	99.8	15.4	9.6	36.8	35.5	35.6	72.2	35.9	35.7
Level of Service	E	D	C	F	B	A	D	D	D	E	D	D
Approach Delay (s)		43.5			22.1			36.0			61.3	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	37.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	1155	38	86	1774	167	135	35	139	190	13	48
Future Volume (vph)	87	1155	38	86	1774	167	135	35	139	190	13	48
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1654	3184	1479	1646	3256	1444	1621	1690	1465	1614	1699	1444
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	1654	3184	1479	1646	3256	1444	1277	1690	1465	1245	1699	1444
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	93	1229	40	91	1887	178	144	37	148	202	14	51
RTOR Reduction (vph)	0	0	16	0	0	46	0	0	120	0	0	41
Lane Group Flow (vph)	93	1229	24	91	1887	132	144	37	28	202	14	10
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	6%	0%	0%	4%	2%	1%	2%	0%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	10.3	85.6	85.6	12.6	87.9	87.9	26.8	26.8	26.8	26.8	26.8	26.8
Effective Green, g (s)	10.3	85.6	85.6	12.6	87.9	87.9	26.8	26.8	26.8	26.8	26.8	26.8
Actuated g/C Ratio	0.07	0.61	0.61	0.09	0.63	0.63	0.19	0.19	0.19	0.19	0.19	0.19
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	121	1946	904	148	2044	906	244	323	280	238	325	276
v/s Ratio Prot	c0.06	0.39		0.06	c0.58			0.02			0.01	
v/s Ratio Perm			0.02			0.09	0.11		0.02	c0.16		0.01
v/c Ratio	0.77	0.63	0.03	0.61	0.92	0.15	0.59	0.11	0.10	0.85	0.04	0.04
Uniform Delay, d1	63.7	17.2	10.7	61.4	23.1	10.7	51.6	46.8	46.7	54.6	46.1	46.1
Progression Factor	1.27	0.14	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.2	1.2	0.0	8.4	8.5	0.3	4.4	0.2	0.2	24.3	0.1	0.1
Delay (s)	102.1	3.7	10.8	69.8	31.6	11.0	56.0	47.0	46.9	78.9	46.2	46.1
Level of Service	F	A	B	E	C	B	E	D	D	E	D	D
Approach Delay (s)		10.6			31.5			50.9			70.9	
Approach LOS		B			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Appendix J
2025 Horizon Year Background Conditions Level of Service Worksheets

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	KAI
Date Performed	10/21/2017
Analysis Year	2025
Time Analyzed	Background with Reassigned Traffic AM
Project Description	Crestview Crossing

Site Information

Intersection	Springbrook/Crestview
E/W Street Name	Crestview Dr
N/S Street Name	Springbrook Rd
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.66
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	2	54	23	54	0	3	24	67	2	49	254	2	1	211	145	135
Percent Heavy Vehicles, %	9	9	13	3	0	0	0	0	2	2	4	0	25	25	4	7
Flow Rate (v_{PCE}), pc/h	3	89	39	84	0	5	36	102	3	76	400	3	2	400	228	219
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		215			143			482			849	
Entry Volume veh/h		200			143			465			746	
Circulating Flow (v_c), pc/h		638			573			533			123	
Exiting Flow (v_{ex}), pc/h		442			334			593			320	
Capacity (c_{pce}), pc/h		720			769			801			1217	
Capacity (c), veh/h		671			769			773			1069	
v/c Ratio (x)		0.30			0.19			0.60			0.70	

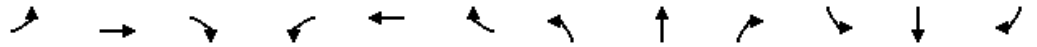
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		9.1			6.7			14.4			14.2	
Lane LOS		A			A			B			B	
95% Queue, veh		1.3			0.7			4.1			6.0	
Approach Delay, s/veh	9.1			6.7			14.4			14.2		
Approach LOS	A			A			B			B		
Intersection Delay, s/veh | LOS	12.9						B					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	221	5	8	85	6	5
Future Volume (Veh/h)	221	5	8	85	6	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	2%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	325	7	12	125	9	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			332		478	328
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			332		478	328
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.3
p0 queue free %			99		98	99
cM capacity (veh/h)			1239		515	717

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	332	137	16
Volume Left	0	12	9
Volume Right	7	0	7
cSH	1700	1239	587
Volume to Capacity	0.20	0.01	0.03
Queue Length 95th (ft)	0	1	2
Control Delay (s)	0.0	0.8	11.3
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	11.3
Approach LOS			B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	21.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	61	27	174	37	13	15	66	154	5	16	116	69
Future Volume (vph)	61	27	174	37	13	15	66	154	5	16	116	69
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	73	33	210	45	16	18	80	186	6	19	140	83

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	106	210	79	80	192	19	223
Volume Left (vph)	73	0	45	80	0	19	0
Volume Right (vph)	0	210	18	0	6	0	83
Hadj (s)	0.42	-0.65	0.05	0.58	0.09	0.72	-0.16
Departure Headway (s)	6.5	5.4	6.4	6.6	6.1	6.8	5.9
Degree Utilization, x	0.19	0.32	0.14	0.15	0.32	0.04	0.36
Capacity (veh/h)	522	625	511	520	564	501	582
Control Delay (s)	9.8	9.7	10.5	9.5	10.7	8.8	11.0
Approach Delay (s)	9.7		10.5	10.4		10.8	
Approach LOS	A		B	B		B	

Intersection Summary				
Delay	10.3			
Level of Service	B			
Intersection Capacity Utilization	36.6%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1486	75	81	888	75	179	140	99	206	120	69
Future Volume (vph)	42	1486	75	81	888	75	179	140	99	206	120	69
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			3%			0%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	3197	1430	2906	3050	1403	2997	1642	1423	3101	1577	1408
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	3197	1430	2906	3050	1403	2997	1642	1423	3101	1577	1408
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	47	1670	84	91	998	84	201	157	111	231	135	78
RTOR Reduction (vph)	0	0	37	0	0	38	0	0	96	0	0	68
Lane Group Flow (vph)	47	1670	47	91	998	46	201	157	15	231	135	10
Confl. Peds. (#/hr)							3					3
Heavy Vehicles (%)	5%	4%	4%	11%	9%	6%	6%	5%	3%	4%	11%	4%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	6.9	67.0	67.0	6.3	66.4	66.4	15.2	16.1	16.1	14.1	15.0	15.0
Effective Green, g (s)	6.9	67.0	67.0	6.3	66.4	66.4	15.2	16.1	16.1	14.1	15.0	15.0
Actuated g/C Ratio	0.06	0.56	0.56	0.05	0.55	0.55	0.13	0.13	0.13	0.12	0.12	0.12
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.3	4.2	4.2	2.3	4.0	4.0	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	91	1784	798	152	1687	776	379	220	190	364	197	176
v/s Ratio Prot	0.03	c0.52		0.03	c0.33		0.07	c0.10		c0.07	0.09	
v/s Ratio Perm			0.03			0.03			0.01			0.01
v/c Ratio	0.52	0.94	0.06	0.60	0.59	0.06	0.53	0.71	0.08	0.63	0.69	0.06
Uniform Delay, d1	54.9	24.5	12.1	55.6	17.8	12.4	49.1	49.7	45.5	50.5	50.2	46.3
Progression Factor	1.00	1.00	1.00	0.82	0.53	0.10	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	10.8	0.1	4.4	1.4	0.1	1.0	9.4	0.1	3.0	8.3	0.1
Delay (s)	57.9	35.3	12.2	50.1	10.9	1.4	50.0	59.1	45.6	53.4	58.5	46.3
Level of Service	E	D	B	D	B	A	D	E	D	D	E	D
Approach Delay (s)		34.8			13.3			52.0			53.7	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1683	43	70	1008	28	58	3	87	11	5	27
Future Volume (vph)	19	1683	43	70	1008	28	58	3	87	11	5	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		2%			0%			0%			-2%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1567	3165	1265	1568	3079	1273	1433	1408		1678	1361	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.73	1.00		0.56	1.00	
Satd. Flow (perm)	1567	3165	1265	1568	3079	1273	1109	1408		991	1361	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	1829	47	76	1096	30	63	3	95	12	5	29
RTOR Reduction (vph)	0	0	13	0	0	7	0	86	0	0	26	0
Lane Group Flow (vph)	21	1829	34	76	1096	23	63	12	0	12	8	0
Confl. Peds. (#/hr)	2					2			1	1		
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	5%	4%	14%	6%	8%	14%	16%	0%	5%	0%	40%	7%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		
Actuated Green, G (s)	3.2	86.6	86.6	9.2	92.6	92.6	11.7	11.7		11.7	11.7	
Effective Green, g (s)	3.2	86.6	86.6	9.2	92.6	92.6	11.7	11.7		11.7	11.7	
Actuated g/C Ratio	0.03	0.72	0.72	0.08	0.77	0.77	0.10	0.10		0.10	0.10	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	41	2284	912	120	2375	982	108	137		96	132	
v/s Ratio Prot	0.01	c0.58		c0.05	0.36			0.01			0.01	
v/s Ratio Perm			0.03			0.02	c0.06			0.01		
v/c Ratio	0.51	0.80	0.04	0.63	0.46	0.02	0.58	0.09		0.12	0.06	
Uniform Delay, d1	57.6	11.0	4.8	53.8	4.9	3.2	51.8	49.3		49.5	49.2	
Progression Factor	1.11	0.21	0.03	1.40	0.18	0.11	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.2	1.5	0.0	7.0	0.5	0.0	6.5	0.2		0.4	0.1	
Delay (s)	67.4	3.8	0.2	82.5	1.4	0.4	58.3	49.5		49.9	49.3	
Level of Service	E	A	A	F	A	A	E	D		D	D	
Approach Delay (s)		4.4			6.5			53.0			49.5	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	1740	1145	21	52	24
Future Volume (Veh/h)	4	1740	1145	21	52	24
Sign Control		Free	Free		Stop	
Grade		-2%	2%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	4	1871	1231	23	56	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			521			
pX, platoon unblocked	0.74				0.74	0.74
vC, conflicting volume	1254				2186	627
vC1, stage 1 conf vol					1242	
vC2, stage 2 conf vol					944	
vCu, unblocked vol	653				1906	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				77	97
cM capacity (veh/h)	702				245	812

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	4	936	936	821	433	82
Volume Left	4	0	0	0	0	56
Volume Right	0	0	0	0	23	26
cSH	702	1700	1700	1700	1700	315
Volume to Capacity	0.01	0.55	0.55	0.48	0.25	0.26
Queue Length 95th (ft)	0	0	0	0	0	26
Control Delay (s)	10.2	0.0	0.0	0.0	0.0	20.4
Lane LOS	B					C
Approach Delay (s)	0.0			0.0		20.4
Approach LOS						C

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1701	90	100	1123	69	42	8	71	214	13	1
Future Volume (vph)	1	1701	90	100	1123	69	42	8	71	214	13	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.96	
Satd. Flow (prot)	1607	3214	1480	1614	3113			1601	1465		1575	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.78	1.00		0.70	
Satd. Flow (perm)	1607	3214	1480	1614	3113			1305	1465		1153	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	1849	98	109	1221	75	46	9	77	233	14	1
RTOR Reduction (vph)	0	0	30	0	3	0	0	0	59	0	0	0
Lane Group Flow (vph)	1	1849	68	109	1293	0	0	55	18	0	248	0
Heavy Vehicles (%)	5%	5%	2%	2%	8%	5%	3%	5%	0%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8		8	4		
Actuated Green, G (s)	1.0	67.5	67.5	9.0	75.5			28.5	28.5		28.5	
Effective Green, g (s)	1.0	67.5	67.5	9.0	75.5			28.5	28.5		28.5	
Actuated g/C Ratio	0.01	0.56	0.56	0.08	0.63			0.24	0.24		0.24	
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5			4.5	4.5		4.5	
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	13	1807	832	121	1958			309	347		273	
v/s Ratio Prot	0.00	c0.58		c0.07	0.42							
v/s Ratio Perm			0.05					0.04	0.01		c0.22	
v/c Ratio	0.08	1.02	0.08	0.90	0.66			0.18	0.05		0.91	
Uniform Delay, d1	59.0	26.2	12.0	55.1	14.1			36.4	35.3		44.5	
Progression Factor	1.08	1.52	2.12	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	2.3	23.4	0.1	53.1	1.8			0.4	0.1		31.8	
Delay (s)	66.2	63.2	25.7	108.1	15.9			36.8	35.4		76.2	
Level of Service	E	E	C	F	B			D	D		E	
Approach Delay (s)		61.3			23.0			36.0			76.2	
Approach LOS		E			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	47.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	1986	1287	29	62	6
Future Vol, veh/h	3	1986	1287	29	62	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-2	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	33	4	7	7	3	0
Mvmt Flow	3	2091	1355	31	65	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1385	0	-	0	2422	693
Stage 1	-	-	-	-	1370	-
Stage 2	-	-	-	-	1052	-
Critical Hdwy	4.76	-	-	-	6.46	6.7
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.53	-	-	-	3.53	3.3
Pot Cap-1 Maneuver	357	-	-	-	~ 35	406
Stage 1	-	-	-	-	232	-
Stage 2	-	-	-	-	332	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	357	-	-	-	~ 35	406
Mov Cap-2 Maneuver	-	-	-	-	140	-
Stage 1	-	-	-	-	232	-
Stage 2	-	-	-	-	329	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	49.7
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	357	-	-	-	149
HCM Lane V/C Ratio	0.009	-	-	-	0.48
HCM Control Delay (s)	15.2	-	-	-	49.7
HCM Lane LOS	C	-	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	2.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	KAI
Date Performed	10/21/2017
Analysis Year	2025
Time Analyzed	Background with Reassigned Traffic PM
Project Description	Crestview Crossing

Site Information

Intersection	Springbrook/Crestview
E/W Street Name	Crestview Dr
N/S Street Name	Springbrook Rd
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.93
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	53	2	13	0	3	2	162	0	7	374	7	2	182	263	49
Percent Heavy Vehicles, %	0	0	0	0	20	20	0	0	0	0	3	0	0	0	2	0
Flow Rate (v_{PCE}), pc/h	0	57	2	14	0	4	2	174	0	8	414	8	2	196	288	53
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		73			180			430			539	
Entry Volume veh/h		73			179			418			533	
Circulating Flow (v_c), pc/h	490			481			257			14		
Exiting Flow (v_{ex}), pc/h	206			63			647			306		
Capacity (c_{pce}), pc/h		837			845			1062			1360	
Capacity (c), veh/h		837			842			1032			1346	
v/c Ratio (x)		0.09			0.21			0.40			0.40	

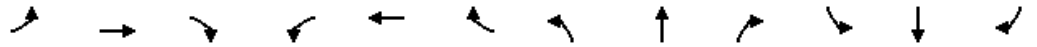
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		5.1			6.5			7.9			6.4	
Lane LOS		A			A			A			A	
95% Queue, veh		0.3			0.8			2.0			1.9	
Approach Delay, s/veh	5.1			6.5			7.9			6.4		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	6.8						A					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	179	5	9	161	8	14
Future Volume (Veh/h)	179	5	9	161	8	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	2%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	227	6	11	204	10	18
Pedestrians					2	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			235		458	232
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			235		458	232
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	98
cM capacity (veh/h)			1342		559	810

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	233	215	28
Volume Left	0	11	10
Volume Right	6	0	18
cSH	1700	1342	698
Volume to Capacity	0.14	0.01	0.04
Queue Length 95th (ft)	0	1	3
Control Delay (s)	0.0	0.5	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.5	10.4
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	27.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	83	63	219	91	68	86	136	202	5	67	181	40
Future Volume (vph)	83	63	219	91	68	86	136	202	5	67	181	40
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	86	66	228	95	71	90	142	210	5	70	189	42

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	152	228	256	142	215	70	231
Volume Left (vph)	86	0	95	142	0	70	0
Volume Right (vph)	0	228	90	0	5	0	42
Hadj (s)	0.30	-0.68	-0.12	0.53	0.03	0.53	-0.06
Departure Headway (s)	7.5	6.5	7.1	7.7	7.2	7.8	7.2
Degree Utilization, x	0.32	0.41	0.50	0.31	0.43	0.15	0.46
Capacity (veh/h)	455	525	470	432	463	431	462
Control Delay (s)	12.7	12.7	17.1	12.9	14.4	11.1	15.1
Approach Delay (s)	12.7		17.1	13.8		14.2	
Approach LOS	B		C	B		B	

Intersection Summary				
Delay	14.2			
Level of Service	B			
Intersection Capacity Utilization	53.2%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	1263	124	141	1616	150	374	179	124	217	212	84
Future Volume (vph)	98	1263	124	141	1616	150	374	179	124	217	212	84
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			3%			0%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	3137	1440	2854	3197	1423	3177	1674	1361	3193	1699	1438
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	3137	1440	2854	3197	1423	3177	1674	1361	3193	1699	1438
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	100	1289	127	144	1649	153	382	183	127	221	216	86
RTOR Reduction (vph)	0	0	63	0	0	68	0	0	109	0	0	67
Lane Group Flow (vph)	100	1289	64	144	1649	85	382	183	18	221	216	19
Confl. Peds. (#/hr)	2		9	9		2	14					14
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	5%	6%	1%	13%	4%	2%	0%	3%	6%	1%	3%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	11.0	71.0	71.0	9.9	69.9	69.9	20.5	19.9	19.9	22.7	22.1	22.1
Effective Green, g (s)	11.0	71.0	71.0	9.9	69.9	69.9	20.5	19.9	19.9	22.7	22.1	22.1
Actuated g/C Ratio	0.08	0.51	0.51	0.07	0.50	0.50	0.15	0.14	0.14	0.16	0.16	0.16
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.3	4.2	4.2	2.3	4.0	4.0	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	124	1590	730	201	1596	710	465	237	193	517	268	226
v/s Ratio Prot	c0.06	0.41		0.05	c0.52		c0.12	0.11		0.07	c0.13	
v/s Ratio Perm			0.04			0.06			0.01			0.01
v/c Ratio	0.81	0.81	0.09	0.72	1.03	0.12	0.82	0.77	0.09	0.43	0.81	0.08
Uniform Delay, d1	63.5	28.9	17.8	63.7	35.0	18.7	58.0	57.9	52.2	52.8	56.9	50.3
Progression Factor	1.00	1.00	1.00	0.99	1.00	1.20	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	29.5	4.6	0.2	6.0	26.2	0.2	10.8	13.6	0.1	0.3	15.5	0.1
Delay (s)	92.9	33.5	18.0	69.2	61.2	22.5	68.8	71.5	52.3	53.1	72.3	50.4
Level of Service	F	C	B	E	E	C	E	E	D	D	E	D
Approach Delay (s)		36.1			58.7			66.5			60.6	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	52.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1147	101	220	1650	41	243	16	134	21	10	51
Future Volume (vph)	32	1147	101	220	1650	41	243	16	134	21	10	51
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		2%			0%			0%			-2%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1646	3105	1402	1646	3197	1352	1620	1442		1674	1471	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.72	1.00		0.52	1.00	
Satd. Flow (perm)	1646	3105	1402	1646	3197	1352	1221	1442		911	1471	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	33	1195	105	229	1719	43	253	17	140	22	10	53
RTOR Reduction (vph)	0	0	39	0	0	13	0	110	0	0	42	0
Lane Group Flow (vph)	33	1195	66	229	1719	30	253	47	0	22	21	0
Confl. Peds. (#/hr)							5		3	3		5
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	6%	5%	1%	4%	10%	2%	0%	4%	0%	0%	4%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		
Actuated Green, G (s)	5.4	74.9	74.9	22.3	91.8	91.8	30.3	30.3		30.3	30.3	
Effective Green, g (s)	5.4	74.9	74.9	22.3	91.8	91.8	30.3	30.3		30.3	30.3	
Actuated g/C Ratio	0.04	0.54	0.54	0.16	0.66	0.66	0.22	0.22		0.22	0.22	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	63	1661	750	262	2096	886	264	312		197	318	
v/s Ratio Prot	0.02	c0.38		0.14	c0.54			0.03			0.01	
v/s Ratio Perm			0.05			0.02	c0.21			0.02		
v/c Ratio	0.52	0.72	0.09	0.87	0.82	0.03	0.96	0.15		0.11	0.07	
Uniform Delay, d1	66.0	24.6	15.9	57.5	18.0	8.5	54.2	44.4		44.0	43.6	
Progression Factor	0.78	1.24	1.56	0.81	0.52	0.35	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.4	1.9	0.2	12.0	1.5	0.0	43.5	0.2		0.2	0.1	
Delay (s)	54.6	32.3	25.0	58.4	10.8	3.0	97.7	44.6		44.2	43.7	
Level of Service	D	C	C	E	B	A	F	D		D	D	
Approach Delay (s)		32.3			16.1			77.4			43.8	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	32	1298	1964	128	26	18
Future Volume (Veh/h)	32	1298	1964	128	26	18
Sign Control		Free	Free		Stop	
Grade		-2%	2%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	34	1396	2112	138	28	19
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			522			
pX, platoon unblocked	0.30				0.30	0.30
vC, conflicting volume	2250				2947	1125
vC1, stage 1 conf vol					2181	
vC2, stage 2 conf vol					766	
vCu, unblocked vol	484				2822	0
tC, single (s)	4.2				7.0	6.9
tC, 2 stage (s)					6.0	
tF (s)	2.2				3.6	3.3
p0 queue free %	89				84	94
cM capacity (veh/h)	318				177	325

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	34	698	698	1408	842	47
Volume Left	34	0	0	0	0	28
Volume Right	0	0	0	0	138	19
cSH	318	1700	1700	1700	1700	217
Volume to Capacity	0.11	0.41	0.41	0.83	0.50	0.22
Queue Length 95th (ft)	9	0	0	0	0	20
Control Delay (s)	17.7	0.0	0.0	0.0	0.0	26.1
Lane LOS	C					D
Approach Delay (s)	0.4			0.0		26.1
Approach LOS						D

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1281	38	86	1955	140	135	17	139	174	2	2
Future Volume (vph)	0	1281	38	86	1955	140	135	17	139	174	2	2
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)		6.0	6.0	4.5	4.5			4.5	4.5		4.5	
Lane Util. Factor		0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes		1.00	0.98	1.00	1.00			1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt		1.00	0.85	1.00	0.99			1.00	0.85		1.00	
Flt Protected		1.00	1.00	0.95	1.00			0.96	1.00		0.95	
Satd. Flow (prot)		3184	1479	1646	3227			1632	1465		1617	
Flt Permitted		1.00	1.00	0.95	1.00			0.78	1.00		0.49	
Satd. Flow (perm)		3184	1479	1646	3227			1326	1465		826	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	1363	40	91	2080	149	144	18	148	185	2	2
RTOR Reduction (vph)	0	0	16	0	3	0	0	0	111	0	0	0
Lane Group Flow (vph)	0	1363	24	91	2226	0	0	162	37	0	189	0
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	6%	0%	0%	4%	2%	1%	2%	0%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8		8	4		
Actuated Green, G (s)		82.3	82.3	12.6	100.9			30.1	30.1		30.1	
Effective Green, g (s)		82.3	82.3	12.6	100.9			30.1	30.1		30.1	
Actuated g/C Ratio		0.59	0.59	0.09	0.72			0.22	0.22		0.22	
Clearance Time (s)		6.0	6.0	4.5	4.5			4.5	4.5		4.5	
Vehicle Extension (s)		5.0	5.0	4.0	4.0			4.0	4.0		4.0	
Lane Grp Cap (vph)		1871	869	148	2325			285	314		177	
v/s Ratio Prot		0.43		0.06	c0.69							
v/s Ratio Perm			0.02					0.12	0.02		c0.23	
v/c Ratio		0.73	0.03	0.61	0.96			0.57	0.12		1.07	
Uniform Delay, d1		20.8	12.1	61.4	17.6			49.1	44.2		54.9	
Progression Factor		0.37	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		2.0	0.0	8.4	11.1			3.1	0.2		86.8	
Delay (s)		9.8	12.1	69.8	28.7			52.3	44.5		141.8	
Level of Service		A	B	E	C			D	D		F	
Approach Delay (s)		9.9			30.3			48.6			141.8	
Approach LOS		A			C			D			F	

Intersection Summary			
HCM 2000 Control Delay	29.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	95.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	31	1569	2186	75	61	17
Future Vol, veh/h	31	1569	2186	75	61	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-2	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	5	4	0	2	0
Mvmt Flow	33	1687	2351	81	66	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2431	0	-	0	3301	1216
Stage 1	-	-	-	-	2391	-
Stage 2	-	-	-	-	910	-
Critical Hdwy	4.1	-	-	-	6.44	6.7
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.2	-	-	-	3.52	3.3
Pot Cap-1 Maneuver	197	-	-	-	~ 9	188
Stage 1	-	-	-	-	71	-
Stage 2	-	-	-	-	390	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	197	-	-	-	~ 7	188
Mov Cap-2 Maneuver	-	-	-	-	~ 55	-
Stage 1	-	-	-	-	71	-
Stage 2	-	-	-	-	325	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	$ 316.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	197	-	-	-	65
HCM Lane V/C Ratio	0.169	-	-	-	1.29
HCM Control Delay (s)	27	-	-	-	$ 316.6
HCM Lane LOS	D	-	-	-	F
HCM 95th %tile Q(veh)	0.6	-	-	-	6.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Appendix K
2025 Horizon Year Total Conditions Level of Service Worksheets

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	KAI
Date Performed	10/21/2017
Analysis Year	2025
Time Analyzed	Total AM
Project Description	Crestview Crossing

Site Information

Intersection	Springbrook/Crestview
E/W Street Name	Crestview Dr
N/S Street Name	Springbrook Rd
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.66
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	2	54	29	54	0	19	40	83	2	49	254	7	1	216	145	135
Percent Heavy Vehicles, %	9	9	13	3	0	0	0	0	2	2	4	0	25	25	4	7
Flow Rate (v_{PCE}), pc/h	3	89	50	84	0	29	61	126	3	76	400	11	2	409	228	219
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		226			216			490			858	
Entry Volume veh/h		210			216			473			753	
Circulating Flow (v_c), pc/h		671			573			553			172	
Exiting Flow (v_{ex}), pc/h		470			359			617			344	
Capacity (c_{pce}), pc/h		696			769			785			1158	
Capacity (c), veh/h		647			769			758			1016	
v/c Ratio (x)		0.32			0.28			0.62			0.74	

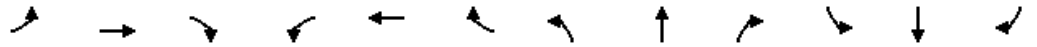
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		9.8			7.9			15.4			16.6	
Lane LOS		A			A			C			C	
95% Queue, veh		1.4			1.2			4.4			7.1	
Approach Delay, s/veh	9.8			7.9			15.4			16.6		
Approach LOS	A			A			C			C		
Intersection Delay, s/veh | LOS	14.3						B					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	237	5	8	133	6	5
Future Volume (Veh/h)	237	5	8	133	6	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	2%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	349	7	12	196	9	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			356		572	352
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			356		572	352
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.3
p0 queue free %			99		98	99
cM capacity (veh/h)			1214		452	696

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	356	208	16
Volume Left	0	12	9
Volume Right	7	0	7
cSH	1700	1214	534
Volume to Capacity	0.21	0.01	0.03
Queue Length 95th (ft)	0	1	2
Control Delay (s)	0.0	0.5	12.0
Lane LOS		A	B
Approach Delay (s)	0.0	0.5	12.0
Approach LOS			B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	61	27	179	37	13	15	82	154	5	16	116	69
Future Volume (vph)	61	27	179	37	13	15	82	154	5	16	116	69
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	73	33	216	45	16	18	99	186	6	19	140	83

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	106	216	79	99	192	19	223
Volume Left (vph)	73	0	45	99	0	19	0
Volume Right (vph)	0	216	18	0	6	0	83
Hadj (s)	0.42	-0.65	0.05	0.58	0.09	0.72	-0.16
Departure Headway (s)	6.5	5.5	6.5	6.6	6.1	6.8	5.9
Degree Utilization, x	0.19	0.33	0.14	0.18	0.33	0.04	0.37
Capacity (veh/h)	517	619	505	519	562	497	576
Control Delay (s)	9.9	9.9	10.6	9.8	10.8	8.9	11.1
Approach Delay (s)	9.9		10.6	10.5		10.9	
Approach LOS	A		B	B		B	

Intersection Summary				
Delay	10.4			
Level of Service	B			
Intersection Capacity Utilization	36.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1497	75	89	920	91	179	140	102	211	120	69
Future Volume (vph)	42	1497	75	89	920	91	179	140	102	211	120	69
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			3%			0%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	3197	1430	2906	3138	1403	2997	1642	1423	3101	1577	1408
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	3197	1430	2906	3138	1403	2997	1642	1423	3101	1577	1408
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	47	1682	84	100	1034	102	201	157	115	237	135	78
RTOR Reduction (vph)	0	0	37	0	0	46	0	0	100	0	0	68
Lane Group Flow (vph)	47	1682	47	100	1034	56	201	157	15	237	135	10
Confl. Peds. (#/hr)							3					3
Heavy Vehicles (%)	5%	4%	4%	11%	9%	6%	6%	5%	3%	4%	11%	4%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	6.9	66.7	66.7	6.3	66.1	66.1	15.5	16.1	16.1	14.4	15.0	15.0
Effective Green, g (s)	6.9	66.7	66.7	6.3	66.1	66.1	15.5	16.1	16.1	14.4	15.0	15.0
Actuated g/C Ratio	0.06	0.56	0.56	0.05	0.55	0.55	0.13	0.13	0.13	0.12	0.12	0.12
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.3	4.2	4.2	2.3	4.0	4.0	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	91	1776	794	152	1728	772	387	220	190	372	197	176
v/s Ratio Prot	0.03	c0.53		0.03	c0.33		0.07	c0.10		c0.08	0.09	
v/s Ratio Perm			0.03			0.04			0.01			0.01
v/c Ratio	0.52	0.95	0.06	0.66	0.60	0.07	0.52	0.71	0.08	0.64	0.69	0.06
Uniform Delay, d1	54.9	25.0	12.2	55.8	18.1	12.6	48.8	49.7	45.5	50.3	50.2	46.3
Progression Factor	1.00	1.00	1.00	0.76	0.46	0.11	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	12.0	0.1	7.6	1.4	0.2	0.7	9.4	0.1	2.9	8.3	0.1
Delay (s)	57.9	37.0	12.4	49.9	9.6	1.6	49.5	59.1	45.6	53.2	58.5	46.3
Level of Service	E	D	B	D	A	A	D	E	D	D	E	D
Approach Delay (s)		36.4			12.2			51.7			53.6	
Approach LOS		D			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1702	43	86	1064	28	58	3	92	11	5	27
Future Volume (vph)	19	1702	43	86	1064	28	58	3	92	11	5	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		2%			0%			0%			-2%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1567	3165	1265	1568	3079	1273	1433	1408		1678	1361	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.73	1.00		0.54	1.00	
Satd. Flow (perm)	1567	3165	1265	1568	3079	1273	1109	1408		951	1361	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	1850	47	93	1157	30	63	3	100	12	5	29
RTOR Reduction (vph)	0	0	13	0	0	7	0	90	0	0	26	0
Lane Group Flow (vph)	21	1850	34	93	1157	23	63	13	0	12	8	0
Confl. Peds. (#/hr)	2					2			1	1		
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	5%	4%	14%	6%	8%	14%	16%	0%	5%	0%	40%	7%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		
Actuated Green, G (s)	3.2	84.6	84.6	11.2	92.6	92.6	11.7	11.7		11.7	11.7	
Effective Green, g (s)	3.2	84.6	84.6	11.2	92.6	92.6	11.7	11.7		11.7	11.7	
Actuated g/C Ratio	0.03	0.70	0.70	0.09	0.77	0.77	0.10	0.10		0.10	0.10	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	41	2231	891	146	2375	982	108	137		92	132	
v/s Ratio Prot	0.01	c0.58		c0.06	0.38			0.01			0.01	
v/s Ratio Perm			0.03			0.02	c0.06			0.01		
v/c Ratio	0.51	0.83	0.04	0.64	0.49	0.02	0.58	0.09		0.13	0.06	
Uniform Delay, d1	57.6	12.6	5.4	52.4	5.0	3.2	51.8	49.3		49.5	49.2	
Progression Factor	1.12	0.21	0.03	1.45	0.16	0.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.1	1.8	0.0	5.1	0.5	0.0	6.5	0.2		0.5	0.1	
Delay (s)	67.4	4.5	0.2	81.0	1.3	0.0	58.3	49.5		50.0	49.3	
Level of Service	E	A	A	F	A	A	E	D		D	D	
Approach Delay (s)		5.0			7.1			52.9			49.5	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	1764	1217	21	52	24
Future Volume (Veh/h)	4	1764	1217	21	52	24
Sign Control		Free	Free		Stop	
Grade		-2%	2%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	4	1897	1309	23	56	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			521			
pX, platoon unblocked	0.69				0.69	0.69
vC, conflicting volume	1332				2277	666
vC1, stage 1 conf vol					1320	
vC2, stage 2 conf vol					956	
vCu, unblocked vol	580				1951	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				77	97
cM capacity (veh/h)	692				242	752

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	4	948	948	873	459	82
Volume Left	4	0	0	0	0	56
Volume Right	0	0	0	0	23	26
cSH	692	1700	1700	1700	1700	309
Volume to Capacity	0.01	0.56	0.56	0.51	0.27	0.27
Queue Length 95th (ft)	0	0	0	0	0	26
Control Delay (s)	10.2	0.0	0.0	0.0	0.0	20.8
Lane LOS	B					C
Approach Delay (s)	0.0			0.0		20.8
Approach LOS						C

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	1701	90	100	1123	77	42	13	71	238	29	73
Future Volume (vph)	25	1701	90	100	1123	77	42	13	71	238	29	73
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.97	
Satd. Flow (prot)	1607	3214	1480	1614	3110			1604	1465		1548	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.71	1.00		0.75	
Satd. Flow (perm)	1607	3214	1480	1614	3110			1190	1465		1208	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	1849	98	109	1221	84	46	14	77	259	32	79
RTOR Reduction (vph)	0	0	26	0	4	0	0	0	55	0	8	0
Lane Group Flow (vph)	27	1849	72	109	1301	0	0	60	22	0	362	0
Heavy Vehicles (%)	5%	5%	2%	2%	8%	5%	3%	5%	0%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8		8	4		
Actuated Green, G (s)	3.6	63.7	63.7	6.8	66.9			34.5	34.5		34.5	
Effective Green, g (s)	3.6	63.7	63.7	6.8	66.9			34.5	34.5		34.5	
Actuated g/C Ratio	0.03	0.53	0.53	0.06	0.56			0.29	0.29		0.29	
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5			4.5	4.5		4.5	
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	48	1706	785	91	1733			342	421		347	
v/s Ratio Prot	0.02	c0.58		c0.07	0.42							
v/s Ratio Perm			0.05					0.05	0.02		c0.30	
v/c Ratio	0.56	1.08	0.09	1.20	0.75			0.18	0.05		1.04	
Uniform Delay, d1	57.4	28.1	13.9	56.6	20.2			32.1	30.9		42.8	
Progression Factor	0.89	1.50	1.85	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	10.8	44.8	0.1	156.9	3.0			0.3	0.1		60.2	
Delay (s)	62.2	87.0	25.8	213.5	23.3			32.4	31.0		102.9	
Level of Service	E	F	C	F	C			C	C		F	
Approach Delay (s)		83.7			37.9			31.6			102.9	
Approach LOS		F			D			C			F	

Intersection Summary			
HCM 2000 Control Delay	67.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2010	1295	29	62	6
Future Vol, veh/h	3	2010	1295	29	62	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	-2	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	33	4	7	7	3	0
Mvmt Flow	3	2116	1363	31	65	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1394	0	-	0	2442	697
Stage 1	-	-	-	-	1378	-
Stage 2	-	-	-	-	1064	-
Critical Hdwy	4.76	-	-	-	6.46	6.7
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.53	-	-	-	3.53	3.3
Pot Cap-1 Maneuver	353	-	-	-	~ 34	403
Stage 1	-	-	-	-	230	-
Stage 2	-	-	-	-	327	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	353	-	-	-	~ 34	403
Mov Cap-2 Maneuver	-	-	-	-	138	-
Stage 1	-	-	-	-	230	-
Stage 2	-	-	-	-	324	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	50.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	353	-	-	-	147
HCM Lane V/C Ratio	0.009	-	-	-	0.487
HCM Control Delay (s)	15.3	-	-	-	50.8
HCM Lane LOS	C	-	-	-	F
HCM 95th %tile Q(veh)	0	-	-	-	2.3

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	KAI
Date Performed	10/21/2017
Analysis Year	2025
Time Analyzed	Total AM
Project Description	Crestview Crossing

Site Information

Intersection	Crestview/East-West Connector
E/W Street Name	East-West Connector
N/S Street Name	Crestview Dr
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.92
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	14	0	32	0	39	0	17	0	11	92	13	0	5	269	5
Percent Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0
Flow Rate (v_{PCE}), pc/h	0	15	0	35	0	42	0	18	0	12	105	14	0	5	307	5
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		50			60			131			317	
Entry Volume veh/h		50			60			126			302	
Circulating Flow (v_c), pc/h	354			132			20			54		
Exiting Flow (v_{ex}), pc/h	19			17			138			384		
Capacity (c_{pce}), pc/h		962			1206			1352			1306	
Capacity (c), veh/h		962			1206			1301			1246	
v/c Ratio (x)		0.05			0.05			0.10			0.24	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		4.2			3.4			3.5			5.0	
Lane LOS		A			A			A			A	
95% Queue, veh		0.2			0.2			0.3			1.0	
Approach Delay, s/veh	4.2			3.4			3.5			5.0		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	4.4						A					

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	KAI
Date Performed	10/21/2017
Analysis Year	2025
Time Analyzed	Total PM
Project Description	Crestview Crossing

Site Information

Intersection	Springbrook/Crestview
E/W Street Name	Crestview Dr
N/S Street Name	Springbrook Rd
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.93
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	53	20	13	0	14	13	172	0	7	374	25	2	200	263	49
Percent Heavy Vehicles, %	0	0	0	0	20	20	0	0	0	0	3	0	0	0	2	0
Flow Rate (v_{PCE}), pc/h	0	57	22	14	0	18	14	185	0	8	414	27	2	215	288	53
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		93			217			449			558	
Entry Volume veh/h		93			214			437			552	
Circulating Flow (v_c), pc/h		523			481			296			40	
Exiting Flow (v_{ex}), pc/h		264			75			658			320	
Capacity (c_{pce}), pc/h		809			845			1020			1325	
Capacity (c), veh/h		809			833			993			1311	
v/c Ratio (x)		0.11			0.26			0.44			0.42	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		5.6			7.1			8.6			6.8	
Lane LOS		A			A			A			A	
95% Queue, veh		0.4			1.0			2.3			2.1	
Approach Delay, s/veh	5.6			7.1			8.6			6.8		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	7.4						A					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	233	5	9	193	8	14
Future Volume (Veh/h)	233	5	9	193	8	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	2%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	295	6	11	244	10	18
Pedestrians					2	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			303		566	300
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			303		566	300
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	98
cM capacity (veh/h)			1267		483	743

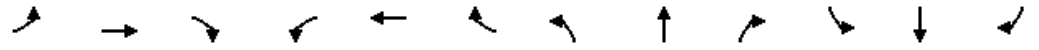
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	301	255	28
Volume Left	0	11	10
Volume Right	6	0	18
cSH	1700	1267	623
Volume to Capacity	0.18	0.01	0.04
Queue Length 95th (ft)	0	1	4
Control Delay (s)	0.0	0.4	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	11.0
Approach LOS			B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	27.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	83	63	226	91	68	86	141	202	5	67	181	40
Future Volume (vph)	83	63	226	91	68	86	141	202	5	67	181	40
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	86	66	235	95	71	90	147	210	5	70	189	42

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	152	235	256	147	215	70	231
Volume Left (vph)	86	0	95	147	0	70	0
Volume Right (vph)	0	235	90	0	5	0	42
Hadj (s)	0.30	-0.68	-0.12	0.53	0.03	0.53	-0.06
Departure Headway (s)	7.5	6.5	7.1	7.8	7.3	7.9	7.3
Degree Utilization, x	0.32	0.42	0.51	0.32	0.43	0.15	0.47
Capacity (veh/h)	454	524	468	431	462	429	460
Control Delay (s)	12.7	13.0	17.2	13.1	14.5	11.1	15.3
Approach Delay (s)	12.9		17.2	13.9		14.3	
Approach LOS	B		C	B		B	

Intersection Summary				
Delay	14.4			
Level of Service	B			
Intersection Capacity Utilization	50.7%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	1301	124	151	1636	155	374	179	142	224	212	84
Future Volume (vph)	98	1301	124	151	1636	155	374	179	142	224	212	84
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			3%			0%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	3137	1440	2854	3288	1423	3177	1674	1361	3193	1699	1438
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	3137	1440	2854	3288	1423	3177	1674	1361	3193	1699	1438
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	100	1328	127	154	1669	158	382	183	145	229	216	86
RTOR Reduction (vph)	0	0	63	0	0	70	0	0	124	0	0	67
Lane Group Flow (vph)	100	1328	64	154	1669	89	382	183	21	229	216	19
Confl. Peds. (#/hr)	2		9	9		2	14					14
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	5%	6%	1%	13%	4%	2%	0%	3%	6%	1%	3%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	11.0	70.6	70.6	10.4	70.0	70.0	20.4	19.9	19.9	22.6	22.1	22.1
Effective Green, g (s)	11.0	70.6	70.6	10.4	70.0	70.0	20.4	19.9	19.9	22.6	22.1	22.1
Actuated g/C Ratio	0.08	0.50	0.50	0.07	0.50	0.50	0.15	0.14	0.14	0.16	0.16	0.16
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.3	4.2	4.2	2.3	4.0	4.0	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	124	1581	726	212	1644	711	462	237	193	515	268	226
v/s Ratio Prot	c0.06	0.42		0.05	c0.51		c0.12	0.11		0.07	c0.13	
v/s Ratio Perm			0.04			0.06			0.02			0.01
v/c Ratio	0.81	0.84	0.09	0.73	1.02	0.12	0.83	0.77	0.11	0.44	0.81	0.08
Uniform Delay, d1	63.5	29.8	18.0	63.4	35.0	18.7	58.1	57.9	52.3	53.0	56.9	50.3
Progression Factor	1.00	1.00	1.00	1.03	0.97	1.09	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	29.5	5.5	0.2	6.2	20.6	0.2	11.2	13.6	0.1	0.4	15.5	0.1
Delay (s)	92.9	35.4	18.2	71.5	54.5	20.5	69.3	71.5	52.5	53.4	72.3	50.4
Level of Service	F	D	B	E	D	C	E	E	D	D	E	D
Approach Delay (s)		37.7			53.1			66.4			60.6	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	50.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1210	101	231	1685	41	243	16	152	21	10	51
Future Volume (vph)	32	1210	101	231	1685	41	243	16	152	21	10	51
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		2%			0%			0%			-2%	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1646	3105	1402	1646	3197	1352	1620	1438		1675	1471	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.72	1.00		0.50	1.00	
Satd. Flow (perm)	1646	3105	1402	1646	3197	1352	1221	1438		875	1471	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	33	1260	105	241	1755	43	253	17	158	22	10	53
RTOR Reduction (vph)	0	0	33	0	0	14	0	121	0	0	41	0
Lane Group Flow (vph)	33	1260	72	241	1755	29	253	54	0	22	22	0
Confl. Peds. (#/hr)							5		3	3		5
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	6%	5%	1%	4%	10%	2%	0%	4%	0%	0%	4%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		
Actuated Green, G (s)	3.9	68.9	68.9	26.0	91.0	91.0	32.6	32.6		32.6	32.6	
Effective Green, g (s)	3.9	68.9	68.9	26.0	91.0	91.0	32.6	32.6		32.6	32.6	
Actuated g/C Ratio	0.03	0.49	0.49	0.19	0.65	0.65	0.23	0.23		0.23	0.23	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	45	1528	689	305	2078	878	284	334		203	342	
v/s Ratio Prot	0.02	c0.41		0.15	c0.55			0.04			0.02	
v/s Ratio Perm			0.05			0.02	c0.21			0.03		
v/c Ratio	0.73	0.82	0.10	0.79	0.84	0.03	0.89	0.16		0.11	0.07	
Uniform Delay, d1	67.5	30.4	19.0	54.4	19.0	8.8	52.0	42.8		42.3	41.8	
Progression Factor	0.79	1.05	1.02	0.73	0.49	0.34	1.00	1.00		1.00	1.00	
Incremental Delay, d2	30.1	3.4	0.2	1.3	0.4	0.0	27.3	0.2		0.2	0.1	
Delay (s)	83.6	35.5	19.6	40.9	9.7	3.0	79.3	43.0		42.4	41.9	
Level of Service	F	D	B	D	A	A	E	D		D	D	
Approach Delay (s)		35.4			13.3			64.4			42.0	
Approach LOS		D			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	32	1379	2010	128	26	18
Future Volume (Veh/h)	32	1379	2010	128	26	18
Sign Control		Free	Free		Stop	
Grade		-2%	2%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	34	1483	2161	138	28	19
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			522			
pX, platoon unblocked	0.42				0.42	0.42
vC, conflicting volume	2299				3040	1150
vC1, stage 1 conf vol					2230	
vC2, stage 2 conf vol					810	
vCu, unblocked vol	1312				3095	0
tC, single (s)	4.2				7.0	6.9
tC, 2 stage (s)					6.0	
tF (s)	2.2				3.6	3.3
p0 queue free %	84				71	96
cM capacity (veh/h)	215				95	453

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	34	742	742	1441	858	47
Volume Left	34	0	0	0	0	28
Volume Right	0	0	0	0	138	19
cSH	215	1700	1700	1700	1700	140
Volume to Capacity	0.16	0.44	0.44	0.85	0.50	0.34
Queue Length 95th (ft)	14	0	0	0	0	34
Control Delay (s)	24.9	0.0	0.0	0.0	0.0	43.2
Lane LOS	C					E
Approach Delay (s)	0.6			0.0		43.2
Approach LOS						E

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	1281	38	86	1955	167	135	35	139	190	13	48
Future Volume (vph)	87	1281	38	86	1955	167	135	35	139	190	13	48
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.96	
Satd. Flow (prot)	1654	3184	1479	1646	3222			1638	1465		1594	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.70	1.00		0.53	
Satd. Flow (perm)	1654	3184	1479	1646	3222			1191	1465		872	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	93	1363	40	91	2080	178	144	37	148	202	14	51
RTOR Reduction (vph)	0	0	18	0	4	0	0	0	105	0	6	0
Lane Group Flow (vph)	93	1363	22	91	2254	0	0	181	43	0	261	0
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	6%	0%	0%	4%	2%	1%	2%	0%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8		8	4		
Actuated Green, G (s)	7.0	77.5	77.5	12.6	83.1			34.9	34.9		34.9	
Effective Green, g (s)	7.0	77.5	77.5	12.6	83.1			34.9	34.9		34.9	
Actuated g/C Ratio	0.05	0.55	0.55	0.09	0.59			0.25	0.25		0.25	
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5			4.5	4.5		4.5	
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	82	1762	818	148	1912			296	365		217	
v/s Ratio Prot	c0.06	0.43		0.06	c0.70							
v/s Ratio Perm			0.01					0.15	0.03		c0.30	
v/c Ratio	1.13	0.77	0.03	0.61	1.18			0.61	0.12		1.20	
Uniform Delay, d1	66.5	24.4	14.2	61.4	28.5			46.5	40.6		52.5	
Progression Factor	1.07	0.54	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	124.2	2.4	0.0	8.4	86.2			4.2	0.2		126.7	
Delay (s)	195.5	15.6	14.2	69.8	114.6			50.8	40.8		179.2	
Level of Service	F	B	B	E	F			D	D		F	
Approach Delay (s)		26.8			112.9			46.3			179.2	
Approach LOS		C			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	82.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	102.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	31	1585	2213	75	61	17
Future Vol, veh/h	31	1585	2213	75	61	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	-2	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	5	4	0	2	0
Mvmt Flow	33	1704	2380	81	66	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2460	0	-	0	3339	1230
Stage 1	-	-	-	-	2420	-
Stage 2	-	-	-	-	919	-
Critical Hdwy	4.1	-	-	-	6.44	6.7
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.2	-	-	-	3.52	3.3
Pot Cap-1 Maneuver	192	-	-	-	~ 9	184
Stage 1	-	-	-	-	69	-
Stage 2	-	-	-	-	387	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	192	-	-	-	~ 7	184
Mov Cap-2 Maneuver	-	-	-	-	~ 54	-
Stage 1	-	-	-	-	69	-
Stage 2	-	-	-	-	320	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	$ 326.2
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	192	-	-	-	64
HCM Lane V/C Ratio	0.174	-	-	-	1.31
HCM Control Delay (s)	27.6	-	-	-	$ 326.2
HCM Lane LOS	D	-	-	-	F
HCM 95th %tile Q(veh)	0.6	-	-	-	7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	KAI
Date Performed	10/21/2017
Analysis Year	2025
Time Analyzed	Total PM
Project Description	Crestview Crossing

Site Information

Intersection	Crestview/East-West Connector
E/W Street Name	East-West Connector
N/S Street Name	Crestview Dr
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.94
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	9	0	21	0	25	0	11	0	36	210	43	0	19	205	15
Percent Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
Flow Rate (v_{PCE}), pc/h	0	10	0	22	0	27	0	12	0	38	228	46	0	20	222	16
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		32			39			312			258	
Entry Volume veh/h		32			39			308			254	
Circulating Flow (v_c), pc/h	269			276			30			65		
Exiting Flow (v_{ex}), pc/h	66			54			250			271		
Capacity (c_{pce}), pc/h		1049			1041			1338			1291	
Capacity (c), veh/h		1049			1041			1319			1270	
v/c Ratio (x)		0.03			0.04			0.23			0.20	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		3.7			3.8			4.7			4.5	
Lane LOS		A			A			A			A	
95% Queue, veh		0.1			0.1			0.9			0.7	
Approach Delay, s/veh	3.7			3.8			4.7			4.5		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	4.5						A					

Appendix L
2025 Horizon Year Total
Conditions with Mitigation
Level of Service Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	1701	90	100	1123	77	42	13	71	238	29	73
Future Volume (vph)	25	1701	90	100	1123	77	42	13	71	238	29	73
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1607	3214	1480	1614	3135	1402	1590	1642	1465	1567	1650	1402
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.74	1.00	1.00	0.75	1.00	1.00
Satd. Flow (perm)	1607	3214	1480	1614	3135	1402	1232	1642	1465	1235	1650	1402
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	1849	98	109	1221	84	46	14	77	259	32	79
RTOR Reduction (vph)	0	0	30	0	0	33	0	0	59	0	0	60
Lane Group Flow (vph)	27	1849	68	109	1221	51	46	14	18	259	32	19
Heavy Vehicles (%)	5%	5%	2%	2%	8%	5%	3%	5%	0%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	3.6	67.5	67.5	9.3	73.2	73.2	28.2	28.2	28.2	28.2	28.2	28.2
Effective Green, g (s)	3.6	67.5	67.5	9.3	73.2	73.2	28.2	28.2	28.2	28.2	28.2	28.2
Actuated g/C Ratio	0.03	0.56	0.56	0.08	0.61	0.61	0.23	0.23	0.23	0.23	0.23	0.23
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	48	1807	832	125	1912	855	289	385	344	290	387	329
v/s Ratio Prot	0.02	c0.58		c0.07	c0.39			0.01			0.02	
v/s Ratio Perm			0.05			0.04	0.04		0.01	c0.21		0.01
v/c Ratio	0.56	1.02	0.08	0.87	0.64	0.06	0.16	0.04	0.05	0.89	0.08	0.06
Uniform Delay, d1	57.4	26.2	12.0	54.8	14.9	9.5	36.5	35.4	35.6	44.4	35.8	35.6
Progression Factor	0.89	1.47	2.02	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.7	25.0	0.2	45.0	1.6	0.1	0.4	0.1	0.1	27.8	0.1	0.1
Delay (s)	65.0	63.5	24.5	99.8	16.6	9.6	36.8	35.5	35.6	72.2	35.9	35.7
Level of Service	E	E	C	F	B	A	D	D	D	E	D	D
Approach Delay (s)		61.6			22.6			36.0			61.3	
Approach LOS		E			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	46.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	1281	38	86	1955	167	135	35	139	190	13	48
Future Volume (vph)	87	1281	38	86	1955	167	135	35	139	190	13	48
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1654	3184	1479	1646	3256	1444	1621	1690	1465	1614	1699	1444
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	1654	3184	1479	1646	3256	1444	1277	1690	1465	1245	1699	1444
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	93	1363	40	91	2080	178	144	37	148	202	14	51
RTOR Reduction (vph)	0	0	16	0	0	42	0	0	114	0	0	41
Lane Group Flow (vph)	93	1363	24	91	2080	136	144	37	34	202	14	10
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	6%	0%	0%	4%	2%	1%	2%	0%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	10.3	85.6	85.6	12.6	87.9	87.9	26.8	26.8	26.8	26.8	26.8	26.8
Effective Green, g (s)	10.3	85.6	85.6	12.6	87.9	87.9	26.8	26.8	26.8	26.8	26.8	26.8
Actuated g/C Ratio	0.07	0.61	0.61	0.09	0.63	0.63	0.19	0.19	0.19	0.19	0.19	0.19
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	121	1946	904	148	2044	906	244	323	280	238	325	276
v/s Ratio Prot	c0.06	0.43		0.06	c0.64			0.02			0.01	
v/s Ratio Perm			0.02			0.09	0.11		0.02	c0.16		0.01
v/c Ratio	0.77	0.70	0.03	0.61	1.02	0.15	0.59	0.11	0.12	0.85	0.04	0.04
Uniform Delay, d1	63.7	18.5	10.7	61.4	26.0	10.7	51.6	46.8	46.9	54.6	46.1	46.1
Progression Factor	1.25	0.18	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	22.2	1.8	0.0	8.4	24.4	0.4	4.4	0.2	0.3	24.3	0.1	0.1
Delay (s)	101.6	5.1	10.8	69.8	50.5	11.1	56.0	47.0	47.1	78.9	46.2	46.1
Level of Service	F	A	B	E	D	B	E	D	D	E	D	D
Approach Delay (s)		11.2			48.2			51.0			70.9	
Approach LOS		B			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	37.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	92.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Appendix M
SimTraffic Queuing Worksheets

Intersection: 4: Springbrook Rd & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	R	L	L	T
Maximum Queue (ft)	320	524	561	225	77	95	228	239	24	130	148	241
Average Queue (ft)	43	273	273	21	21	46	128	135	0	42	80	99
95th Queue (ft)	154	447	453	162	59	83	207	219	0	102	133	186
Link Distance (ft)		2053	2053				1271	1271				1159
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	350			350	430	430			370	320	320	
Storage Blk Time (%)		4	4	0								
Queuing Penalty (veh)		2	3	0								

Intersection: 4: Springbrook Rd & OR 99W

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	L	T	R
Maximum Queue (ft)	106	182	194	417	155
Average Queue (ft)	47	143	165	159	37
95th Queue (ft)	95	212	220	353	108
Link Distance (ft)				443	
Upstream Blk Time (%)				1	
Queuing Penalty (veh)				3	
Storage Bay Dist (ft)	320	170	170		130
Storage Blk Time (%)		2	12	7	0
Queuing Penalty (veh)		3	22	33	0

Intersection: 5: Brutscher St & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	53	140	162	35	128	138	174	75	145	137	53	62
Average Queue (ft)	11	35	43	4	44	36	52	5	53	45	8	16
95th Queue (ft)	38	99	115	21	101	101	130	32	118	103	34	44
Link Distance (ft)		1271	1271			1266	1266			345		357
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	260			200	350			80	220		50	
Storage Blk Time (%)			0				2	0			1	1
Queuing Penalty (veh)			0				1	0			0	0

Intersection: 6: OR 99W & Vittoria Way

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	23	163
Average Queue (ft)	2	62
95th Queue (ft)	15	126
Link Distance (ft)		204
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Providence Dr & OR 99W

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	R	L	T	T	L	R
Maximum Queue (ft)	219	230	125	128	90	98	78	105
Average Queue (ft)	91	104	16	61	34	30	28	35
95th Queue (ft)	191	216	76	117	83	82	66	77
Link Distance (ft)	447	447			1785	1785	301	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			100	230				160
Storage Blk Time (%)		6	0					0
Queuing Penalty (veh)		3	0					0

Intersection: 8: OR 99W & Benjamin Rd

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	38	297
Average Queue (ft)	2	158
95th Queue (ft)	17	349
Link Distance (ft)		526
Upstream Blk Time (%)		1
Queuing Penalty (veh)		0
Storage Bay Dist (ft)	250	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 77

Intersection: 4: Springbrook Rd & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	R	L	L	T
Maximum Queue (ft)	328	465	475	148	214	410	571	589	395	332	345	1699
Average Queue (ft)	201	213	217	5	79	111	254	266	87	303	335	1616
95th Queue (ft)	385	475	455	76	174	257	530	553	352	394	383	1901
Link Distance (ft)		3631	3631				1270	1270				1649
Upstream Blk Time (%)												77
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	350			350	430	430			370	320	320	
Storage Blk Time (%)	14	0	1	0			2	4	0	9	65	12
Queuing Penalty (veh)	76	0	1	0			2	11	0	26	197	62

Intersection: 4: Springbrook Rd & OR 99W

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	L	T	R
Maximum Queue (ft)	276	182	195	451	155
Average Queue (ft)	91	144	171	427	69
95th Queue (ft)	259	229	247	482	175
Link Distance (ft)				432	
Upstream Blk Time (%)				40	
Queuing Penalty (veh)				265	
Storage Bay Dist (ft)	320	170	170		130
Storage Blk Time (%)	0	11	30	60	1
Queuing Penalty (veh)	0	33	89	286	5

Intersection: 5: Brutscher St & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	211	409	375	225	374	984	979	105	245	388	61	123
Average Queue (ft)	27	180	188	70	313	571	565	10	214	250	12	33
95th Queue (ft)	109	360	364	216	453	1383	1382	55	295	487	41	87
Link Distance (ft)		1270	1270			1264	1264			345		357
Upstream Blk Time (%)						6	6			41		
Queuing Penalty (veh)						54	56			0		
Storage Bay Dist (ft)	260			200	350			80	220		50	
Storage Blk Time (%)		3	7	0	39	2	18	0	50	3	2	7
Queuing Penalty (veh)		1	7	0	297	4	8	0	74	8	1	2

Intersection: 6: OR 99W & Vittoria Way

Movement	EB	WB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	72	204	208	158
Average Queue (ft)	20	94	95	88
95th Queue (ft)	52	382	384	200
Link Distance (ft)		449	449	209
Upstream Blk Time (%)		4	5	10
Queuing Penalty (veh)		42	45	0
Storage Bay Dist (ft)	100			
Storage Blk Time (%)	0			
Queuing Penalty (veh)	2			

Intersection: 7: Providence Dr & OR 99W

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	R	L	T	T	L	R
Maximum Queue (ft)	259	285	106	189	768	748	218	131
Average Queue (ft)	118	128	7	92	303	305	90	46
95th Queue (ft)	214	228	51	196	1174	1169	177	106
Link Distance (ft)	449	449			1785	1785	301	
Upstream Blk Time (%)					1	1	0	
Queuing Penalty (veh)					11	13	0	
Storage Bay Dist (ft)			100	230				160
Storage Blk Time (%)		10	0	0	12		2	0
Queuing Penalty (veh)		2	0	0	8		2	0

Intersection: 8: OR 99W & Benjamin Rd

Movement	EB	WB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	95	158	164	541
Average Queue (ft)	28	52	51	510
95th Queue (ft)	73	354	347	607
Link Distance (ft)		746	746	526
Upstream Blk Time (%)		2	3	83
Queuing Penalty (veh)		0	0	0
Storage Bay Dist (ft)	250			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 1908

Intersection: 4: Springbrook Rd & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	L	L	T	R
Maximum Queue (ft)	320	553	506	224	91	105	193	192	186	212	219	127
Average Queue (ft)	35	282	254	13	22	51	89	91	46	118	96	43
95th Queue (ft)	137	466	430	125	61	91	159	161	143	191	171	100
Link Distance (ft)		686	686				1271	1271			527	
Upstream Blk Time (%)		0	0									
Queuing Penalty (veh)		0	0									
Storage Bay Dist (ft)	350			350	430	430			320	320		320
Storage Blk Time (%)		5	3	0								
Queuing Penalty (veh)		2	2	0								

Intersection: 4: Springbrook Rd & OR 99W

Movement	SB	SB	SB	SB
Directions Served	L	L	T	R
Maximum Queue (ft)	169	190	294	155
Average Queue (ft)	67	103	107	44
95th Queue (ft)	146	172	233	115
Link Distance (ft)			443	
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			1	
Storage Bay Dist (ft)	170	170		130
Storage Blk Time (%)	0	1	7	0
Queuing Penalty (veh)	0	2	19	1

Intersection: 5: Brutscher St & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	114	234	249	76	130	144	163	36	132	116	54	75
Average Queue (ft)	13	66	76	8	53	19	30	2	54	47	9	16
95th Queue (ft)	60	168	182	43	109	77	104	24	114	99	33	48
Link Distance (ft)		1271	1271			1266	1266			345		357
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	260			200	350			80	220		50	
Storage Blk Time (%)		0	1	0			1	0			1	2
Queuing Penalty (veh)		0	0	0			0	0			0	0

Intersection: 6: OR 99W & Vittoria Way

Movement	EB	EB	EB	SB
Directions Served	L	T	T	LR
Maximum Queue (ft)	34	82	92	204
Average Queue (ft)	3	5	8	104
95th Queue (ft)	17	41	49	214
Link Distance (ft)		1266	1266	204
Upstream Blk Time (%)				14
Queuing Penalty (veh)				0
Storage Bay Dist (ft)	100			
Storage Blk Time (%)		0		
Queuing Penalty (veh)		0		

Intersection: 7: Providence Dr/Crestview Dr & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	15	457	458	125	189	190	187	101	102	302
Average Queue (ft)	1	273	297	41	88	79	86	35	34	178
95th Queue (ft)	8	445	463	126	155	157	166	77	71	275
Link Distance (ft)		452	452			1780	1780	302		398
Upstream Blk Time (%)		0	0							
Queuing Penalty (veh)		2	3							
Storage Bay Dist (ft)	100			100	230				160	
Storage Blk Time (%)		20	23	0	0	0				
Queuing Penalty (veh)		0	20	0	0	0				

Intersection: 8: OR 99W & Benjamin Rd

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	28	568
Average Queue (ft)	2	462
95th Queue (ft)	18	650
Link Distance (ft)		526
Upstream Blk Time (%)		61
Queuing Penalty (veh)		0
Storage Bay Dist (ft)	250	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 55

Intersection: 4: Springbrook Rd & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	R	L	L	T
Maximum Queue (ft)	337	469	431	372	131	454	811	838	395	296	322	320
Average Queue (ft)	115	308	271	15	49	127	457	473	171	176	220	138
95th Queue (ft)	237	436	389	138	102	361	716	737	493	264	308	259
Link Distance (ft)		686	686				1270	1270				527
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	350			350	430	430			370	320	320	
Storage Blk Time (%)	0	4	2	0		0	9	16	0	0	1	0
Queuing Penalty (veh)	0	4	2	0		0	13	24	1	0	3	1

Intersection: 4: Springbrook Rd & OR 99W

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	L	T	R
Maximum Queue (ft)	192	178	195	417	155
Average Queue (ft)	52	75	124	183	67
95th Queue (ft)	121	145	211	339	161
Link Distance (ft)				432	
Upstream Blk Time (%)				0	
Queuing Penalty (veh)				1	
Storage Bay Dist (ft)	320	170	170		130
Storage Blk Time (%)		0	1	22	0
Queuing Penalty (veh)		0	2	67	0

Intersection: 5: Brutscher St & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	174	387	392	225	375	1162	1180	105	245	379	68	124
Average Queue (ft)	36	187	206	64	327	609	599	17	227	292	16	36
95th Queue (ft)	113	369	391	206	454	1319	1322	75	284	488	50	88
Link Distance (ft)		1270	1270			1264	1264			345		357
Upstream Blk Time (%)						2	2			52		
Queuing Penalty (veh)						15	18			0		
Storage Bay Dist (ft)	260			200	350			80	220		50	
Storage Blk Time (%)		2	8	0	49	3	19	0	61	1	2	10
Queuing Penalty (veh)		1	8	0	363	6	8	0	92	2	1	2

Intersection: 6: OR 99W & Vittoria Way

Movement	EB	WB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	74	290	295	129
Average Queue (ft)	26	35	37	45
95th Queue (ft)	63	197	204	101
Link Distance (ft)		454	454	209
Upstream Blk Time (%)		0	0	
Queuing Penalty (veh)		3	3	
Storage Bay Dist (ft)	100			
Storage Blk Time (%)	0			
Queuing Penalty (veh)	3			

Intersection: 7: Providence Dr/Crestview Dr & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	57	242	241	125	250	462	462	278	185	256
Average Queue (ft)	7	109	116	18	83	208	221	124	71	145
95th Queue (ft)	31	207	208	77	180	392	406	223	156	233
Link Distance (ft)		454	454			1780	1780	301		314
Upstream Blk Time (%)								0		
Queuing Penalty (veh)								0		
Storage Bay Dist (ft)	100			100	230				160	
Storage Blk Time (%)		10	12	0	0	5		6	0	
Queuing Penalty (veh)		1	4	0	0	5		9	0	

Intersection: 8: OR 99W & Benjamin Rd

Movement	EB	WB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	89	8	17	541
Average Queue (ft)	27	0	1	517
95th Queue (ft)	65	6	7	584
Link Distance (ft)		746	746	526
Upstream Blk Time (%)				90
Queuing Penalty (veh)				0
Storage Bay Dist (ft)	250			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 666

Intersection: 4: Springbrook Rd & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	L	L	T	R
Maximum Queue (ft)	213	600	564	300	90	115	201	209	181	210	210	97
Average Queue (ft)	39	302	267	13	25	52	90	90	40	102	100	40
95th Queue (ft)	142	484	458	126	70	101	165	167	127	178	178	83
Link Distance (ft)		686	686				1271	1271			527	
Upstream Blk Time (%)		1	0									
Queuing Penalty (veh)		0	0									
Storage Bay Dist (ft)	350			350	430	430			320	320		320
Storage Blk Time (%)	0	6	3	0								
Queuing Penalty (veh)	0	3	3	0								

Intersection: 4: Springbrook Rd & OR 99W

Movement	SB	SB	SB	SB
Directions Served	L	L	T	R
Maximum Queue (ft)	165	190	300	141
Average Queue (ft)	71	107	95	39
95th Queue (ft)	142	174	207	103
Link Distance (ft)			443	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	170	170		130
Storage Blk Time (%)	0	1	5	0
Queuing Penalty (veh)	0	1	14	0

Intersection: 5: Brutscher St & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	55	216	237	72	180	136	137	24	133	117	47	57
Average Queue (ft)	12	72	80	7	64	17	29	1	50	42	7	15
95th Queue (ft)	38	171	186	43	136	67	79	10	115	91	27	41
Link Distance (ft)		1271	1271			1266	1266			345		357
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	260			200	350			80	220		50	
Storage Blk Time (%)		0	1				1				1	0
Queuing Penalty (veh)		0	0				0				0	0

Intersection: 6: OR 99W & Vittoria Way

Movement	EB	EB	EB	WB	SB
Directions Served	L	T	T	TR	LR
Maximum Queue (ft)	24	201	214	5	219
Average Queue (ft)	2	34	42	0	167
95th Queue (ft)	15	139	151	3	269
Link Distance (ft)		1266	1266	452	204
Upstream Blk Time (%)					54
Queuing Penalty (veh)					0
Storage Bay Dist (ft)	100				
Storage Blk Time (%)		2			
Queuing Penalty (veh)		0			

Intersection: 7: Providence Dr & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	124	468	472	125	233	297	277	113	89	404
Average Queue (ft)	28	353	368	38	92	147	148	42	37	243
95th Queue (ft)	76	516	526	121	181	269	265	91	74	366
Link Distance (ft)		452	452			1780	1780	302		398
Upstream Blk Time (%)		2	3							1
Queuing Penalty (veh)		14	24							0
Storage Bay Dist (ft)	100			100	230				160	
Storage Blk Time (%)	0	28	30	0	0	1				
Queuing Penalty (veh)	0	7	27	0	2	2				

Intersection: 8: OR 99W & Benjamin Rd

Movement	EB	EB	SB
Directions Served	L	T	LR
Maximum Queue (ft)	25	352	433
Average Queue (ft)	2	12	328
95th Queue (ft)	15	252	654
Link Distance (ft)		1780	526
Upstream Blk Time (%)			39
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	250		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 98

Intersection: 4: Springbrook Rd & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	R	L	L	T
Maximum Queue (ft)	359	548	497	300	124	454	746	770	395	302	325	280
Average Queue (ft)	134	328	288	13	57	177	473	485	187	168	214	135
95th Queue (ft)	281	461	423	126	116	457	680	694	512	257	302	224
Link Distance (ft)		686	686				1270	1270				527
Upstream Blk Time (%)		0										
Queuing Penalty (veh)		0										
Storage Bay Dist (ft)	350			350	430	430			370	320	320	
Storage Blk Time (%)		5	1	0		0	10	19	0	0	1	
Queuing Penalty (veh)		5	2	0		0	15	29	1	0	2	

Intersection: 4: Springbrook Rd & OR 99W

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	L	T	R
Maximum Queue (ft)	158	161	195	425	155
Average Queue (ft)	56	69	119	189	60
95th Queue (ft)	114	139	207	364	150
Link Distance (ft)				432	
Upstream Blk Time (%)				1	
Queuing Penalty (veh)				3	
Storage Bay Dist (ft)	320	170	170		130
Storage Blk Time (%)		0	1	22	1
Queuing Penalty (veh)		0	2	66	2

Intersection: 5: Brutscher St & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	153	385	426	225	344	367	374	105	244	357	61	93
Average Queue (ft)	24	194	211	58	181	220	238	16	184	117	16	28
95th Queue (ft)	104	355	383	191	307	341	351	70	265	284	46	67
Link Distance (ft)		1270	1270			1264	1264			345		357
Upstream Blk Time (%)										1		
Queuing Penalty (veh)										0		
Storage Bay Dist (ft)	260			200	350			80	220		50	
Storage Blk Time (%)		3	7	0	1	0	23	0	10	0	0	5
Queuing Penalty (veh)		1	7	0	4	0	9	0	16	0	0	1

Intersection: 6: OR 99W & Vittoria Way

Movement	EB	EB	EB	WB	WB	SB
Directions Served	L	T	T	T	TR	LR
Maximum Queue (ft)	79	50	30	18	17	125
Average Queue (ft)	31	3	2	1	1	43
95th Queue (ft)	68	37	26	10	7	95
Link Distance (ft)		1264	1264	454	454	209
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100					
Storage Blk Time (%)	0	0				
Queuing Penalty (veh)	2	0				

Intersection: 7: Providence Dr/Crestview Dr & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	124	374	356	119	254	1569	1564	281	185	331
Average Queue (ft)	86	161	159	13	132	1082	1083	137	89	213
95th Queue (ft)	141	344	329	65	274	1831	1824	236	183	337
Link Distance (ft)		454	454			1780	1780	301		314
Upstream Blk Time (%)		1	0			0	0	0		5
Queuing Penalty (veh)		4	2			3	4	0		0
Storage Bay Dist (ft)	100			100	230				160	
Storage Blk Time (%)	21	12	18	0	0	34		9	0	
Queuing Penalty (veh)	124	11	7	0	0	29		12	1	

Intersection: 8: OR 99W & Benjamin Rd

Movement	EB	EB	EB	WB	WB	SB
Directions Served	L	T	T	T	TR	LR
Maximum Queue (ft)	170	202	188	172	181	537
Average Queue (ft)	77	19	14	23	22	516
95th Queue (ft)	205	156	135	136	140	570
Link Distance (ft)		1780	1780	746	746	526
Upstream Blk Time (%)						94
Queuing Penalty (veh)						0
Storage Bay Dist (ft)	250					
Storage Blk Time (%)	6	1				
Queuing Penalty (veh)	45	0				

Network Summary

Network wide Queuing Penalty: 421

Intersection: 7: Providence Dr & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	124	459	467	125	188	241	246	92	94	57	99	224
Average Queue (ft)	35	318	332	43	82	120	119	14	34	12	40	175
95th Queue (ft)	87	486	497	128	149	214	218	54	75	38	79	244
Link Distance (ft)		445	445			1774	1774			301		
Upstream Blk Time (%)		1	1									
Queuing Penalty (veh)		8	10									
Storage Bay Dist (ft)	100			100	230			230	160		160	200
Storage Blk Time (%)	0	24	26	0		0	0					10
Queuing Penalty (veh)	1	6	24	1		0	0					10

Intersection: 7: Providence Dr & OR 99W

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	381	79
Average Queue (ft)	64	25
95th Queue (ft)	243	59
Link Distance (ft)	385	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		200
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 7: Providence Dr/Crestview Dr & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	124	242	201	65	254	563	586	255	184	284	163	224
Average Queue (ft)	75	70	67	5	92	292	302	96	104	48	65	151
95th Queue (ft)	123	171	148	32	209	487	521	272	176	155	132	238
Link Distance (ft)		446	446			1774	1774			300		
Upstream Blk Time (%)										1		
Queuing Penalty (veh)										0		
Storage Bay Dist (ft)	100			100	230			230	160		160	200
Storage Blk Time (%)	16	2	2	0		12	11	0	5		0	9
Queuing Penalty (veh)	96	2	1	0		10	19	0	9		1	6

Intersection: 7: Providence Dr/Crestview Dr & OR 99W

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	300	82
Average Queue (ft)	40	26
95th Queue (ft)	188	65
Link Distance (ft)	300	
Upstream Blk Time (%)	1	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		200
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Providence Dr & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	124	458	468	125	196	298	308	216	100	76	94	225
Average Queue (ft)	71	322	341	42	81	152	152	29	37	21	38	183
95th Queue (ft)	129	484	495	128	154	255	271	111	80	57	77	246
Link Distance (ft)		445	445			1774	1774			301		
Upstream Blk Time (%)		1	1									
Queuing Penalty (veh)		7	10									
Storage Bay Dist (ft)	100			100	230			230	160		160	200
Storage Blk Time (%)	7	25	27	0		1	2	0				13
Queuing Penalty (veh)	55	17	24	0		1	1	0				17

Intersection: 7: Providence Dr & OR 99W

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	372	98
Average Queue (ft)	105	34
95th Queue (ft)	328	73
Link Distance (ft)	385	
Upstream Blk Time (%)	1	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		200
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 7: Providence Dr/Crestview Dr & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	125	412	417	122	255	855	865	255	181	221	158	225
Average Queue (ft)	108	169	158	12	121	483	484	138	104	55	65	175
95th Queue (ft)	146	382	372	66	260	828	834	320	174	166	122	259
Link Distance (ft)		446	446			1774	1774			300		
Upstream Blk Time (%)		1	0							0		
Queuing Penalty (veh)		3	3							0		
Storage Bay Dist (ft)	100			100	230			230	160		160	200
Storage Blk Time (%)	47	6	11	0	0	23	24	0	3	0	0	21
Queuing Penalty (veh)	264	8	4	0	0	20	49	1	6	1	1	29

Intersection: 7: Providence Dr/Crestview Dr & OR 99W

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	324	184
Average Queue (ft)	111	63
95th Queue (ft)	334	138
Link Distance (ft)	300	
Upstream Blk Time (%)	7	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		200
Storage Blk Time (%)	0	0
Queuing Penalty (veh)	0	0

Intersection: 4: Springbrook Rd & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	L	L	T	R
Maximum Queue (ft)	266	623	610	375	68	100	205	217	158	221	240	168
Average Queue (ft)	43	358	322	31	17	44	99	101	43	109	97	43
95th Queue (ft)	171	597	570	201	46	81	174	183	134	185	184	113
Link Distance (ft)		686	686				1271	1271			527	
Upstream Blk Time (%)		2	2									
Queuing Penalty (veh)		0	0									
Storage Bay Dist (ft)	350			350	430	430			320	320		320
Storage Blk Time (%)		11	8	0							0	
Queuing Penalty (veh)		5	6	0							0	

Intersection: 4: Springbrook Rd & OR 99W

Movement	SB	SB	SB	SB
Directions Served	L	L	T	R
Maximum Queue (ft)	162	194	326	126
Average Queue (ft)	70	107	98	40
95th Queue (ft)	147	177	218	105
Link Distance (ft)			443	
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			1	
Storage Bay Dist (ft)	170	170		130
Storage Blk Time (%)	0	1	6	0
Queuing Penalty (veh)	0	1	17	0

Intersection: 5: Brutscher St & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	44	268	264	60	146	132	154	37	122	132	42	63
Average Queue (ft)	9	110	118	8	51	22	28	2	46	54	8	16
95th Queue (ft)	31	228	236	34	107	88	93	18	101	110	29	44
Link Distance (ft)		1271	1271			1266	1266			345		357
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	260			200	350			80	220		50	
Storage Blk Time (%)		0	2				1				0	1
Queuing Penalty (veh)		0	1				0				0	0

Intersection: 6: OR 99W & Vittoria Way

Movement	EB	EB	EB	SB
Directions Served	L	T	T	LR
Maximum Queue (ft)	24	192	199	219
Average Queue (ft)	3	18	28	190
95th Queue (ft)	18	94	115	274
Link Distance (ft)		1266	1266	204
Upstream Blk Time (%)				73
Queuing Penalty (veh)				0
Storage Bay Dist (ft)	100			
Storage Blk Time (%)		1		
Queuing Penalty (veh)		0		

Intersection: 7: Providence Dr/Crestview Dr & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	10	465	469	125	149	207	217	110	93	334
Average Queue (ft)	0	332	347	40	76	91	98	42	42	189
95th Queue (ft)	5	487	500	120	136	170	181	85	82	302
Link Distance (ft)		452	452			1780	1780	302		398
Upstream Blk Time (%)		1	1							
Queuing Penalty (veh)		7	10							
Storage Bay Dist (ft)	100			100	230				160	
Storage Blk Time (%)		24	26	0		0		0		
Queuing Penalty (veh)		0	24	0		0		0		

Intersection: 8: OR 99W & Benjamin Rd

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	36	4	554
Average Queue (ft)	3	0	493
95th Queue (ft)	19	0	638
Link Distance (ft)		746	526
Upstream Blk Time (%)			70
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	250		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 74

Intersection: 4: Springbrook Rd & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	R	L	L	T
Maximum Queue (ft)	374	583	570	300	145	454	1182	1185	395	255	290	246
Average Queue (ft)	137	344	308	18	56	221	811	818	232	152	198	128
95th Queue (ft)	312	500	461	150	124	538	1395	1404	551	233	272	215
Link Distance (ft)		686	686				1270	1270				527
Upstream Blk Time (%)		0	0				4	5				
Queuing Penalty (veh)		0	0				34	46				
Storage Bay Dist (ft)	350			350	430	430			370	320	320	
Storage Blk Time (%)	0	7	2	0		0	29	34	0		0	
Queuing Penalty (veh)	0	7	3	0		0	40	51	1		0	

Intersection: 4: Springbrook Rd & OR 99W

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	L	T	R
Maximum Queue (ft)	143	150	195	437	155
Average Queue (ft)	56	73	125	209	63
95th Queue (ft)	109	134	208	399	156
Link Distance (ft)				432	
Upstream Blk Time (%)				1	
Queuing Penalty (veh)				3	
Storage Bay Dist (ft)	320	170	170		130
Storage Blk Time (%)		0	0	23	0
Queuing Penalty (veh)		0	1	69	1

Intersection: 5: Brutscher St & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	239	332	362	225	375	1285	1301	105	245	373	70	143
Average Queue (ft)	42	184	201	67	356	972	973	16	219	261	18	38
95th Queue (ft)	152	350	371	212	435	1597	1620	72	286	481	52	104
Link Distance (ft)		1270	1270			1264	1264			345		357
Upstream Blk Time (%)						6	7			37		
Queuing Penalty (veh)						54	65			0		
Storage Bay Dist (ft)	260			200	350			80	220		50	
Storage Blk Time (%)		2	8	0	60	9	24	0	50	2	2	10
Queuing Penalty (veh)		1	8	0	494	19	10	0	75	5	1	2

Intersection: 6: OR 99W & Vittoria Way

Movement	EB	EB	EB	WB	WB	SB
Directions Served	L	T	T	T	TR	LR
Maximum Queue (ft)	85	78	41	404	401	230
Average Queue (ft)	25	3	1	178	177	154
95th Queue (ft)	69	43	29	514	517	260
Link Distance (ft)		1264	1264	454	454	209
Upstream Blk Time (%)				3	4	35
Queuing Penalty (veh)				35	43	0
Storage Bay Dist (ft)	100					
Storage Blk Time (%)	2					
Queuing Penalty (veh)	16					

Intersection: 7: Providence Dr/Crestview Dr & OR 99W

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	T	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	317	316	125	254	1236	1258	281	184	289
Average Queue (ft)	119	132	18	112	630	637	136	78	144
95th Queue (ft)	232	246	75	250	1627	1633	241	167	242
Link Distance (ft)	454	454			1780	1780	301		314
Upstream Blk Time (%)					1	1	1		0
Queuing Penalty (veh)					14	14	0		0
Storage Bay Dist (ft)			100	230				160	
Storage Blk Time (%)	10	13	0	0	18		8	0	
Queuing Penalty (veh)	0	5	0	0	15		12	0	

Intersection: 8: OR 99W & Benjamin Rd

Movement	EB	EB	WB	WB	SB
Directions Served	L	T	T	TR	LR
Maximum Queue (ft)	169	111	362	321	543
Average Queue (ft)	74	13	76	74	515
95th Queue (ft)	184	105	425	421	584
Link Distance (ft)		1780	746	746	526
Upstream Blk Time (%)			4	3	90
Queuing Penalty (veh)			0	0	0
Storage Bay Dist (ft)	250				
Storage Blk Time (%)	1	0			
Queuing Penalty (veh)	8	0			

Network Summary

Network wide Queuing Penalty: 1158

Intersection: 4: Springbrook Rd & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	L	L	T	R
Maximum Queue (ft)	372	606	614	375	92	114	208	206	178	187	174	117
Average Queue (ft)	64	366	333	34	20	49	96	97	45	112	93	46
95th Queue (ft)	241	606	597	210	61	93	184	182	137	175	161	99
Link Distance (ft)		686	686				1271	1271			527	
Upstream Blk Time (%)		3	4									
Queuing Penalty (veh)		0	0									
Storage Bay Dist (ft)	350			350	430	430			320	320		320
Storage Blk Time (%)		12	9	0								
Queuing Penalty (veh)		5	7	0								

Intersection: 4: Springbrook Rd & OR 99W

Movement	SB	SB	SB	SB
Directions Served	L	L	T	R
Maximum Queue (ft)	170	194	324	153
Average Queue (ft)	72	110	109	40
95th Queue (ft)	150	186	223	109
Link Distance (ft)			443	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	170	170		130
Storage Blk Time (%)	0	1	6	0
Queuing Penalty (veh)	0	2	17	0

Intersection: 5: Brutscher St & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	98	286	324	97	149	100	136	10	152	134	36	58
Average Queue (ft)	14	114	124	12	63	15	26	1	49	54	8	16
95th Queue (ft)	59	236	257	62	122	59	82	6	115	113	25	43
Link Distance (ft)		1271	1271			1266	1266			345		357
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	260			200	350			80	220		50	
Storage Blk Time (%)		1	2	0			1				0	0
Queuing Penalty (veh)		0	1	0			0				0	0

Intersection: 6: OR 99W & Vittoria Way

Movement	EB	EB	EB	WB	SB
Directions Served	L	T	T	TR	LR
Maximum Queue (ft)	43	517	530	11	219
Average Queue (ft)	2	164	176	0	207
95th Queue (ft)	22	487	495	8	235
Link Distance (ft)		1266	1266	452	204
Upstream Blk Time (%)					95
Queuing Penalty (veh)					0
Storage Bay Dist (ft)	100				
Storage Blk Time (%)		11			
Queuing Penalty (veh)		0			

Intersection: 7: Providence Dr & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	124	474	482	125	203	333	378	117	98	400
Average Queue (ft)	30	413	428	46	86	174	184	44	43	266
95th Queue (ft)	88	533	535	137	170	296	328	92	80	396
Link Distance (ft)		452	452			1780	1780	302		398
Upstream Blk Time (%)		9	10							5
Queuing Penalty (veh)		77	93							0
Storage Bay Dist (ft)	100			100	230				160	
Storage Blk Time (%)	0	35	37	0	0	2				
Queuing Penalty (veh)	0	9	34	0	0	2				

Intersection: 8: OR 99W & Benjamin Rd

Movement	EB	EB	SB
Directions Served	L	T	LR
Maximum Queue (ft)	27	361	554
Average Queue (ft)	1	12	465
95th Queue (ft)	12	259	679
Link Distance (ft)		1780	526
Upstream Blk Time (%)		0	64
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)	250		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 250

Intersection: 4: Springbrook Rd & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	R	L	L	T
Maximum Queue (ft)	375	617	557	374	138	454	877	897	395	288	328	283
Average Queue (ft)	135	386	344	39	59	184	518	526	209	170	217	128
95th Queue (ft)	313	553	509	226	118	471	819	823	534	258	294	230
Link Distance (ft)		686	686				1270	1270				527
Upstream Blk Time (%)		0	0					0				
Queuing Penalty (veh)		0	0					0				
Storage Bay Dist (ft)	350			350	430	430			370	320	320	
Storage Blk Time (%)	0	11	5	0		0	13	22	0	0	0	0
Queuing Penalty (veh)	0	10	6	0		0	19	34	1	0	1	0

Intersection: 4: Springbrook Rd & OR 99W

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	L	T	R
Maximum Queue (ft)	235	162	195	430	155
Average Queue (ft)	70	74	110	183	70
95th Queue (ft)	142	137	190	345	164
Link Distance (ft)				432	
Upstream Blk Time (%)				0	
Queuing Penalty (veh)				1	
Storage Bay Dist (ft)	320	170	170		130
Storage Blk Time (%)		0	0	20	0
Queuing Penalty (veh)		0	1	62	0

Intersection: 5: Brutscher St & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	161	461	465	225	316	376	363	105	244	343	66	107
Average Queue (ft)	23	210	221	66	161	227	243	15	172	110	15	32
95th Queue (ft)	85	395	398	209	275	338	344	68	255	271	46	83
Link Distance (ft)		1270	1270			1264	1264			345		357
Upstream Blk Time (%)										1		
Queuing Penalty (veh)										0		
Storage Bay Dist (ft)	260			200	350			80	220		50	
Storage Blk Time (%)	0	5	9	0	0	1	24	0	7	0	1	6
Queuing Penalty (veh)	0	1	9	0	3	1	10	0	12	1	0	1

Intersection: 6: OR 99W & Vittoria Way

Movement	EB	EB	EB	WB	SB
Directions Served	L	T	T	TR	LR
Maximum Queue (ft)	103	152	123	16	113
Average Queue (ft)	30	13	11	1	50
95th Queue (ft)	73	107	100	8	116
Link Distance (ft)		1264	1264	454	209
Upstream Blk Time (%)					1
Queuing Penalty (veh)					0
Storage Bay Dist (ft)	100				
Storage Blk Time (%)	1	2			
Queuing Penalty (veh)	5	1			

Intersection: 7: Providence Dr/Crestview Dr & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	124	423	425	123	254	1809	1818	284	177	324
Average Queue (ft)	88	220	216	20	99	1648	1645	139	80	218
95th Queue (ft)	145	402	395	89	231	2148	2149	256	173	323
Link Distance (ft)		454	454			1780	1780	301		314
Upstream Blk Time (%)		1	1			4	5	1		3
Queuing Penalty (veh)		9	6			47	54	0		0
Storage Bay Dist (ft)	100			100	230				160	
Storage Blk Time (%)	20	20	25	0	0	36		7	1	
Queuing Penalty (veh)	130	17	9	0	0	31		10	1	

Intersection: 8: OR 99W & Benjamin Rd

Movement	EB	WB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	151	797	803	541
Average Queue (ft)	50	527	530	519
95th Queue (ft)	136	1068	1069	556
Link Distance (ft)		746	746	526
Upstream Blk Time (%)		33	33	81
Queuing Penalty (veh)		0	0	0
Storage Bay Dist (ft)	250			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 502

Intersection: 7: Providence Dr & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	108	457	472	125	180	280	279	47	94	78	104	224
Average Queue (ft)	31	352	366	42	86	132	128	15	39	15	43	172
95th Queue (ft)	81	493	498	130	146	239	230	38	84	50	90	243
Link Distance (ft)		445	445			1774	1774			301		
Upstream Blk Time (%)		2	2									
Queuing Penalty (veh)		13	19									
Storage Bay Dist (ft)	100			100	230			230	160		160	200
Storage Blk Time (%)	0	27	29	0		1	1					11
Queuing Penalty (veh)	2	7	26	0		1	0					12

Intersection: 7: Providence Dr & OR 99W

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	364	112
Average Queue (ft)	78	27
95th Queue (ft)	277	70
Link Distance (ft)	385	
Upstream Blk Time (%)	2	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		200
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 7: Providence Dr/Crestview Dr & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	124	260	258	125	255	1066	1064	255	180	212	156	224
Average Queue (ft)	85	101	90	9	112	702	700	140	114	38	66	159
95th Queue (ft)	137	212	196	52	244	1277	1260	328	185	127	123	244
Link Distance (ft)		446	446			1774	1774			300		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	100			100	230			230	160		160	200
Storage Blk Time (%)	25	6	5	0	0	26	26	0	5		0	10
Queuing Penalty (veh)	160	5	2	0	0	22	43	1	9		0	6

Intersection: 7: Providence Dr/Crestview Dr & OR 99W

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	319	83
Average Queue (ft)	51	27
95th Queue (ft)	220	68
Link Distance (ft)	300	
Upstream Blk Time (%)	2	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		200
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 7: Providence Dr & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	124	470	484	125	238	355	355	142	107	61	96	225
Average Queue (ft)	67	366	379	42	94	161	160	20	37	18	40	176
95th Queue (ft)	125	520	523	129	185	281	286	72	81	48	79	244
Link Distance (ft)		445	445			1774	1774			301		
Upstream Blk Time (%)		4	4									
Queuing Penalty (veh)		29	35									
Storage Bay Dist (ft)	100			100	230			230	160		160	200
Storage Blk Time (%)	6	29	30	0		2	2	0				10
Queuing Penalty (veh)	51	20	27	0		2	2	0				13

Intersection: 7: Providence Dr & OR 99W

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	368	116
Average Queue (ft)	94	35
95th Queue (ft)	301	80
Link Distance (ft)	385	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		200
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 7: Providence Dr/Crestview Dr & OR 99W

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	125	429	442	87	255	1332	1331	255	178	192	159	224
Average Queue (ft)	113	214	185	10	104	1018	1024	161	104	42	70	177
95th Queue (ft)	143	417	408	58	240	1384	1391	344	178	125	133	257
Link Distance (ft)		446	446			1774	1774			300		
Upstream Blk Time (%)		2	2							0		
Queuing Penalty (veh)		10	10							0		
Storage Bay Dist (ft)	100			100	230			230	160		160	200
Storage Blk Time (%)	50	8	13	0	0	34	34	0	4		0	17
Queuing Penalty (veh)	315	12	5	0	0	30	70	1	7		1	23

Intersection: 7: Providence Dr/Crestview Dr & OR 99W

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	321	177
Average Queue (ft)	83	68
95th Queue (ft)	281	140
Link Distance (ft)	300	
Upstream Blk Time (%)	4	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		200
Storage Blk Time (%)	0	0
Queuing Penalty (veh)	0	0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1795	55	67	1115	39	64
v/c Ratio	0.74	0.05	0.44	0.41	0.31	0.37
Control Delay	17.7	3.0	59.7	2.6	58.1	18.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	3.0	59.7	2.6	58.1	18.4
Queue Length 50th (ft)	770	7	50	77	29	0
Queue Length 95th (ft)	852	m11	94	121	64	43
Internal Link Dist (ft)	441			1753	284	
Turn Bay Length (ft)		100	230			160
Base Capacity (vph)	2412	1116	208	2735	271	303
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.05	0.32	0.41	0.14	0.21

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1334	23	78	1921	103	107
v/c Ratio	0.61	0.02	0.52	0.71	0.59	0.42
Control Delay	11.1	6.6	71.8	7.5	72.2	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	6.6	71.8	7.5	72.2	14.6
Queue Length 50th (ft)	196	3	69	312	91	0
Queue Length 95th (ft)	239	m5	121	486	148	55
Internal Link Dist (ft)	442			1753	284	
Turn Bay Length (ft)		100	230			160
Base Capacity (vph)	2203	1026	241	2693	353	402
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.02	0.32	0.71	0.29	0.27

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

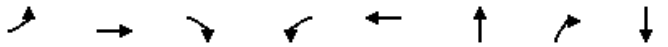
Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	1	1670	98	109	1183	55	77	248
v/c Ratio	0.01	0.92	0.11	0.91	0.57	0.18	0.19	0.91
Control Delay	55.0	44.4	10.2	116.3	12.7	37.2	8.0	79.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.0	44.4	10.2	116.3	12.7	37.2	8.0	79.7
Queue Length 50th (ft)	1	612	29	~94	227	34	0	184
Queue Length 95th (ft)	m0	#772	m50	#214	377	70	35	#334
Internal Link Dist (ft)		441			1753	284		365
Turn Bay Length (ft)	100		100	230			160	
Base Capacity (vph)	71	1807	862	120	2083	326	427	288
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.92	0.11	0.91	0.57	0.17	0.18	0.86

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	6	1229	40	91	2036	162	148	189
v/c Ratio	0.10	0.66	0.04	0.61	0.89	0.57	0.34	1.07
Control Delay	73.7	9.6	0.1	79.0	23.5	58.1	9.0	138.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.7	9.6	0.1	79.0	23.5	58.1	9.0	138.1
Queue Length 50th (ft)	6	139	0	80	664	133	0	~189
Queue Length 95th (ft)	m11	159	m0	141	#1126	213	58	#350
Internal Link Dist (ft)		442			1753	284		281
Turn Bay Length (ft)	100		100	230			160	
Base Capacity (vph)	59	1871	908	166	2276	285	431	177
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.66	0.04	0.55	0.89	0.57	0.34	1.07

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
7: Providence Dr & OR 99W

08/16/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	27	1670	98	109	1108	84	46	14	77	259	32	79
v/c Ratio	0.32	0.92	0.11	0.87	0.56	0.09	0.16	0.04	0.19	0.90	0.08	0.20
Control Delay	56.5	44.6	10.2	107.9	15.4	2.6	37.0	34.5	8.0	76.6	35.4	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.5	44.6	10.2	107.9	15.4	2.6	37.0	34.5	8.0	76.6	35.4	8.4
Queue Length 50th (ft)	19	613	28	~94	282	0	28	8	0	191	19	0
Queue Length 95th (ft)	m30	#772	m47	#214	350	22	61	26	35	#338	46	37
Internal Link Dist (ft)		441			1753			284			365	
Turn Bay Length (ft)	100		100	230		230	160		160	200		200
Base Capacity (vph)	85	1807	862	125	1976	914	308	410	427	308	412	412
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.92	0.11	0.87	0.56	0.09	0.15	0.03	0.18	0.84	0.08	0.19

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
7: Providence Dr/Crestview Dr & OR 99W

08/16/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	93	1229	40	91	1887	178	144	37	148	202	14	51
v/c Ratio	0.77	0.63	0.04	0.62	0.92	0.19	0.59	0.11	0.37	0.85	0.04	0.14
Control Delay	107.5	3.9	0.1	79.3	32.3	4.1	61.4	45.9	9.4	84.1	44.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.5	3.9	0.1	79.3	32.3	4.1	61.4	45.9	9.4	84.1	44.5	0.8
Queue Length 50th (ft)	90	58	0	80	771	18	118	28	0	175	10	0
Queue Length 95th (ft)	m#167	77	m0	141	#920	49	192	60	58	#294	30	0
Internal Link Dist (ft)		442			1753			284			281	
Turn Bay Length (ft)	100		100	230		230	160		160	200		200
Base Capacity (vph)	121	1947	941	165	2045	953	273	362	430	266	364	391
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.63	0.04	0.55	0.92	0.19	0.53	0.10	0.34	0.76	0.04	0.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

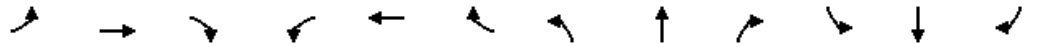
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	76	1670	98	109	1108	100	46	26	77	267	38	105
v/c Ratio	0.53	0.93	0.12	0.90	0.62	0.12	0.16	0.07	0.19	0.91	0.10	0.25
Control Delay	55.0	45.8	10.7	115.5	21.0	3.1	36.5	34.7	8.8	77.7	35.1	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.0	45.8	10.7	115.5	21.0	3.1	36.5	34.7	8.8	77.7	35.1	8.2
Queue Length 50th (ft)	52	655	28	~94	322	0	28	15	0	198	23	0
Queue Length 95th (ft)	m76	#820	m50	#214	401	27	60	39	38	#351	52	44
Internal Link Dist (ft)		441			1753			284			365	
Turn Bay Length (ft)	100		100	230		230	160		160	200		200
Base Capacity (vph)	160	1794	850	121	1776	838	311	417	429	310	419	434
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.93	0.12	0.90	0.62	0.12	0.15	0.06	0.18	0.86	0.09	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	145	1209	40	91	1856	219	144	45	148	236	22	126
v/c Ratio	0.94	0.64	0.04	0.62	0.96	0.24	0.55	0.13	0.35	0.93	0.06	0.32
Control Delay	127.2	3.8	0.1	79.3	40.6	5.3	58.3	45.7	9.1	93.9	44.5	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.2	3.8	0.1	79.3	40.6	5.3	58.3	45.7	9.1	93.9	44.5	9.5
Queue Length 50th (ft)	~144	55	0	80	804	28	117	33	0	211	16	0
Queue Length 95th (ft)	m#252	74	m0	141	#1023	66	192	70	58	#369	41	55
Internal Link Dist (ft)		442			1753			284			281	
Turn Bay Length (ft)	100		100	230		230	160		160	200		200
Base Capacity (vph)	154	1898	905	165	1930	914	271	362	430	265	364	408
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.64	0.04	0.55	0.96	0.24	0.53	0.12	0.34	0.89	0.06	0.31

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	1	1849	98	109	1296	55	77	248
v/c Ratio	0.01	1.02	0.11	0.91	0.62	0.18	0.19	0.91
Control Delay	60.0	62.1	10.2	116.3	13.8	37.2	8.0	79.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	62.1	10.2	116.3	13.8	37.2	8.0	79.7
Queue Length 50th (ft)	1	~817	25	~94	266	34	0	184
Queue Length 95th (ft)	m0	#930	m44	#214	438	70	35	#334
Internal Link Dist (ft)		441			1753	284		365
Turn Bay Length (ft)	100		100	230			160	
Base Capacity (vph)	71	1807	862	120	2084	326	427	288
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	1.02	0.11	0.91	0.62	0.17	0.18	0.86

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	1363	40	91	2229	162	148	189
v/c Ratio	0.73	0.04	0.61	0.96	0.57	0.35	1.07
Control Delay	10.1	0.1	79.0	29.2	58.1	10.2	138.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.1	0.1	79.0	29.2	58.1	10.2	138.1
Queue Length 50th (ft)	147	0	80	868	133	4	~189
Queue Length 95th (ft)	181	m0	141	#1122	213	63	#350
Internal Link Dist (ft)	442			1753	284		281
Turn Bay Length (ft)		100	230			160	
Base Capacity (vph)	1871	908	166	2328	285	426	177
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.04	0.55	0.96	0.57	0.35	1.07

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
7: Providence Dr & OR 99W

08/16/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	27	1849	98	109	1221	84	46	14	77	259	32	79
v/c Ratio	0.32	1.02	0.11	0.87	0.62	0.09	0.16	0.04	0.19	0.90	0.08	0.20
Control Delay	57.3	62.5	9.7	107.9	16.6	2.6	37.0	34.5	8.0	76.6	35.4	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.3	62.5	9.7	107.9	16.6	2.6	37.0	34.5	8.0	76.6	35.4	8.4
Queue Length 50th (ft)	19	~810	27	~94	328	0	28	8	0	191	19	0
Queue Length 95th (ft)	m31	#929	m47	#214	406	22	61	26	35	#338	46	37
Internal Link Dist (ft)		441			1753			284			365	
Turn Bay Length (ft)	100		100	230		230	160		160	200		200
Base Capacity (vph)	85	1807	862	125	1976	914	308	410	427	308	412	412
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	1.02	0.11	0.87	0.62	0.09	0.15	0.03	0.18	0.84	0.08	0.19

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	93	1363	40	91	2080	178	144	37	148	202	14	51
v/c Ratio	0.77	0.70	0.04	0.62	1.02	0.19	0.59	0.11	0.38	0.85	0.04	0.14
Control Delay	107.6	5.3	0.1	79.3	50.6	4.7	61.4	45.9	10.9	84.1	44.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.6	5.3	0.1	79.3	50.6	4.7	61.4	45.9	10.9	84.1	44.5	0.8
Queue Length 50th (ft)	90	85	0	80	~1062	22	118	28	5	175	10	0
Queue Length 95th (ft)	m#170	109	m0	141	#1195	53	192	60	64	#294	30	0
Internal Link Dist (ft)		442			1753			284			281	
Turn Bay Length (ft)	100		100	230		230	160		160	200		200
Base Capacity (vph)	121	1947	941	165	2045	949	273	362	424	266	364	391
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.70	0.04	0.55	1.02	0.19	0.53	0.10	0.35	0.76	0.04	0.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	76	1849	98	109	1221	100	46	26	77	267	38	105
v/c Ratio	0.53	1.03	0.12	0.90	0.69	0.12	0.16	0.07	0.19	0.91	0.10	0.25
Control Delay	56.5	65.0	10.3	115.5	22.7	3.2	36.5	34.7	8.8	77.7	35.1	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.5	65.0	10.3	115.5	22.7	3.2	36.5	34.7	8.8	77.7	35.1	8.2
Queue Length 50th (ft)	53	~790	27	~94	375	0	28	15	0	198	23	0
Queue Length 95th (ft)	m81	#973	m49	#214	465	27	60	39	38	#351	52	44
Internal Link Dist (ft)		441			1753			284			365	
Turn Bay Length (ft)	100		100	230		230	160		160	200		200
Base Capacity (vph)	160	1794	850	121	1776	837	311	417	429	310	419	434
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	1.03	0.12	0.90	0.69	0.12	0.15	0.06	0.18	0.86	0.09	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	145	1343	40	91	2049	219	144	45	148	236	22	126
v/c Ratio	0.94	0.71	0.04	0.62	1.06	0.24	0.55	0.13	0.35	0.93	0.06	0.32
Control Delay	128.1	5.5	0.1	79.3	67.7	5.9	58.3	45.7	9.1	93.9	44.5	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	128.1	5.5	0.1	79.3	67.7	5.9	58.3	45.7	9.1	93.9	44.5	9.5
Queue Length 50th (ft)	~144	84	0	80	~1077	33	117	33	0	211	16	0
Queue Length 95th (ft)	m#252	106	m0	141	#1212	73	192	70	58	#369	41	55
Internal Link Dist (ft)		442			1753			284			281	
Turn Bay Length (ft)	100		100	230		230	160		160	200		200
Base Capacity (vph)	154	1898	905	165	1930	909	271	362	430	265	364	408
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.71	0.04	0.55	1.06	0.24	0.53	0.12	0.34	0.89	0.06	0.31

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Appendix N
Phase II Sensitivity Analysis
Level of Service Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	1536	90	100	1019	92	42	24	71	246	35	97
Future Volume (vph)	70	1536	90	100	1019	92	42	24	71	246	35	97
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1607	3214	1480	1614	3135	1402	1590	1642	1465	1567	1650	1402
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.73	1.00	1.00	0.74	1.00	1.00
Satd. Flow (perm)	1607	3214	1480	1614	3135	1402	1226	1642	1465	1221	1650	1402
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	1670	98	109	1108	100	46	26	77	267	38	105
RTOR Reduction (vph)	0	0	24	0	0	44	0	0	58	0	0	80
Lane Group Flow (vph)	76	1670	74	109	1108	56	46	26	19	267	38	25
Heavy Vehicles (%)	5%	5%	2%	2%	8%	5%	3%	5%	0%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	9.2	67.0	67.0	9.0	66.8	66.8	29.0	29.0	29.0	29.0	29.0	29.0
Effective Green, g (s)	9.2	67.0	67.0	9.0	66.8	66.8	29.0	29.0	29.0	29.0	29.0	29.0
Actuated g/C Ratio	0.08	0.56	0.56	0.08	0.56	0.56	0.24	0.24	0.24	0.24	0.24	0.24
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	123	1794	826	121	1745	780	296	396	354	295	398	338
v/s Ratio Prot	0.05	c0.52		c0.07	0.35			0.02			0.02	
v/s Ratio Perm			0.05			0.04	0.04		0.01	c0.22		0.02
v/c Ratio	0.62	0.93	0.09	0.90	0.63	0.07	0.16	0.07	0.05	0.91	0.10	0.08
Uniform Delay, d1	53.7	24.4	12.3	55.1	18.2	12.3	35.9	35.1	34.9	44.2	35.3	35.1
Progression Factor	0.86	1.53	1.71	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.7	8.1	0.2	53.1	1.8	0.2	0.3	0.1	0.1	29.6	0.1	0.1
Delay (s)	53.8	45.5	21.2	108.1	20.0	12.5	36.2	35.2	35.0	73.7	35.5	35.3
Level of Service	D	D	C	F	C	B	D	D	D	E	D	D
Approach Delay (s)		44.5			26.7			35.4			60.3	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	39.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	KAI
Date Performed	10/21/2017
Analysis Year	2020
Time Analyzed	Total AM Phase II Sensitivity Analysis
Project Description	Crestview Crossing

Site Information

Intersection	Crestview/East-West Connector
E/W Street Name	East-West Connector
N/S Street Name	Crestview Dr
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.92
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	14	0	32	0	77	0	35	0	11	92	83	0	37	269	5
Percent Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0
Flow Rate (v_{PCE}), pc/h	0	15	0	35	0	84	0	38	0	12	105	90	0	40	307	5
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		50			122			207			352	
Entry Volume veh/h		50			122			202			337	
Circulating Flow (v_c), pc/h	431			132			55			96		
Exiting Flow (v_{ex}), pc/h	130			17			158			426		
Capacity (c_{pce}), pc/h		889			1206			1305			1251	
Capacity (c), veh/h		889			1206			1273			1199	
v/c Ratio (x)		0.06			0.10			0.16			0.28	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		4.6			3.8			4.2			5.6	
Lane LOS		A			A			A			A	
95% Queue, veh		0.2			0.3			0.6			1.2	
Approach Delay, s/veh	4.6			3.8			4.2			5.6		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	4.8						A					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	1262	38	86	1926	206	135	42	139	222	21	118
Future Volume (vph)	136	1262	38	86	1926	206	135	42	139	222	21	118
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1654	3184	1479	1646	3256	1444	1621	1690	1465	1614	1699	1444
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.74	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	1654	3184	1479	1646	3256	1444	1268	1690	1465	1236	1699	1444
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	145	1343	40	91	2049	219	144	45	148	236	22	126
RTOR Reduction (vph)	0	0	16	0	0	53	0	0	117	0	0	100
Lane Group Flow (vph)	145	1343	24	91	2049	166	144	45	31	236	22	26
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	6%	0%	0%	4%	2%	1%	2%	0%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	13.1	83.5	83.5	12.6	83.0	83.0	28.9	28.9	28.9	28.9	28.9	28.9
Effective Green, g (s)	13.1	83.5	83.5	12.6	83.0	83.0	28.9	28.9	28.9	28.9	28.9	28.9
Actuated g/C Ratio	0.09	0.60	0.60	0.09	0.59	0.59	0.21	0.21	0.21	0.21	0.21	0.21
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	154	1899	882	148	1930	856	261	348	302	255	350	298
v/s Ratio Prot	c0.09	0.42		0.06	c0.63			0.03			0.01	
v/s Ratio Perm			0.02			0.11	0.11		0.02	c0.19		0.02
v/c Ratio	0.94	0.71	0.03	0.61	1.06	0.19	0.55	0.13	0.10	0.93	0.06	0.09
Uniform Delay, d1	63.1	19.7	11.6	61.4	28.5	13.1	49.7	45.3	45.0	54.5	44.7	44.9
Progression Factor	1.27	0.18	0.03	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	48.9	1.8	0.0	8.4	39.1	0.5	3.1	0.2	0.2	37.0	0.1	0.2
Delay (s)	128.7	5.3	0.4	69.8	67.6	13.6	52.8	45.5	45.2	91.5	44.8	45.1
Level of Service	F	A	A	E	E	B	D	D	D	F	D	D
Approach Delay (s)		16.9			62.7			48.5			73.6	
Approach LOS		B			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	47.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	KAI
Date Performed	10/21/2017
Analysis Year	2020
Time Analyzed	Total PM Phase II Sensitivity Analysis
Project Description	Crestview Crossing

Site Information

Intersection	Crestview/East-West Connector
E/W Street Name	East-West Connector
N/S Street Name	Crestview Dr
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.94
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	6	10	14	0	142	10	39	0	29	210	145	0	43	205	12
Percent Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
Flow Rate (v_{PCE}), pc/h	0	6	11	15	0	151	11	41	0	31	228	154	0	46	222	13
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		32			203			413			281	
Entry Volume veh/h		32			203			409			277	
Circulating Flow (v_c), pc/h		419			265			63			193	
Exiting Flow (v_{ex}), pc/h		211			55			275			388	
Capacity (c_{pce}), pc/h		900			1053			1294			1133	
Capacity (c), veh/h		900			1053			1280			1116	
v/c Ratio (x)		0.04			0.19			0.32			0.25	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		4.3			5.2			5.7			5.5	
Lane LOS		A			A			A			A	
95% Queue, veh		0.1			0.7			1.4			1.0	
Approach Delay, s/veh	4.3			5.2			5.7			5.5		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	5.5						A					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	1701	90	100	1123	92	42	24	71	246	35	97
Future Volume (vph)	70	1701	90	100	1123	92	42	24	71	246	35	97
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1607	3214	1480	1614	3135	1402	1590	1642	1465	1567	1650	1402
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.73	1.00	1.00	0.74	1.00	1.00
Satd. Flow (perm)	1607	3214	1480	1614	3135	1402	1226	1642	1465	1221	1650	1402
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	1849	98	109	1221	100	46	26	77	267	38	105
RTOR Reduction (vph)	0	0	24	0	0	44	0	0	58	0	0	80
Lane Group Flow (vph)	76	1849	74	109	1221	56	46	26	19	267	38	25
Heavy Vehicles (%)	5%	5%	2%	2%	8%	5%	3%	5%	0%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	9.2	67.0	67.0	9.0	66.8	66.8	29.0	29.0	29.0	29.0	29.0	29.0
Effective Green, g (s)	9.2	67.0	67.0	9.0	66.8	66.8	29.0	29.0	29.0	29.0	29.0	29.0
Actuated g/C Ratio	0.08	0.56	0.56	0.08	0.56	0.56	0.24	0.24	0.24	0.24	0.24	0.24
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	123	1794	826	121	1745	780	296	396	354	295	398	338
v/s Ratio Prot	0.05	c0.58		c0.07	0.39			0.02			0.02	
v/s Ratio Perm			0.05			0.04	0.04		0.01	c0.22		0.02
v/c Ratio	0.62	1.03	0.09	0.90	0.70	0.07	0.16	0.07	0.05	0.91	0.10	0.08
Uniform Delay, d1	53.7	26.5	12.3	55.1	19.3	12.3	35.9	35.1	34.9	44.2	35.3	35.1
Progression Factor	0.87	1.46	1.64	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.3	27.5	0.2	53.1	2.4	0.2	0.3	0.1	0.1	29.6	0.1	0.1
Delay (s)	55.1	66.1	20.4	108.1	21.7	12.5	36.2	35.2	35.0	73.7	35.5	35.3
Level of Service	E	E	C	F	C	B	D	D	D	E	D	D
Approach Delay (s)		63.4			27.6			35.4			60.3	
Approach LOS		E			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	49.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	KAI
Date Performed	10/21/2017
Analysis Year	2025
Time Analyzed	Total AM Phase II Sensitivity Analysis
Project Description	Crestview Crossing

Site Information

Intersection	Crestview/East-West Connector
E/W Street Name	East-West Connector
N/S Street Name	Crestview Dr
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.92
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	14	0	32	0	77	0	35	0	11	92	83	0	37	269	5
Percent Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0
Flow Rate (v_{PCE}), pc/h	0	15	0	35	0	84	0	38	0	12	105	90	0	40	307	5
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		50			122			207			352	
Entry Volume veh/h		50			122			202			337	
Circulating Flow (v_c), pc/h	431			132			55			96		
Exiting Flow (v_{ex}), pc/h	130			17			158			426		
Capacity (c_{pce}), pc/h		889			1206			1305			1251	
Capacity (c), veh/h		889			1206			1273			1199	
v/c Ratio (x)		0.06			0.10			0.16			0.28	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		4.6			3.8			4.2			5.6	
Lane LOS		A			A			A			A	
95% Queue, veh		0.2			0.3			0.6			1.2	
Approach Delay, s/veh	4.6			3.8			4.2			5.6		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	4.8						A					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	1262	38	86	1926	206	135	42	139	222	21	118
Future Volume (vph)	136	1262	38	86	1926	206	135	42	139	222	21	118
Ideal Flow (vphpl)	1750	1750	1750	1750	1800	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			3%			2%	
Total Lost time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1654	3184	1479	1646	3256	1444	1621	1690	1465	1614	1699	1444
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.74	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	1654	3184	1479	1646	3256	1444	1268	1690	1465	1236	1699	1444
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	145	1343	40	91	2049	219	144	45	148	236	22	126
RTOR Reduction (vph)	0	0	16	0	0	53	0	0	117	0	0	100
Lane Group Flow (vph)	145	1343	24	91	2049	166	144	45	31	236	22	26
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	6%	0%	0%	4%	2%	1%	2%	0%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	13.1	83.5	83.5	12.6	83.0	83.0	28.9	28.9	28.9	28.9	28.9	28.9
Effective Green, g (s)	13.1	83.5	83.5	12.6	83.0	83.0	28.9	28.9	28.9	28.9	28.9	28.9
Actuated g/C Ratio	0.09	0.60	0.60	0.09	0.59	0.59	0.21	0.21	0.21	0.21	0.21	0.21
Clearance Time (s)	6.0	6.0	6.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	4.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	154	1899	882	148	1930	856	261	348	302	255	350	298
v/s Ratio Prot	c0.09	0.42		0.06	c0.63			0.03			0.01	
v/s Ratio Perm			0.02			0.11	0.11		0.02	c0.19		0.02
v/c Ratio	0.94	0.71	0.03	0.61	1.06	0.19	0.55	0.13	0.10	0.93	0.06	0.09
Uniform Delay, d1	63.1	19.7	11.6	61.4	28.5	13.1	49.7	45.3	45.0	54.5	44.7	44.9
Progression Factor	1.27	0.18	0.03	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	48.9	1.8	0.0	8.4	39.1	0.5	3.1	0.2	0.2	37.0	0.1	0.2
Delay (s)	128.7	5.3	0.4	69.8	67.6	13.6	52.8	45.5	45.2	91.5	44.8	45.1
Level of Service	F	A	A	E	E	B	D	D	D	F	D	D
Approach Delay (s)		16.9			62.7			48.5			73.6	
Approach LOS		B			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	47.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	KAI
Date Performed	10/21/2017
Analysis Year	2025
Time Analyzed	Total PM Phase II Sensitivity Analysis
Project Description	Crestview Crossing

Site Information

Intersection	Crestview/East-West Connector
E/W Street Name	East-West Connector
N/S Street Name	Crestview Dr
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.94
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	6	10	14	0	142	10	39	0	29	210	145	0	43	205	12
Percent Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
Flow Rate (v_{PCE}), pc/h	0	6	11	15	0	151	11	41	0	31	228	154	0	46	222	13
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway (s)		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		32			203			413			281	
Entry Volume veh/h		32			203			409			277	
Circulating Flow (v_c), pc/h		419			265			63			193	
Exiting Flow (v_{ex}), pc/h		211			55			275			388	
Capacity (c_{pce}), pc/h		900			1053			1294			1133	
Capacity (c), veh/h		900			1053			1280			1116	
v/c Ratio (x)		0.04			0.19			0.32			0.25	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		4.3			5.2			5.7			5.5	
Lane LOS		A			A			A			A	
95% Queue, veh		0.1			0.7			1.4			1.0	
Approach Delay, s/veh	4.3			5.2			5.7			5.5		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	5.5						A					

KITTELSON & ASSOCIATES
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MEMORANDUM - DRAFT

Date: August 14, 2018

Project #: 21709

To: Jesse Nemec
JT Smith Companies
5285 Meadows Road, Suite 171
Lake Oswego, OR 97035

From: Diego Arguea and Matt Hughart

Project: Crestview Crossing Development

Subject: 6-Party Agreement Transportation Considerations

Pursuant to your request, we have reviewed the *Crestview Improvement Project (From Robin Court to Highway 99W Alignment Exploration)* that was included as part of a six-party agreement (Yamhill County Board Order 06-265) prepared in April 2006. The purpose of this agreement was to begin the process to amend the 2005 Newberg Transportation System Plan (TSP) and reclassify the Crestview Drive extension from a Minor Arterial to a Major Collector designation.

The current development proposed by JT Smith Companies is required to construct a portion of the Crestview Improvement Project, connecting Highway 99W to the existing terminus of Crestview Drive at the southern boundary of the Oxberg Lake and MeadowWood subdivisions.

EXECUTIVE SUMMARY

Our assessment of the six-party agreement (Agreement) concludes that the proposed Crestview Drive alignment, intersection treatments, and cross-sectional elements are consistent with the guiding principles established in the Agreement, and as such, provides functionally equivalent transportation infrastructure as that identified in the Agreement. Additional details are provided herein.

SIX-PARTY AGREEMENT BACKGROUND

In April 2006, the Yamhill County Board of Commissioners accepted an agreement to begin the amendment of the then-current 2005 TSP. The agreement's purpose was to authorize the City to conduct an amendment to the 2005 TSP that would designate Crestview Drive as a Major Collector roadway and identify a general design and alignment of the Crestview Drive extension (Reference 1, Agreement, #3). A traffic study was prepared by JRH Engineering concluding the change in classification of Crestview Drive

to a Major Collector would not measurably affect the City's transportation network. The TSP was subsequently amended to reflect Crestview Drive as a Major Collector.

Conceptual Alignment

The alignment identified in the Agreement extends Robin Court to Highway 99W and includes one roundabout intersection (located approximately 390 feet from 99W) and one traffic calming circle located approximately 895 feet north of the roundabout location. As stated in the Agreement, this represents a *general design and alignment* to provide direction for future development. Site-specific characteristics, unforeseen challenges, and street connectivity and layout were not addressed in the Agreement, and turn lanes, if required, were to be determined at a later date. The general design and alignment shown in the Agreement Exhibit A is shown below in Figure 1.

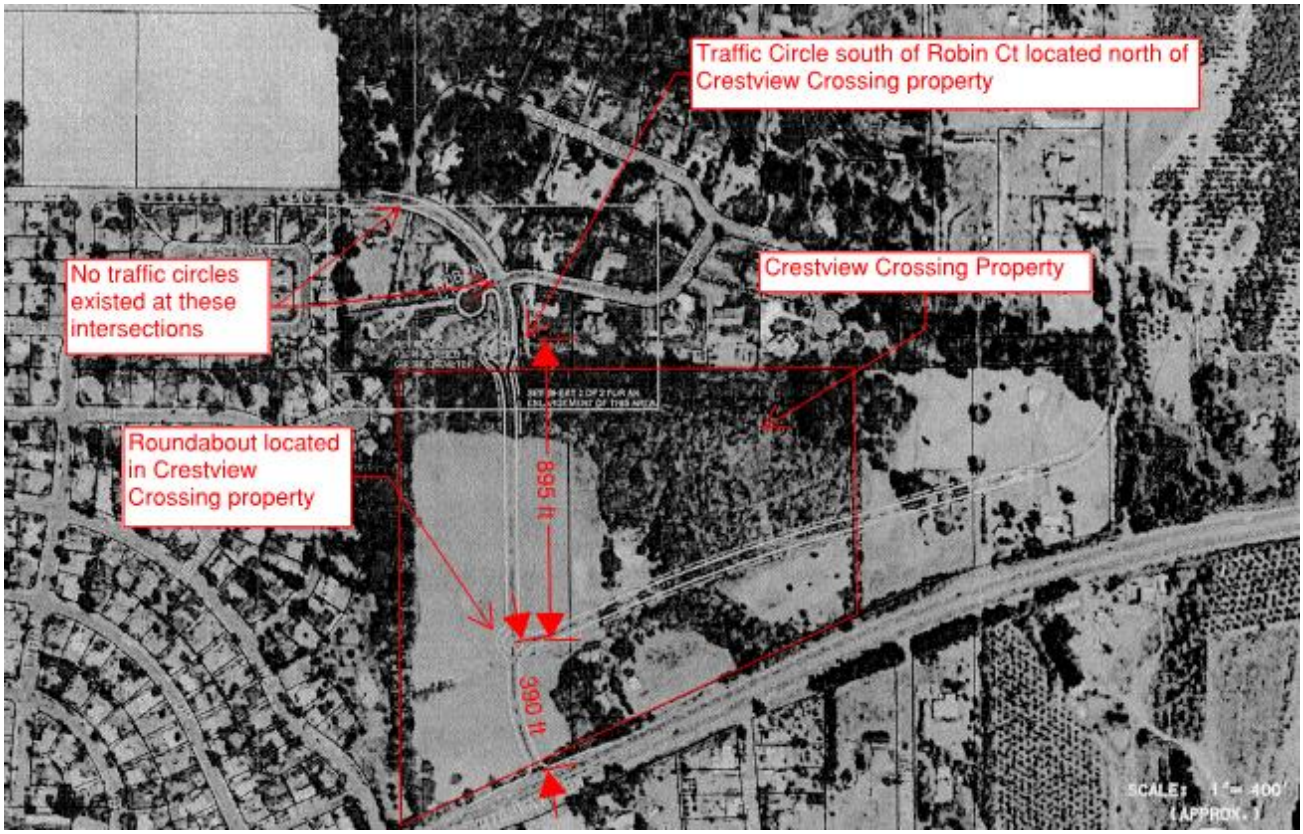


Figure 1. 6-Party Agreement Exhibit A

As shown above, the Agreement identifies a general alignment with two intersection treatments addressing intersection operations and traffic calming. As stated in the Agreement, the alignment should be *designed to encourage a 25 mph speed limit*.

PROPOSED DEVELOPMENT

The proposed residential application acknowledges responsibility to construct the extension of Crestview Drive, connecting from Robin Court to Highway 99W, and has developed an alignment consistent and in compliance with that shown in the 2006 Agreement.

Constructed To-Date

As shown in Figure 1, Crestview Drive, from Birdhaven Loop to the northern edge of Crestview Crossing, was reconstructed in 2011/2012 to include two intersection traffic calming traffic circles on Crestview Drive at Birdhaven Loop and Robin Court, depicted in Figure 2 below.

Figure 2. Traffic Calming Treatments along Crestview Drive

Neither of these traffic circles were identified in the Agreement. The traffic circles were constructed after the 2006 Agreement was adopted and are recognized to have a traffic calming effect to limit speeds to 25 mph.

PROPOSED ALIGNMENT

The June 2018 Crestview Crossing Traffic Impact Analysis (TIA) evaluated the impacts of the proposed development and identified recommended mitigation measures. The mitigation measures were selected considering anticipated traffic volumes along Crestview Drive and include the number and configuration travel lanes on the southbound approach to 99W, turn lane storage lengths, as well as transition tapers approaching the roundabout.

Roundabout Intersection

In accordance with the Agreement, construction of a roundabout is proposed to serve traffic into the residential areas north of Highway 99W, and connect to the future Benjamin Road Realignment (a Minor Collector). The roundabout location was determined based on the required queue storage length as an outcome of the TIA as well as roundabout design parameters, including entry deflection angles and transition tapers. As shown in Crestview Crossing site plan application, the roundabout is located approximately 545 feet north of Highway 99W (measured from the center of roundabout to the stop bar at Highway 99W). A southbound left-turn lane on Crestview Drive approaching Highway 99W provides 250 feet of storage and requires at least 50 feet of transition. The northbound transition taper into the roundabout is approximately 200 feet, and has been designed to accommodate all turning movements including u-turns.

The Public Improvement Standards of the Newberg Development Code (Chapter 15.505) were also reviewed to ensure consistency with Collector Roadway spacing standards (400 feet for a Major Collector designation). As such, the location of the roundabout has been designed to comply with the Newberg Development Code and the 6-Party Agreement in the context of the projected traffic operations while recognizing site-specific design considerations and constraints.

Two-way Stop Controlled Intersection

To provide efficient connectivity to adjacent residential development, a two-way stop-controlled intersection (Public Street C) has been designed approximately 500 feet north of the proposed roundabout. The location of this intersection is influenced by intersection spacing on a Major Collector (greater than 400 feet minimum spacing requirement), location of wetlands (site constraints), meeting minimum intersection sight distance requirements, and ability to provide an east-west roadway serving the proposed large lot homes of the Development. The location of this intersection is approximately 410 feet south of Robin Court, the closest public street intersection to the north.

Additional Considerations

Consideration was given to the 6-Party Agreement and the spacing between traffic calming devices during the roadway and site design process. As shown in Figure 1, the conceptual spacing shown in the Agreement between the roundabout and traffic calming circle is approximately 895 feet. The proposed site layout and intersection design maintains similar distance between the proposed roundabout and the constructed traffic calming circle on Robin Court (approximately 910 feet). We conclude that the difference in spacing (15 feet) will not impact travel speeds and that the 25 mph roadway design speed is consistent with the 6-Party Agreement.

COMPLIANCE WITH 6-PARTY AGREEMENT

In summary, we conclude the proposed alignment and intersection treatments are consistent with and satisfy the terms of the 6-Party Agreement for the following reasons.

1. The purpose of the Agreement is to re-designate Crestview Drive from a Minor Arterial to a Major Collector designation. The re-designation was successfully incorporated into the City's Transportation System Plan based in part on the JRH traffic study.

2. The current Crestview Crossing development proposal acknowledges the Agreement and proposes a roadway extension design consistent with City Major Collector requirements as well as key Agreement elements.

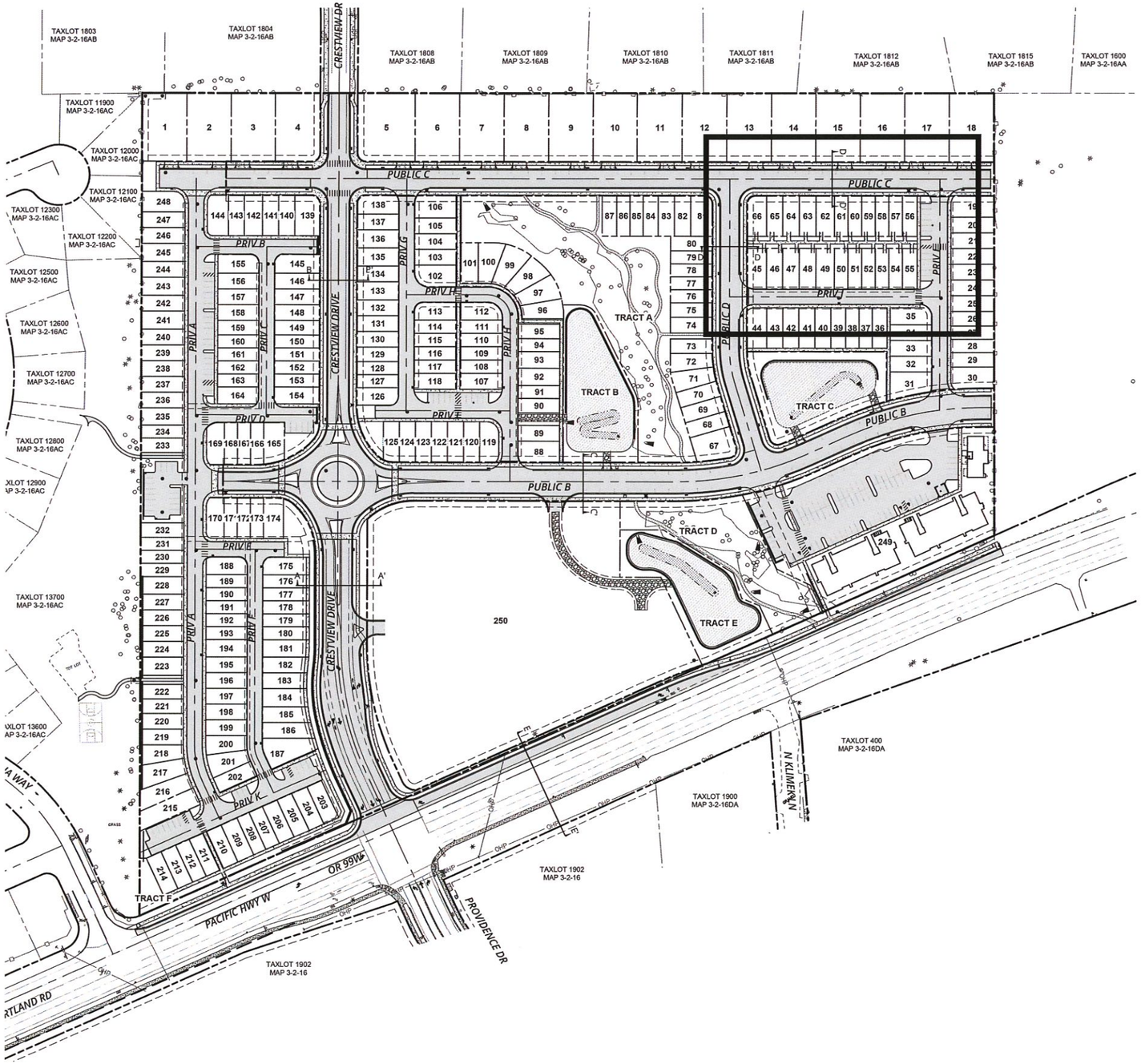
3. The spacing difference between the proposed roundabout and the recently constructed traffic calming circle at Robin Court is not expected to impact travel speeds on Crestview Drive extension and thus is consistent with the traffic calming south in the 6-Party Agreement.

4. With construction of the proposed roundabout, there will be a total of three traffic calming intersection treatments along Crestview Drive between Highway 99W and Birdhaven Loop. This is a greater amount of traffic calming than originally identified in the Agreement, indicating compliance in design and fulfillment of intent by the Applicant.

We trust this memorandum demonstrates compliance with the 6-Party Agreement.

REFERENCES

1. Yamhill County Board of Commissioners. *6-Party Agreement, Crestview Improvement Project (From Robin Court to Highway 99W Alignment Exploration).* Board Order #06-265. April 19, 2006.



PRELIMINARY PARKING COUNT:

APARTMENT PARKING:	91
PUBLIC STREET PARKING:	73
PRIVATE STREET PARKING:	85
17-FOOT FRONT LOAD PARKING:	48
17-FOOT REAR LOAD PARKING:	219
21-FOOT FRONT LOAD PARKING:	111
21-FOOT REAR LOAD PARKING:	268
25-FOOT FRONT LOAD PARKING:	52
25-FOOT REAR LOAD PARKING:	68
LARGE LOT PARKING:	72
TOTAL PARKING:	**1087**

CRESTVIEW CROSSING

PARKING EXHIBIT

3J CONSULTING
CIVIL ENGINEERING . WATER RESOURCES . LAND USE PLANNING

AUGUST 2018

BLUE MOUNTAIN
COMMUNITY MANAGEMENT
An Associa® Company

Crestview Crossing Homeowners Association

Reserve Study
2020

Prepared by
Blue Mountain Community Management
17933 NW Evergreen Place, Suite 200
Beaverton, OR 97006
503-332-2047

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Property Description

Crestview Crossing Homeowners Association (herein referred to as the "community") is a single family residential development located in Newberg, Yamhill County, Oregon. The **Crestview Crossing Homeowners Association** (herein referred to as the "Association") shall provide repair, replacement and maintenance on all property designated as common area by the adopted community plat, recorded in Yamhill County, Oregon.

This reserve study utilizes a mix of information provided by the developer, various construction estimating and scheduling manuals/programs, and information from the **Crestview Crossing Homeowners Association** board in order to derive the useful life and replacement cost of each common item.

Funds will be accumulated in the reserve account as required by Oregon State Law based on estimates of future need for repairs and replacement of common property components. Actual expenditures, income and provisions for income taxes may vary from estimated amounts and the variations may be significant and material. Therefore, amounts accumulated in the replacement fund may not be adequate to meet future funding expectations. Please update your reserve study on an annual basis in order to maintain the best possible estimates.

If additional funds are needed for any repair, replacement or maintenance to common area properties, the Association has the right to increase regular assessments or to levy special assessments or delay repairs or replacement until funds become available.

Reserve Study & Maintenance Plan Information Section

Blue Mountain Community Management was selected by the **Crestview Crossing Homeowners Association** to conduct a Reserve Study for implementation beginning January 1, 2020. The enclosed Reserve Study and Maintenance Plan were developed in accordance with guidelines established by the Community Associations Institute and are in compliance with Oregon State Law including changes made during the 2007 legislative session to ORS Revised State Statutes, Chapters 94 and 100.

Assumptions used for inflation, interest, and other factors are detailed in the *Reserve Study Summary*. All assumptions made herein are based upon information provided by the developer and an onsite inspection of those details. This Reserve Study offers no warranties or guarantees based upon those assumptions and observations and provides an annual baseline for funding and maintaining common elements throughout the community.

All information regarding the useful lives and costs of reserve components were derived by Blue Mountain Community Management and various construction pricing and scheduling manuals.

The terms RS Means and National Construction Estimator refer to construction industry estimating databases that are used throughout the industry to establish cost estimates and useful life estimates for common building components and products. In any case, when work is to be performed, the association should obtain firm bids for these services.

Blue Mountain Community Management is not aware of any material issues that if not disclosed would cause distortion of this report.

Certain information such as the beginning balance of reserve funds and other information as detailed on the component reports were provided by Association representatives and are deemed to be reliable by Blue Mountain Community Management. This Reserve Study is a reflection of the information provided to Blue Mountain Community Management and cannot be used for the purpose of performing an audit, quality analysis, or background check for historical records. Onsite inspections are not to be considered a project audit or quality inspection of Association property.

The two most pressing responsibilities for a homeowner association board are the annual preparation of a budget and the maintenance of a reserve fund for community components identified as “common” to all members of the association. The annual operating budget reflects the association’s annual commitment to quality and service, while the reserve budget reflects the association’s desire to maintain the community for a 30-year period at a level acceptable to all members of the association.

Reserve studies, while an important guiding document for the long-term health of the community, must be maintained on an annual basis in order to continue to reflect an association’s desire to remain at a particular level of maintenance and replacement. Blue Mountain Community Management suggests remembering the following:

1. Update your Reserve Study on an annual basis. Hire a professional to refresh your Reserve Study annually and make this commitment by including a line item in your annual budget for doing so. A Reserve Study is a “snapshot in time” and its assumptions, factors and results will become skewed without annual maintenance.

2. Reserve studies are not perfect. While a paved section of road may have a useful life of 24 years, it doesn’t necessarily mean it will be replaced in 24 years. Sometimes asphalt doesn’t adhere perfectly, or the contractor makes a mistake and the road needs to be replaced in 15 years. Occasionally, the road looks just fine in 24 years and does not need replacement. Remember, an estimate is based on the best knowledge available at the time of the study.

3. This Reserve Study and its parameters are based upon information provided by the declarant, the association members, board of directors and a host of contractors, vendors and construction estimation programs. It represents an amalgamation of the best information available and relies on the information provided by several outside sources.

4. It is assumed that all assets have been designed and constructed properly unless otherwise noted.

5. This Reserve Study is provided as an aid for planning purposes and not as an accounting tool. It describes events and occurrences that have not yet occurred and there is no assurance that the results outlined in the Reserve Study will occur as described.

Funding Methods

Reserve studies are a complicated mix of assumptions and estimates used to approximate the cost of renewal/replacement of capital and non-capital assets associated with a given community's common elements. The Reserve Study User's Guide has been developed to assist homeowners, board members and declarants better understand the Reserve Study and maintenance plan they purchased.

A Reserve Study is best described as an assessment of current assets, their approximate value and their future value at the time of replacement. A Reserve Study is typically requested by the developer of a specific parcel of land that has been subdivided for condominiums or residential units for the purpose of determining the initial value of common elements like privately owned parks, pathways, clubhouses etc. In some states, reserve studies and maintenance plans have become a legal requirement in order to develop a new community.

A Reserve Study has two primary functions:

1. Establish the initial funding goals for the association as they relate to common elements and

2. Select an appropriate funding plan for those goals.

The basis for funding of reserves is to distribute the cost of the replacement over the useful life of a particular component. The ideal level of reserves is proportionate to the expected life of a component and those costs. Therefore, if a particular component has a useful life of 20 years, the expectation would be that the individual reserve for that item is spread equally over 20 years:

(Age/Useful Life) x Current Replacement Cost = Full Funding of Reserves

Each year would equal $1/20^{th}$ of the useful life and the reserve should include $1/20^{th}$ of the value of the component over a 20-year period. If the fund meets this standard, then it is referred to as "fully funded."

Do not confuse "fully funded" with the concept that every Reserve Study has a 100% funding for all components at one time. A proper Reserve Study provides 100% funding based on expected life. If a given component fails or needs maintenance prior to its expected life cycle, the fund may become depleted or may incur a negative balance. Every Reserve Study is a "snapshot in time" based on accepted industry standards for life expectancy and costs.

There are four generally accepted funding plans from which most associations select:

1. **"Minimum Funding Method (Threshold)".** This funding method focuses on keeping the reserve fund's cash balance above zero. This means that while each component may not be fully funded, the cash balance overall does not drop below zero during the projected period. A large percentage of association's use this model because of its relative lower cost and simplicity, however an association must remember that if an item prematurely expires prior to its useful life calculation, a deficit may occur in the reserve cash balance.

2. **"Capped Minimum Funding Method (Threshold +)".** The same as the Minimum Funding model concept, however the fund balance never reaches below an arbitrarily set reserve cash balance. Instead of starting the fund with $0, an association or developer compels the prospective homeowner to contribute an amount at time of closing in order to ensure a cushion in the reserve balance. This method is typically used by Condominium Associations who need to give rise to a large amount of money early on in order to ensure proper capital maintenance and replacement of elements.

3. **"Current Assessment Funding Method".** Based on a cash flow funding model like the two previous methods, this model takes the current funding level of the reserve account and assumes that the amount will not change. The funding level is then projected over 30 years in order to illustrate the adequacy of current funding. This method is more regularly examined with long established associations with members who are sensitive to increased monthly dues.

4. **"Component Funding Method".** The simplest and most conservative method. It distributes cash reserves to individual reserve components and then calculates what the reserve assessment and interest contribution should be, again by each reserve component. The current annual assessment is then determined by adding all the individual component assessments together. This is the most conservative method and leads to a fully funded reserve position at all times.

This particular Reserve Study utilizes the "Minimum Funding Method (Threshold)" based on the association's annual cash flow. The annual balance of the fund will maintain more than $1,000 annually at any given period for the next 30 years based on the assumptions provided in the Funding Method Summary and the additional caveat that no component fails in total prior to its expected useful life.

Funding Options

In the event a component does fail prior to its expected useful life, an association has three primary options:

1. **Acquire a loan.** Lending institutions will often loan money to an association for capital improvements using the future assets of the association as collateral for the loan. Traditionally, an additional monthly assessment for the principal and interest of the loan would be assessed against each unit for the period specified by the lender.

2. **Institute a special assessment.** Some associations may not be able to secure a loan for a component that has failed unexpectedly. Typically, the association board then turns to a special assessment. The cost of the item in need of replacement is divided equally among the homeowners and assessed against their HOA dues. This may be done as a one-time payment or as a monthly assessment for a given period of time.

3. **Defer the required repair or replacement.** This option is most commonly used and is often abused. Because it is much simpler to ignore a problem, an association will defer repair or replacement in lieu of having future funds. This usually leads to more deferred repair and replacement until eventually the entire reserve schedule is woefully behind. This method should only be used in extreme cases. Please consider all options prior to selecting deferral.

Maintenance Plan 2020

Maintenance Plan Executive Summary

Regular maintenance of common elements is necessary to insure maximum useful life and optimum performance of components. Items of particular concern are those that represent a safety hazard to residents or guests if they are not maintained properly and components that provide waterproofing or protection from other elements.

This maintenance plan is a cyclical plan that calls for maintenance at regular intervals. The frequency of maintenance and cost of the activity initially will follow a short narrative description. Every maintenance plan should be reviewed and updated on an annual basis when preparing the annual operating budget for the Association.

Information herein is coordinated from a frequently updated source, Reed Construction Data, a reputable provider of construction cost data.

Pursuant to Oregon State Statutes, Sections 94 and 100—requiring a maintenance plan as an integral part of the reserve study, the following maintenance procedures are recommended:

Concrete—Maintenance Allowance
Total Maintenance Frequency: Inspect Annually

Concrete steps, common area sidewalks, the curbs on private streets shall be kept in good condition. Any cracks, damage, or displacement should be repaired. Periodic pressure washing of the concrete steps at Tract G.

Reserve Study 2020

Funding Method Summary

Report Statistics		Report Assumptions/ Parameters	
Report Date	July 20, 2018	**Inflation Factor**	3.30%
Account Number	CrstVwTerrRS1	**Annual Assessment Increase**	3.30%
Budget Year Beginning	January 1, 2020	**Interest Rate on Reserve Deposit**	0.50%
Budget Year Ending	December 31, 2020	**Tax Rate on Interest**	0.00%
Total Units	248	**Contingency**	0.00%

Funding Method Notes

- The purpose of this study is to ensure that adequate replacement funds are available when components reach the end of their useful life according to a variety of assumptions. Components will be replaced as required, not necessarily in their expected replacement year. This analysis should be updated annually.
- The following items were not included in the analysis because their useful life is greater than thirty years: sanitary sewer and storm drains, telephone, cable, internet lines, grading, all other unmentioned components with a useful life deemed greater than thirty years by industry standards.
- Two funding projections are provided. The *Threshold Method Projection* establishes a reserve funding goal that keeps the reserve balance above **$15,000**. The *Fully-Funded Projection* establishes a reserve funding goal that achieves a 100% fully-funded reserve balance by the end of the 30-year study period.

Contribution Rate Recommendation

Blue Mountain Community Management recommends that the Association adopt the contribution rates provided in the *Threshold Method Projection*.

Threshold Method Projection

This projection uses a "threshold funding" method, which establishes a reserve funding goal that keeps the reserve balance above a specified dollar or percent funded amount.

All – 248 Lots

The funding scenario for the 248 lots begins with a starting balance of **$0.00** and an annual contribution of **$16,425.00**. The annual contribution increases 3.3% each year for the remaining years of the study. A minimum balance of **$15,000** is maintained from throughout the life of the study.

Summary of Calculations – All Lots

Required Annual Contribution	$16,425.00
Required Monthly Contribution	$1,368.75
Unit Monthly Contribution	$5.52

Threshold Method Projection Chart – All Lots

Beginning Balance **$0.00**

Year	Current Cost	Annual Contribution	Annual Interest	Annual Expenditures	Target Ending Reserves
2020	$374,458	$16,425	$83	$0	$16,507
2021	$386,815	$16,967	$167	$0	$33,642
2022	$399,579	$17,527	$256	$0	$51,424
2023	$412,766	$18,105	$321	$5,291	$64,560
2024	$426,387	$18,703	$379	$7,401	$76,240
2025	$440,458	$19,320	$478	$0	$96,038
2026	$454,993	$19,958	$137	$88,579	$27,554
2027	$470,007	$20,616	$241	$0	$48,411
2028	$485,518	$21,296	$306	$8,428	$61,586
2029	$501,540	$21,999	$386	$6,429	$77,542
2030	$518,091	$22,725	$501	$0	$100,769
2031	$535,188	$23,475	$621	$0	$124,865
2032	$552,849	$24,250	$159	$117,226	$32,048
2033	$571,093	$25,050	$285	$0	$57,384
2034	$589,939	$25,877	$377	$7,877	$75,760
2035	$609,407	$26,731	$473	$7,812	$95,153
2036	$629,517	$27,613	$559	$10,927	$112,397
2037	$650,291	$28,524	$705	$0	$141,626
2038	$671,751	$29,465	$202	$130,778	$40,515
2039	$693,919	$30,438	$355	$0	$71,308
2040	$716,818	$31,442	$423	$18,186	$84,987
2041	$740,473	$32,480	$540	$9,492	$108,515
2042	$764,909	$33,552	$710	$0	$142,777
2043	$790,151	$34,659	$887	$0	$178,323
2044	$816,226	$35,802	$79	$198,358	$15,846
2045	$843,161	$36,984	$264	$0	$53,094
2046	$870,985	$38,204	$456	$0	$91,755
2047	$899,728	$39,465	$598	$11,533	$120,286
2048	$929,419	$40,768	$622	$36,610	$125,065
2049	$960,090	$42,113	$836	$0	$168,014

Component Summary by Category

Description	Replacement Year	Useful Life	Remaining Life	Current Cost
Grounds				
Asphalt - Repair, Patch & Seal	2026	6	6	$62,400
Asphalt - Overlay	2056	36	36	$218,400
Concrete Sidewalk Allowance	2040	20	20	$3,000
Fence - Chain Link	2055	35	35	$30,608
Fitness Stations	2044	24	24	$10,000
Benches	2048	28	28	$3,250
Irrigation Controller, System Allowance	2026	6	6	$5,700
Bollard Lights	2044	24	24	$1,600
Bark Mulch	2023	3	3	$4,800
Cedar Chips	2024	4	4	$2,000
Retaining Wall Allowance	2034	14	14	$2,500
Open Space/Tree Allowance	2024	4	4	$4,500
Monument & Sign Allowance	2034	14	14	$2,500
Mailboxes	2055	35	35	$23,200
Total Grounds				**$374,458**
Total Assets:				**$374,458**

Component Summary by Group

Description	Replacement Year	Useful Life	Remaining Life	Current Cost
Capital				
Asphalt - Overlay	2056	35	36	$218,400
Concrete Allowance	2040	20	20	$3,000
Fence - Chain Link	2055	35	35	$30,608
Fitness Stations	2044	24	24	$10,000
Benches	2048	28	28	$3,250
Irrigation Controller, System Allowance	2026	6	6	$5,700
Bollard Lights	2044	24	24	$1,600
Bark Mulch	2023	3	3	$4,800
Cedar Chips	2024	4	4	$2,000
Retaining Wall Allowance	2034	14	14	$2,500
Open Space/Tree Allowance	2024	4	4	$4,500
Monument & Sign Allowance	2034	14	14	$2,500
Mailboxes	2055	35	35	$23,200
Total Capital				**$312,058**
Non-Capital				
Asphalt - Repair, Patch & Seal	2026	6	6	$62,400
Total Non-Capital				**$62,400**
Total Assets:				**$374,458**

Annual Expenditure Detail

Description	Expenditure per Item	Expenditure per Year
No replacement in 2020 - 2022		
Replacement in 2023		**$5,291**
Bark Mulch	$5,291	
Replacement in 2024		**$7,401**
Cedar Chips	$2,277	
Open Space/Tree Allowance	$5,124	
No replacement in 2025		
Replacement in 2026		**$88,578**
Asphalt - Repair, Patch & Seal	$75,820	
Irrigation, Controller	$6,926	
Bark Mulch	$5,832	
No replacement in 2027		
Replacement in 2028		**$8,428**
Cedar Chips	$2,593	
Open Space/Tree Allowance	$5,835	
Replacement in 2029		**$6,429**
Bark Mulch	$6,429	
No replacement in 2030 - 2031		
Replacement in 2032		**$117,226**
Asphalt - Repair, Patch & Seal	$92,127	
Irrigation, Controller	$8,415	
Bark Mulch	$7,087	
Cedar Chips	$2,953	
Open Space/Tree Allowance	$6,644	
No replacement in 2033		
Replacement in 2034		**$7,878**
Retaining Wall Allowance	$3,939	
Monument & Sign Allowance	$3,939	
Replacement in 2035		**$7,812**
Bark Mulch	$7,812	
Replacement in 2036		**$10,927**
Cedar Chips	$3,362	
Open Space/Tree Allowance	$7,565	
No replacement in 2037		
Replacement in 2038		**$130,777**
Asphalt - Repair, Patch & Seal	$111,941	
Irrigation, Controller	$10,225	
Bark Mulch	$8,611	
No replacement in 2039		
Replacement in 2040		**$18,186**
Concrete Sidewalk Allowance	$5,743	
Cedar Chips	$3,829	
Open Space/Tree Allowance	$8,614	

Description	Expenditure per Item	Expenditure per Year
Replacement in 2041		**$9,492**
Bark Mulch	$9,492	
No replacement in 2042 - 2043		
Replacement in 2044		**$198,360**
Asphalt - Repair, Patch & Seal	$136,017	
Fitness Stations	$21,798	
Irrigation, Controller	$12,425	
Bollard Lights	$3,488	
Bark Mulch	$10,463	
Cedar Chips	$4,360	
Open Space/Tree Allowance	$9,809	
No replacement in 2045 - 2046		
Replacement in 2047		**$11,533**
Bark Mulch	$11,533	
Replacement in 2048		**$36,610**
Benches	$8,067	
Cedar Chips	$4,964	
Retaining Wall Allowance	$6,205	
Open Space/Tree Allowance	$11,169	
Monument Allowance	$6,205	
No replacement in 2049		
Total:	**$664,928**	**$664,928**

Detail Report by Category

Grounds

Asphalt Streets – Patch, Repair & Seal

Non-Capital: Grounds

Placed in Service:	2020	**Cost Basis:**	156,000 SF @ $0.40
Useful Life:	6 years	**Asset Cost:**	$62,400
Remaining Life:	6 years	**Percent Replacement:**	100%
Replacement Year:	2026	**Replacement Year Cost:**	$75,820

This component category provides funding for the periodic application of an asphalt emulsion sealer also known as “Slurry Seal” to all asphalt surfaces maintained by the HOA. The process includes pre-cleaning of all pavement, filling of any cracks or fissures in the pavement as well as the patching of isolated, damaged pavement surfaces, followed by the application of the emulsion sealer either by hand or mechanical means.

A licensed paving contractor should perform this work and all asphalt striping (if necessary) will need to be renewed when the seal coating is applied. The component expense estimate includes the cost of this work as well the seal coating cost.

Useful life assumptions are based on accepted industry estimates established by RS Means, and/or The National Construction Estimator. The Association should obtain a bid prior to commencing work. The estimated costs obtained ranged from $0.38 - $0.56 per square foot with replacement every 7-8 years.

Asphalt Streets – Overlay

Capital: Grounds

Placed in Service:	2020	**Cost Basis:**	156,000 SF @ $1.40
Useful Life:	36 years	**Asset Cost:**	$218,400
Remaining Life:	36 years	**Percent Replacement:**	100%
Replacement Year:	2056	**Replacement Year Cost:**	$680,399

This component category provides funding for the renewal/replacement of asphalt surfaces maintained by the HOA. Renewal/replacement of asphalt paving refers to the periodic application of bituminous asphalt overlay that is typically applied in continuous sections at a thickness of 1" to 2", depending on the individual project specifications. The overlay is designed to renew the life of the pavement for another life cycle of equal duration to the initial life expectancy of the pavement. The new surface is to be maintained in the same fashion as the original surface.

A licensed paving contractor should perform this work and all asphalt striping (if necessary) will need to be renewed when the overlay is applied. The component expense estimate includes the cost of this work as well as the overlay cost.

Useful life assumptions are based on accepted industry estimates established by RS Means, and/or The National Construction Estimator. The Association should obtain a bid prior to commencing work.

Concrete Allowance

Capital: Grounds

Placed in Service:	2020	**Cost Basis:**	1 @ $3,000
Useful Life:	20 years	**Current Cost:**	$3,000
Remaining Life:	20 years	**Percent Replacement:**	100%
Replacement Year:	2040	**Replacement Year Cost:**	$5,743

This component category provides the partial replacement and repair of common area concrete.

Because this item is outside the 30-year scope of this study, this item provides an allowance for periodic maintenance and repair every 20 years or as needed.

Fence – Chain Link

Capital: Grounds

Placed in Service:	2020	**Cost Basis:**	1,155 LF @ $26.50
Useful Life:	35 years	**Asset Cost:**	$30,608
Remaining Life:	35 years	**Percent Replacement:**	100%
Replacement Year:	2055	**Replacement Year Cost:**	$95,354

This component category provides for the replacement of the chain link fence bordering the water quality facilities in the community.

Fitness Stations

Capital: Grounds

Placed in Service:	2020	**Cost Basis:**	5 @ $2,000
Useful Life:	24 years	**Asset Cost:**	$10,000
Remaining Life:	24 years	**Percent Replacement:**	100%
Replacement Year:	2044	**Replacement Year Cost:**	$21,798

This component category provides funding for the replacement of the fitness stations in the community.

Benches

Capital: Grounds

Placed in Service:	2020	**Cost Basis:**	5 @ $650
Useful Life:	28 years	**Asset Cost:**	$3,250
Remaining Life:	28 years	**Percent Replacement:**	100%
Replacement Year:	2048	**Replacement Year Cost:**	$8,067

This component category provides funding for the replacement of the benches located along the cedar path in Tract A.

Irrigation Controller

Capital: Grounds

Placed in Service:	2020	**Cost Basis:**	6 @ $950
Useful Life:	6 years	**Asset Cost:**	$5,700
Remaining Life:	6 years	**Percent Replacement:**	100%
Replacement Year:	2026	**Replacement Year Cost:**	$6,926

This component category provides funding for the replacement of the irrigation controller and system in the common areas.

Bollard Lights

Capital: Grounds

Placed in Service:	2020	**Cost Basis:**	2 @ $800
Useful Life:	24 years	**Asset Cost:**	$1,600
Remaining Life:	24 years	**Percent Replacement:**	100%
Replacement Year:	2044	**Replacement Year Cost:**	$3,488

This component category provides funding for the replenishment of the bollard style lights in the park.

Bark Mulch

Capital: Grounds

Placed in Service:	2020	**Cost Basis:**	10 @ $480
Useful Life:	3 years	**Asset Cost:**	$4,800
Remaining Life:	3 years	**Percent Replacement:**	100%
Replacement Year:	2023	**Replacement Year Cost:**	$5,291

This component category provides funding for the replenishment of the bark mulch throughout the community.

Cedar Chips

Capital: Grounds

Placed in Service:	2020	**Cost Basis:**	4 @ $500
Useful Life:	4 years	**Asset Cost:**	$2,000
Remaining Life:	4 years	**Percent Replacement:**	100%
Replacement Year:	2024	**Replacement Year Cost:**	$2,277

This component category provides funding for the replenishment of the cedar chip path in Tract A.

Retaining Wall Allowance

Capital: Grounds

Placed in Service:	2020	**Cost Basis:**	1 @ $2,500
Useful Life:	14 years	**Asset Cost:**	$2,500
Remaining Life:	14 years	**Percent Replacement:**	100%
Replacement Year:	2034	**Replacement Year Cost:**	$3,939

This component category provides funding for the maintenance of the retaining wall.

Open Space/Tree Allowance

Capital: Grounds

Placed in Service:	2020	**Cost Basis:**	1 @ $4,500
Useful Life:	4 years	**Asset Cost:**	$4,500
Remaining Life:	4 years	**Percent Replacement:**	100%
Replacement Year:	2024	**Replacement Year Cost:**	$5,124

This component category provides funding to upkeep the open space areas in Tracts A, B, C, & D.

Monument & Sign Allowance

Capital: Grounds

Placed in Service:	2020	**Cost Basis:**	1 @ $2,500
Useful Life:	14 years	**Asset Cost:**	$2,500
Remaining Life:	14 years	**Percent Replacement:**	100%
Replacement Year:	2034	**Replacement Year Cost:**	$3,939

This component category provides funding for the maintenance, partial replacement, of the monument at the entrance to the community.

Mailboxes

Capital: Grounds

Placed in Service:	2020	**Cost Basis:**	16 @ $1,450
Useful Life:	35 years	**Asset Cost:**	$23,200
Remaining Life:	35 years	**Percent Replacement:**	100%
Replacement Year:	2055	**Replacement Year Cost:**	$72,277

This component category provides funding for the replacement of the mailbox clusters in the Association. It is anticipated that the life of the mailboxes will be 30-40 years.

Grounds—Total Current Cost: $374,458

AFTER RECORDING RETURN COPY TO:

JORDAN RAMIS, PC
2 CENTERPOINTE DR, 6TH FLOOR
LAKE OSWEGO, OR 97035
ATTN: JAMES D. HOWSLEY

DRAFT

SPACE ABOVE THIS LINE FOR RECORDER'S USE

DECLARATION OF PRIVATE STREET MAINTENANCE COVENANT AND AGREEMENT

RECITALS

WHEREAS, CG Commercial, LLC, a Delaware limited liability company and VPCF Crestview, LLC, a Delaware limited liability company ("Declarants") are the owners of the real property described in Exhibit A and depicted on Exhibit B attached hereto and incorporated by this reference (the "Private Street Tracts").

WHEREAS, a Private Street Maintenance Covenant and Agreement ("Agreement") is required pursuant to the City of Newberg Final Decision dated _____, 2018 approving the Crestview Crossing Subdivision ("Subdivision") including the Private Street Tracts.

WHEREAS, the Subdivision plat will be recorded to create the Private Street Tracts.

WHEREAS, the Crestview Crossing Homeowners Association ("Association") has been created to own, administer and maintain the Private Street Tracts, among other purposes.

AGREEMENT

NOW, THEREFORE, Declarants covenant and agree on behalf of Declarants and their successors, including the Association, that the following provisions shall constitute a covenant running with the Private Street Tracts, as more particularly described herein.

1. PURPOSE OF COVENANT AND AGREEMENT.

The purpose of this Agreement is to provide for the perpetual maintenance of the Private Street Tracts by the Association.

2. LEGAL DESCRIPTION.

The legal description of the Private Street Tracts is on Exhibit A and depicted on Exhibit

B.

3. DURATION AND NATURE OF AGREEMENT.

This Agreement shall continue in perpetuity. This Agreement is intended to and does attach to and run with the land affected herein. This Agreement is binding on the Declarant, and its successors, heirs and assigns. It is the intent of Declarants to create a continuing obligation and right of the Association as the future owner of the Private Street Tracts.

4. CONSTRUCTION OF IMPROVEMENTS.

Declarants shall design and construct the street improvements to the specifications established by the City of Newberg, at Declarants' expense.

5. OWNERSHIP.

When Declarants have conveyed a sufficient number of the lots in the Subdivision to others, it will convey ownership of the Private Street Tracts to the Association and Declarants' obligations shall terminate.

6. MAINTENANCE.

The Declarants shall maintain the Private Street Tracts through a one-year warranty period expiring on _____, 2019. Once the warranty period is complete, the Association shall maintain all improvements including asphalt pavement, concrete curbs, fire lane restriction signage and striping, to the satisfaction of the City of Newberg and/or the Fire Marshal. The Association shall ensure that no lot owner, guest, invitee, licensee, contractor, vendor or agent of an owner shall cause damage, or place upon or over the Private Street Tracts any improvement, planting or other materials which would interfere with the maintenance or operation of the Private Street Tracts.

At the direction of the Association, the Private Street Tracts shall be inspected by a licensed Civil Engineer, at no less than 5 year intervals to identify needed maintenance. The Civil Engineer will recommend the amount of maintenance needed, and the recommendations shall be considered, mutually agreed and acted on by Association.

Maintenance shall include, but not be limited to:

a. The removal of leaves, trash or other unsightly or dangerous materials;
b. The removal of diseased or dead trees, landscaping or natural vegetation and the replanting of replacement materials.
c. The trimming of trees and vegetation.
d. The removal and replacement of any broken pavement.

e. The sealing of and/or the eventual repaving of the pavement, in a useable condition and in good repair.
f. The repair and/or replacement of damaged or missing fire lane restriction parking signs (as applicable) to the satisfaction of the Fire Marshal.
g. The re-painting of any and all fire lane restriction striping, including any stenciled lettering to the satisfaction of the Fire Marshal.

7. INDEMNIFICATION.

The Association shall hold harmless, defend and indemnify the Declarants, the City of Newberg and the Fire Marshal and their officers, agents and employees against all claims, demands, actions and suits, including attorneys' fees and costs brought against any of them arising out of the failure to properly design, locate, construct or maintain the Private Street Tracts which are subject to this Agreement.

All workers undertaking maintenance work within the Private Street Tracts shall have standard liability insurance in a reasonable amount from a reputable insurance company which protects the Association.

8. NOTICE.

Any notice, demand, or report required under this Agreement shall be sent to the owner of the Private Street Tracts. Any required notice of demand shall be made by hand delivery or certified mail, and shall be deemed received on actual receipt or 48 hours after being mailed whichever first occurs.

9. AMENDMENT AND TERMINATION.

The owner(s) of the Private Street Tracts may not amend, withdraw from or dissolve this Agreement without the written approval of the City of Newberg, and any such instrument shall be recorded in the deed records of Yamhill County.

10. NO DEDICATION AS PUBLIC RIGHT-OF-WAY.

Nothing in this Agreement shall be interpreted to mean the Private Street Tracts are or will be dedicated to the City of Newberg, the public, or other public agency for right-of-way purposes.

IN WITNESS WHEREOF, the Declarants have executed this Private Street Maintenance Covenant and Agreement to be effective on _____2018.

Signatures and acknowledgments are on the following page.

DECLARANTS

CG Commercial, LLC, a Delaware limited liability company LLC

By: _____

Title: _____

STATE OF OREGON
County of Clackamas

The above instrument was subscribed and sworn to before me this _____day of _____.

By _____

As _____ of _____.

_____
Notary Public – State of Oregon
My commission expires:_____

VPCF Crestview, LLC, a Delaware limited liability company

By: _____

Title: _____

STATE OF OREGON
County of Clackamas

The above instrument was subscribed and sworn to before me this _____day of _____.

By _____

As _____ of _____.

Approved as to form

DRAFT

_____

Joe Hannon
City Manager, City of Newberg

Exhibit A
Legal Description

Parcels of land in the northeast quarter of Section 16, Township 3 South, Range 2 West, Willamette Meridian, in the City of Newberg, Yamhill County, Oregon, more particulary described as follows.

Tracts F, G and H on the plat of Crestview Crossing, a subdivision recorded on _____, 2018 at Volume _____, Page _____, Book of Plats.

Exhibit B
Map of Private Street Tracts

AFTER RECORDING RETURN TO:
JORDAN RAMIS, PC
2 Centerpointe Dr, 6th Floor
Lake Oswego, OR 97035
Attn: James D. Howsley

DRAFT

This space provided for recorder's use.

STORMWATER FACILITY EASEMENT AND MAINTENANCE AGREEMENT

BETWEEN: City of Newberg, a municipal corporation of the State of Oregon ("City")

AND: CG Commercial, LLC, a Delaware limited liability company and VPCF Crestview, LLC, a Delaware limited liability company ("Declarants")

DATED: _____, 2018

RECITALS

A. WHEREAS, Declarants are the owner of the real property described in Exhibit A and depicted on Exhibit B attached hereto and incorporated by this reference (the "Private Street Tracts" and the "Stormwater Tracts").

B. WHEREAS, this Stormwater Facility Easement and Maintenance Agreement ("Agreement") is required pursuant to the City of Newberg Final Decision dated _____, 2018 approving the Crestview Crossing Subdivision ("Subdivision") including the Stormwater Tracts.

C. WHEREAS, the Subdivision plat is being recorded to create the Stormwater Tracts.

D. WHEREAS, the Crestview Crossing Homeowners Association ("Association") has been created to own, administer and maintain the Stormwater Tracts, among other purposes.

E. The Stormwater Tracts were designed by a registered professional engineer to accommodate the anticipated volume of runoff, detain such runoff, and release it at a slow rate.

F. The City desires a stormwater facility easement over a portion of the Stormwater Tracts. Declarant is willing to grant to the City a stormwater facility easement, subject to the terms and conditions of this Agreement.

NOW, THEREFORE, in consideration of the following covenants and conditions, it is agreed by and between the parties hereto as follows:

1. **Easement.** Declarants hereby grant the City, its employees, independent contractors and designees, a nonexclusive easement for ingress and egress over the Private Street Tracts, and over the Stormwater Tracts for the purpose of inspection of the Stormwater Tracts as specified below. Declarants understand and agrees that this easement limits the ability of Declarants, their successors and assigns from constructing any permanent buildings, structures, or other improvements that would interfere with the functioning of the Stormwater Tracts.

2. **Declarants' Agreement to Maintain Stormwater Tracts.** Declarants agree to maintain the Stormwater Tracts consistent with operations and maintenance program described in Exhibit C attached hereto and incorporated herein by this reference. In the event that the Declarants fail to so maintain the Stormwater Tracts, City may elect to exercise all remedies available to it in law and in equity, including the right of specific performance.

3. **City's Indemnity.** The City shall indemnify, defend and hold harmless Declarants, their officers, directors, agents and employees from any and all liability, damages, expenses, attorney's fees, causes of action, suits, claims or judgments, arising out of or connected with the City's exercise of its rights under this Agreement. In addition to the indemnity provided above, the City agrees to indemnify, defend and hold harmless Declarants, its officers, directors, agents and employees from and against all damages, costs, liabilities and expenses caused by, arising out of, or in connection with, City's handling, storage, discharge, transportation or disposal of hazardous or toxic wastes or substances, pollutants, oils, materials or contaminants, as those terms are defined by federal state or local law or regulation, as amended from time to time, on or about the Stormwater Tracts. City shall not be required to indemnify, hold harmless or defend Declarant from any claim, damage, loss, liability, cost or expense arising out of Declarant' negligence or intentional conduct.

4. **Declarant' Indemnity.** Declarant shall indemnify, defend and hold harmless City, its officials, agents and employees from any and all liability, damages, expenses, attorney's fees, causes of action, suits, claims or judgments, arising out of or connected with Declarant' acts or omissions which cause result in damage to the Stormwater Tracts. In addition to the indemnity provided above, Declarant agrees to indemnify, defend and hold harmless City, its officers, directors, agents and employees from and against all damages, costs, liabilities and expenses caused by, arising out of, or in connection with, Declarant' handling, storage, discharge, transportation or disposal of hazardous or toxic wastes or substances, pollutants, oils, materials or contaminants, as those terms are defined by federal state or local law or regulation, as amended from time to time, on or about the Stormwater Tracts. Declarant shall not be required to indemnify, hold harmless or defend the City from any claim, damage, loss, liability, cost or expense arising out of City's negligence or intentional conduct.

5. **Notice**. Any notice, demand, request, or other communication (collectively referred to in this as a "notice") required or permitted to be given or made by either party to the other pursuant to this Agreement shall be in writing and shall be delivered to the other party by delivery service (including by overnight delivery service such as Federal Express) or sent postage prepaid by registered or certified U.S. or Canadian mail, as applicable, addressed

to the party at its address set forth below or such other address as may be designated by such party by written notice hereunder. Notices shall be deemed given and shall be effective on the date of delivery or, if mailed, two (2) business days following the date of mailing.

In the case of a notice or communication, all notices shall be addressed as follows:

City: City of Newberg
414 E First St
Newberg, OR 97132
Attn: City Manager

Declarant:

With a copy to: Jordan Ramis, PC
2 Centerpointe Dr, 6th Floor
Lake Oswego, OR 97035
Attn: James D. Howsley

6. **Force and Effect.** This Agreement shall constitute deed covenants running with the land and shall be binding on all owners, their heirs, successors, and assigns.

7. **Amendments.** The terms of this Agreement may be amended by mutual agreement of the parties. Any amendments shall be in writing and shall refer specifically to this Agreement and shall be valid only when executed by both parties to this Agreement and duly recorded.

8. **Breach.** In the event either party breaches this Agreement, the nonbreaching party may elect to exercise all remedies available in law and equity.

9. **Prevailing Party.** In any action brought by either party to enforce the terms of this Agreement, or to foreclose any lien provided for herein, the prevailing party shall be entitled to recover all costs, including reasonable attorney fees as may be determined by the court having jurisdiction, including any appeal therefrom.

10. **Severability.** The invalidity of any section, clause, sentence, or provision of this Agreement shall not affect the validity of any other part of this Agreement, which can be given effect without such invalid part or parts.

11. **Duration.** This agreement shall continue in perpetuity unless otherwise terminated and released by the parties hereto or their respective heirs, successors or assigns. In the event that the Declarant fails to use the Stormwater Tracts for a period of twenty-four (24) consecutive months, then this Agreement shall terminate and the parties hereto shall execute a termination of this Agreement and record the same in the real estate records of Yamhill County, Oregon. At the time of such termination, the Stormwater Tracts shall revert to Declarant.

12. **Recording.** This Agreement shall be recorded in the deed records of Yamhill County, Oregon.

13. **Exhibits.** All Exhibits attached hereto are incorporated herein by this reference.

14. **Recitals Contractual.** The Recitals in this Agreement are contractual.

IN WITNESS WHEREOF, Declarant has set his hand and seal the day and year first above written, and City has caused these presents to be signed in its name by its City Manager, attesting to the day and year first above written.

DECLARANTS

CG Commercial, LLC, a Delaware limited liability company LLC

By: _____

Title: _____

STATE OF OREGON
County of Clackamas

The above instrument was subscribed and sworn to before me this _____day of _____.

By _____

As _____ of _____.

_____
Notary Public – State of Oregon
My commission expires:_____

VPCF Crestview, LLC, a Delaware limited liability company

By: _____

Title: _____

STATE OF OREGON
County of Clackamas

The above instrument was subscribed and sworn to before me this _____day of _____.

By _____

As _____ of _____.

CITY:

CITY OF NEWBERG, a municipal corporation of the State of Oregon

By:_____
Joe Hannon, City Manager

STATE OF OREGON)
) ss.
COUNTY OF)

This instrument was acknowledged before me on _____, 2018 by Joe Hannon as City Manager of the City of Newberg.

_____
Notary Public for Oregon
My commission expires:_____

Exhibit A
Legal Description of Property

Parcels of land in the northeast quarter of Section 16, Township 3 South, Range 2 West, Willamette Meridian, in the City of Newberg, Yamhill County, Oregon, more particulary described as follows.

Private Street Tracts

Tracts F, G and H on the plat of Crestview Crossing, a subdivision recorded on _____. 2018 at Volume _____, Page _____, Book of Plats.

Stormwater Tracts

Tracts B and C on the plat of Crestview Crossing, a subdivision ecorded on _____. 2018 at Volume _____, Page _____, Book of Plats.

Exhibit B
Map of Private Street and Stormwater Tracts

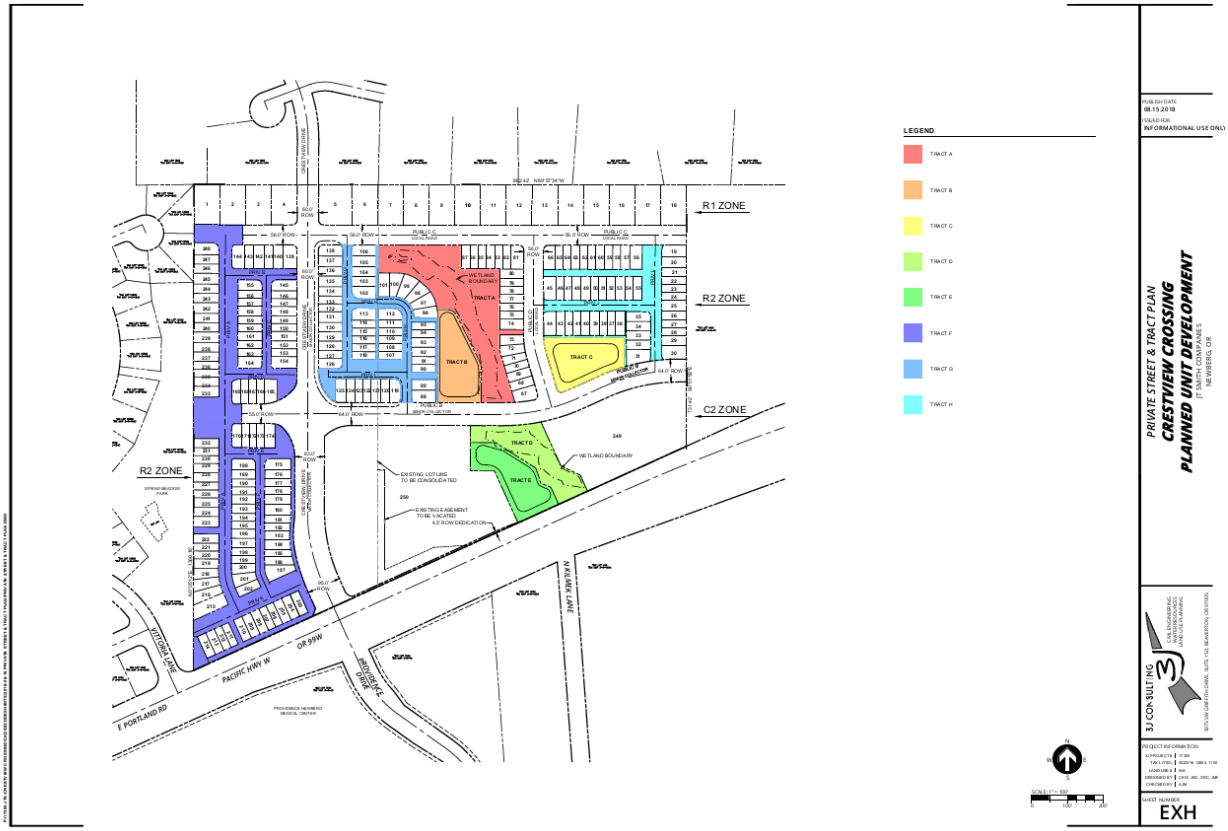


EXHIBIT C

Maintenance Requirement for Stormwater Tracts B and C

1. Stormwater Tracts shall be mowed regularly to maintain a maximum grass height of 6 inches or less. Side slopes that are planted shall be maintained to prevent erosion. Bare soil shall be replanted as needed to maintain sufficient ground coverage.
2. The Stormwater Tracts access gates shall remain free of obstructions at all times allowing access by the City's Public Works Department for inspection, maintenance, and repair, if necessary. The access gate shall remain locked at all times. The lock shall be accessible by both Declarant and the City.
3. The fence enclosing the Stormwater Tracts shall be maintained to remain structurally competent. Debris that accumulates along the fence and within the Stormwater Tracts shall be removed quarterly.
4. Inspect the Stormwater Tracts per the following table and stormwater retention basin inspection maintenance checklist.

Table 1
Routine Maintenance Activities for Retention Basins

No.	Maintenance Task	Frequency of Task
1	Conduct annual vegetation management during the summer, removing weeds and harvesting vegetation. Remove all grass cuttings and other green waste.	Once a year
2	Trim vegetation at beginning and end of wet season to prevent establishment of woody vegetation, and for aesthetics and mosquito control.	Twice a year (spring and fall)
3	Evaluate health of vegetation and remove and replace any dead or dying plants. Remove all green waste and dispose of properly.	Twice a year
4	If turf grass is included in basin design, conduct regular mowing and remove all grass cuttings. Avoid producing ruts when mowing.	Maintain less than 6-inches
5	Remove sediment when the sediment level reaches the level shown on the fixed vertical sediment marker and dispose of sediment properly.	As needed
6	Remove accumulated sediment and regrade when the accumulated sediment volume reduces the infiltration rate or impedes the outfall pipe and dispose of sediment properly.	Every 2-5 years, or as needed to maintain min. clearance below outlet
7	Remove accumulated trash and debris from the extended detention basin at the middle and end of the wet season and dispose of trash and debris properly.	Twice a year (January and April)
8	Irrigate during dry weather.	As needed
9	Inspect extended detention basin using the attached inspection checklist.	Quarterly, or as needed

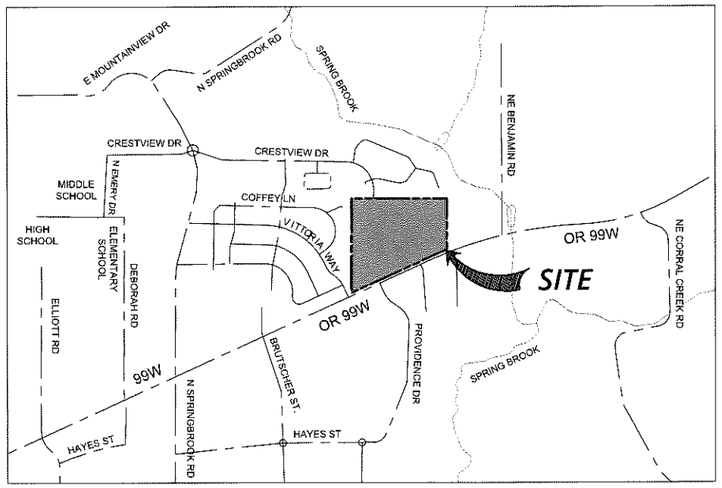
LAND USE DOCUMENTS

FOR

CRESTVIEW CROSSING PLANNED UNIT DEVELOPMENT

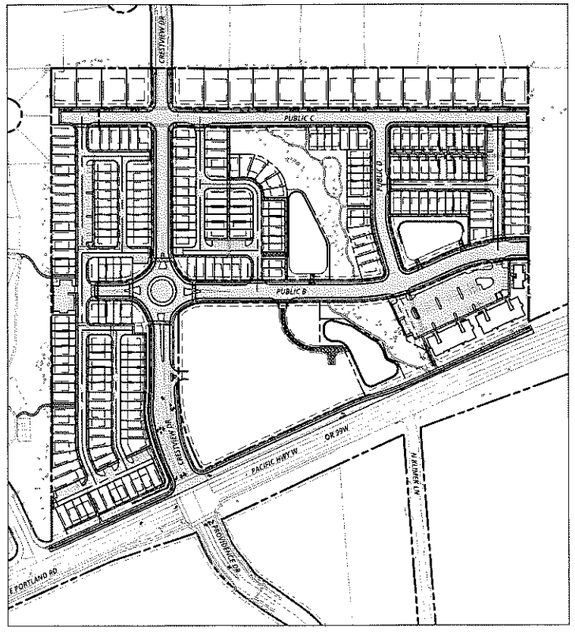
PREPARED FOR

JT SMITH COMPANIES



VICINITY MAP

NOT TO SCALE



SITE MAP

SCALE: 1" = 200'

0 200 400

SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
C000	COVER SHEET
C100	EXISTING CONDITIONS PLAN
C110	TREE REMOVAL AND PRESERVATION PLAN
C120	1200C COVER SHEET
C121	1200C CLEARING AND DEMOLITION ESCP I
C122	1200C GRADING AND STREET CONSTRUCTION ESCP I
C123	1200C DETAILS I
C124	1200C DETAILS II
C150	OVERALL TENTATIVE PLAT
C151	TENTATIVE PLAT I
C152	TENTATIVE PLAT II
C153	TENTATIVE PLAT III
C154	TENTATIVE PLAT IV
C200	TYPICAL SECTIONS I
C201	TYPICAL SECTIONS II
C210	OVERALL SITE PLAN
C215	MULTI-FAMILY SITE PLAN
C218	MULTI-FAMILY GRADING PLAN
C220	ACCESS, PARKING, AND CIRCULATION PLAN
C230	FIRE ACCESS PLAN
C290	PHOTOMETRICS PLAN
C291	MULTI-FAMILY PHOTOMETRICS PLAN
C300	COMPOSITE UTILITY PLAN
C301	OFFSITE SEWER CONNECTION
C302	PRELIMINARY STREET LIGHT CONDUIT ROUTING PLAN
C303	MULTI-FAMILY COMPOSITE UTILITY PLAN
LS 1.0	LS 1.0 STREET TREE PLAN
LS 1.1	LS 1.1 PLANTING PLAN
LS 1.2	LS 1.2 PLANTING PLAN
LS 1.3	LS 1.3 PLANTING PLAN
LS 1.4	LS 1.4 PLANTING PLAN

SITE INFORMATION

SITE ADDRESS
4505 E PORTLAND RD
NEWBERG, OR 97132

TAX LOT(S)
3S2W16 13800, 1100

FLOOD HAZARD
MAP NUMBER: 41071C0241D AND 41071C0235D ZONE X (UNSHADED)

JURISDICTION
CITY OF NEWBURG

ZONING
R-1, R-2, AND C-2

GROSS SITE AREA
33.13 ACRES

UTILITIES & SERVICES

STORM, SEWER
CITY OF NEWBERG

WATER
CITY OF NEWBERG

POWER
PGE

GAS
NORTHWEST NATURAL GAS

CABLE
COMCAST, VERIZON

FIRE
TUALATIN VALLEY FIRE & RESCUE

SCHOOLS
NEWBERG OREGON SCHOOL DISTRICT

PARKS
CHEHALEM

POLICE
NEWBERG POLICE DEPARTMENT

ROADS
CITY OF NEWBERG, ODOT

PROJECT TEAM

OWNER/APPLICANT
JT SMITH COMPANIES
5285 MEADOWS ROAD, SUITE 171
LAKE OSWEGO, OR 97035
CONTACT: JESSE NEMEC
PHONE: (503) 730-8620
EMAIL: jnemec@jtsmithco.com

CIVIL ENGINEER
3J CONSULTING, INC.
5075 SW GRIFFITH DRIVE, SUITE 150
BEAVERTON, OR 97005
CONTACT: ASHLEY SEAL, PE
PHONE: (503) 946-9365
EMAIL: ashley.seal@3j-consulting.com

PLANNING CONSULTANT
3J CONSULTING, INC
5075 SW GRIFFITH DRIVE, SUITE 150
BEAVERTON, OR 97005
CONTACT: ANDREW TULL
PHONE: (503) 946-9365
EMAIL: andrew.tull@3j-consulting.com

LANDSCAPE ARCHITECT
CARDNO, INC.
6720 SW MACADAM AVE, SUITE 200
PORTLAND, OR 97219
CONTACT: ANDREW HILL
PHONE: (503) 419-2500
EMAIL: andrew.hill@cardno.com

TAX LOTS 13800 AND 01100 LOCATED IN THE NE 1/4 OF SECTION 16, T.3S., R.2W., W.M. CITY OF NEWBURG, YAMHILL COUNTY, OREGON

ALL WORK PERFORMED SHALL CONFORM TO ALL STANDARD SPECIFICATIONS FOUND WITHIN THE LATEST VERSION OF THE CITY OF NEWBURG'S PUBLIC WORKS DESIGN AND CONSTRUCTION STANDARDS.

811 Know what's below. Call before you dig.

REGISTERED PROFESSIONAL ENGINEER 87782PE OREGON JULY 14, 2017 ASHLEY ROCHELLE SEAL EXPIRES: 06/30/20

PRELIMINARY

PUBLISH DATE
06.06.2018

ISSUED FOR
LAND USE DOCUMENTS

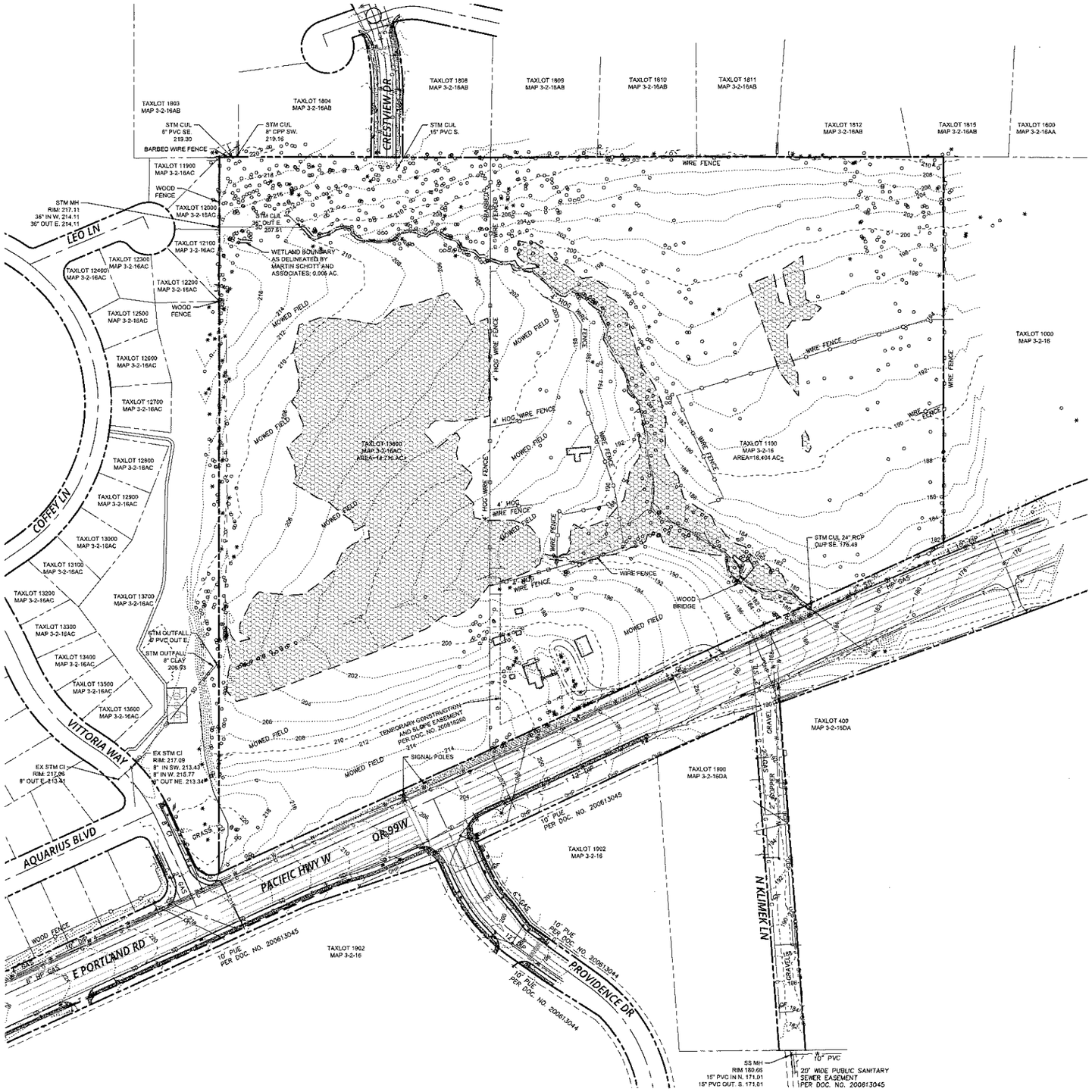
COVER SHEET
CRESTVIEW CROSSING PLANNED UNIT DEVELOPMENT
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C000

P:\17393-JTS CRESTVIEW CROSSING\DGN\CADD\DC000 COVER SHEET.DWG



EXISTING LEGEND

- EXISTING BUILDING
- PROJECT BOUNDARY
- RIGHT-OF-WAY LINE
- RIGHT-OF-WAY CENTERLINE
- EASEMENT LINE
- EXISTING LOT LINE
- EXISTING ADJACENT PROPERTY LINE
- EXISTING CONCRETE
- EXISTING WETLAND
- EXISTING CURB
- EXISTING FENCE LINE
- EXISTING STRIPING: WHITE
- EXISTING STRIPING: YELLOW
- EXISTING TELECOM. LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD POWER
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATER MAIN
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING INTERSECTION SIGNAL
- EXISTING MAILBOX
- EXISTING LIGHTPOLE
- EXISTING UTILITY POLE
- EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING STORM MANHOLE
- EXISTING STORM INLET
- EXISTING POWER METER
- EXISTING GAS METER
- EXISTING TELEPHONE PEDESTAL

SURVEYOR'S NOTES:

1. WETLAND BOUNDARIES SHOWN WERE DELINEATED BY MARTIN SCHOTT AND ASSOCIATES AND WERE SURVEYED BY AKS ENGINEERING AND FORESTRY, LLC. THE WEEK OF 03/11/13 TO 03/14/13. FIELD WORK WAS CONDUCTED 03/07/13 TO 03/14/13.
2. UTILITIES SHOWN ARE BASED ON UNDERGROUND UTILITY LOCATE MARKINGS PER UTILITY LOCATE TICKET NUMBERS 13163881 AND 14165137. THERE IS NO GUARANTEE THAT THE UNDERGROUND LOCATES REPRESENT THE ONLY UTILITIES IN THE AREA. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION.
3. FIELD WORK WAS CONDUCTED 08/06/13 TO 08/12/13 AND 07/07/14 TO 07/18/14.
4. DATUM: CITY OF NEWBERG (ESTABLISHED OCTOBER OF 1984 AND REVISED IN 2001)
   BM NO. 111 ELEVATION = 230.11 (NGVD 29)
   BENCHMARK LOCATION: BRASS DISK IN THE TOP OF CURB, CENTER OF THE NORTHEAST CURB RETURN AT THE CORNER OF AQUARIUS BLVD. AND MADRONNA DRIVE.
5. CONTOUR INTERVAL IS 2 FEET.

EXISTING CONDITIONS PLAN

THIS PLAN HAS BEEN PREPARED FOR ILLUSTRATIVE PURPOSES ONLY. SITE BACKGROUND INFORMATION AND FEATURES HAVE BEEN GENERATED FROM A COMBINATION OF SITE SURVEY FROM AKS ENGINEERING (SENT 07-07-2017), PUBLIC GIS DATA SOURCES, AERIAL PHOTOS, TAX ASSESSOR MAPS AND PHYSICAL SITE OBSERVATIONS. PROPOSED SITE FEATURES ARE PRELIMINARY IN NATURE AND SUBJECT TO CHANGE. NO WARRANTY OR GUARANTEE IS EXPRESSED OR IMPLIED.

ZONE X (UN-SHADED) THE SITE IS LOCATED WITHIN ZONE X (UN-SHADED) PER FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY-PANEL NUMBER **41071C0241D AND 41071C0235D** FEMA'S DEFINITION OF ZONE X (UN-SHADED) IS AN AREA OF MINIMAL FLOOD HAZARD, USUALLY DEPICTED ON FIRMS AS ABOVE THE 500-YEAR FLOOD LEVEL. ZONE X IS THE AREA DETERMINED TO BE OUTSIDE THE 500-YEAR FLOOD AND PROTECTED BY LEVEE FROM 100-YEAR FLOOD. IN COMMUNITIES THAT PARTICIPATE IN THE NFIP, FLOOD INSURANCE IS AVAILABLE TO ALL PROPERTY OWNERS AND RENTERS IN THESE ZONES.

GENERAL NOTES:

WETLAND BOUNDARY DELINEATED BY MARTIN SCHOTT AND ASSOCIATES; SURVEYED BY AKS WEEK OF 3/11/13 - 3/14/13

Know what's below. Call before you dig.

N W E S

SCALE: 1" = 100'
0 100' 200'

REGISTERED PROFESSIONAL ENGINEER
87752PE
OREGON
JULY 14, 1987
BRENT ROCHELLE SIMMONS
EXPIRES: 06/30/20

PRELIMINARY

PUBLISH DATE
06.06.2018
ISSUED FOR
LAND USE DOCUMENTS

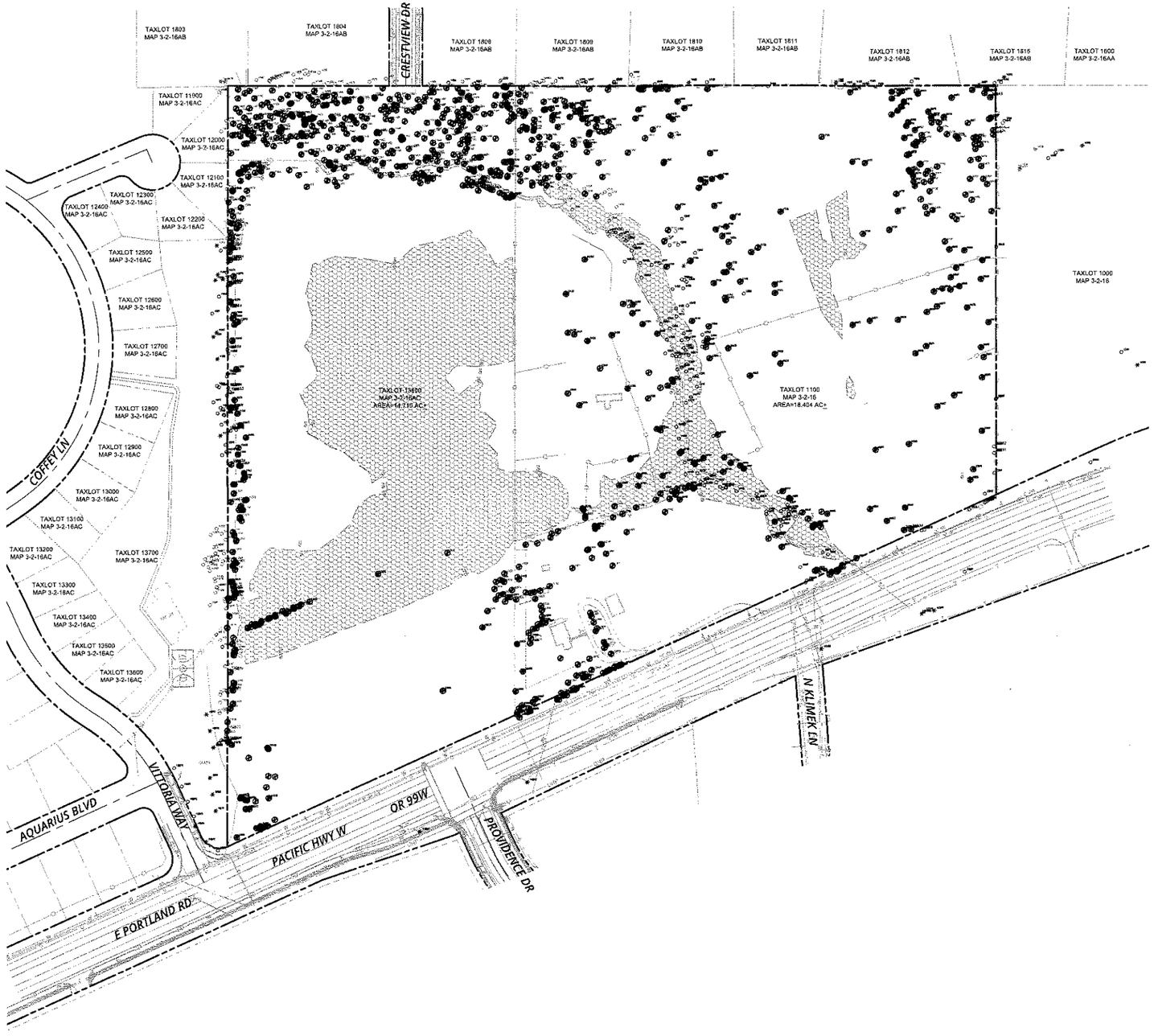
EXISTING CONDITIONS PLAN
CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150; BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C100

P:\17393-JTS-CRESTVIEW CROSSING\CAD\CDVC100 EXISTING CONDITIONS AND DEMOLITION PLAN.DWG



LEGEND

- EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE
- TREE TO BE REMOVED (848 TOTAL)

GENERAL TREE INVENTORY STATISTICS

TOTAL TREE INVENTORY (IN PROJECT LIMITS):	1,042 EA
TOTAL TREES RETAINED:	119 EA
TOTAL TREES REMOVED:	923 EA

N
W E
S

SCALE: 1" = 100'
0 100' 200'

811 Know what's below. Call before you dig.

REGISTERED PROFESSIONAL ENGINEER
87762PE
OREGON
JULY 14, 2017
PRELIMINARY
JESSY ROCHELLE SEAL
EXPIRES: 06/30/20

PUBLISH DATE
06.06.2018
ISSUED FOR
LAND USE DOCUMENTS

TREE REMOVAL AND PRESERVATION PLAN
CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT

JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION

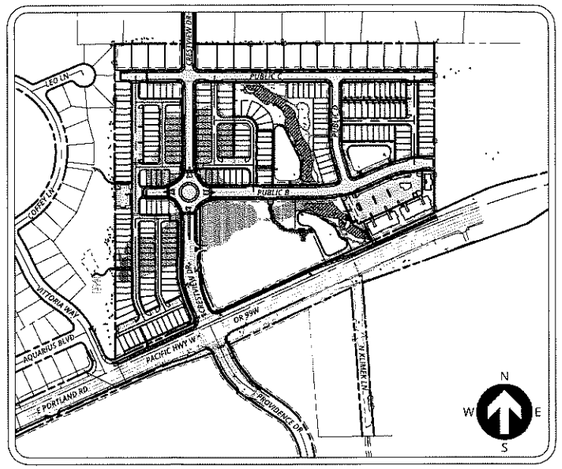
3J PROJECT #	17393
TAX LOT(S)	3S2W16 13800, 1100
LAND USE #	N/A
DESIGNED BY	ARS, JEJ, BMO
CHECKED BY	AJM, RGW

SHEET NUMBER
C110

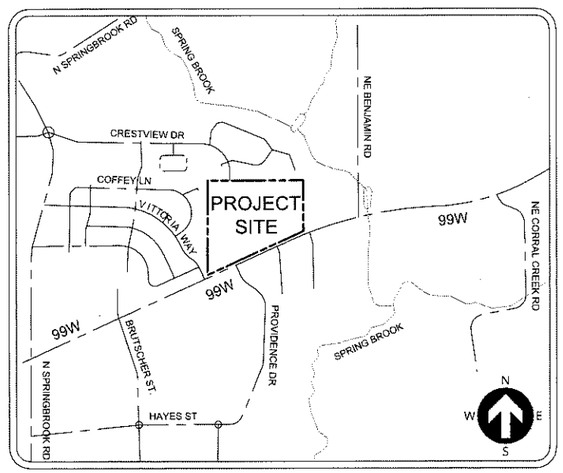
P:\17393-JTS-CRESTVIEW CROSSING\DOC\DOC\110 TREE REMOVAL AND PRESERVATION PLAN.DWG

CRESTVIEW CROSSING SUBDIVISION

EROSION AND SEDIMENT CONTROL PLAN (ESCP) COVER SHEET



SITE MAP
SCALE: 1" = 300'



VICINITY MAP
SCALE: N.T.S.

INSPECTION FREQUENCY:

SITE CONDITION	MINIMUM FREQUENCY
1. ACTIVE PERIOD	DAILY WHEN STORMWATER RUNOFF, INCLUDING RUNOFF FROM SNOW MELT, IS OCCURRING. AT LEAST ONCE EVERY FOURTEEN (14) CALENDAR DAYS REGARDLESS OF WHETHER STORMWATER RUNOFF IS OCCURRING.
2. PRIOR TO THE SITE BECOMING INACTIVE OR IN ANTICIPATION OF SITE INACCESSIBILITY.	ONCE TO ENSURE THAT EROSION AND SEDIMENT CONTROL MEASURES ARE IN WORKING ORDER. ANY NECESSARY MAINTENANCE AND REPAIR MUST BE MADE PRIOR TO LEAVING THE SITE.
3. INACTIVE PERIODS GREATER THAN FOURTEEN (14) CONSECUTIVE CALENDAR DAYS.	ONCE EVERY MONTH.
4. PERIODS DURING WHICH THE SITE IS INACCESSIBLE DUE TO INCLEMENT WEATHER.	IF PRACTICAL, INSPECTIONS MUST OCCUR DAILY AT A RELEVANT AND ACCESSIBLE DISCHARGE POINT OR DOWNSTREAM LOCATION.
5. PERIODS DURING WHICH DISCHARGE IS UNLIKELY DUE TO FROZEN CONDITIONS.	MONTHLY. RESUME MONITORING IMMEDIATELY UPON MELT, OR WHEN WEATHER CONDITIONS MAKE DISCHARGES LIKELY.

ATTENTION EXCAVATORS:

OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH OAR 952-001-0090. YOU MAY OBTAIN COPIES OF THESE RULES FROM THE CENTER BY CALLING 503-232-1987. IF YOU HAVE ANY QUESTIONS ABOUT THE RULES, YOU MAY CONTACT THE CENTER. YOU MUST NOTIFY THE CENTER AT LEAST TWO BUSINESS DAYS, BEFORE COMMENCING AN EXCAVATION. CALL 503-246-6999.

811 Know what's below. Call before you dig.

PROPERTY DESCRIPTION:

TAX LOTS 13800 AND 01100 LOCATED IN THE
NE 1/4 OF SECTION 16, T.3S., R.2W., W.M.
CITY OF NEWBURG, YAMHILL COUNTY, OREGON

PROJECT LOCATION:

NEAR THE WASHINGTON COUNTY BENCHMARK #59, EL. 145.876,
WASHINGTON COUNTY, OREGON
LATITUDE = 45°29'29.53" N, LONGITUDE = 122°55'58.33" W

OWNER/APPLICANT

JT SMITH COMPANIES
5285 MEADOWS ROAD, SUITE 171
LAKE OSWEGO, OR 97035
CONTACT: JESSE NEMEC
PHONE: (503) 730-8620
EMAIL: jnemec@jtsmithco.com

PLANNING CONSULTANT

3J CONSULTING, INC
5075 SW GRIFFITH DRIVE, SUITE 150
BEAVERTON, OR 97005
CONTACT: ANDREW TULL
PHONE: (503) 946-9365
EMAIL: andrew.tull@3j-consulting.com

CIVIL ENGINEER

3J CONSULTING, INC.
5075 SW GRIFFITH DRIVE, SUITE 150
BEAVERTON, OR 97005
CONTACT: ASHLEY SEAL, PE
PHONE: (503) 946-9365
EMAIL: ashley.seal@3j-consulting.com

LANDSCAPE ARCHITECT

CARDNO, INC.
5720 SW MACADAM AVE, SUITE 200
PORTLAND, OR 97219
CONTACT: ANDREW HILL
PHONE: (503) 419-2500
EMAIL: andrew.hill@cardno.com

NARRATIVE DESCRIPTIONS

EXISTING SITE CONDITIONS

ONE HOUSE WITH ACCESSORY STRUCTURES. REMAINDER OF SITE CONSISTS OF WETLANDS AND GRASSY FIELD, WITH SCATTERED TREES.

DEVELOPED CONDITIONS

SUBDIVIDE INTO 4.20 ACRE COMMERCIAL SPACE, 2 APARTMENT BUILDINGS WITH 48 TOTAL UNITS, 230 HIGH DENSITY LOTS AND 18 SINGLE FAMILY HOME LOTS.

NATURE OF CONSTRUCTION ACTIVITY AND ESTIMATED TIME TABLE

* CLEARING (JUNE 2019)
* MASS GRADING (JUNE-JULY 2019)
* UTILITY INSTALLATION (AUGUST-SEPTEMBER 2019)
* STREET CONSTRUCTION (MAY 2020)
* FINAL STABILIZATION (JUNE 2020)

TOTAL ON-SITE AREA = 1,442,521 SF = 33.13 ACRES

TOTAL OFF-SITE AREA = 50,990 SF = 1.17 ACRES

TOTAL AREA = 1,493,511 SF = 34.30 ACRES

SITE SOIL CLASSIFICATION:

* AMITY SILT LOAM, 0-3% SLOPE - 51.1%
* WOODBURN SILT LOAM, 0-3% SLOPE - 21.7%
* WOODBURN SILT LOAM, 3-12% SLOPE - 26.5%
* WOODBURN SILT LOAM, 12-20% SLOPE - 0.8%

ON-SITE SOILS HAVE A MODERATE TO HIGH EROSION POTENTIAL. ALL FILL MATERIAL SHALL BE GENERATED ON-SITE FROM GRADING EXCAVATION AND UTILITY TRENCH SPOILS.

RECEIVING WATER BODIES:

NEAREST WATER BODY: SPRING BROOK, A PART OF THE WILLAMETTE RIVER BASIN.

SITE IS ZONE X (UNSHADED) PER FEMA FIRM MAP NUMBER: 41071C0241D AND 41071C0235D. NO ELEVATED FLOOD RISK.

STANDARD EROSION AND SEDIMENT CONTROL PLAN DRAWING NOTES:

1. HOLD A PRE-CONSTRUCTION MEETING OF PROJECT CONSTRUCTION PERSONNEL THAT INCLUDES THE INSPECTOR TO DISCUSS EROSION AND SEDIMENT CONTROL MEASURES AND CONSTRUCTION LIMITS. (SCHEDULE A.8.C.I.(3))
2. ALL INSPECTIONS MUST BE MADE IN ACCORDANCE WITH DEQ 1200-C PERMIT REQUIREMENTS. (SCHEDULE A.12.B AND SCHEDULE B.1)
3. INSPECTION LOGS MUST BE KEPT IN ACCORDANCE WITH DEQ'S 1200-C PERMIT REQUIREMENTS. (SCHEDULE B.1.C AND B.2)
4. RETAIN A COPY OF THE ESCP AND ALL REVISIONS ON SITE AND MAKE IT AVAILABLE ON REQUEST TO DEQ, AGENT, OR THE LOCAL MUNICIPALITY. DURING INACTIVE PERIODS OF GREATER THAN SEVEN (7) CONSECUTIVE CALENDAR DAYS, THE ABOVE RECORDS MUST BE RETAINED BY THE PERMIT REGISTRANT BUT DO NOT NEED TO BE AT THE CONSTRUCTION SITE. (SCHEDULE B.2.C)
5. ALL PERMIT REGISTRANTS MUST IMPLEMENT THE ESCP. FAILURE TO IMPLEMENT ANY OF THE CONTROL MEASURES OR PRACTICES DESCRIBED IN THE ESCP IS A VIOLATION OF THE PERMIT. (SCHEDULE A.8.A)
6. THE ESCP MUST BE ACCURATE AND REFLECT SITE CONDITIONS. (SCHEDULE A.12.C.I)
7. SUBMISSION OF ALL ESCP REVISIONS IS NOT REQUIRED. SUBMITTAL OF THE ESCP REVISIONS IS ONLY UNDER SPECIFIC CONDITIONS. SUBMIT ALL NECESSARY REVISION TO DEQ OR AGENT WITHIN 10 DAYS. (SCHEDULE A.12.C.IV. AND V)
8. PHASE CLEARING AND GRADING TO THE MAXIMUM EXTENT PRACTICAL TO PREVENT EXPOSED INACTIVE AREAS FROM BECOMING A SOURCE OF EROSION. (SCHEDULE A.7.A.III)
9. IDENTIFY, MARK, AND PROTECT (BY CONSTRUCTION FENCING OR OTHER MEANS) CRITICAL RIPARIAN AREAS AND VEGETATION INCLUDING IMPORTANT TREES AND ASSOCIATED ROOTING ZONES, AND VEGETATION AREAS TO BE PRESERVED. IDENTIFY VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS (E.G., WETLANDS), AND OTHER AREAS TO BE PRESERVED, ESPECIALLY IN PERIMETER AREAS. (SCHEDULE A.8.C.I.(1) AND (2))
10. PRESERVE EXISTING VEGETATION WHEN PRACTICAL AND RE-VEGETATE OPEN AREAS. RE-VEGETATE OPEN AREAS WHEN PRACTICABLE BEFORE AND AFTER GRADING OR CONSTRUCTION. IDENTIFY THE TYPE OF VEGETATIVE SEED MIX USED. (SCHEDULE A.7.A.V)
11. MAINTAIN AND DELINEATE ANY EXISTING NATURAL BUFFER WITHIN THE 50-FEET OF WATERS OF THE STATE. (SCHEDULE A.7.B.I.AND (2(A)(B))
12. INSTALL PERIMETER SEDIMENT CONTROL, INCLUDING STORM DRAIN INLET PROTECTION AS WELL AS ALL SEDIMENT BASINS, TRAPS, AND BARRIERS PRIOR TO LAND DISTURBANCE. (SCHEDULE A.8.C.I.(5))
13. CONTROL BOTH PEAK FLOW RATES AND TOTAL STORMWATER VOLUME, TO MINIMIZE EROSION AT OUTLETS AND DOWNSTREAM CHANNELS AND STREAMBANKS. (SCHEDULE A.7.C)
14. CONTROL SEDIMENT AS NEEDED ALONG THE SITE PERIMETER AND AT ALL OPERATIONAL INTERNAL STORM DRAIN INLETS AT ALL TIMES DURING CONSTRUCTION, BOTH INTERNALLY AND AT THE SITE BOUNDARY. (SCHEDULE A.7.D.I)
15. ESTABLISH CONCRETE TRUCK AND OTHER CONCRETE EQUIPMENT WASHOUT AREAS BEFORE BEGINNING CONCRETE WORK. (SCHEDULE A.8.C.I.(6))
16. APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS AS GRADING PROGRESSES. TEMPORARY OR PERMANENT STABILIZATIONS MEASURES ARE NOT REQUIRED FOR AREAS THAT ARE INTENDED TO BE LEFT UNVEGETATED, SUCH AS DIRT ACCESS ROADS OR UTILITY POLE PADS.(SCHEDULE A.8.C.II.(3))
17. ESTABLISH MATERIAL AND WASTE STORAGE AREAS, AND OTHER NON-STORMWATER CONTROLS. (SCHEDULE A.8.C.I.(7))
18. PREVENT TRACKING OF SEDIMENT ONTO PUBLIC OR PRIVATE ROADS USING BMPS SUCH AS: CONSTRUCTION ENTRANCE, GRAVELED (OR PAVED) EXITS AND PARKING AREAS, GRAVEL ALL UNPAVED ROADS LOCATED ONSITE, OR USE AN EXIT TIRE WASH. THESE BMPS MUST BE IN PLACE PRIOR TO LAND-DISTURBING ACTIVITIES. (SCHEDULE A.7.D.II AND A.8.C.II(4))
19. WHEN TRUCKING SATURATED SOILS FROM THE SITE, EITHER USE WATER-TIGHT TRUCKS OR DRAIN LOADS ON SITE. (SCHEDULE A.7.D.II.(5))
20. CONTROL PROHIBITED DISCHARGES FROM LEAVING THE CONSTRUCTION SITE, I.E., CONCRETE WASH-OUT, WASTEWATER FROM CLEANOUT OF STUCCO, PAINT AND CURING COMPOUNDS. (SCHEDULE A.6)
21. USE BMPS TO PREVENT OR MINIMIZE STORMWATER EXPOSURE TO POLLUTANTS FROM SPILLS; VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE; OTHER CLEANING AND MAINTENANCE ACTIVITIES; AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, FERTILIZER, PESTICIDES AND HERBICIDES, PAINTS, SOLVENTS, CURING COMPOUNDS AND ADHESIVES FROM CONSTRUCTION OPERATIONS. (SCHEDULE A.7.E.I.(2))
22. IMPLEMENT THE FOLLOWING BMPS WHEN APPLICABLE: WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES, SPILL KITS IN ALL VEHICLES, REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY, MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE, AND COVERED STORAGE AREAS FOR WASTE AND SUPPLIES. (SCHEDULE A. 7.E.III.)
23. USE WATER, SOIL-BINDING AGENT OR OTHER DUST CONTROL TECHNIQUE AS NEEDED TO AVOID WIND-BLOWN SOIL. (SCHEDULE A 7.A.IV)
24. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW MANUFACTURER'S RECOMMENDATIONS TO MINIMIZE NUTRIENT RELEASES TO SURFACE WATERS. EXERCISE CAUTION WHEN USING TIME-RELEASE FERTILIZERS WITHIN ANY WATERWAY RIPARIAN ZONE. (SCHEDULE A.9.B.III)
25. IF AN ACTIVE TREATMENT SYSTEM (FOR EXAMPLE, ELECTRO-COAGULATION, FLOCCULATION, FILTRATION, ETC.) FOR SEDIMENT OR OTHER POLLUTANT REMOVAL IS EMPLOYED, SUBMIT AN OPERATION AND MAINTENANCE PLAN (INCLUDING SYSTEM SCHEMATIC, LOCATION OF SYSTEM, LOCATION OF INLET, LOCATION OF DISCHARGE, DISCHARGE DISPERSION DEVICE DESIGN, AND A SAMPLING PLAN AND FREQUENCY) BEFORE OPERATING THE TREATMENT SYSTEM. OBTAIN PLAN APPROVAL BEFORE OPERATING THE TREATMENT SYSTEM. OPERATE AND MAINTAIN THE TREATMENT SYSTEM ACCORDING TO MANUFACTURER'S SPECIFICATIONS. (SCHEDULE A.9.D)
26. TEMPORARILY STABILIZE SOILS AT THE END OF THE SHIFT BEFORE HOLIDAYS AND WEEKENDS, IF NEEDED. THE REGISTRANT IS RESPONSIBLE FOR ENSURING THAT SOILS ARE STABLE DURING RAIN EVENTS AT ALL TIMES OF THE YEAR. (SCHEDULE A.7.B)
27. AS NEEDED BASED ON WEATHER CONDITIONS, AT THE END OF EACH WORKDAY SOIL STOCKPILES MUST BE STABILIZED OR COVERED, OR OTHER BMPS MUST BE IMPLEMENTED TO PREVENT DISCHARGES TO SURFACE WATERS OR CONVEYANCE SYSTEMS LEADING TO SURFACE WATERS. (SCHEDULE A.7.E.II.(2))
28. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND BARE GROUND ACTIVITIES DURING WET WEATHER. (SCHEDULE A.7.A.II)
29. SEDIMENT FENCE: REMOVE TRAPPED SEDIMENT BEFORE IT REACHES ONE THIRD OF THE ABOVE GROUND FENCE HEIGHT AND BEFORE FENCE REMOVAL. (SCHEDULE A.9.C.I)
30. OTHER SEDIMENT BARRIERS (SUCH AS BIOBAGS): REMOVE SEDIMENT BEFORE IT REACHES TWO INCHES DEPTH ABOVE GROUND HEIGHT AND BEFORE BMP REMOVAL.(SCHEDULE A.9.C.I)
31. CATCH BASINS: CLEAN BEFORE RETENTION CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT. SEDIMENT BASINS AND SEDIMENT TRAPS: REMOVE TRAPPED SEDIMENTS BEFORE DESIGN CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT AND AT COMPLETION OF PROJECT. (SCHEDULE A.9.C.III& IV)
32. WITHIN 24 HOURS, SIGNIFICANT SEDIMENT THAT HAS LEFT THE CONSTRUCTION SITE, MUST BE REMEDIATED. INVESTIGATE THE CAUSE OF THE SEDIMENT RELEASE AND IMPLEMENT STEPS TO PREVENT A RECURRENCE OF THE DISCHARGE WITHIN THE SAME 24 HOURS. ANY IN-STREAM CLEAN-UP OF SEDIMENT SHALL BE PERFORMED ACCORDING TO THE OREGON DIVISION OF STATE LANDS REQUIRED TIMEFRAME. (SCHEDULE A.9.B.I)
33. THE INTENTIONAL WASHING OF SEDIMENT INTO STORM SEWERS OR DRAINAGE WAYS MUST NOT OCCUR. VACUUMING OR DRY SWEEPING AND MATERIAL PICKUP MUST BE USED TO CLEANUP RELEASED SEDIMENTS. (SCHEDULE A.9.B.II)
34. THE ENTIRE SITE MUST BE TEMPORARILY STABILIZED USING VEGETATION OR A HEAVY MULCH LAYER, TEMPORARY SEEDING, OR OTHER METHOD SHOULD ALL CONSTRUCTION ACTIVITIES CEASE FOR 30 DAYS OR MORE. (SCHEDULE A.7.F.I)
35. PROVIDE TEMPORARY STABILIZATION FOR THAT PORTION OF THE SITE WHERE CONSTRUCTION ACTIVITIES CEASE FOR 14 DAYS OR MORE WITH A COVERING OF BLOWN STRAW AND A TACKIFIER, LOOSE STRAW, OR AN ADEQUATE COVERING OF COMPOST MULCH UNTIL WORK RESUMES ON THAT PORTION OF THE SITE. (SCHEDULE A.7.F.II)
36. DO NOT REMOVE TEMPORARY SEDIMENT CONTROL PRACTICES UNTIL PERMANENT VEGETATION OR OTHER COVER OF EXPOSED AREAS IS ESTABLISHED. ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED, ALL TEMPORARY EROSION CONTROLS AND RETAINED SOILS MUST BE REMOVED AND DISPOSED OF PROPERLY, UNLESS DOING SO CONFLICTS WITH LOCAL REQUIREMENTS. (SCHEDULE A.8.C.III(1) AND D.3.C.II AND III)

LOCAL AGENCY (CITY OF NEWBERG) SPECIFIC EROSION CONTROL NOTES:

1. THE IMPLEMENTATION OF THIS ESC PLAN AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THE ESC FACILITIES IS THE RESPONSIBILITY OF THE APPLICANT/CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED, APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.
2. THE ESC PLAN, ANY REVISIONS, AND INSPECTION LOGS SHALL BE KEPT ONSITE AT ALL TIMES.
3. THE ESC MEASURES SHOWN ON THE PLAN ARE THE MINIMUM REQUIREMENTS FOR THE PROJECT SITE AND SHALL BE UPGRADED AS NEEDED TO MAINTAIN COMPLIANCE WITH ALL REGULATIONS.
4. SEDIMENT MUST BE REMOVED FROM SUMPED STRUCTURES WHEN THE SEDIMENT RETENTION
5. CAPACITY HAS BEEN REDUCED BY 1/3RD AND WITHIN 30 DAYS OF PROJECT COMPLETION.
6. TOXIC AND HAZARDOUS MATERIALS MUST ALSO HAVE SECONDARY CONTAINMENT.
7. PAVING ACTIVITIES SHALL BE MINIMIZED BETWEEN OCTOBER 1ST AND MAY 31ST OF THE FOLLOWING YEAR TO AVOID POTENTIAL DISCHARGE OF PAVING CHEMICALS INTO THE STORM DRAINS, STREETS, WATERCOURSES, OR SENSITIVE AREAS.
8. ALL ESC MEASURES SHALL BE REMOVED FROM THE SITE 30 DAYS AFTER CONSTRUCTION IS COMPLETED AND APPROVED BY THE CITY.

THE PERMITTEE IS REQUIRED TO MEET ALL THE CONDITIONS OF THE 1200C PERMIT. THIS ESCP AND GENERAL CONDITIONS HAVE BEEN DEVELOPED TO FACILITATE COMPLIANCE WITH THE 1200C PERMIT REQUIREMENTS. IN CASES OF DISCREPANCIES OR OMISSIONS, THE 1200C PERMIT REQUIREMENTS SUPERCEDE REQUIREMENTS OF THIS PLAN.

BMP MATRIX FOR CONSTRUCTION PHASES

REFER TO DEQ GUIDANCE MANUAL FOR A COMPREHENSIVE LIST OF AVAILABLE BMP'S.

	CLEARING	MASS GRADING	UTILITY INSTALLATION	STREET CONSTRUCTION	FINAL STABILIZATION	WET WEATHER (OCT. 1 - MAY 31ST)
EROSION PREVENTION						
PRESERVE NATURAL VEGETATION	**X	X	X	X	X	X
GROUND COVER					X	X
HYDRAULIC APPLICATIONS					X	
PLASTIC SHEETING						X
MATTING					X	X
DUST CONTROL	X	X	X	X	X	X
TEMPORARY/PERMANENT SEEDING					X	X
BUFFER ZONE						
OTHER:						
SEDIMENT CONTROL						
SEDIMENT FENCE (PERIMETER)	**X	X	X	X	X	X
SEDIMENT FENCE (INTERIOR)			X	X	X	X
STRAW WATTLES						
FILTER BERM						
INLET PROTECTION	**X	X	X	X	X	X
DEWATERING						
SEDIMENT TRAP						
NATURAL BUFFER ENCROACHMENT	*X	*X	*X	*X	*X	*X
OTHER:						
RUN OFF CONTROL						
CONSTRUCTION ENTRANCE	**X	X	X	X	X	
WHEEL WASH	**X	X	X	X	X	
PIPE SLOPE DRAIN						
OUTLET PROTECTION		X	X	X	X	
SURFACE ROUGHENING						
CHECK DAMS	**X	X	X	X	X	
OTHER:						
POLLUTION PREVENTION						
PROPER SIGNAGE	X	X	X	X	X	X
HAZ WASTE MGMT	X	X	X	X	X	X
SPILL KIT ON-SITE	X	X	X	X	X	X
CONCRETE WASHOUT AREA	X	X	X	X	X	X
OTHER:						

* SIGNIFIES ADDITIONAL BMP'S REQUIRED FOR WORK WITHIN 50' OF WATER OF THE STATE.
** SIGNIFIES BMP THAT WILL BE INSTALLED PRIOR TO ANY GROUND DISTURBING ACTIVITY.

RATIONALE STATEMENT

A COMPREHENSIVE LIST OF AVAILABLE BEST MANAGEMENT PRACTICES (BMP) OPTIONS BASED ON DEQ's GUIDANCE MANUAL HAS BEEN REVIEWED TO COMPLETE THIS EROSION AND SEDIMENT CONTROL PLAN. SOME OF THE ABOVE LISTED BMP's WERE NOT CHOSEN BECAUSE THEY WERE DETERMINED TO NOT EFFECTIVELY MANAGE EROSION PREVENTION AND SEDIMENT CONTROL FOR THIS PROJECT BASED ON SPECIFIC SITE CONDITIONS, INCLUDING SOIL CONDITIONS TOPOGRAPHIC CONSTRAINTS, ACCESSIBILITY TO THE SITE, AND OTHER RELATED CONDITIONS. AS THE PROJECT PROGRESSES AND THERE IS A NEED TO REVISE THE ESC PLAN, AN ACTION PLAN WILL BE SUBMITTED.

INITIAL

PERMITTEE'S SITE INSPECTOR:

COMPANY/AGENCY: Sevin Simpson, 3J Consulting
PHONE: (503) 946.9365 x229 - WORK
(541) 508.9159 - CELL
E-MAIL: sevin.simpson@3j-consulting.com
DESCRIPTION OF EXPERIENCE: ATTENDED A TWO-DAY TRAINING COURSE ON THE PRINCIPLES AND PRACTICES OF EROSION CONTROL
CESCL #ECO-3-4131801

SHEET INDEX

EROSION AND SEDIMENT CONTROL PLANS

REGISTERED PROFESSIONAL ENGINEER 87762PE OREGON JULY 14, 2017 ASHLEY ROCHELLE SEAL
EXPIRES: 06/30/20

PUBLISH DATE
06.06.2018
ISSUED FOR
LAND USE DOCUMENTS

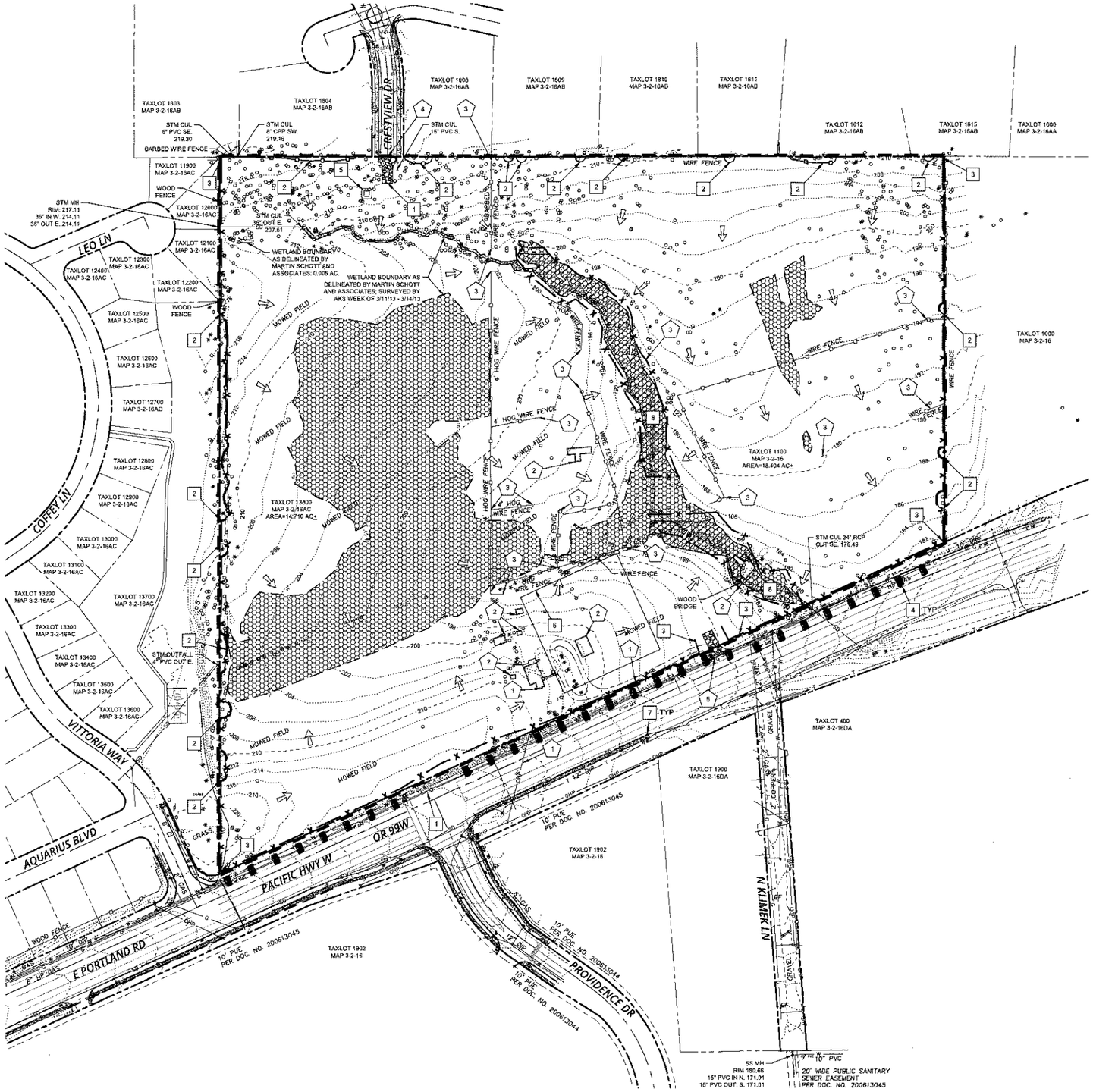
1200C COVER SHEET
CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C120

P:\17393-JTS-CRESTVIEW CROSSING\CAD\DOC\120 1200C SET.DWG



EROSION CONTROL KEY NOTES

1. CONSTRUCT CONSTRUCTION ENTRANCE PER NEWBERG STANDARD DRAWING 601 ON SHEET C123. MAINTAIN THROUGHOUT CONSTRUCTION.
2. INSTALL TREE PROTECTION FENCING PER DETAIL T-1 ON SHEET C124. MAINTAIN THROUGHOUT CONSTRUCTION. ALL RELOCATION OF TREE PROTECTION FENCING AND WORK WITHIN THE STANDARD TREE PROTECTION ZONE SHALL BE PERFORMED UNDER THE SUPERVISION OF AN ARBORIST OR THE CITY'S URBAN FORESTER. FENCING SHALL BE REPLACED TO 5' BEYOND THE TREE DRIPLINE ONCE WORK WITHIN THE TREE PROTECTION ZONE IS COMPLETED.
3. INSTALL SILT FENCING PER NEWBERG STANDARD DRAWING 602 ON SHEET C123. MAINTAIN THROUGHOUT CONSTRUCTION.
4. INSTALL BIO-FILTER BAG CHECK DAMS AT 50' O.C. SPACING PER NEWBERG STANDARD DRAWING 605 ON SHEET C123. MAINTAIN THROUGHOUT CONSTRUCTION.
5. CONSTRUCT CONCRETE WASHOUT BASIN PER NEWBERG STANDARD DRAWING 607 ON SHEET C124. MAINTAIN THROUGHOUT CONSTRUCTION.
6. PROVIDE CONSTRUCTION STAGING AND PARKING AREA FOR SITE ACCESS MANAGEMENT AND JOBSITE ADMINISTRATION.
7. INSTALL INLET PROTECTION PER NEWBERG STANDARD DRAWING 605 ON SHEET C123. MAINTAIN THROUGHOUT CONSTRUCTION.

DEMOLITION KEY NOTES

1. SHUT OFF, DISCONNECT, AND REMOVE UTILITY LINES AND DISPOSE OFF-SITE.
2. REMOVE EXISTING STRUCTURE AND FOUNDATION AND DISPOSE OFF-SITE AFTER ALL UTILITY LINES ARE PROPERLY SHUT OFF AND DISCONNECTED.
3. REMOVE EXISTING FENCING AND ASSOCIATED APPURTENANCES AND DISPOSE OFF-SITE.
4. SAWCUT AND REMOVE LAST 2' OF AC AT TIME OF ROAD CONSTRUCTION, AND DISPOSE OFF-SITE.
5. REMOVE EXISTING CULVERT AND ENTRANCE, CLEAR DITCH OF DEBRIS, AND DISPOSE OFF-SITE.

GENERAL DEMOLITION NOTES

1. SEE TREE REMOVAL AND PRESERVATION PLAN (SHEET C110) FOR ALL TREE REMOVAL INFORMATION.
2. SEE GEOTECHNICAL REPORT FOR SURFACE GRUBBING AND STRIPPING INFORMATION.
3. NO UNAUTHORIZED GROUND DISTURBANCE MAY OCCUR WITHIN VEGETATED CORRIDOR AND SENSITIVE AREA.

PRE-CONSTRUCTION, CLEARING, AND DEMOLITION NOTES

1. ALL BASE ESC MEASURES (INLET PROTECTION, PERIMETER SEDIMENT CONTROL, GRAVEL CONSTRUCTION ENTRANCES, ETC.) MUST BE IN PLACE, FUNCTIONAL, AND APPROVED IN AN INITIAL INSPECTION, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
2. SEDIMENT BARRIERS APPROVED FOR USE INCLUDE SEDIMENT FENCE, BERMS CONSTRUCTED OUT OF MULCH, CHIPPINGS, OR OTHER SUITABLE MATERIAL, STRAW WATTLES, OR OTHER APPROVED MATERIALS.
3. SENSITIVE RESOURCES INCLUDING, BUT NOT LIMITED TO, TREES, WETLANDS, AND RIPARIAN PROTECTION AREAS SHALL BE CLEARLY DELINEATED WITH ORANGE CONSTRUCTION FENCING OR CHAIN LINK FENCING IN A MANNER THAT IS CLEARLY VISIBLE TO ANYONE IN THE AREA. NO ACTIVITIES ARE PERMITTED TO OCCUR BEYOND THE CONSTRUCTION BARRIER.
4. CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES INCLUDING, BUT NOT LIMITED TO, STREET SWEEPING, AND VACUUMING, MAY BE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
5. RUN-ON AND RUN-OFF CONTROLS SHALL BE IN PLACE AND FUNCTIONING PRIOR TO BEGINNING SUBSTANTIAL CONSTRUCTION ACTIVITIES. RUN-ON AND RUN-OFF CONTROL MEASURES INCLUDE: SLOPE DRAINS (WITH OUTLET PROTECTION), CHECK DAMS, SURFACE ROUGHENING, AND BANK STABILIZATION.

GENERAL EROSION CONTROL NOTES

1. THESE EROSION AND SEDIMENT CONTROL PLANS ASSUME "DRY WEATHER" CONSTRUCTION. "WET WEATHER" CONSTRUCTION MEASURES SHALL BE APPLIED BETWEEN OCTOBER 1ST AND MAY 31ST.

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED SILT FENCING
- PROPOSED TREE PROTECTING FENCING
- PROPOSED CONSTRUCTION ENTRANCE
- PROPOSED INLET PROTECTION
- PROPOSED BIO BAG CHECK DAM
- EXISTING SURFACE RUN-OFF FLOW ARROW
- PROPOSED LIMITS OF DISTURBANCE
- WETLAND TO REMAIN

811 Know what's below. Call before you dig.

N W E S

SCALE: 1" = 100'
0 100' 200'

REGISTERED PROFESSIONAL ENGINEER 87762PE OREGON JULY 14, 1987 ASHLEY ROCHELLE SIALL
PRELIMINARY
EXPIRES: 06/30/20

PUBLISH DATE
06.06.2018

ISSUED FOR
LAND USE DOCUMENTS

1200C CLEARING AND DEMOLITION ESCP I

CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT

JT SMITH COMPANIES
NEWBERG, OR

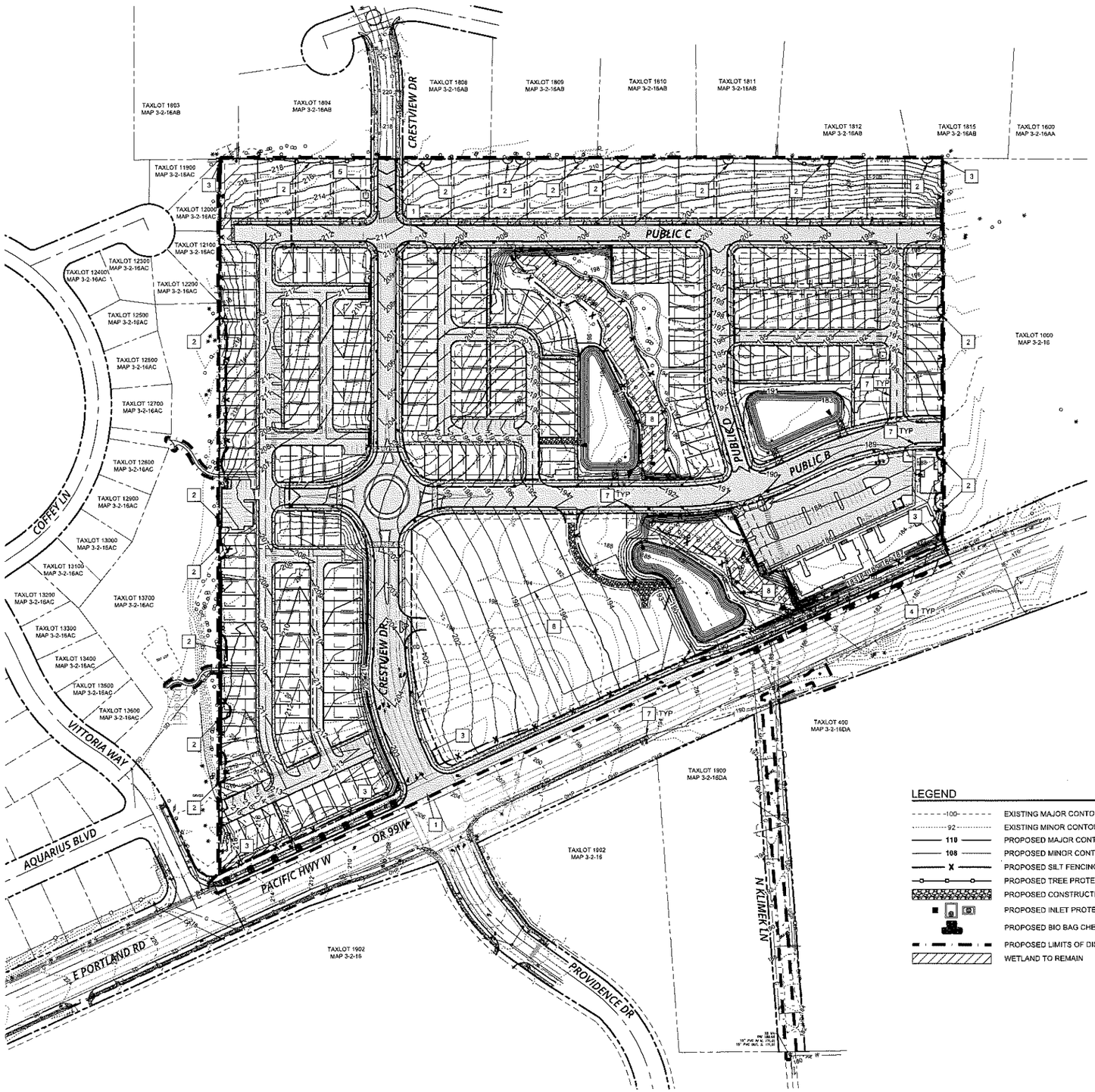
3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION

3J PROJECT #	17393
TAX LOT(S)	3S2W1S 13800, 1100
LAND USE #	N/A
DESIGNED BY	ARS, JEJ, BMO
CHECKED BY	AJM, RGW

SHEET NUMBER
C121

P:\17393-JTS-CRESTVIEW CROSSING\CAD\DGN\C120 1200C-SET.DWG



EROSION CONTROL KEY NOTES

1. INSTALL CONSTRUCTION ENTRANCE PER NEWBERG STANDARD DRAWING 601 ON SHEET C123. MAINTAIN THROUGHOUT CONSTRUCTION.
2. INSTALL TREE PROTECTION FENCING PER DETAIL T-1 ON SHEET C124. MAINTAIN THROUGHOUT CONSTRUCTION. ALL RELOCATION OF TREE PROTECTION FENCING AND WORK WITHIN THE STANDARD TREE PROTECTION ZONE SHALL BE PERFORMED UNDER THE SUPERVISION OF AN ARBORIST OR THE CITY'S URBAN FORESTER. FENCING SHALL BE REPLACED TO 5' BEYOND THE TREE DRIPLINE ONCE WORK WITHIN THE TREE PROTECTION ZONE IS COMPLETED.
3. INSTALL SILT FENCING PER NEWBERG STANDARD DRAWING 602 ON SHEET C123. MAINTAIN THROUGHOUT CONSTRUCTION.
4. INSTALL BIO-FILTER BAG CHECK DAMS AT 50' O.C. SPACING PER NEWBERG STANDARD DRAWING 605 ON SHEET C123. MAINTAIN THROUGHOUT CONSTRUCTION.
5. CONSTRUCT CONCRETE WASHOUT BASIN PER NEWBERG STANDARD DRAWING 607 ON SHEET C124. MAINTAIN THROUGHOUT CONSTRUCTION.
6. PROVIDE CONSTRUCTION STAGING AND PARKING AREA FOR SITE ACCESS MANAGEMENT AND JOBSITE ADMINISTRATION.
7. INSTALL INLET PROTECTION PER NEWBERG STANDARD DRAWING 605 ON SHEET C123. MAINTAIN THROUGHOUT CONSTRUCTION.
8. INSTALL OUTLET PROTECTION PER NEWBERG STANDARD DRAWING 606 ON SHEET C123. MAINTAIN THROUGHOUT CONSTRUCTION.

GRADING, STREET AND UTILITY EROSION AND SEDIMENT CONSTRUCTION NOTES:

1. SEED USED FOR TEMPORARY OR PERMANENT SEEDING SHALL BE COMPOSED OF ONE OF THE FOLLOWING MIXTURES. UNLESS OTHERWISE AUTHORIZED:
   - A. VEGETATED CORRIDOR AREAS REQUIRE NATIVE SEED MIXES. SEE RESTORATION PLAN FOR APPROPRIATE SEED MIX.
   - B. DWARF GRASS MIX (MIN. 100 LB./AC.)
     1. DWARF PERENNIAL RYEGRASS (80% BY WEIGHT)
     2. CREEPING RED FESCUE (20% BY WEIGHT)
   - C. STANDARD HEIGHT GRASS MIX (MIN. 100LB./AC.)
     1. ANNUAL RYEGRASS (40% BY WEIGHT)
     2. TURF-TYPE FESCUE (60% BY WEIGHT)
2. SLOPE TO RECEIVE TEMPORARY OR PERMANENT SEEDING SHALL HAVE THE SURFACE ROUGHENED BY MEANS OF TRACK-WALKING OR THE USE OF OTHER APPROVED IMPLEMENTS. SURFACE ROUGHENING IMPROVES SEED BEDDING AND REDUCES RUN-OFF VELOCITY.
3. LONG TERM SLOPE STABILIZATION MEASURES SHALL INCLUDE THE ESTABLISHMENT OF PERMANENT VEGETATIVE COVER VIA SEEDING WITH APPROVED MIX AND APPLICATION RATE.
4. TEMPORARY SLOPE STABILIZATION MEASURES SHALL INCLUDE: COVERING EXPOSED SOIL WITH PLASTIC SHEETING, STRAW MULCHING, WOOD CHIPS, OR OTHER APPROVED MEASURES.
5. STOCKPILED SOIL OR STRIPPINGS SHALL BE PLACED IN A STABLE LOCATION AND CONFIGURATION. DURING "WET WEATHER" PERIODS, STOCKPILES SHALL BE COVERED WITH PLASTIC SHEETING OR STRAW MULCH. SEDIMENT FENCE IS REQUIRED AROUND THE PERIMETER OF THE STOCKPILE.
6. EXPOSED CUT OR FILL AREAS SHALL BE STABILIZED THROUGH THE USE OF TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS OR MATS, MID-SLOPE SEDIMENT FENCES OR WATTLES, OR OTHER APPROPRIATE MEASURES. SLOPES EXCEEDING 25% MAY REQUIRE ADDITIONAL EROSION CONTROL MEASURES.
7. AREAS SUBJECT TO WIND EROSION SHALL USE APPROPRIATE DUST CONTROL MEASURES INCLUDING THE APPLICATION OF A FINE SPRAY OF WATER, PLASTIC SHEETING, STRAW MULCHING, OR OTHER APPROVED MEASURES.
8. CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES INCLUDING, BUT NOT LIMITED TO, TIRE WASHES, STREET SWEEPING, AND VACUUMING MAY BE BE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
9. ACTIVE INLETS TO STORM WATER SYSTEMS SHALL BE PROTECTED THROUGH THE USE OF APPROVED INLET PROTECTION MEASURES. ALL INLET PROTECTION MEASURES ARE TO BE REGULARLY INSPECTED AND MAINTAINED AS NEEDED.
10. SATURATED MATERIALS THAT ARE HAULED OFF-SITE MUST BE TRANSPORTED IN WATER-TIGHT TRUCKS TO ELIMINATE SPILLAGE OF SEDIMENT AND SEDIMENT-LADEN WATER.
11. AN AREA SHALL BE PROVIDED FOR THE WASHING OUT OF CONCRETE TRUCKS IN A LOCATION THAT DOES NOT PROVIDE RUN-OFF THAT CAN ENTER THE STORM WATER SYSTEM. IF THE CONCRETE WASH-OUT AREA CAN NOT BE CONSTRUCTED GREATER THAN 50' FROM ANY DISCHARGE POINT, SECONDARY MEASURES SUCH AS BERMS OR TEMPORARY SETTLING PITS MAY BE REQUIRED. THE WASH-OUT SHALL BE LOCATED WITHIN SIX FEET OF TRUCK ACCESS AND BE CLEANED WHEN IT REACHES 50% OF THE CAPACITY.
12. SWEEPINGS FROM EXPOSED AGGREGATE CONCRETE SHALL NOT BE TRANSFERRED TO THE STORM WATER SYSTEM. SWEEPINGS SHALL BE PICKED UP AND DISPOSED IN THE TRASH.
13. AVOID PAVING IN WET WEATHER WHEN PAVING CHEMICALS CAN RUN-OFF INTO THE STORM WATER SYSTEM.
14. USE BMPs SUCH AS CHECK-DAMS, BERMS, AND INLET PROTECTION TO PREVENT RUN-OFF FROM REACHING DISCHARGE POINTS.
15. COVER CATCH BASINS, MANHOLES, AND OTHER DISCHARGE POINTS WHEN APPLYING SEAL COAT, TACK COAT, ETC. TO PREVENT INTRODUCING THESE MATERIALS TO THE STORM WATER SYSTEM.
16. SEEDING SHALL BE PERFORMED NO LATER THAN SEPTEMBER 1ST FOR EACH PHASE OF CONSTRUCTION.

EROSION AND SEDIMENT CONTROL BMP IMPLEMENTATION

1. ALL BASE ESC MEASURES (INLET PROTECTION, PERIMETER SEDIMENT CONTROL, GRAVEL CONSTRUCTION ENTRANCES, ETC.) MUST BE IN PLACE, FUNCTIONAL, AND APPROVED IN AN INITIAL INSPECTION, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
2. UTILIZATION OF STOCK PILE AREAS SHOULD TRANSITION FROM PRIMARY STOCK PILE AREA TO SECONDARY STOCK PILE AREAS ACCORDING TO CUT AND FILL ACTIVITY.
3. ALL SEDIMENT BARRIERS (TO BE INSTALLED AFTER GRADING) SHALL BE INSTALLED IMMEDIATELY FOLLOWING ESTABLISHMENT OF FINISHED GRADE AS SHOWN ON THESE PLANS.
4. LONG TERM SLOPE STABILIZATION MEASURES "INCLUDING MATTING" SHALL BE IN PLACE OVER ALL EXPOSED SOILS BY OCTOBER 1.
5. THE STORM WATER FACILITY SHALL BE CONSTRUCTED AND LANDSCAPED PRIOR TO THE STORM WATER SYSTEM FUNCTIONING AND SITE PACING.
6. INLET PROTECTION SHALL BE IN PLACE IMMEDIATELY FOLLOWING PAVING ACTIVITIES.

LEGEND

- EXISTING MAJOR CONTOUR (-100-)
- EXISTING MINOR CONTOUR (92)
- PROPOSED MAJOR CONTOUR (110)
- PROPOSED MINOR CONTOUR (108)
- PROPOSED SILT FENCING (X)
- PROPOSED TREE PROTECTING FENCING
- PROPOSED CONSTRUCTION ENTRANCE
- PROPOSED INLET PROTECTION
- PROPOSED BIO BAG CHECK DAM
- PROPOSED LIMITS OF DISTURBANCE
- WETLAND TO REMAIN

Know what's below. Call before you dig.

N W E S

SCALE: 1" = 100'
0 100' 200'

REGISTERED PROFESSIONAL ENGINEER 87762 OREGON JULY 14, 2017 ANDREW J. ROCHELLE RENEWAL
PRELIMINARY
EXPIRES: 06/30/20

PUBLISH DATE
06.06.2018
ISSUED FOR
LAND USE DOCUMENTS

1200C GRADING AND STREET CONSTRUCTION ESCP I

CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT

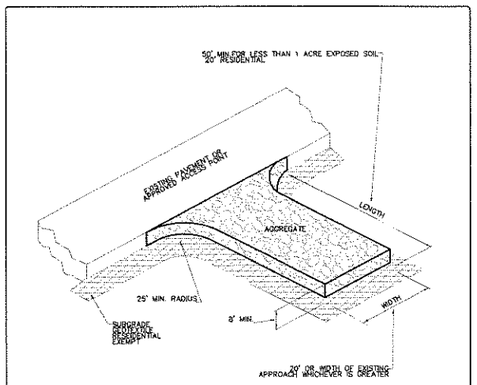
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C122

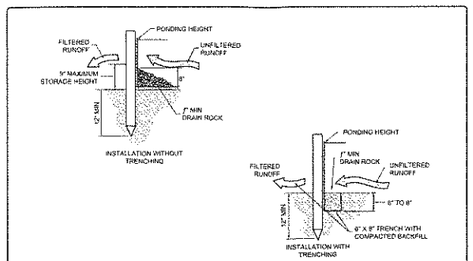
P:\17393-JTS-CRESTVIEW CROSSING\CAD\SDC\120 1200C SET.DWG



NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-RIGH-OF WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
4. WHERE RUNOFF CONTAINING SEDIMENT-LADEN WATER IS LEAVING THE SITE VIA THE CONSTRUCTION ENTRANCE, OTHER MEASURES SHALL BE IMPLEMENTED TO DIVERT RUNOFF THROUGH AN APPROVED FILTERING SYSTEM.
5. DIMENSIONS
   SINGLE FAMILY AND DUPLEX
   20' LONG BY 20' WIDE, 8" DEEP OF 3/4 " MINUS CLEAN ROCK.
   COMMERCIAL
   50' LONG BY 20' WIDE, 3-6" DEEP CLEAN ROCK.
   GOVERNING AUTHORITY MAY REQUIRE GEOTEXTILE FABRIC TO PREVENT SUB-SOIL PUMPING.

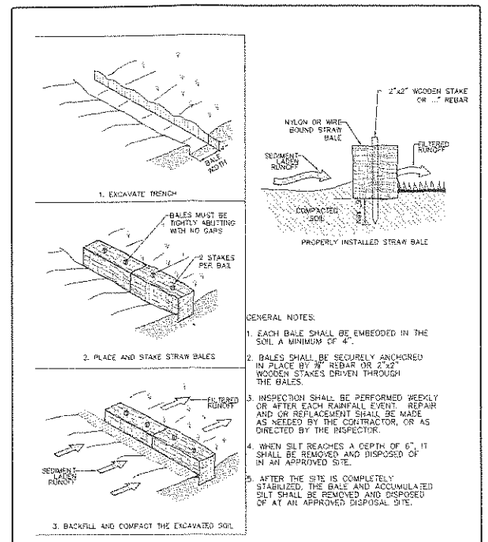
City of Newberg — PUBLIC WORKS ENGINEERING DIVISION, 414 E. FIRST STREET NEWBERG, OR 97132, PHONE: 503-537-1240, FAX: 503-537-1277

REVISIONS:		CONSTRUCTION ENTRANCE	SCALE: N.T.S.
			DATE: May 2007
			APPROVED BY: D. Gerlicz
			STANDARD DRAWING 601



City of Newberg — PUBLIC WORKS ENGINEERING DIVISION, 414 E. FIRST STREET NEWBERG, OR 97132, PHONE: 503-537-1240, FAX: 503-537-1277

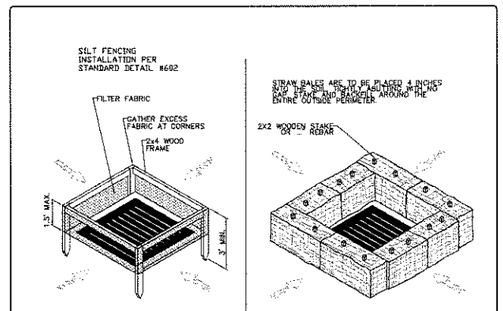
REVISIONS:		SILT FENCE	SCALE: N.T.S.
			DATE: MAY 2007
			APPROVED BY: D. DANIELS
			STANDARD DRAWING 602



GENERAL NOTES:
1. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
2. BALES SHALL BE SECURELY ANCHORED IN PLACE BY 36" REBAR OR 2"x2" WOODEN STAKES DRIVEN THROUGH THE BALES.
3. INSPECTION SHALL BE PERFORMED WEEKLY OR AFTER EACH RAINFALL EVENT. REPAIR AND OR REPLACEMENT SHALL BE MADE AS NEEDED BY THE CONTRACTOR, OR AS DIRECTED BY THE INSPECTOR.
4. WHEN SILT REACHES A DEPTH OF 6", IT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED SITE.
5. AFTER THE SITE IS COMPLETELY STABILIZED, THE BALE AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF AT AN APPROVED DISPOSAL SITE.

City of Newberg

REVISIONS:		STRAW BALE BARRIER	SCALE: N.T.S.
			DATE: May 2007
			APPROVED BY: D. Gerlicz
			STANDARD DRAWING 603

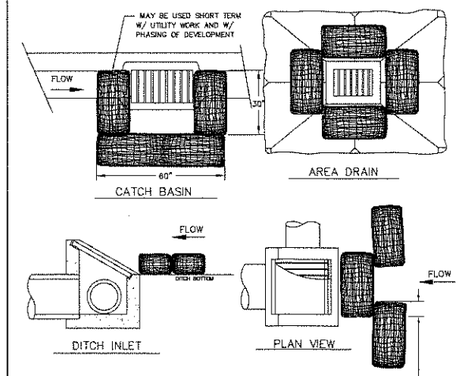


THIS METHOD OF INLET PROTECTION IS TO BE USED WHERE THE INLET DRAIN IS LOCATED IN A RELATIVELY FLAT UNPAVED AREA (SLOPE <5%).

THIS METHOD OF INLET PROTECTION SHALL NOT BE USED IN STREETS, TRAVELED AREAS, OR AREAS OF CONCENTRATED FLOW (DITCHES).

City of Newberg — PUBLIC WORKS ENGINEERING DIVISION, 414 E. FIRST STREET NEWBERG, OR 97132, PHONE: 503-537-1240, FAX: 503-537-1277

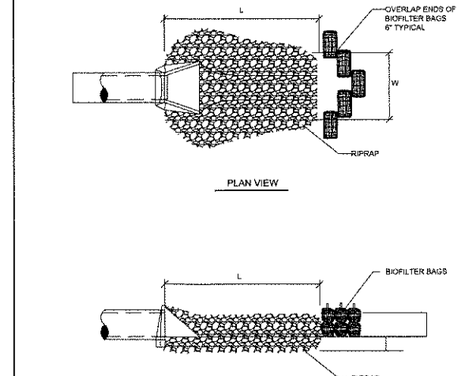
REVISIONS:		FIELD DRAIN INLET PROTECTION	SCALE: N.T.S.
12/10/2013			DATE: 12/10/2013
			APPROVED BY: PAUL CHOU
			STANDARD DRAWING 604



NOTES:
1. ADDITIONAL MEASURES MUST BE CONSIDERED DEPENDING ON SOIL TYPES.
2. BIO-FILTER BAGS SHOULD BE STAKED WHERE APPLICABLE USING (2) 1"x2" WOODEN STAKES OR APPROVED EQUAL PER BAG.
3. WHEN USING 30" BIO-BAGS TO PROTECT A CATCH BASIN YOU MUST HAVE 4 BAGS AND THEY SHALL BE OVERLAPPED BY 6".

City of Newberg — PUBLIC WORKS ENGINEERING DIVISION, 414 E. FIRST STREET NEWBERG, OR 97132, PHONE: 503-537-1240, FAX: 503-537-1277

REVISIONS:		INLET PROTECTION	SCALE: N.T.S.
12/10/2013			DATE: 04/04/2009
			APPROVED BY: PAUL CHOU
			STANDARD DRAWING 605



W = GREATER OF: DIAMETER + 6" OR 3x DIAMETER

L = GREATER OF: 12' OR 4x DIAMETER

NOTES:
1. BIOFILTER BAGS REQUIRED ONLY WHEN DISCHARGING SEDIMENT-LADEN WATER.
2. STAKING OF BIOFILTER BAGS REQUIRED USING (2) 1"x2" WOOD STAKES OR APPROVED EQUAL PER BAG.

City of Newberg — PUBLIC WORKS ENGINEERING DIVISION, 414 E. FIRST STREET NEWBERG, OR 97132, PHONE: 503-537-1240, FAX: 503-537-1277

REVISIONS:		OUTLET PROTECTION	SCALE: N.T.S
			DATE: 01/10/2014
			APPROVED BY:
			STANDARD DRAWING 606

PRELIMINARY
REGISTERED PROFESSIONAL ENGINEER
87769
OREGON
JULY 14, 2017
JEFFREY ROCHELLE SEAL
EXPIRES: 06/30/20

PUBLISH DATE
06.06.2018
ISSUED FOR
LAND USE DOCUMENTS

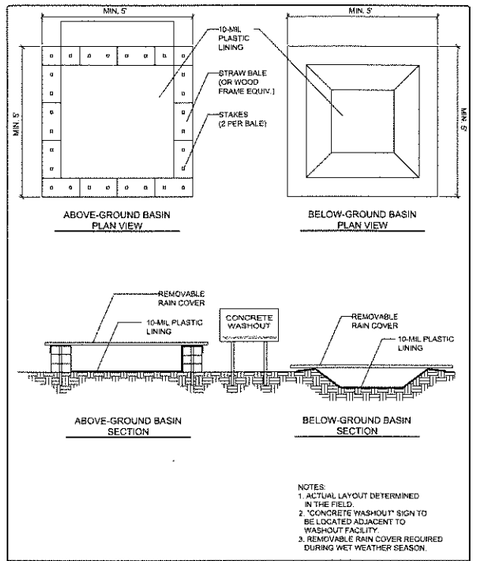
1200C DETAILS I
CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

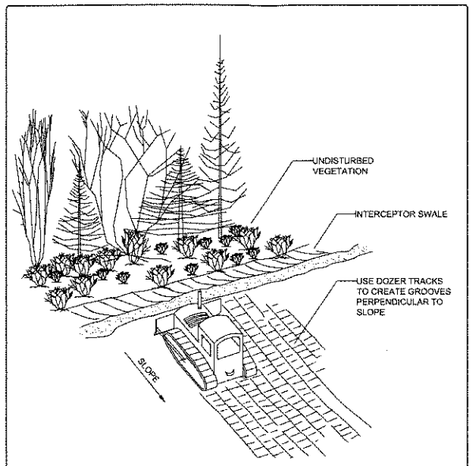
SHEET NUMBER
C123

P:\17393-JTS-CRESTVIEW CROSSING\CAD\DOC\120 1200C SET.DWG



NOTES:
1. ACTUAL LAYOUT DETERMINED IN THE FIELD.
2. "CONCRETE WASHOUT" SIGN TO BE LOCATED ADJACENT TO WASHOUT FACILITY.
3. REMOVABLE RAIN COVER REQUIRED DURING WET WEATHER SEASON.

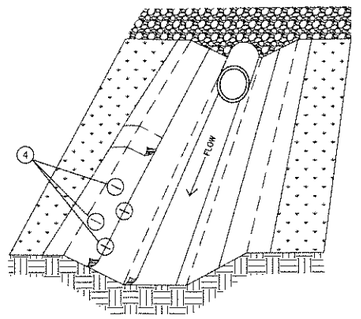
City of Newberg — Public Works Engineering Division, 414 E. First Street Newberg, OR 97132, Phone: 503-537-1240, Fax: 503-537-1277	REVISIONS: NA	CONCRETE WASTE MANAGEMENT	SCALE: N.T.S; DATE: 01/10/2014; APPROVED BY: ; STANDARD DRAWING: 607



BMP NEEDED AT MIN. AT TOE OF SLOPE

ALL SLOPES TO BE SEEDED

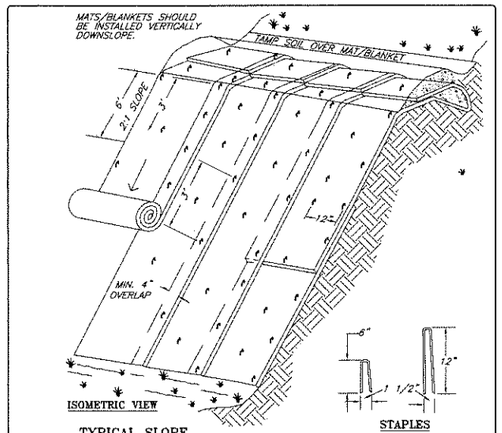
City of Newberg — Public Works Engineering Division, 414 E. First Street Newberg, OR 97132, Phone: 503-537-1240, Fax: 503-537-1277	REVISIONS: NA	SURFACE ROUGHENING CAT TRACKING	SCALE: N.T.S; DATE: 01/10/2014; APPROVED BY: ; STANDARD DRAWING: 608



CHANNEL INSTALLATION

NOTES:
1. INFORMATION PROVIDED IS MINIMUM REQUIREMENTS. MANUFACTURES REQUIREMENTS WHICH ARE MORE STRINGENT SHALL BE USED.
2. INSTALL MAT PARALLEL IN CENTER OF CHANNEL IN THE DIRECTION OF FLOW. FOR CULVERT OUTFALLS, PLACE MAT UNDER CULVERT OR RIP RAP A MINIMUM OF 12 INCHES.
3. IN CHANNEL BOTTOM, OVERLAP LENGTH ENDS A MINIMUM OF 12 INCHES.
4. LENGTH OF STAPLES SHALL BE DETERMINDED BY SOIL TYPE– COHESIVE SOIL USE 6 INCH, NON–COHESIVE SOILS 8–12 INCH.

City of Newberg — Public Works Engineering Division, 414 E. First Street Newberg, OR 97132, Phone: 503-537-1240, Fax: 503-537-1277	REVISIONS: NA	MATTING TRENCH INSTALLATION	SCALE: N.T.S; DATE: 01/10/2014; APPROVED BY: ; STANDARD DRAWING: 609



TYPICAL SLOPE SOIL STABILIZATION

NOTES:
1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
4. STAKING OR STAPLING LAYOUT PER MANUFACTURERS SPECIFICATIONS.

NOT TO SCALE

City of Newberg — Public Works Engineering Division, 414 E. First Street Newberg, OR 97132, Phone: 503-537-1240, Fax: 503-537-1277	REVISIONS: NA	MATTING- SLOPE INSTALLATION	SCALE: N.T.S; DATE: 01/10/2014; APPROVED BY: ; STANDARD DRAWING: 610

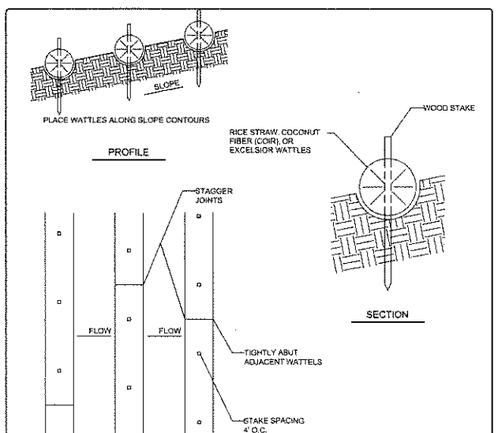
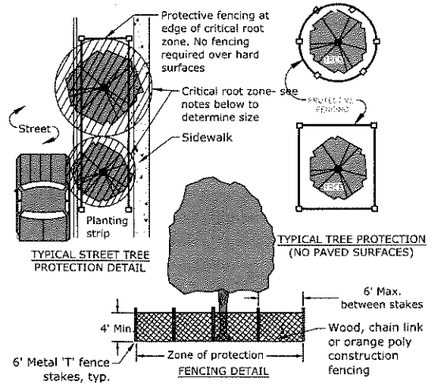


TABLE 3-12 BARRIER SPACING FOR GENERAL APPLICATION

% SLOPE	SLOPE	MAX SPACING ON SLOPE
<10%	<10:1	200 ft
10-16%	10:1 to 7:1	150 ft
16-20%	7:1 to 5:1	100 ft
20-30%	5:1 to 3.5:1	50 ft
30-50%	3.5:1 to 2:1	25 ft

NOTES:
1. STAKING SPECIFICATIONS:
   A. 1"x2" WOODEN STAKES.
   B. ADDITIONAL STAKES MAY BE INSTALLED ON DOWNHILL SIDE OF WATTLES ON STEEP SLOPES OR HIGHLY EROSIVE SOILS.
2. SPACING IN ACCORDANCE WITH TABLE 3-12

City of Newberg — Public Works Engineering Division, 414 E. First Street Newberg, OR 97132, Phone: 503-537-1240, Fax: 503-537-1277	REVISIONS: NA	WATTLES/STRAW BALE	SCALE: N.T.S; DATE: 01/10/2014; APPROVED BY: ; STANDARD DRAWING: 611



Notes:
1) The critical root zone (CRZ) shall be an area with a radius at least 5' from the edge of the tree dripline. 2) The CRZ shall be marked and protected by a construction fence placed around the perimeter prior to construction. 3) No soil grade changes or compaction shall take place within the CRZ except as directed. 4) No storage of material shall be allowed within the CRZ. 5) If work is done within the CRZ, care must be taken to minimize root disturbance. Special care shall be taken during excavation and removal of existing curb, gutter, and sidewalks to avoid damage to tree roots. Locate existing tree roots using hand tools or other approved methods such as an airspade. 6) Protective fencing is required when the work area is within the CRZ of trees, except where portions of the CRZ are covered with pavement such as streets or walks. 7) No root over 2" shall be cut without approval of the urban forester (or an approved arborist). Roots shall be cut with approved saws. No roots over 2" shall be cut or torn during trenching with power equipment such as backhoes and trenchers. Utility lines and irrigation or other pipes shall be installed by hand digging or tunneling under roots, as necessary, to avoid cutting roots 2" and larger.

TREE PROTECTION FENCING

N.T.S.

T-1
C124

REGISTERED PROFESSIONAL ENGINEER — OREGON — JANUARY 14, 2005 — BRENT ROCHELLE SEAL
PRELIMINARY
EXPIRES: 06/30/20

PUBLISH DATE
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ISSUED FOR
LAND USE DOCUMENTS

1200C DETAILS II

CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT

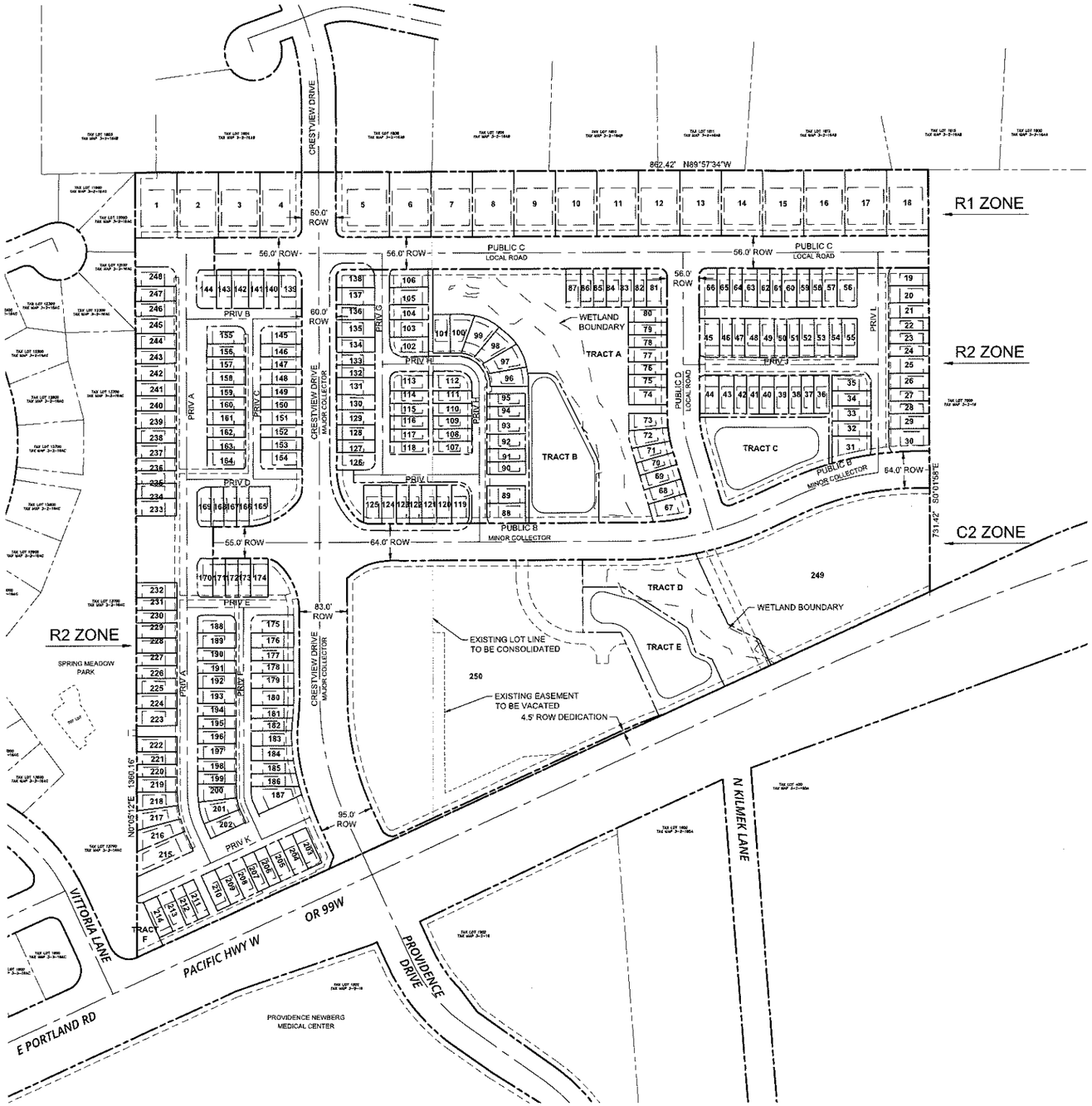
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 1300, 1100
LAND USE # | N/A
DESIGNED BY | ARB, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C124

P:\17393-JTS-CRESTVIEW CROSSING\CAD\DID\C120 1200C SET.DWG



SITE STATISTICS

SITE ADDRESS	4505 E PORTLAND ROAD
TAX LOT / ALT. PARCEL NO.	3216AC 13800 & 1100
JURISDICTION	CITY OF NEWBERG
GROSS SITE AREA	33.13 ACRES
PROPERTY ZONING	R-1, R-2, C-2
FLOOD HAZARD MAP NUMBER	FIRM PANEL NUMBER: 41071C0241D - ZONE X (UN-SHADED) 41071C0235D - ZONE X (UN-SHADED)

SUBDIVISION STATISTICS

ZONING CODE CHAPTER 33.120	ZONE R-1	ZONE R-2	ZONE R-2 PUD* AS PROPOSED	ZONE C-2
ZONE AREA	4.31 ACRES	6.58 ACRES	6.58 ACRES	22.24 ACRES
MAXIMUM DENSITY*	175 DENSITY POINTS/ACRE	310 DENSITY POINTS/ACRE	310 DENSITY POINTS/ACRE	640 DENSITY POINTS/ACRE
MAXIMUM LOT SIZE	10,000 SF	5,000 SF	3,100 SF	N/A
MINIMUM LOT SIZE	5,000 SF	3,000 SF	1,440 SF	5,000 SF
MINIMUM LOT WIDTH	35 FT @ BL	35 FT @ BL	22 FT	N/A
MAXIMUM LOT COVERAGE	30%	50%	60%	N/A
MAXIMUM BUILDING HEIGHT	30 FT	30 FT	30 FT	N/A

SETBACKS

FRONT	15 FT	15 FT	10 FT	10 FT
INTERIOR	5 FT	5 FT	2.5 FT	0 FT/10FT

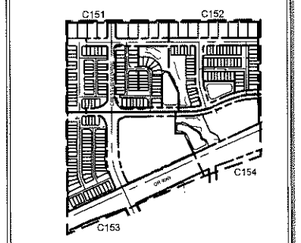
*THIS SUBDIVISION IS A PLANNED UNIT DEVELOPMENT (PUD) THAT PROPOSES REDUCED LOT OR DEVELOPMENT SITE AREA AND INSTEAD USES MAXIMUM DENSITY POINTS PER ACRE.

THIS PLAN HAS BEEN PREPARED FOR PLANNING AND ILLUSTRATIVE PURPOSES ONLY. THIS TENTATIVE PLAT SHOWS PROPOSED LOT CONSOLIDATION AND DIMENSIONS. THIS IS NOT AN OFFICIAL PLAT AND IS NOT TO BE USED FOR SURVEY OR RECORDING PURPOSES.

LEGEND

- PROJECT BOUNDARY
- EXISTING RIGHT-OF-WAY LINE
- EXISTING RIGHT-OF-WAY CENTERLINE
- EXISTING LOT LINE
- EXISTING ADJACENT PROPERTY LINE
- EXISTING EASEMENT
- PROPOSED RIGHT-OF-WAY LINE
- PROPOSED RIGHT-OF-WAY CENTERLINE
- PROPOSED LOT LINE
- PROPOSED SETBACK LINE
- PROPOSED EASEMENT

KEY MAP



811 Know what's below. Call before you dig.

N
W E
S

SCALE: 1" = 100'
0 100' 200'

PUBLISH DATE
06.06.2018

ISSUED FOR
LAND USE DOCUMENTS

OVERALL TENTATIVE PLAT
CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT

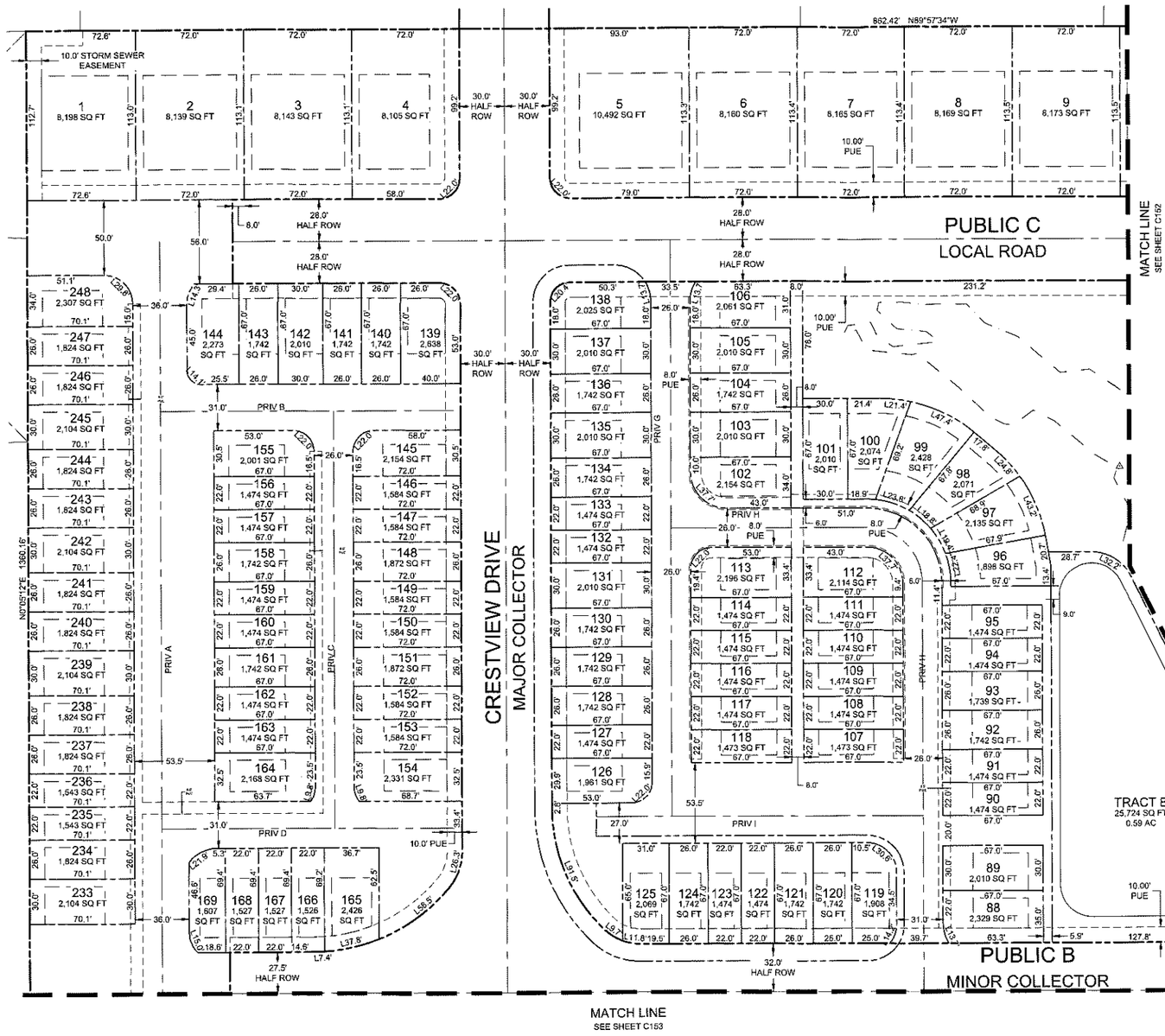
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C150

P:\17393-JTS-CRESTVIEW CROSSING\GIS\CAD\DOC\150 TENTATIVE PLAT.DWG



SITE STATISTICS

SITE ADDRESS	4505 E PORTLAND ROAD
TAX LOT / ALT. PARCEL NO.	3216AC 13800 & 1100
JURISDICTION	CITY OF NEWBERG
GROSS SITE AREA	33.13 ACRES
PROPERTY ZONING	R-1, R-2, C-2
FLOOD HAZARD MAP NUMBER	FIRM PANEL NUMBER: 41071C0241D - ZONE X (UN-SHADED) 41071C0235D - ZONE X (UN-SHADED)

SUBDIVISION STATISTICS

ZONING CODE CHAPTER 33.120	ZONE R-1	ZONE R-2	ZONE R-2 PUD* AS PROPOSED	ZONE C-2
ZONE AREA	4.31 ACRES	6.58 ACRES	6.58 ACRES	22.24 ACRES
MAXIMUM DENSITY*	175 DENSITY POINTS/ACRE	310 DENSITY POINTS/ACRE	310 DENSITY POINTS/ACRE	640 DENSITY POINTS/ACRE
MAXIMUM LOT SIZE	10,000 SF	5,000 SF	3,100 SF	N/A
MINIMUM LOT SIZE	5,000 SF	3,000 SF	1,440 SF	5,000 SF
MINIMUM LOT WIDTH	35 FT @ BL	35 FT @ BL	22 FT	N/A
MAXIMUM LOT COVERAGE	30%	50%	60%	N/A
MAXIMUM BUILDING HEIGHT	30 FT	30 FT	30 FT	N/A

SETBACKS

FRONT	15 FT	15 FT	10 FT	10 FT
INTERIOR	5 FT	5 FT	2.5 FT	0 FT/10FT

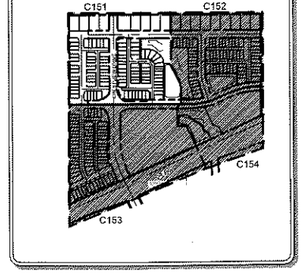
*THIS SUBDIVISION IS A PLANNED UNIT DEVELOPMENT (PUD) THAT PROPOSES REDUCED LOT OR DEVELOPMENT SITE AREA AND INSTEAD USES MAXIMUM DENSITY POINTS PER ACRE.

THIS PLAN HAS BEEN PREPARED FOR PLANNING AND ILLUSTRATIVE PURPOSES ONLY. THIS TENTATIVE PLAT SHOWS PROPOSED LOT CONSOLIDATION AND DIMENSIONS. THIS IS NOT AN OFFICIAL PLAT AND IS NOT TO BE USED FOR SURVEY OR RECORDING PURPOSES.

LEGEND

- PROJECT BOUNDARY
- EXISTING RIGHT-OF-WAY LINE
- EXISTING RIGHT-OF-WAY CENTERLINE
- EXISTING LOT LINE
- EXISTING ADJACENT PROPERTY LINE
- EXISTING EASEMENT
- PROPOSED RIGHT-OF-WAY LINE
- PROPOSED RIGHT-OF-WAY CENTERLINE
- PROPOSED LOT LINE
- PROPOSED SETBACK LINE
- PROPOSED EASEMENT
- PROPOSED WETLAND BOUNDARY

KEY MAP



Know what's below. Call before you dig. 811

N W E S

SCALE: 1" = 100'
0 100' 200'

PUBLISH DATE
06.06.2018
ISSUED FOR
LAND USE DOCUMENTS

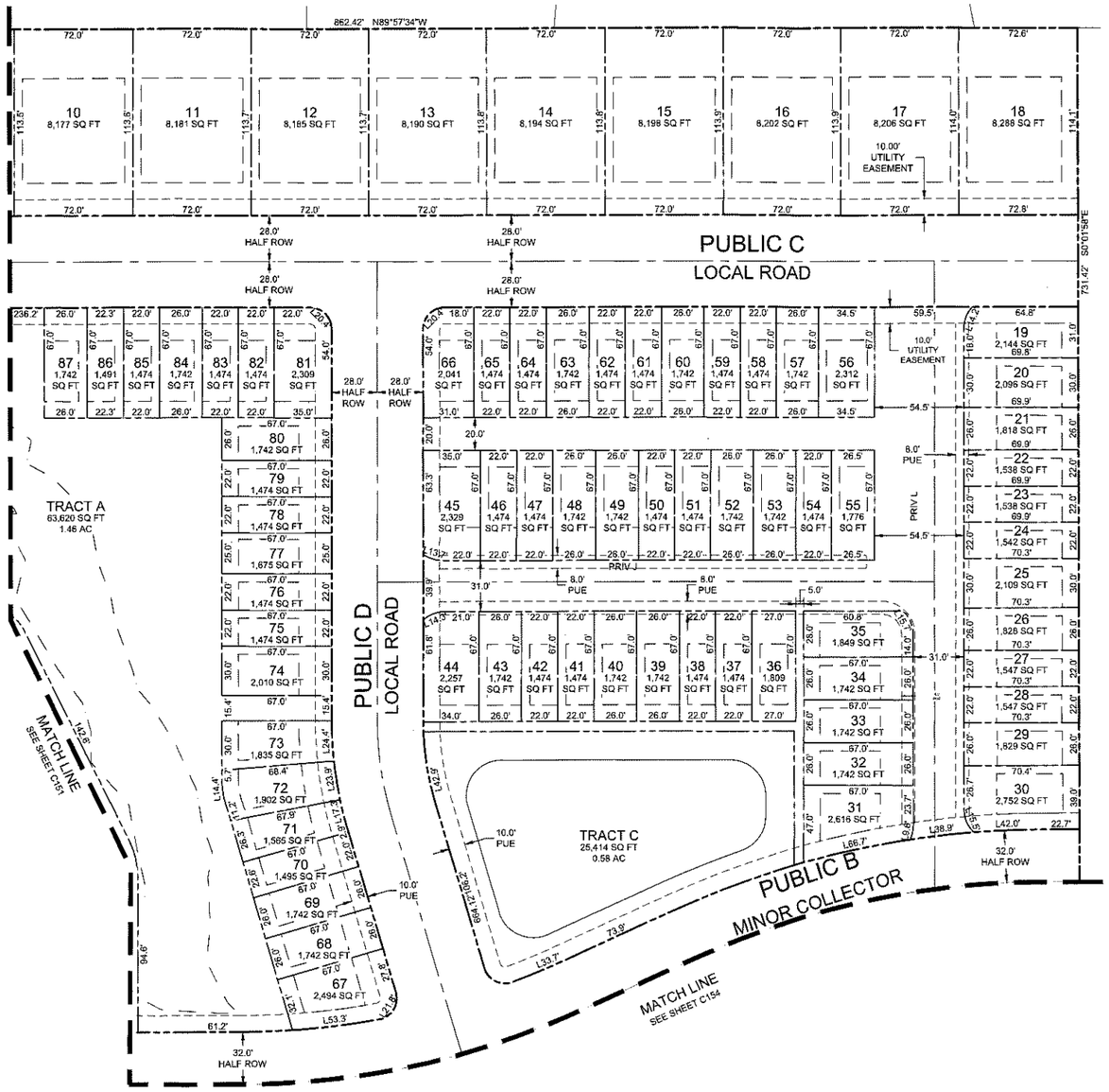
TENTATIVE PLAT I
CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C151

P:\17393-JTS-CRESTVIEW CROSSING\CAD\DGN\C150 TENTATIVE PLAT.DWG



SITE STATISTICS

SITE ADDRESS	4505 E PORTLAND ROAD
TAX LOT / ALT. PARCEL NO.	3216AC 13800 & 1100
JURISDICTION	CITY OF NEWBERG
GROSS SITE AREA	33.13 ACRES
PROPERTY ZONING	R-1, R-2, C-2
FLOOD HAZARD MAP NUMBER	FIRM PANEL NUMBER: 41071C0241D - ZONE X (UN-SHADED) 41071C0235D - ZONE X (UN-SHADED)

SUBDIVISION STATISTICS

ZONING CODE CHAPTER 33.120	ZONE R-1	ZONE R-2	ZONE R-2 PUD* AS PROPOSED	ZONE C-2
ZONE AREA	4.31 ACRES	6.58 ACRES	6.58 ACRES	22.24 ACRES
MAXIMUM DENSITY*	175 DENSITY POINTS/ACRE	310 DENSITY POINTS/ACRE	310 DENSITY POINTS/ACRE	640 DENSITY POINTS/ACRE
MAXIMUM LOT SIZE	10,000 SF	5,000 SF	3,100 SF	N/A
MINIMUM LOT SIZE	5,000 SF	3,000 SF	1,440 SF	5,000 SF
MINIMUM LOT WIDTH	35 FT @ BL	35 FT @ BL	22 FT	N/A
MAXIMUM LOT COVERAGE	30%	50%	60%	N/A
MAXIMUM BUILDING HEIGHT	30 FT	30 FT	30 FT	N/A

SETBACKS

FRONT	15 FT	15 FT	10 FT	10 FT
INTERIOR	5 FT	5 FT	2.5 FT	0 FT/10FT

*THIS SUBDIVISION IS A PLANNED UNIT DEVELOPMENT (PUD) THAT PROPOSES REDUCED LOT OR DEVELOPMENT SITE AREA AND INSTEAD USES MAXIMUM DENSITY POINTS PER ACRE.

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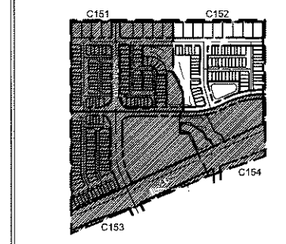
LEGEND

- PROJECT BOUNDARY
- EXISTING RIGHT-OF-WAY LINE
- EXISTING RIGHT-OF-WAY CENTERLINE
- EXISTING LOT LINE
- EXISTING ADJACENT PROPERTY LINE
- EXISTING EASEMENT
- PROPOSED RIGHT-OF-WAY LINE
- PROPOSED RIGHT-OF-WAY CENTERLINE
- PROPOSED LOT LINE
- PROPOSED SETBACK LINE
- PROPOSED EASEMENT
- PROPOSED WETLAND BOUNDARY

KEY MAP



811 Know what's below. Call before you dig.

N W E S

SCALE: 1" = 100'
0 100' 200'

PUBLISH DATE
06.06.2018
ISSUED FOR
LAND USE DOCUMENTS

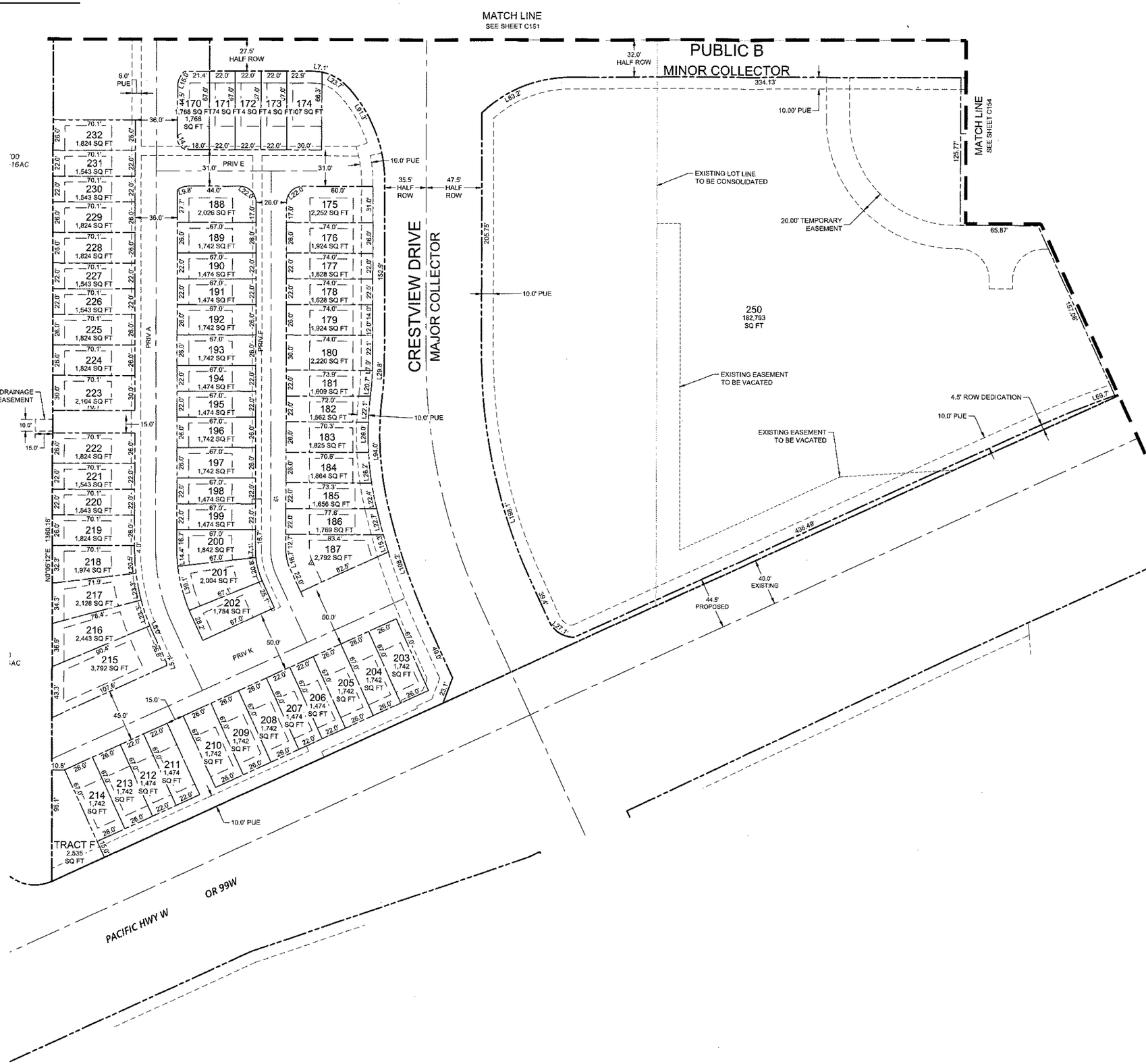
TENTATIVE PLAT II
CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150; BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C152

P:\17393-JTS-CRESTVIEW CROSSING\CAD\DGN\C150 TENTATIVE PLAT.DWG



SITE STATISTICS

SITE ADDRESS	4505 E PORTLAND ROAD
TAX LOT / ALT. PARCEL NO.	3216AC 13800 & 1100
JURISDICTION	CITY OF NEWBERG
GROSS SITE AREA	33.13 ACRES
PROPERTY ZONING	R-1, R-2, C-2
FLOOD HAZARD MAP NUMBER	FIRM PANEL NUMBER: 41071C0241D - ZONE X (UN-SHADED) 41071C0235D - ZONE X (UN-SHADED)

SUBDIVISION STATISTICS

ZONING CODE CHAPTER 33.120	ZONE R-1	ZONE R-2	ZONE R-2 PUD* AS PROPOSED	ZONE C-2
ZONE AREA	4.31 ACRES	6.56 ACRES	6.58 ACRES	22.24 ACRES
MAXIMUM DENSITY*	175 DENSITY POINTS/ACRE	310 DENSITY POINTS/ACRE	310 DENSITY POINTS/ACRE	640 DENSITY POINTS/ACRE
MAXIMUM LOT SIZE	10,000 SF	5,000 SF	3,100 SF	N/A
MINIMUM LOT SIZE	5,000 SF	3,000 SF	1,440 SF	5,000 SF
MINIMUM LOT WIDTH	35 FT @ BL	35 FT @ BL	22 FT	N/A
MAXIMUM LOT COVERAGE	30%	50%	60%	N/A
MAXIMUM BUILDING HEIGHT	30 FT	30 FT	30 FT	N/A

SETBACKS

FRONT	15 FT	15 FT	10 FT	10 FT
INTERIOR	5 FT	5 FT	2.5 FT	0 FT/10FT

*THIS SUBDIVISION IS A PLANNED UNIT DEVELOPMENT (PUD) THAT PROPOSES REDUCED LOT OR DEVELOPMENT SITE AREA AND INSTEAD USES MAXIMUM DENSITY POINTS PER ACRE.

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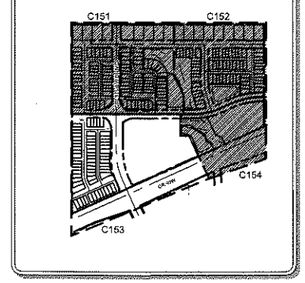
LEGEND

- PROJECT BOUNDARY
- EXISTING RIGHT-OF-WAY LINE
- EXISTING RIGHT-OF-WAY CENTERLINE
- EXISTING LOT LINE
- EXISTING ADJACENT PROPERTY LINE
- EXISTING EASEMENT
- PROPOSED RIGHT-OF-WAY LINE
- PROPOSED RIGHT-OF-WAY CENTERLINE
- PROPOSED LOT LINE
- PROPOSED SETBACK LINE
- PROPOSED EASEMENT

KEY MAP



Know what's below. Call before you dig.

N W E S

SCALE: 1" = 100'
0 100' 200'

PUBLISH DATE
06.06.2018
ISSUED FOR
LAND USE DOCUMENTS

TENTATIVE PLAT III
CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT
JT SMITH COMPANIES
NEWBERG, OR

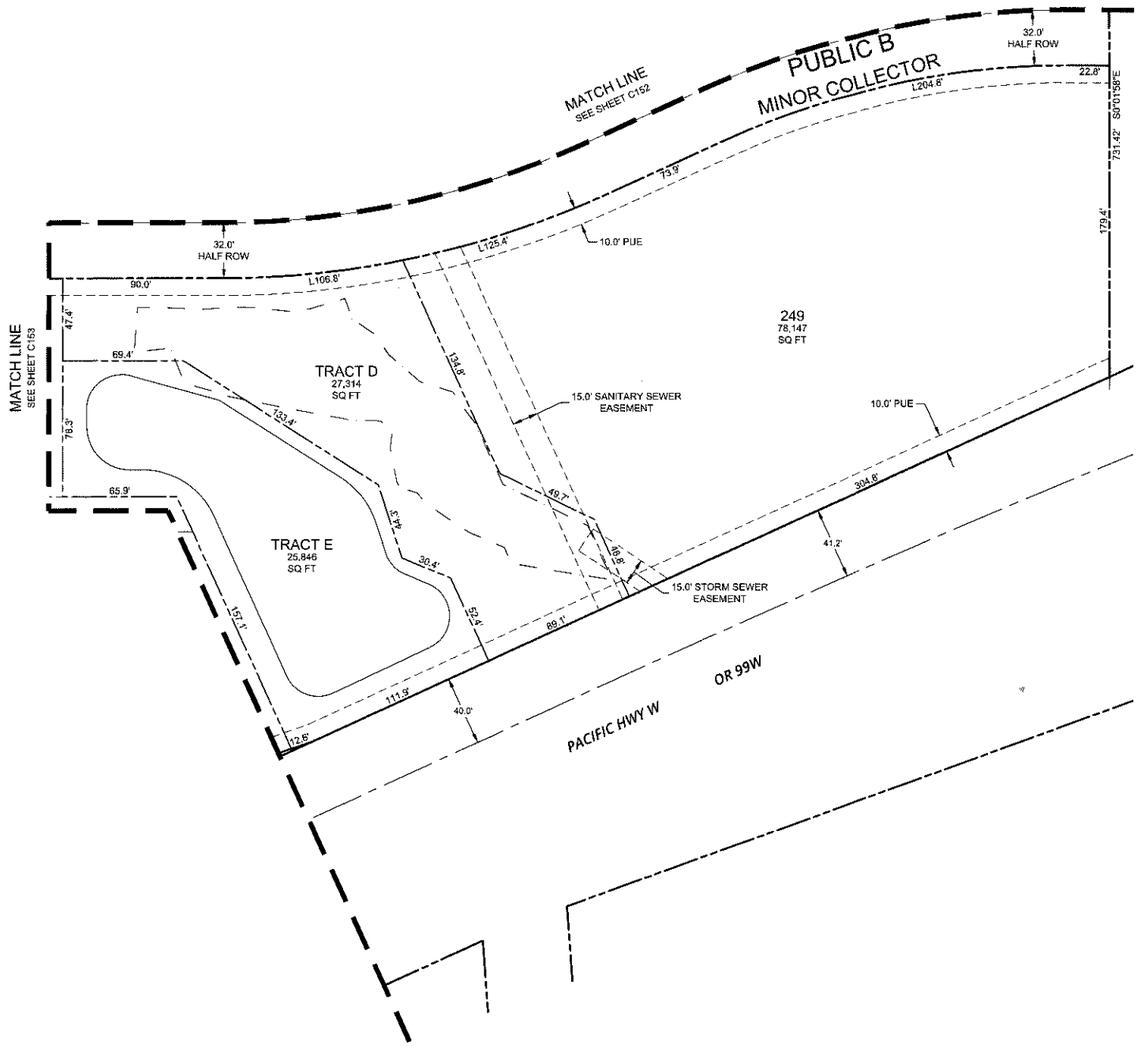
3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150; BEAVERTON, OR 97005

PROJECT INFORMATION

3J PROJECT #	17393
TAX LOT(S)	3S2W16 13800, 1100
LAND USE #	N/A
DESIGNED BY	ARS, JEJ, BMO
CHECKED BY	AJM, RGW

SHEET NUMBER
C153

P:\17393-JTS-CRESTVIEW CROSSING\GCAD\DGC150 TENTATIVE PLAT.DWG



SITE STATISTICS

SITE ADDRESS	4505 E PORTLAND ROAD
TAX LOT / ALT. PARCEL NO.	3216AC 13800 & 1100
JURISDICTION	CITY OF NEWBERG
GROSS SITE AREA	33.13 ACRES
PROPERTY ZONING	R-1, R-2, C-2
FLOOD HAZARD MAP NUMBER	FIRM PANEL NUMBER: 41071C0241D - ZONE X (UN-SHADED) 41071C0235D - ZONE X (UN-SHADED)

SUBDIVISION STATISTICS

ZONING CODE CHAPTER 33.120	ZONE R-1	ZONE R-2	ZONE R-2 PUD* AS PROPOSED	ZONE C-2
ZONE AREA	4.31 ACRES	6.58 ACRES	6.58 ACRES	22.24 ACRES
MAXIMUM DENSITY*	175 DENSITY POINTS/ACRE	310 DENSITY POINTS/ACRE	310 DENSITY POINTS/ACRE	640 DENSITY POINTS/ACRE
MAXIMUM LOT SIZE	10,000 SF	5,000 SF	3,100 SF	N/A
MINIMUM LOT SIZE	5,000 SF	3,000 SF	1,440 SF	5,000 SF
MINIMUM LOT WIDTH	35 FT @ BL	35 FT @ BL	22 FT	N/A
MAXIMUM LOT COVERAGE	30%	50%	60%	N/A
MAXIMUM BUILDING HEIGHT	30 FT	30 FT	30 FT	N/A

SETBACKS

FRONT	15 FT	15 FT	10 FT	10 FT
INTERIOR	5 FT	5 FT	2.5 FT	0 FT/10FT

*THIS SUBDIVISION IS A PLANNED UNIT DEVELOPMENT (PUD) THAT PROPOSES REDUCED LOT OR DEVELOPMENT SITE AREA AND INSTEAD USES MAXIMUM DENSITY POINTS PER ACRE.

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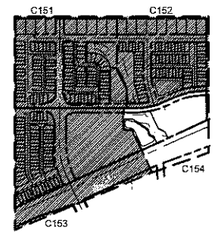
LEGEND

- PROJECT BOUNDARY
- EXISTING RIGHT-OF-WAY LINE
- EXISTING RIGHT-OF-WAY CENTERLINE
- EXISTING LOT LINE
- EXISTING ADJACENT PROPERTY LINE
- EXISTING EASEMENT
- PROPOSED RIGHT-OF-WAY LINE
- PROPOSED RIGHT-OF-WAY CENTERLINE
- PROPOSED LOT LINE
- PROPOSED SETBACK LINE
- PROPOSED EASEMENT
- PROPOSED WETLAND BOUNDARY

KEY MAP



811 Know what's below. Call before you dig.

N W E S

SCALE: 1" = 100'
0 100' 200'

PUBLISH DATE
06.06.2018
ISSUED FOR
LAND USE DOCUMENTS

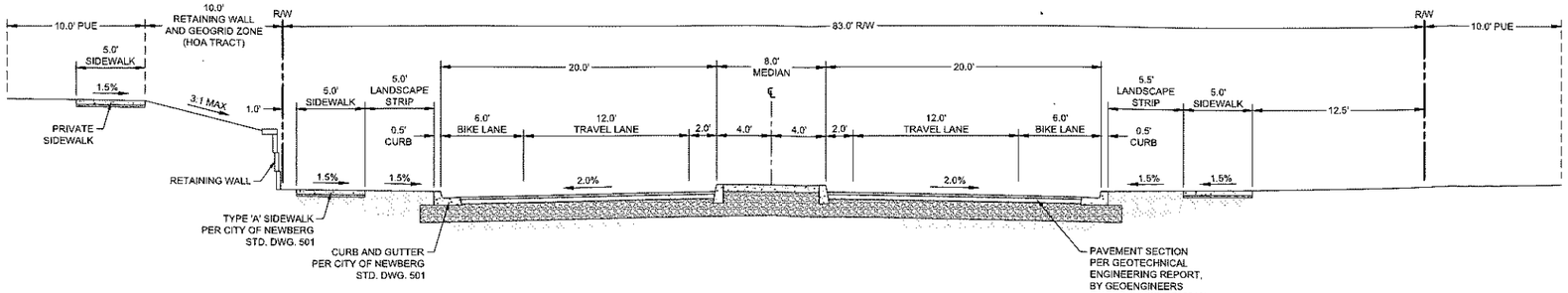
TENTATIVE PLAT IV
CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

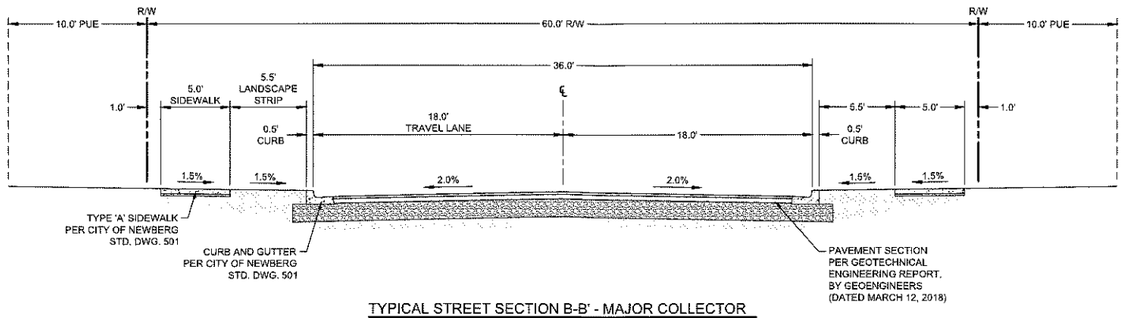
PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C154

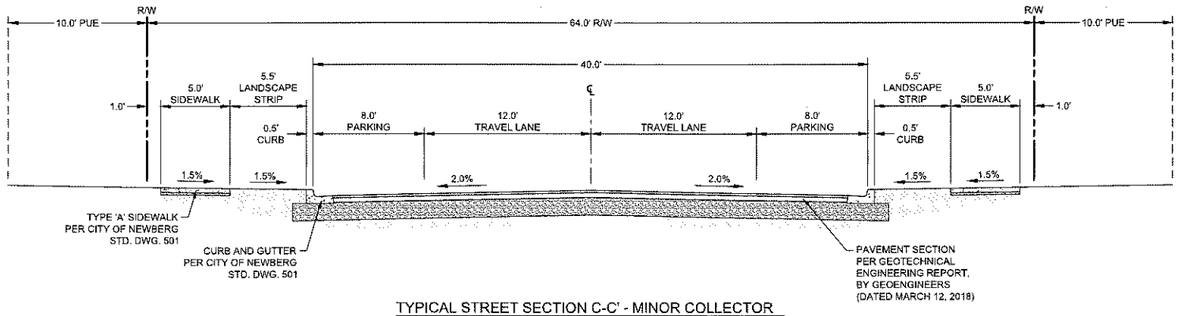
P:\17393-JTS-CRESTVIEW CROSSING\CAD\DO\C150 TENTATIVE PLAT.DWG



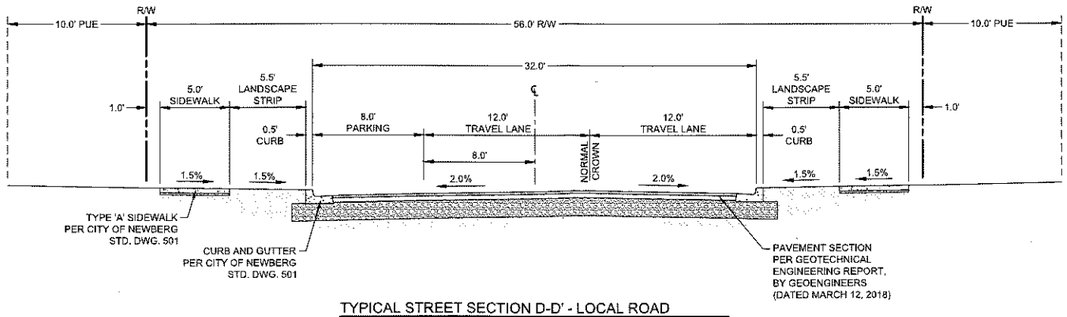
TYPICAL STREET SECTION A-A' - MAJOR COLLECTOR
CRESTVIEW DR NTS



TYPICAL STREET SECTION B-B' - MAJOR COLLECTOR
CRESTVIEW DR NTS



TYPICAL STREET SECTION C-C' - MINOR COLLECTOR
PUBLIC B NTS



TYPICAL STREET SECTION D-D' - LOCAL ROAD
PUBLIC C
PUBLIC D NTS

P:\17393-ITS-CRESTVIEW CROSSING\CAD\DDC\200 TYPICAL SECTIONS.DWG

REGISTERED PROFESSIONAL ENGINEER
67763PE
OREGON
JULY 14, 1981
ASHLEY ROCHELLE SEAL
EXPIRES: 06/30/20

PRELIMINARY

PUBLISH DATE
06.06.2018
ISSUED FOR
LAND USE DOCUMENTS

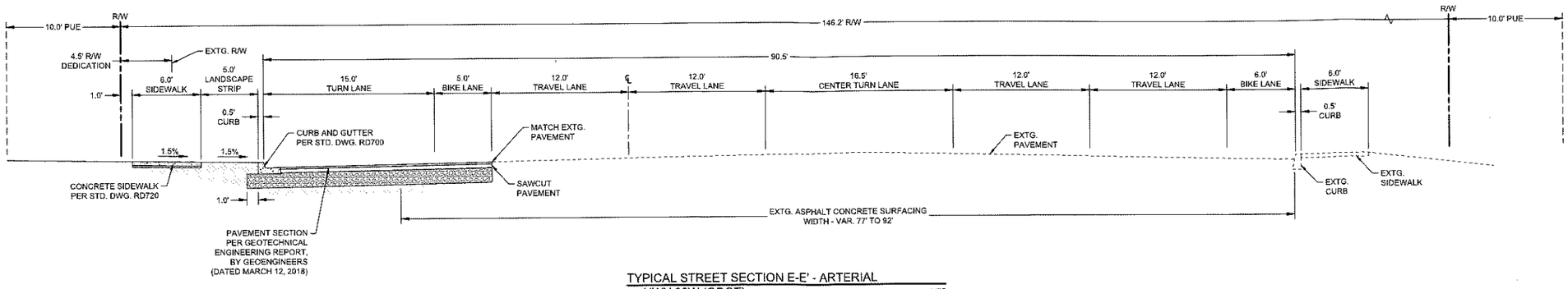
TYPICAL SECTIONS I
CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION

3J PROJECT #	17393
TAX LOT(S)	3S2W16 13800, 1100
LAND USE #	N/A
DESIGNED BY	ARS, JEJ, BMD
CHECKED BY	AJM, RGW

SHEET NUMBER
C200



TYPICAL STREET SECTION E-E' - ARTERIAL
HWY 99W (ODOT) NTS

P:\17393-JTS-CRESTVIEW CROSSING\CAD\DGC200 TYPICAL SECTIONS.DWG

REGISTERED PROFESSIONAL ENGINEER
87763PE
OREGON
JULY 14, 2017
ASHLEY ROCHELLE SEAL
PRELIMINARY
EXPIRES: 06/30/20

PUBLISH DATE
06.06.2018
ISSUED FOR
LAND USE DOCUMENTS

TYPICAL SECTIONS II

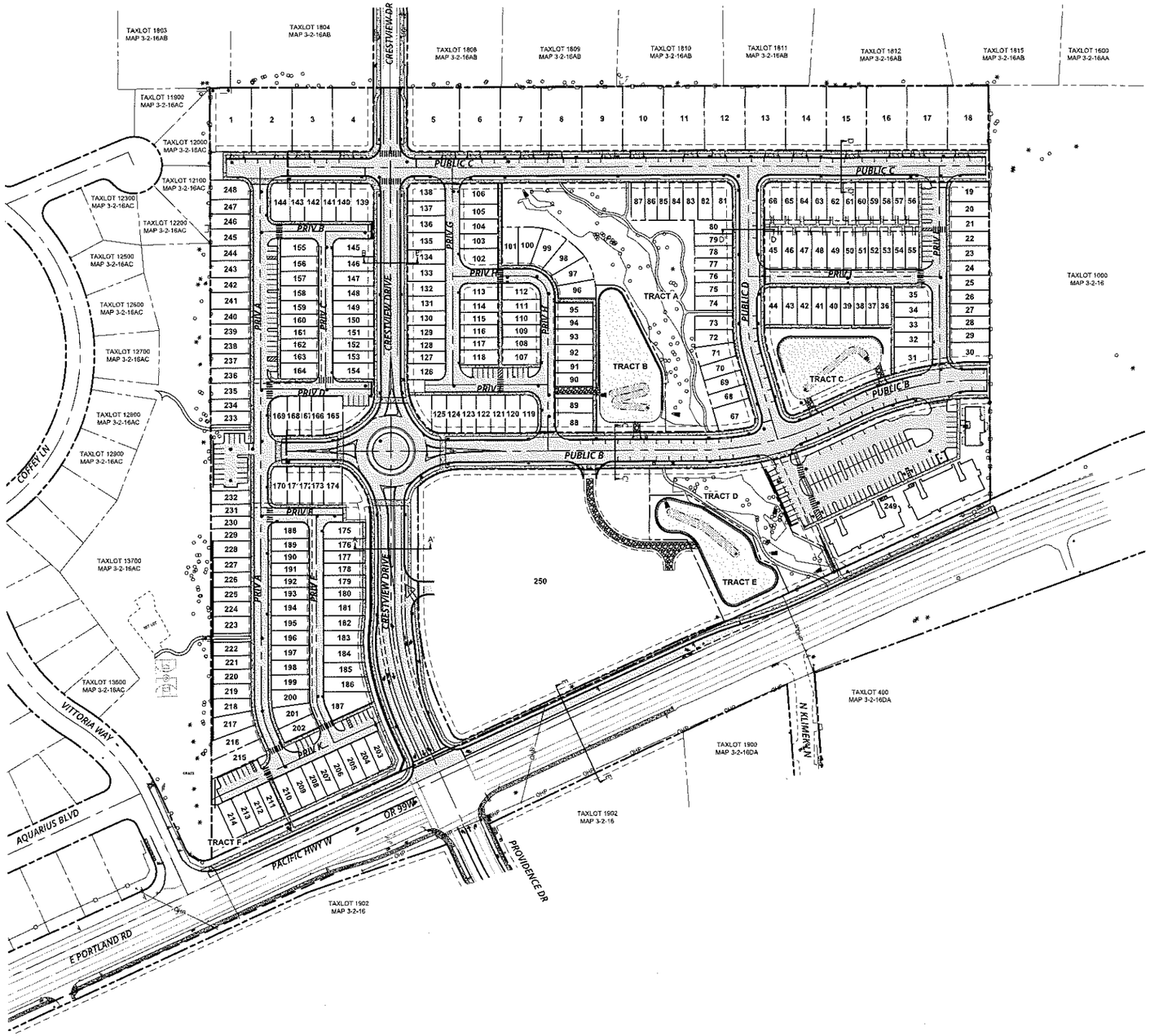
CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT

JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C201



LEGEND

- PROJECT BOUNDARY
- EXISTING RIGHT-OF-WAY LINE
- EXISTING RIGHT-OF-WAY CENTERLINE
- EXISTING ADJACENT PROPERTY LINE
- PROPOSED RIGHT-OF-WAY LINE
- PROPOSED RIGHT-OF-WAY CENTERLINE
- PROPOSED LOT LINE
- PROPOSED SETBACK LINE
- PROPOSED EASEMENT
- PROPOSED CURB FACE
- PROPOSED CURB BACK
- PROPOSED LIP OF GUTTER
- PROPOSED WHITE STRIPING
- PROPOSED CONCRETE
- PROPOSED ASPHALT
- PROPOSED STORM FACILITY
- PROPOSED SWALE
- PROPOSED GRAVEL
- PROPOSED WOODCHIP PATH
- PROPOSED RETAINING WALL
- PROPOSED DRIVEWAY
- PROPOSED PEDESTRIAN CROSSWALK STRIPING
- A A' PROPOSED TYPICAL STREET SECTION SEE SHEETS C200 & C201

Know what's below. Call before you dig.

N W E S

SCALE: 1" = 100'
0 100' 200'

REGISTERED PROFESSIONAL ENGINEER 87762 OREGON JULY 14, 2017 ASHLEY ROCHELLE SEAL
PRELIMINARY
EXPIRES: 06/30/20

PUBLISH DATE
06.06.2018
ISSUED FOR
LAND USE DOCUMENTS

OVERALL SITE PLAN
CRESTVIEW CROSSING PLANNED UNIT DEVELOPMENT

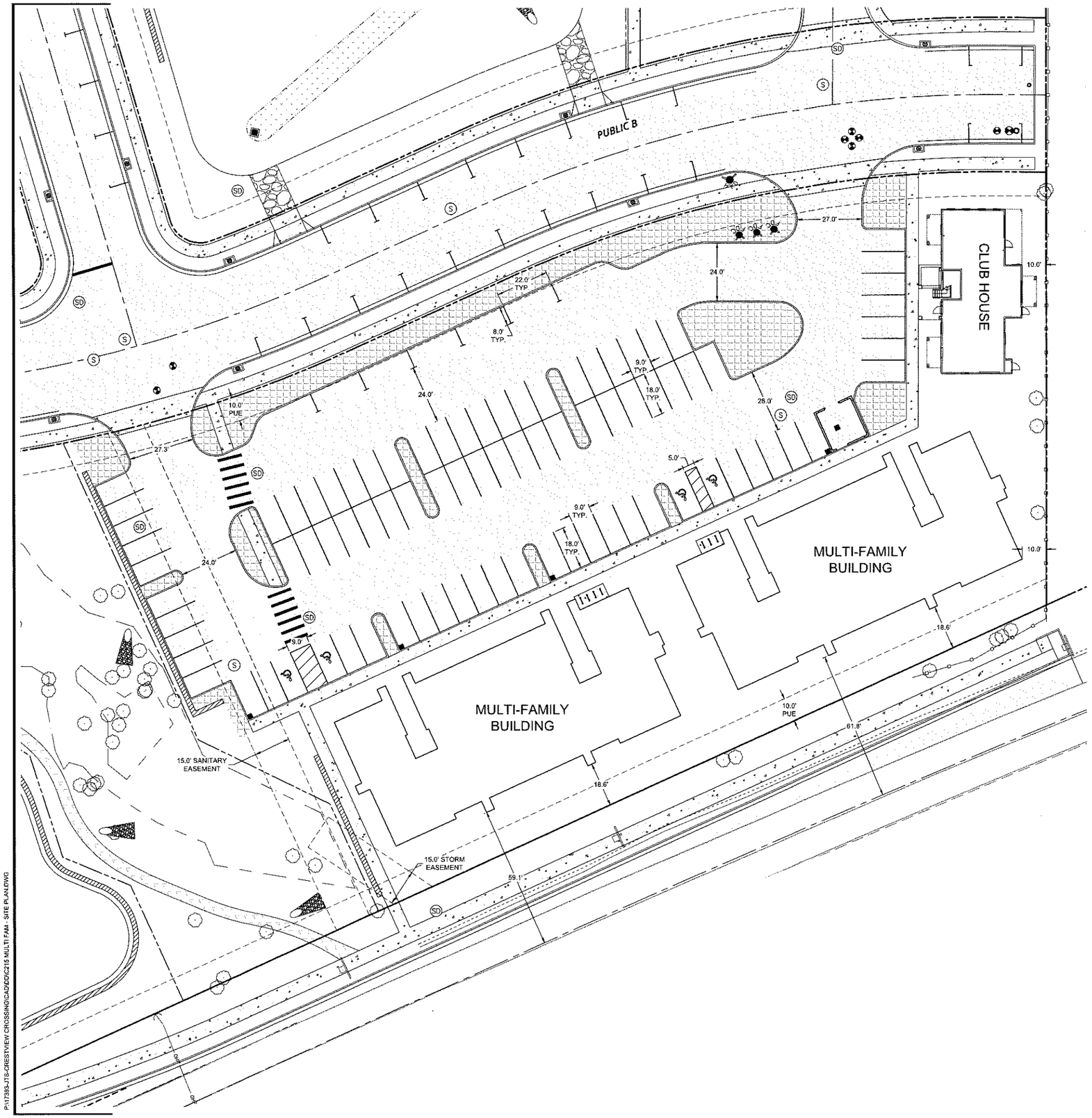
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C210

P:\17393-JTS-CRESTVIEW CROSSING\CAD\DOC\210 SITE PLAN.DWG



P:\17393-JT\S-CRESTVIEW CROSSING\CAD\DC\C215 MULTI FAM - SITE PLAN.DWG

LEGEND

- PROJECT BOUNDARY
- EXISTING RIGHT-OF-WAY LINE
- EXISTING RIGHT-OF-WAY CENTERLINE
- EXISTING ADJACENT PROPERTY LINE
- PROPOSED RIGHT-OF-WAY LINE
- PROPOSED RIGHT-OF-WAY CENTERLINE
- PROPOSED LOT LINE
- PROPOSED SETBACK LINE
- PROPOSED EASEMENT
- PROPOSED CURB FACE
- PROPOSED CURB BACK
- PROPOSED LIP OF GUTTER
- PROPOSED WHITE STRIPING
- PROPOSED CONCRETE
- PROPOSED ASPHALT
- PROPOSED LANDSCAPING
- PROPOSED GRAVEL
- PROPOSED WOODCHIP PATH
- PROPOSED RETAINING WALL
- PROPOSED DRIVEWAY
- PROPOSED PEDESTRIAN CROSSWALK STRIPING
- PROPOSED BIKE PARKING
- PROPOSED ACCESSIBLE PARKING STALL
- PROPOSED HYDRANT
- PROPOSED VALVE
- PROPOSED BLOW-OFF / AIR RELEASE ASSY.
- PROPOSED FIRE DPT. CONNECTION
- PROPOSED SEWER MANHOLE
- PROPOSED STORM MANHOLE
- PROPOSED CATCH BASIN
- EXISTING DECIDUOUS TREE

PARKING STATISTICS - MULITFAMILY LOT

PROPOSED STALL COUNT & SUMMARY

TYPE = (WIDTH x DEPTH)	STANDARD 9' x 18'	PARALLEL 8' x 22'	ADA 9' x 18'	ADA - VAN 9' x 18'	TOTAL
MULTIPLE FAMILY APARTMENTS =	80	7	3	1	91
TOTAL =	80	7	3	1	91

VEHICLES

DEVELOPMENT CODE CHAPTER 15.440.30

MAXIMUM PARKING - MULTI-FAMILY	NONE
MINIMUM PARKING - MULTI-FAMILY	74
PROPOSED	91

BICYCLES

DEVELOPMENT CODE CHAPTER 15.440.90

	MINIMUM	PROPOSED
MINIMUM BICYCLE PARKING - MULTI-FAMILY	13	14

ACCESSIBLE

OSSC SECTION 1106.1

MULTI-FAMILY PARKING LOT (76 TO 100)	MINIMUM	PROPOSED
ACCESSIBLE SPACES	4	4
VAN ACCESSIBLE SPACES	1	1

LANDSCAPING

DEVELOPMENT CODE CHAPTER 15.420.010

	REQUIRED	PROPOSED
MULTI-FAMILY PARKING LOT (25 SF PER STALL)	2,275 SF	6,357 SF

SETBACKS

ZONE C3 - MULTI-FAMILY LOT

FRONT	10 FT
INTERIOR	0 FT/10 FT
STREET - EXPRESSWAY CENTERLINE	50 Ft

811 Know what's below. Call before you dig.

N W E S

SCALE: 1" = 20'
0 20 40

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 2017
ASHLEY ROCHELLE SEAL
EXPIRES: 06/30/20
PRELIMINARY

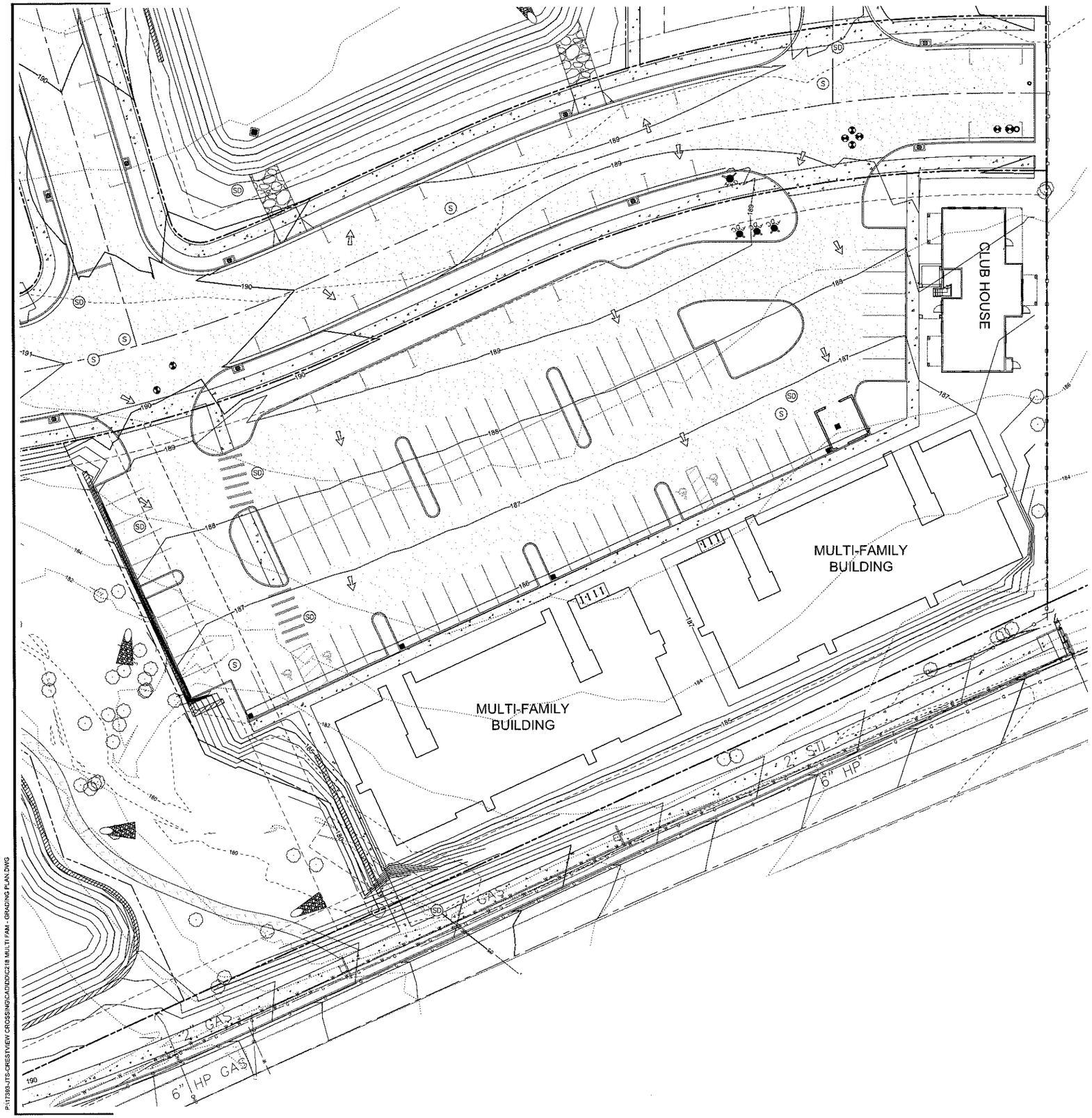
PUBLISH DATE
06.06.2018
ISSUED FOR
LAND USE DOCUMENTS

MULTI-FAMILY SITE PLAN
CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C215



LEGEND

- PROJECT BOUNDARY
- EXISTING RIGHT-OF-WAY LINE
- EXISTING RIGHT-OF-WAY CENTERLINE
- EXISTING ADJACENT PROPERTY LINE
- PROPOSED RIGHT-OF-WAY LINE
- PROPOSED RIGHT-OF-WAY CENTERLINE
- PROPOSED LOT LINE
- PROPOSED SETBACK LINE
- PROPOSED EASEMENT
- 100 EXISTING MAJOR CONTOUR
- 92 EXISTING MINOR CONTOUR
- 110 PROPOSED MAJOR CONTOUR
- 108 PROPOSED MINOR CONTOUR
- PROPOSED SURFACE FLOW ARROW
- PROPOSED CURB FACE
- PROPOSED CURB BACK
- PROPOSED LIP OF GUTTER
- PROPOSED WHITE STRIPING
- PROPOSED CONCRETE
- PROPOSED ASPHALT
- PROPOSED GRAVEL
- PROPOSED WOODCHIP PATH
- PROPOSED RETAINING WALL
- PROPOSED PEDESTRIAN CROSSWALK STRIPING
- PROPOSED BIKE PARKING
- PROPOSED ACCESSIBLE PARKING STALL
- PROPOSED HYDRANT
- PROPOSED VALVE
- PROPOSED BLOW-OFF / AIR RELEASE ASSY.
- PROPOSED FIRE DPT. CONNECTION
- PROPOSED SEWER MANHOLE
- PROPOSED STORM MANHOLE
- PROPOSED CATCH BASIN
- EXISTING DECIDUOUS TREE

Know what's below. Call before you dig.

N W E S

SCALE: 1" = 100'
0 100' 200'

REGISTERED PROFESSIONAL ENGINEER 87763PE OREGON JULY 14, 1987 AMY ROCHELLE STALL EXPIRES: 06/30/20

PRELIMINARY

PUBLISH DATE
06.06.2018

ISSUED FOR
LAND USE DOCUMENTS

MULTI-FAMILY GRADING PLAN

CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT

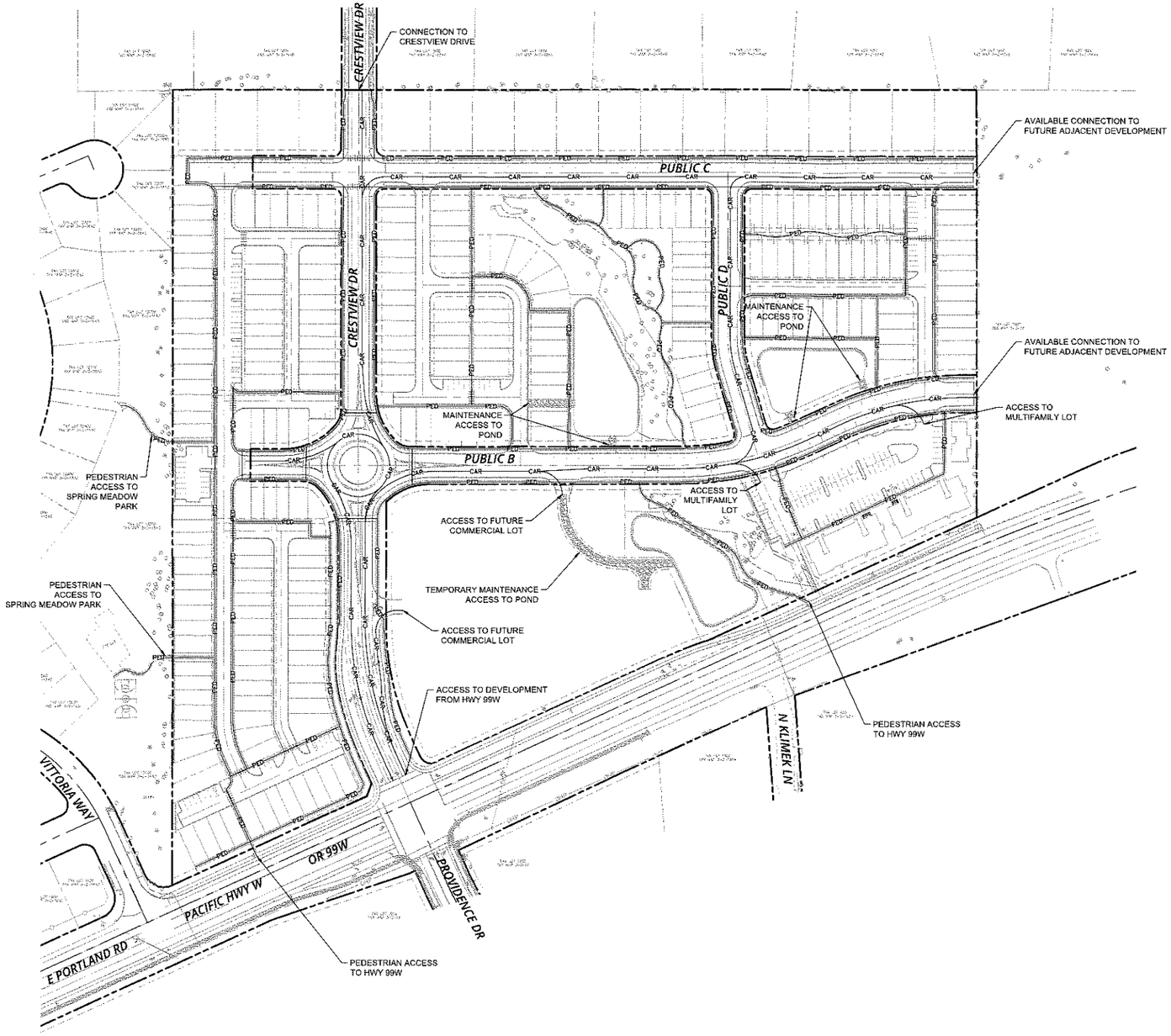
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C218

P:\17393-ITS-CRESTVIEW CROSSING\CAD\DWG\C218 MULTI FAM - GRADING PLAN.DWG



LEGEND

- CAR — PROPOSED CAR CIRCULATION
- PED — PROPOSED PEDESTRIAN CIRCULATION
- PROPOSED STANDARD PARKING STALL
- PROPOSED PARALLEL PARKING STALL
- PROPOSED ADA PARKING STALLS

PARKING STATISTICS

PROPOSED STALL COUNT & SUMMARY

TYPE = (WIDTH x DEPTH)	STANDARD (9' x 18')	PARALLEL (8' x 22')	ADA (9' x 18')	ADA VAN (9' x 18')	TOTAL
PUBLIC ON-STREET =	0	72	0	0	72
PRIVATE =	71	0	10	2	83
MULTIFAMILY LOT =	80	7	3	1	91
TOTAL =	151	79	13	3	246

MULTIFAMILY LOT PARKING - ACCESSIBLE

(OSSC SECTION 1106.1)

PARKING FACILITY TOTAL = 76 TO 100 STALLS	MINIMUM REQUIRED	AS PROPOSED
ACCESSIBLE SPACES	4	4
VAN ACCESSIBLE SPACES	1	1

Know what's below. Call before you dig.

N W E S

SCALE: 1" = 100'
0 100' 200'

REGISTERED PROFESSIONAL ENGINEER 87762PE OREGON JULY 14, 2017 ANDREW J. MUNKITTRICK
PRELIMINARY
EXPIRES: 06/30/20

PUBLISH DATE
06.06.2018

ISSUED FOR
LAND USE DOCUMENTS

ACCESS, PARKING, AND CIRCULATION PLAN

CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT

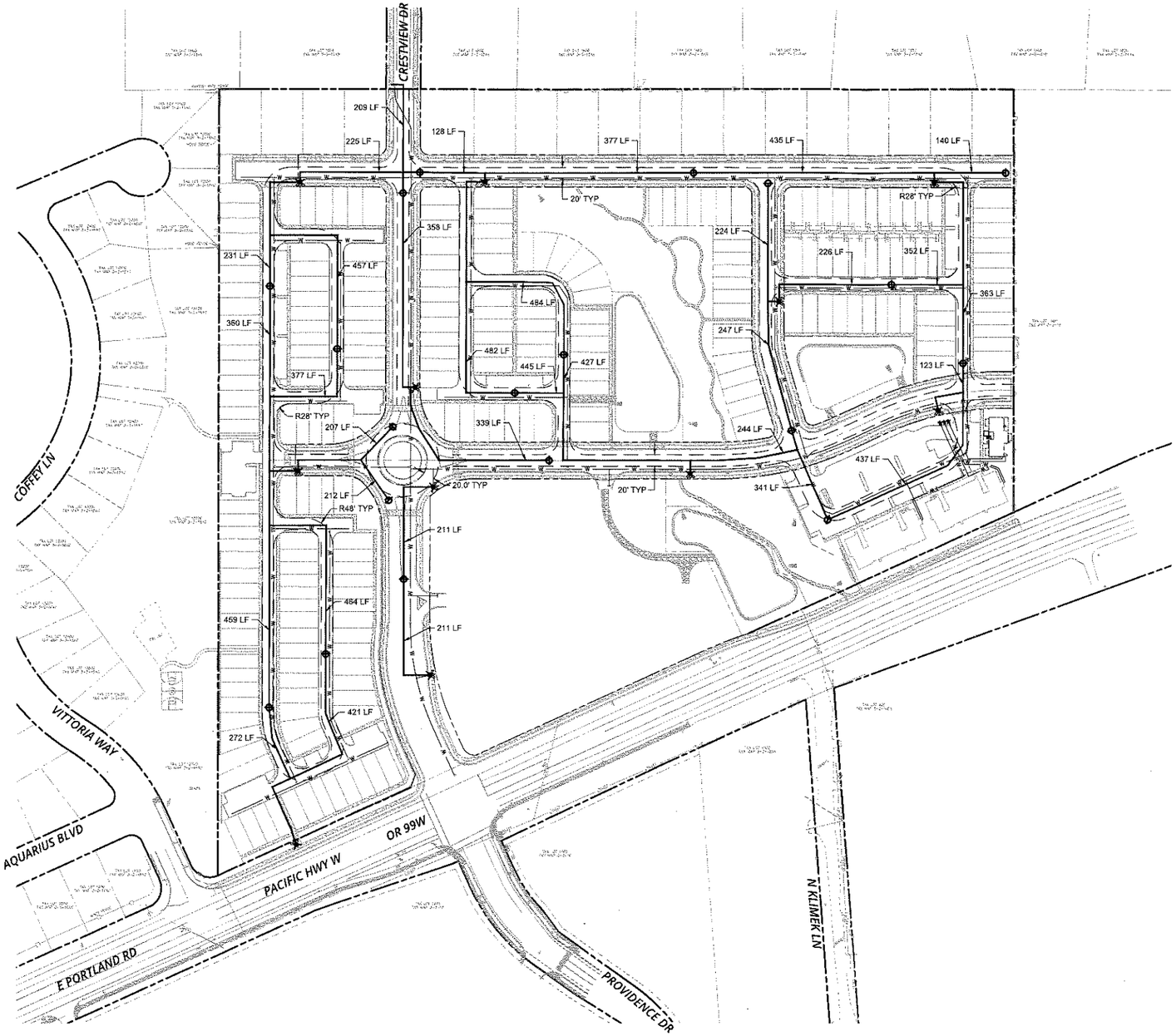
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C220

P:\17393-JTS-CRESTVIEW CROSSING\CAD\DWG\C220 CIRCULATION PLAN.DWG



LEGEND

- PROPOSED WATER DOMESTIC SERVICE
- PROPOSED WATER FIRE SERVICE
- EXISTING FIRE HYDRANT
- PROPOSED HYDRANT
- PROPOSED HYDRANT
- PROPOSED VALVE
- FIRE HOSE LINE PULL EXTENTS FROM FIRE HYDRANT
- R25' CURVE RADIUS
- 20' DRIVE AISLE PROPOSED FIRE ACCESS LANE

Know what's below. Call before you dig.

N W E S

SCALE: 1" = 100'
0 100' 200'

REGISTERED PROFESSIONAL ENGINEER 87760PE OREGON JULY 14, 1995 AMY ROCHELLE SEAL
EXPIRES: 06/30/20

PUBLISH DATE
06.06.2018
ISSUED FOR
LAND USE DOCUMENTS

FIRE ACCESS PLAN
CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C230

P:\17393-JTS-CRESTVIEW CROSSING\CAD\DWG\C230 FIRE ACCESS PLAN.DWG

LIGHTING ZONE CALCULATIONS

ACI 1: ARTERIAL COMMERCIAL INTERSECTION #1		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	4.0 MIN	4.27

ACR 1: ARTERIAL COMMERCIAL ROAD #1		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	2.0 MIN	2.49

ARI 1: ARTERIAL RESIDENTIAL INTERSECTION #1		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	2.0 MIN	2.46

ARR 1: ARTERIAL RESIDENTIAL ROAD #1		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	1.0 MIN	1.41

ARR 2: ARTERIAL RESIDENTIAL ROAD #2		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	1.0 MIN	1.45

CCI 1: COLLECTOR COMMERCIAL INTERSECTION #1		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	2.4 MIN	2.49

CCI 2: COLLECTOR COMMERCIAL INTERSECTION #2		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	2.4 MIN	2.83

CCI 3: COLLECTOR COMMERCIAL INTERSECTION #3		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	2.4 MIN	2.69

CCR 2: COLLECTOR COMMERCIAL ROAD #1		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	1.2 MIN	1.31

CCR 1: COLLECTOR COMMERCIAL ROAD #2		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	1.2 MIN	1.31

CCR 3: COLLECTOR COMMERCIAL ROAD #3		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	1.2 MIN	1.51

CCR 3: COLLECTOR COMMERCIAL ROAD #4		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	1.2 MIN	1.39

CRI 1: COLLECTOR RESIDENTIAL INTERSECTION #1		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	1.4 MIN	1.68

CRI 2: COLLECTOR RESIDENTIAL INTERSECTION #2		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	1.4 MIN	1.65

CRI 3: COLLECTOR RESIDENTIAL INTERSECTION #3		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	1.4 MIN	1.82

CRI 4: COLLECTOR RESIDENTIAL INTERSECTION #4		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	1.4 MIN	1.47

CRR 1: COLLECTOR RESIDENTIAL ROAD #1		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	0.7 MIN	1.51

CRR 2: COLLECTOR RESIDENTIAL ROAD #2		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	0.7 MIN	1.15

CRR 3: COLLECTOR RESIDENTIAL ROAD #3		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	0.7 MIN	0.98

CRR 4: COLLECTOR RESIDENTIAL ROAD #4		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	0.7 MIN	1.14

CRR 5: COLLECTOR RESIDENTIAL ROAD #5		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	0.7 MIN	0.84

CRR 6: COLLECTOR RESIDENTIAL ROAD #6		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	0.7 MIN	1.69

CRR 7: COLLECTOR RESIDENTIAL ROAD #7		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	0.7 MIN	0.97

LRR 1: LOCAL RESIDENTIAL ROAD #1 (PRIVATE)		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	0.5 MIN	1.01

LRR 2: LOCAL RESIDENTIAL ROAD #2 (PRIVATE)		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	0.5 MIN	1.15

LRR 3: LOCAL RESIDENTIAL ROAD #3 (PRIVATE)		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	0.5 MIN	1.10

APL 1: APARTMENTS PARKING LOT #1 (PRIVATE)		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	N/A	1.36

CONSTRUCTION KEY NOTES

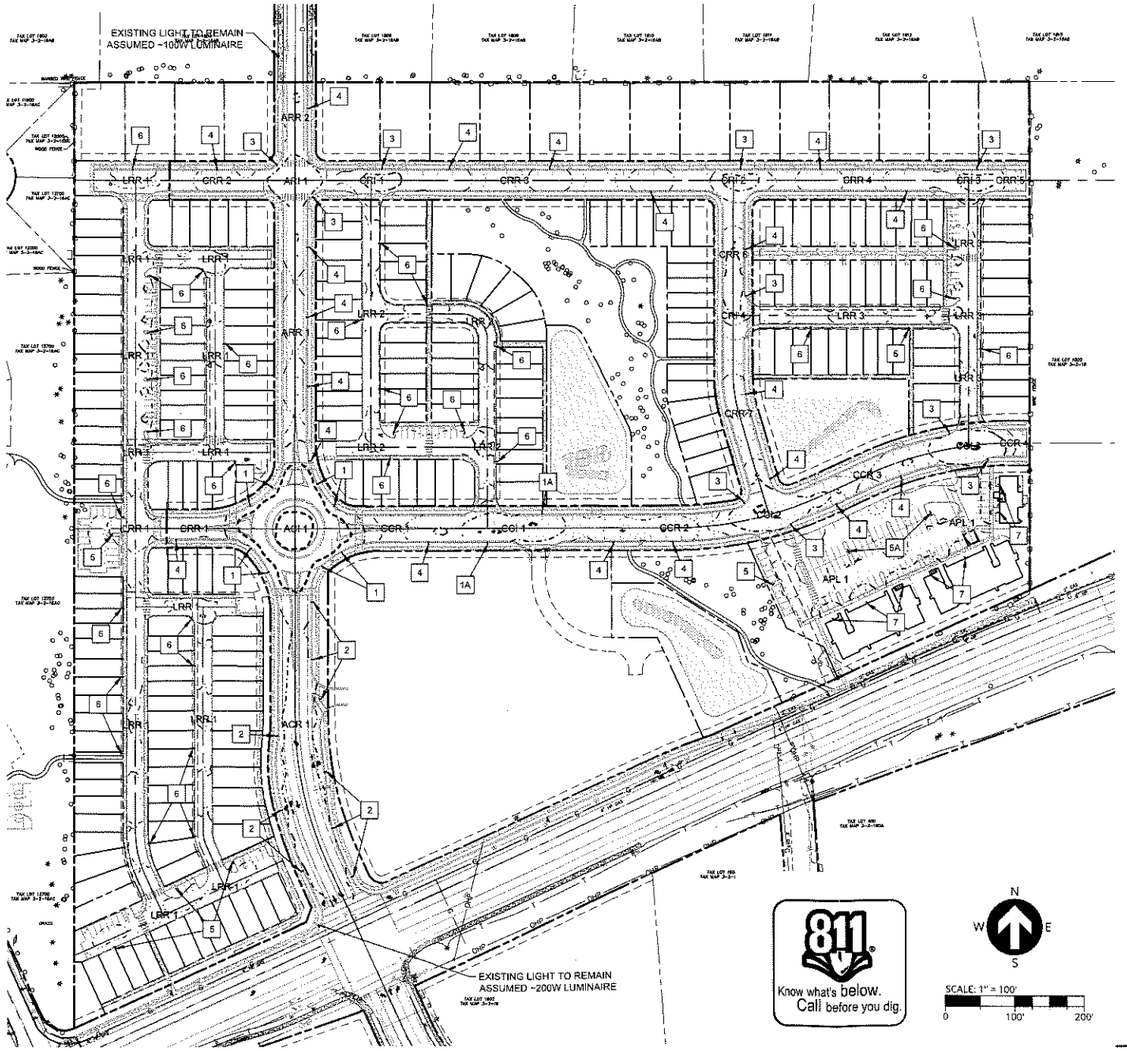
1. INSTALL 180W LED LUMINAIRE, TYPE III, 30' POLE, 6' ARM, BACKLIGHT SHIELD (17700 LUMENS). LUMINAIRE: LEOTEK GC1-80F-MV-NW-3-GY-700-HSS OR CITY APPROVED EQUIVALENT. POLE: VALMONT 1MA0632S-27084580ST4-DNA OR CITY APPROVED EQUIVALENT.
1A. INSTALL 180W LED LUMINAIRE, TYPE III, 25' POLE, 6' ARM, (17700 LUMENS, 80 LEDS). LUMINAIRE: LEOTEK GC1-80F-MV-NW-3-GY-700 OR CITY APPROVED EQUIVALENT. POLE: VALMONT 1MA0632S-220845805T4-DNA OR CITY APPROVED EQUIVALENT.
2. INSTALL 133W LED LUMINAIRE, TYPE III, 30' POLE, 6' ARM, BACKLIGHT SHIELD (13400 LUMENS). LUMINAIRE: LEOTEK GC1-60F-MV-NW-3-GY-700-HSS OR CITY APPROVED EQUIVALENT. POLE: VALMONT 1MA0632S-27084580ST4-DNA OR CITY APPROVED EQUIVALENT.
3. INSTALL 133W LED LUMINAIRE, TYPE III, 25' POLE, 6' ARM (13400 LUMENS, 60 LEDS). LUMINAIRE: LEOTEK GC1-60F-MV-NW-3-GY-700 OR CITY APPROVED EQUIVALENT. POLE: VALMONT 1MA0632S-220845805T4-DNA OR CITY APPROVED EQUIVALENT.
4. INSTALL 92W LED LUMINAIRE, TYPE III, 25' POLE, 6' ARM (9300 LUMENS, 40 LEDS). LUMINAIRE: LEOTEK GC1-40F-MV-NW-3-GY-700 OR CITY APPROVED EQUIVALENT. POLE: VALMONT 1MA0632S-220845805T4-DNA OR CITY APPROVED EQUIVALENT.
5. INSTALL 70W LED LUMINAIRE, TYPE III, 25' POLE, 6' ARM (7000 LUMENS, 30 LEDS). LUMINAIRE: LEOTEK GC1-30F-MV-NW-2-GY-700 OR CITY APPROVED EQUIVALENT. POLE: VALMONT 1MA0632S-220845805T4-DNA OR CITY APPROVED EQUIVALENT.
5A. INSTALL TWO 70W LED LUMINAIRES, TYPE III, 25' POLE IN DOUBLE ARM ARRANGMENT, 6' ARMS LUMINAIRE: TWO LEOTEK GC1-30F-MV-NW-2-GY-700 OR CITY APPROVED EQUIVALENT. POLE: VALMONT 2MA0632S-220845805T4-DNA OR CITY APPROVED EQUIVALENT.
6. INSTALL 70W LED LUMINAIRE, TYPE II, 25' POLE, 6' ARM (7000 LUMENS, 30 LEDS). LUMINAIRE: LEOTEK GC1-30F-MV-NW-2-GY-700 OR CITY APPROVED EQUIVALENT. POLE: VALMONT 1MA0632S-220845805T4-DNA OR CITY APPROVED EQUIVALENT.
7. INSTALL 65W LED LUMINAIRE, TYPE III, WALL MOUNTED, NO ARM (7000 LUMENS, 30 LEDS MIN) LUMINAIRE: LUMARK WPSQLED-65-UNV OR APPROVED EQUIVALENT.

LEGEND

- 4.0 FOOT-CANDLE ISOLINE
- 2.0 FOOT-CANDLE ISOLINE
- 1.0 FOOT-CANDLE ISOLINE
- 0.5 FOOT-CANDLE ISOLINE

ILLUMINATION GENERAL NOTES

1. ELECTRICAL BY OTHERS
2. TOTAL LIGHT LOSS FACTOR OF 0.855 ASSUMED FOR MAINTAINED LEVEL.
3. ALL ILLUMINATION CALCULATIONS AND ISOLINES DEVELOPED USING AGI32 V14.6.13 PHOTOMETRIC SOFTWARE BY LIGHTING ANALYSTS, INC.
4. LIGHT POLES SHALL BE ALUMINUM, NATURAL FINISH, AND ELLIPTICAL MAST ARMS.
5. LUMINARIES SHALL BE LED LIGHT SOURCE WITH NO LESS THAN 30 LEDS AND NO LESS THAN 7000 LUMENS, WITH GREY COLORED "COBRAHEAD" STYLE HOUSINGS.



REGISTERED PROFESSIONAL ENGINEER
87769
OREGON
JULY 14, 2017
ASHLEY ROCHELLE SEAL
EXPIRES: 06/30/20

PRELIMINARY

PUBLISH DATE
06.06.2018

ISSUED FOR
LAND USE DOCUMENTS

PHOTOMETRICS PLAN

CRESTVIEW CROSSING

PLANNED UNIT DEVELOPMENT

JT SMITH COMPANIES
NEWBERG, OR

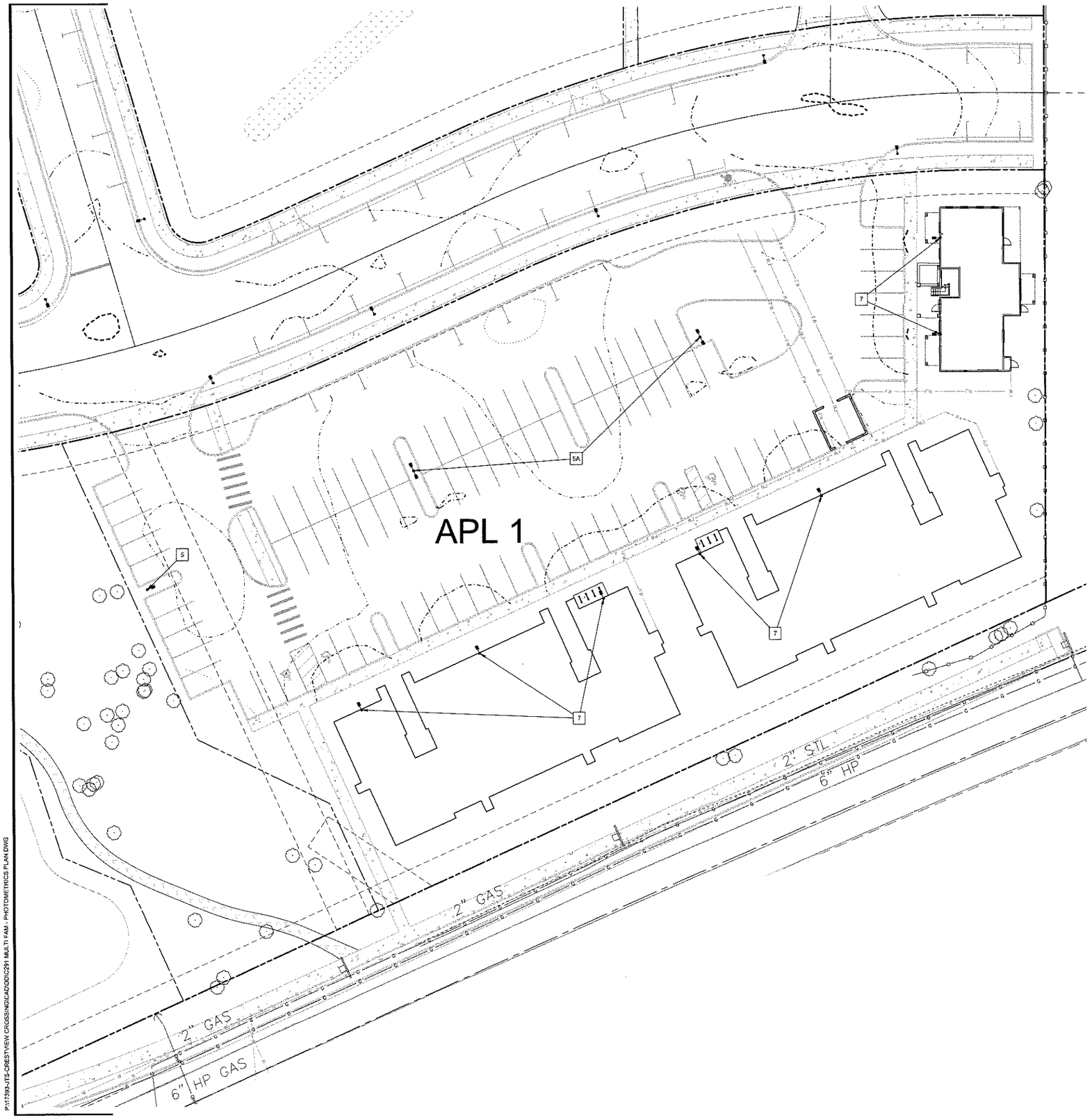
3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION

3J PROJECT #	17393
TAX LOT(S)	3S2W16 13800, 1100
LAND USE #	N/A
DESIGNED BY	ARS, JEJ, BMO
CHECKED BY	AJM, RGW

SHEET NUMBER
C290

P:\17393-JTS-CRESTVIEW CROSSING\CAD\DOC\280 PHOTOMETRICS PLAN.DWG



LEGEND

- 4.0 FOOT-CANDLE ISOLINE
- 2.0 FOOT-CANDLE ISOLINE
- 1.0 FOOT-CANDLE ISOLINE
- 0.5 FOOT-CANDLE ISOLINE

ILLUMINATION GENERAL NOTES

1. ELECTRICAL BY OTHERS
2. TOTAL LIGHT LOSS FACTOR OF 0.855 ASSUMED FOR MAINTAINED LEVEL.
3. ALL ILLUMINATION CALCULATIONS AND ISOLINES DEVELOPED USING AGI32 V14.6.13 PHOTOMETRIC SOFTWARE BY LIGHTING ANALYSTS, INC.
4. LIGHT POLES SHALL BE ALUMINUM, NATURAL FINISH, AND ELLIPTICAL MAST ARMS.
5. LUMINARIES SHALL BE LED LIGHT SOURCE WITH NO LESS THAN 30 LEDS AND NO LESS THAN 7000 LUMENS, WITH GREY COLORED "COBRAHEAD" STYLE HOUSINGS.

CONSTRUCTION KEY NOTES

5 INSTALL 70W LED LUMINAIRE, TYPE III, 25' POLE, 6' ARM (7000 LUMENS, 30 LEDS).
LUMINAIRE: LEOTEK GC1-30F-MV-NW-2-GY-700 OR CITY APPROVED EQUIVALENT.
POLE: VALMONT 1MA0632S-220845805T4-DNA OR CITY APPROVED EQUIVALENT.

5A INSTALL TWO 70W LED LUMINAIRES, TYPE III, 25' POLE IN DOUBLE ARM ARRANGMENT, 6' ARMS
LUMINAIRE: TWO LEOTEK GC1-30F-MV-NW-2-GY-700 OR CITY APPROVED EQUIVALENT.
POLE: VALMONT 2MA0632S-2208458O5T4-DNA OR CITY APPROVED EQUIVALENT.

7 INSTALL 65W LED LUMINAIRE, TYPE III, WALL MOUNTED, NO ARM (7000 LUMENS, 30 LEDS MIN)
LUMINAIRE: LUMARK WPSQLED-65-UNV OR APPROVED EQUIVALENT.

LIGHTING ZONE CALCULATIONS

APL 1: APARTMENTS PARKING LOT #1 (PRIVATE)		
	CITY STANDARD	CALCULATED
AVERAGE MAINTAINED ILLUMINANCE (FC)	N/A	1.36

Know what's below. Call before you dig.

N W E S

SCALE: 1" = 100'
0 100' 200'

REGISTERED PROFESSIONAL ENGINEER
87762PE
OREGON
JULY 14, 2017
AUDREY ROCHELLE SEAL
EXPIRES: 06/30/20

PUBLISH DATE
06.06.2018
ISSUED FOR
LAND USE DOCUMENTS

MULTI-FAMILY PHOTOMETRICS PLAN
CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT

JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

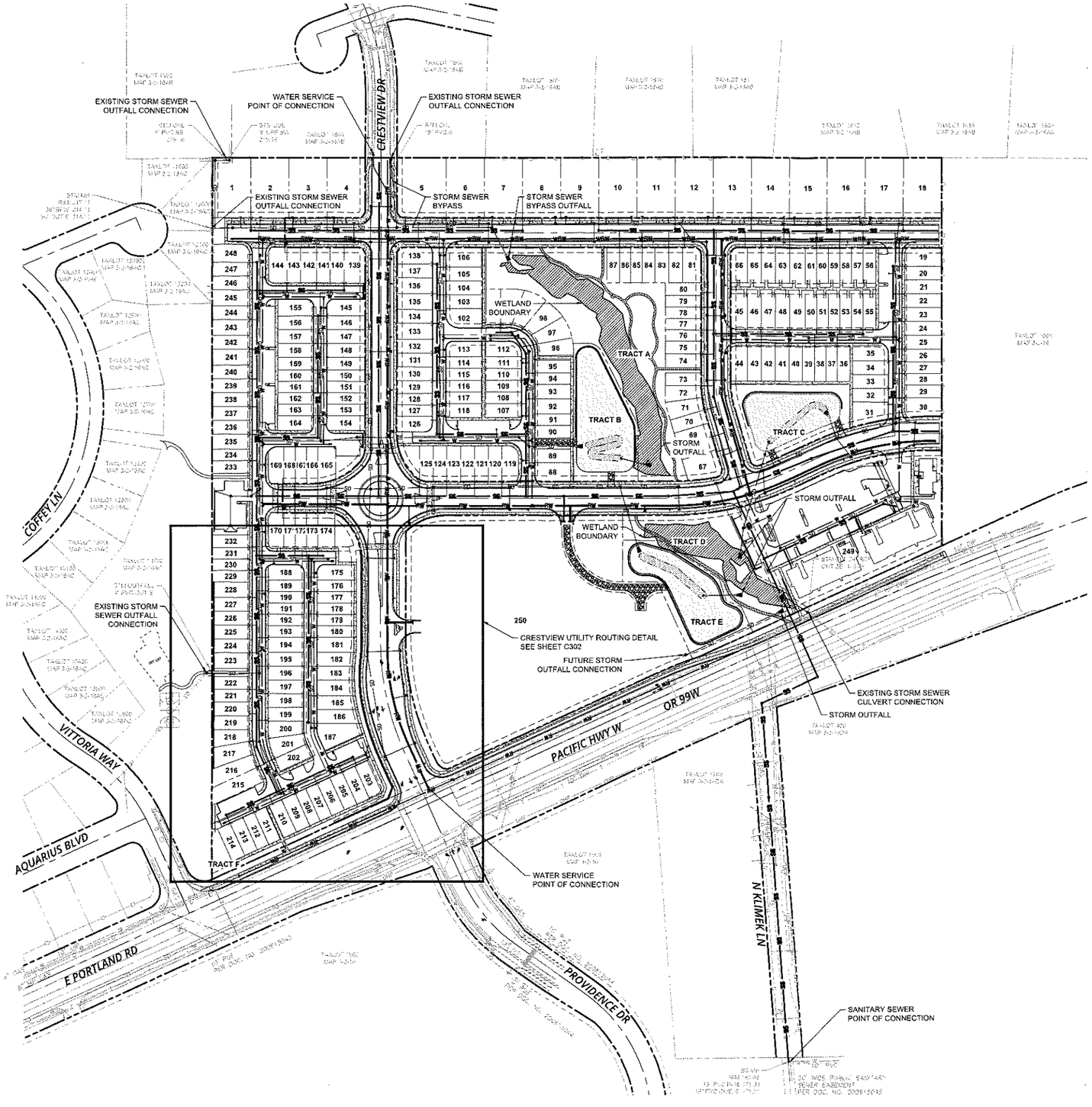
PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C291

P:\17393-JTS-CRESTVIEW CROSSING\CAD\DO\C291 MULTI FAM - PHOTOMETRICS PLAN.DWG

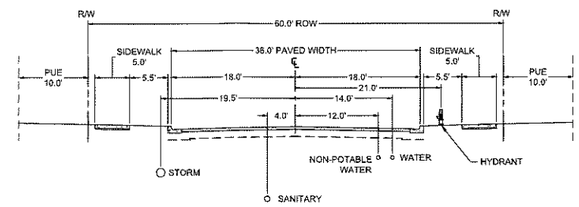
GENERAL NOTES

1. LOTS 1 THROUGH 7 SHALL HAVE STORMWATER QUALITY TREATMENT LOCATED WITHIN LOT BOUNDARIES. STORMWATER DISCHARGE FROM THESE LOTS SHALL CONNECT TO PROPOSED STORM SEWER BYPASS AND OUTFALL TO THE WETLAND.

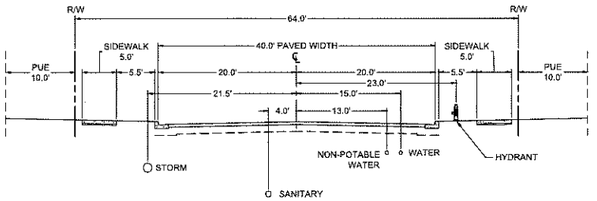


LEGEND

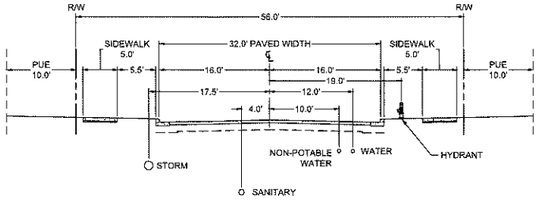
PROPOSED STORM PIPE	EXISTING TELECOM. LINE
PROPOSED SANITARY MAIN	EXISTING GAS LINE
PROPOSED WATER MAIN	EXISTING UNDERGROUND POWER
PROPOSED NON-POTABLE WATER MAIN	EXISTING OVERHEAD POWER
PROPOSED WATER FIRE SERVICE	EXISTING SANITARY SEWER
PROPOSED DETENTION POND	EXISTING STORM DRAIN
PROPOSED WATER QUALITY SWALE	EXISTING WATER MAIN
PIPE CAP / STUB	EXISTING HYDRANT
PROPOSED HYDRANT	EXISTING WATER VALVE
PROPOSED WATER VALVE	EXISTING SANITARY MANHOLE
PROPOSED WATER PIPE BLOWOFF/ PROPOSED AIR RELEASE ASSEMBLY	EXISTING STORM MANHOLE
PROPOSED FIRE DPT. CONNECTION	EXISTING STORM INLET
PROPOSED SANITARY MANHOLE	EXISTING POWER METER
PROPOSED SANITARY SERVICE LATERAL WITH CLEANOUT	EXISTING GAS METER
PROPOSED STORM MANHOLE	EXISTING TELEPHONE PEDESTAL
PROPOSED STORM OUTFALL PROTECTION	EXISTING GUY ANCHOR
PROPOSED STANDARD INLET MANHOLE	EXISTING LIGHT POLE
PROPOSED SUPERSIZED INLET MANHOLE	EXISTING UTILITY POLE
PROPOSED CATCH BASIN	EXISTING INTERSECTION SIGNAL
PROPOSED DITCH INLET	EXISTING ELECTRICAL BOX
PROPOSED STREET LIGHTING	



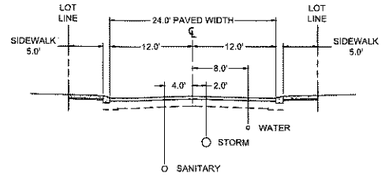
MAJOR COLLECTOR



MINOR COLLECTOR



LOCAL ROAD



PRIVATE ROAD

STREET UTILITIES TYPICAL SECTIONS

SCALE: NTS

811 Know what's below. Call before you dig.

N W E S

SCALE: 1" = 100'
0 100' 200'

REGISTERED PROFESSIONAL ENGINEER
87762PE
OREGON
JULY 14, 1987
ASHLEY ROCHELLE STAL
EXPIRES: 06/30/20

PUBLISH DATE
06.06.2018

ISSUED FOR
LAND USE DOCUMENTS

COMPOSITE UTILITY PLAN

CRESTVIEW CROSSING

PLANNED UNIT DEVELOPMENT

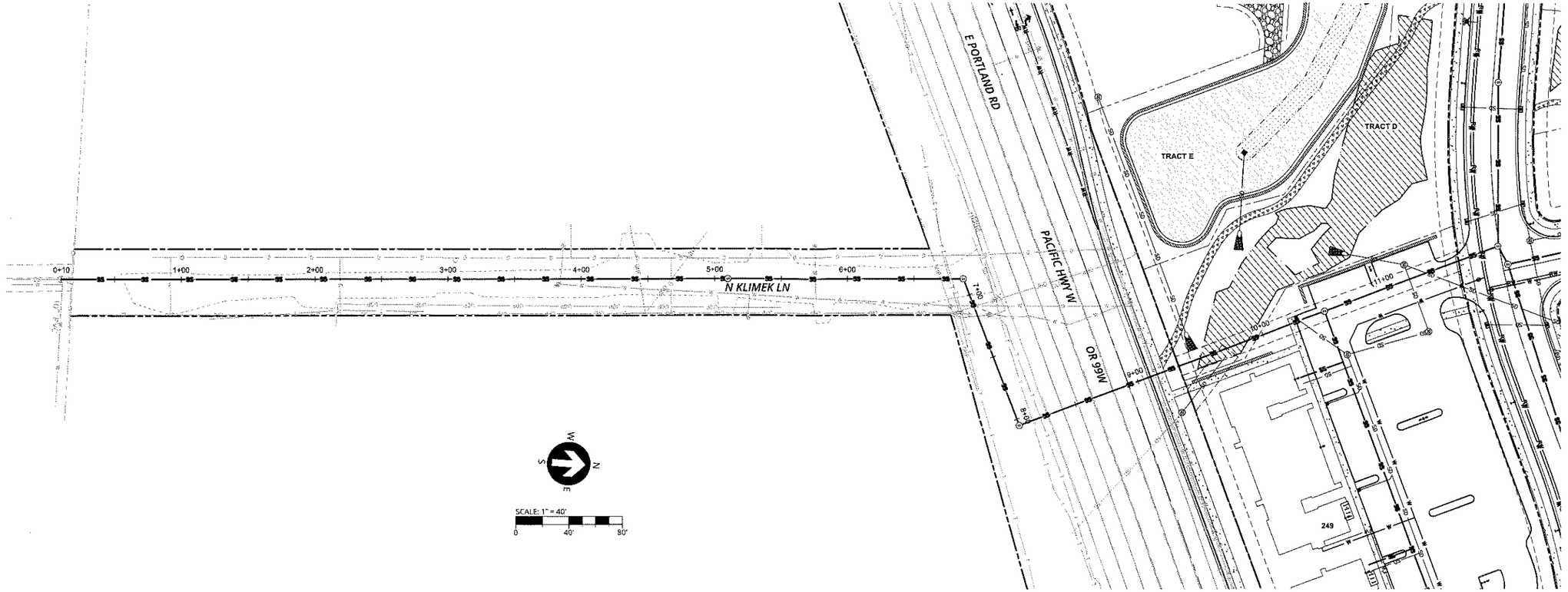
JT SMITH COMPANIES
NEWBERG, OR

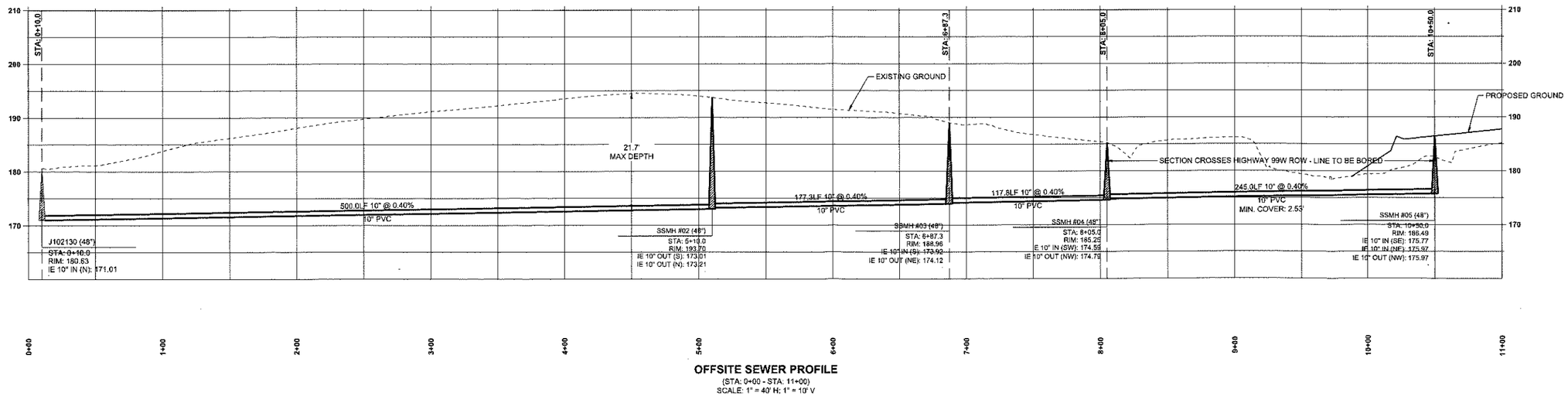
3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C300

P:\17393-JT\5-CRESTVIEW CROSSING\CAD\DGN\C300 COMPOSITE UTILITY PLAN.DWG





OFFSITE SEWER PROFILE
(STA: 0+00 - STA: 11+00)
SCALE: 1" = 40' H; 1" = 10' V

REGISTERED PROFESSIONAL ENGINEER
87763PE
OREGON
JULY 14, 2017
KATHRYN ROCHELLE SEAL
PRELIMINARY
EXPIRES: 06/30/20

PUBLISH DATE
06.06.2018
ISSUED FOR
LAND USE DOCUMENTS

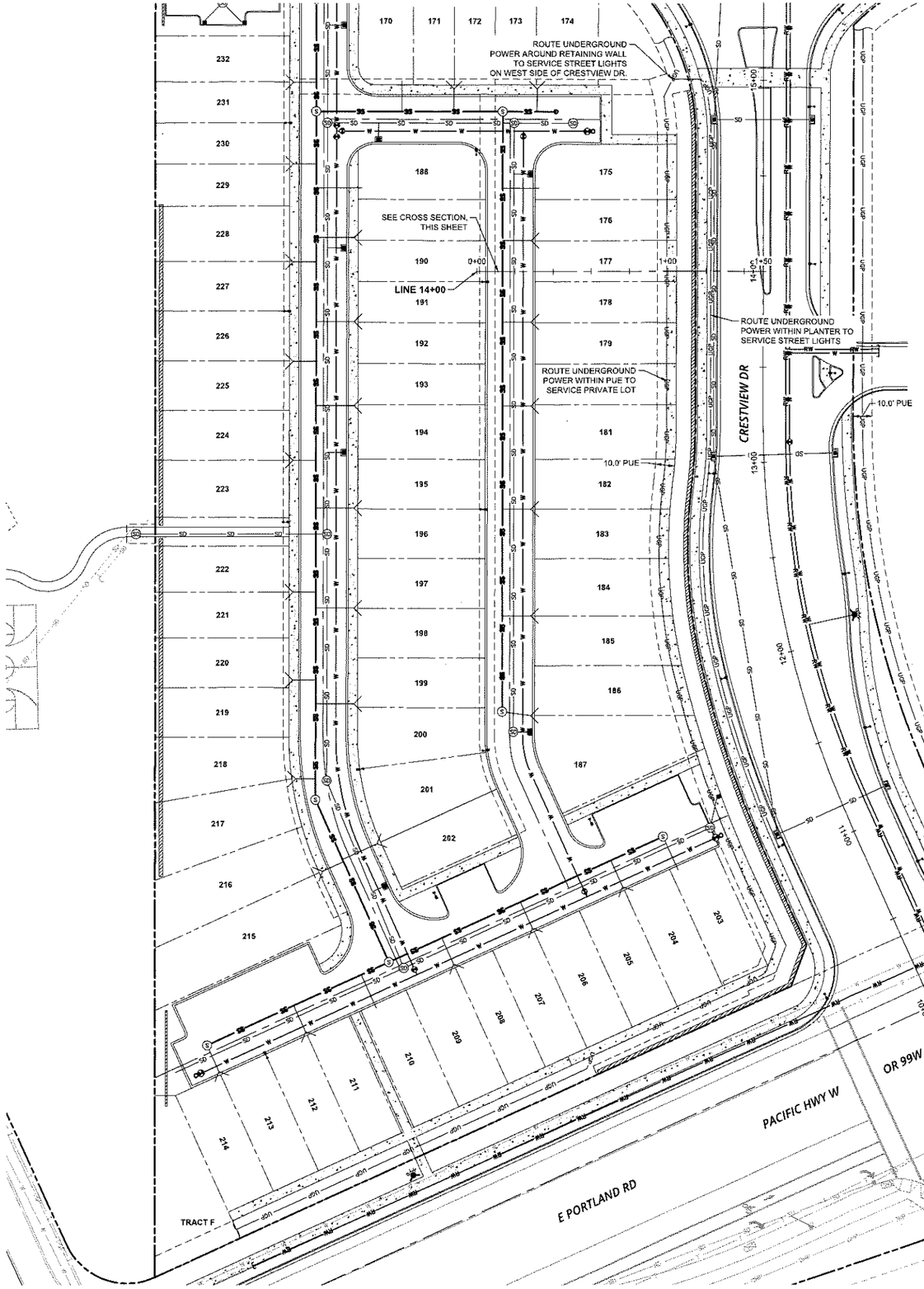
OFFSITE SEWER CONNECTION
CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17383
TAX LOT(S) | 2S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

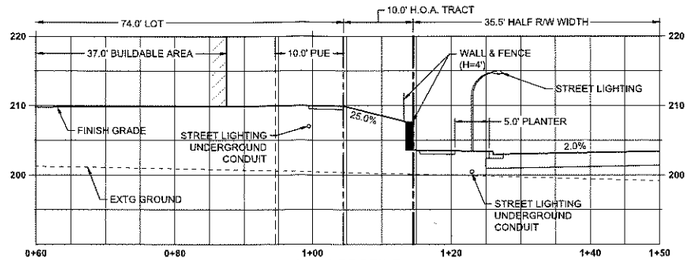
SHEET NUMBER
C301

P:\17383_JTS-CRESTVIEW CROSSING\CAD\DNC300 COMPOSITE UTILITY PLAN.DWG



LEGEND

- SD — PROPOSED STORM PIPE
- SS — PROPOSED SANITARY MAIN
- SS — PROPOSED SANITARY SERVICE LATERAL
- W — PROPOSED WATER PIPE
- RW — PROPOSED RECLAIMED WATER MAIN
- FW — PROPOSED WATER FIRE SERVICE
- UGP — PROPOSED UNDERGROUND POWER CONDUIT
- PROPOSED STREET LIGHT



14+00 PROFILE
(STA: 0+60 - STA: 1+50)
SCALE: 1" = 100' H; 1" = 100' V

811 Know what's below. Call before you dig.

N W E S

SCALE: 1" = 30'
0 30' 60'

REGISTERED PROFESSIONAL ENGINEER — OREGON — JULY 14, 2017 — ASHLEY ROCHELLE SAIL — EXPIRES: 06/30/20

PRELIMINARY

PUBLISH DATE
06.06.2018

ISSUED FOR
LAND USE DOCUMENTS

PRELIMINARY STREET LIGHT CONDUIT ROUTING PLAN

CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT

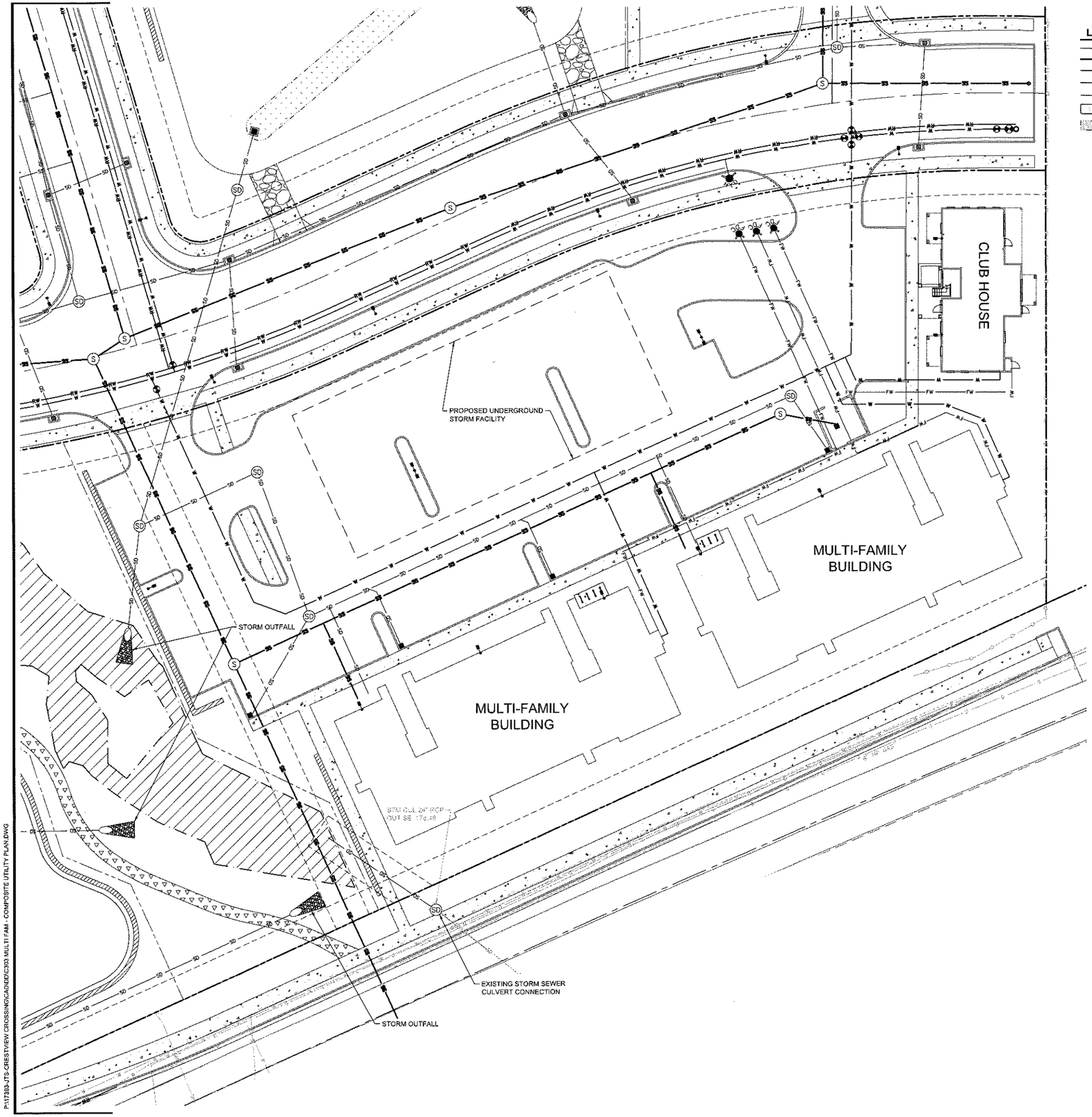
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13800, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C302

P:\17393-JTS-CRESTVIEW CROSSING\CAD\DGN\C300 COMPOSITE UTILITY PLAN.DWG



LEGEND

- PROPOSED STORM PIPE
- PROPOSED SANITARY MAIN
- PROPOSED WATER MAIN
- PROPOSED NON-POTABLE WATER MAIN
- PROPOSED WATER FIRE SERVICE
- PROPOSED DETENTION POND
- PROPOSED WATER QUALITY SWALE
- PIPE CAP / STUB
- PROPOSED HYDRANT
- PROPOSED FIRE DEPARTMENT CONNECTION
- PROPOSED WATER VALVE
- PROPOSED WATER PIPE BLOWOFF/ AIR RELEASE ASSEMBLY
- PROPOSED SANITARY MANHOLE
- PROPOSED SANITARY SERVICE LATERAL WITH CLEANOUT
- PROPOSED STORM MANHOLE
- PROPOSED STORM OUTFALL PROTECTION
- PROPOSED STANDARD INLET MANHOLE
- PROPOSED SUPERSIZED INLET MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED DITCH INLET
- PROPOSED STREET LIGHTING
- EXISTING TELECOM. LINE
- EXISTING GAS LINE
- EXISTING UNDERGROUND POWER
- EXISTING OVERHEAD POWER
- EXISTING SANITARY SEWER
- EXISTING STORM DRAIN
- EXISTING WATER MAIN
- EXISTING HYDRANT
- EXISTING WATER VALVE
- EXISTING SANITARY MANHOLE
- EXISTING STORM MANHOLE
- EXISTING STORM INLET
- EXISTING POWER METER
- EXISTING GAS METER
- EXISTING TELEPHONE PEDESTAL
- EXISTING GUY ANCHOR
- EXISTING LIGHT POLE
- EXISTING UTILITY POLE
- EXISTING INTERSECTION SIGNAL
- EXISTING ELECTRICAL BOX

Know what's below. Call before you dig. 811

N
W E
S

SCALE: 1" = 100'
0 100' 200'

REGISTERED PROFESSIONAL ENGINEER
87760PE
OREGON
JULY 14, 1987
ASHLEY ROCHELLE SEAL
PRELIMINARY
EXPIRES: 06/30/20

PUBLISH DATE
06.06.2018
ISSUED FOR
LAND USE DOCUMENTS

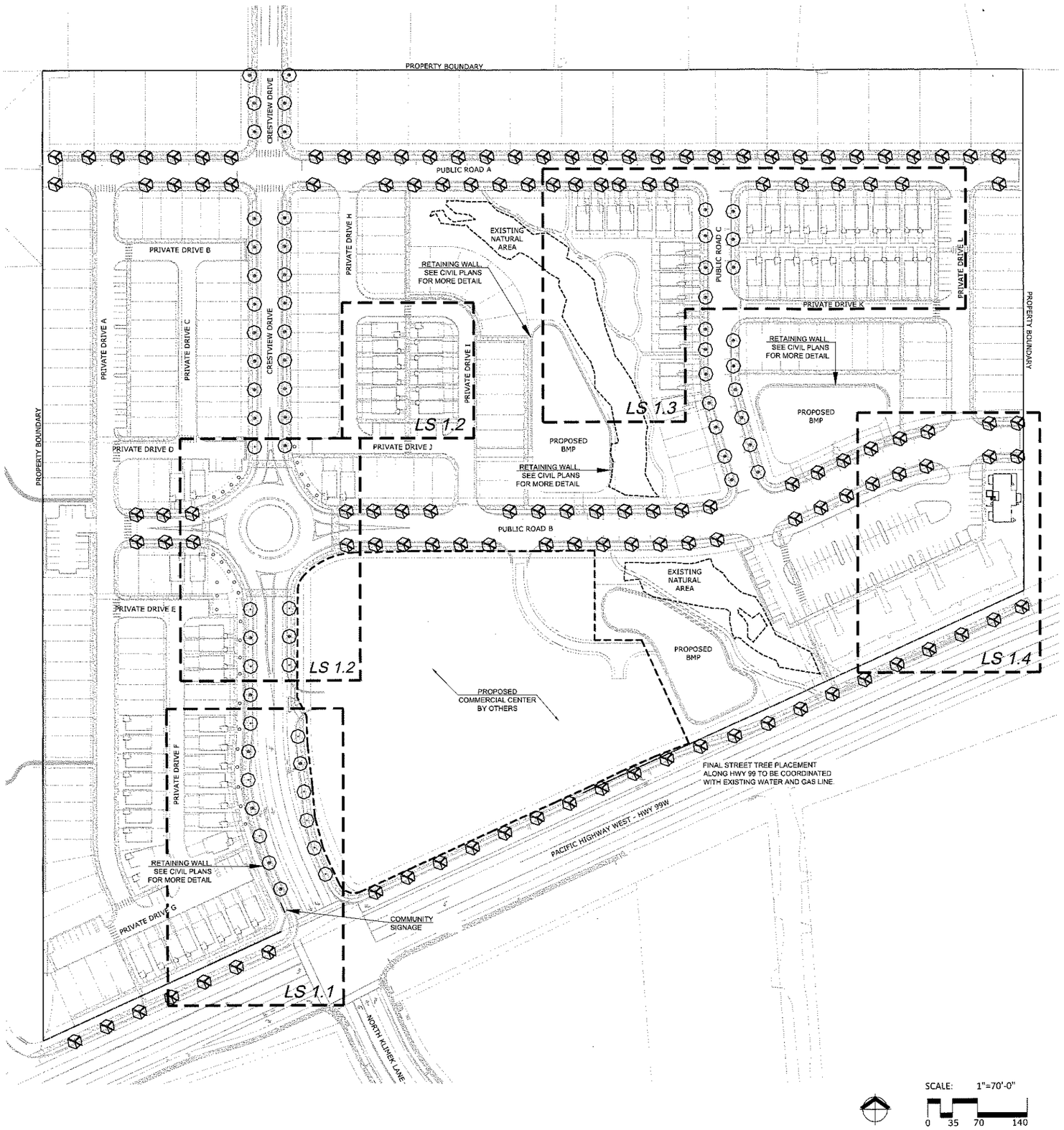
MULTI-FAMILY COMPOSITE UTILITY PLAN
CRESTVIEW CROSSING
PLANNED UNIT DEVELOPMENT
JT SMITH COMPANIES
NEWBERG, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
5075 SW GRIFFITH DRIVE, SUITE 150, BEAVERTON, OR 97005

PROJECT INFORMATION
3J PROJECT # | 17393
TAX LOT(S) | 3S2W16 13500, 1100
LAND USE # | N/A
DESIGNED BY | ARS, JEJ, BMO
CHECKED BY | AJM, RGW

SHEET NUMBER
C303

P:\17393-JTS-CRESTVIEW CROSSING\CAD\DOC\393 MULTI FAM - COMPOSITE UTILITY PLAN.DWG



STREET TREE PLANT MATERIAL SCHEDULE

SYMBOL	STREET TREES ITEM	SIZE
⊙	*ACER RUBRUM 'FRANKSRED'* RED SUNSET MAPLE	2" CAL.
⬡	*PLATANUS X ACERIFOLIA 'BLOODGOOD'* BLOODGOOD LONDON PLANE TREE	2" CAL.

NOTE: A STREET LIGHT LAYOUT PLAN HAS NOT YET BEEN GENERATED. STREET TREE LOCATIONS WILL BE COORDINATED WITH PROPOSED STREET LIGHT, DRIVEWAY, AND UTILITY LOCATIONS DURING CONSTRUCTION DOCUMENT PREPARATION.

GENERAL LANDSCAPE NOTES

1. LANDSCAPE PLANTING SHALL CONFORM TO THE STANDARDS ESTABLISHED UNDER THE CITY OF NEWBERG PLANNING DEPARTMENT.
2. ALL PLANT BEDS SHALL HAVE A 3" DEPTH OF BARK MULCH.
3. LANDSCAPE AREAS SHALL HAVE A COMPLETE UNDERGROUND AUTOMATIC IRRIGATION SYSTEM WITH FULL HEAD TO HEAD COVERAGE. WETLAND BUFFER SHALL HAVE A TEMPORARY IRRIGATION SYSTEM FOR THE TWO YEAR ESTABLISHMENT PERIOD.
4. ALL PLANT MATERIAL DELIVERED TO THIS SITE SHALL MEET THE AMERICAN STANDARD FOR NURSERY STOCK STANDARDS.
5. CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FOR ALL PLANT MATERIAL SUBSTITUTIONS FROM THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. PLANT SUBSTITUTIONS WITHOUT PRIOR WRITTEN APPROVAL THAT DO NOT COMPLY WITH THE DRAWINGS AND SPECIFICATIONS MAY BE REJECTED BY THE LANDSCAPE ARCHITECT AT NO COST TO THE OWNER. THESE ITEMS MAY BE REQUIRED TO BE REPLACED WITH PLANT MATERIALS THAT ARE IN COMPLIANCE WITH THE DRAWINGS.

LS 1.4 — DASHED BOX AND SHEET NUMBER REFLECT CORRESPONDING SHEET WITH DETAILED ENLARGEMENT.

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www.cardno.com

J.T. SMITH

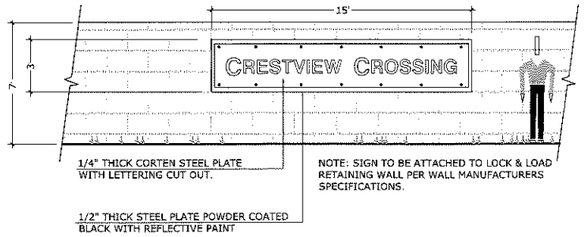
STREET TREE PLAN
CRESTVIEW CROSSING
JT SMITH COMPANIES
City of Newberg, Oregon

REGISTERED LA907
ANDREW D. HILL
OREGON
LANDSCAPE ARCHITECT
10/19/16
EXPIRES 10/31/18

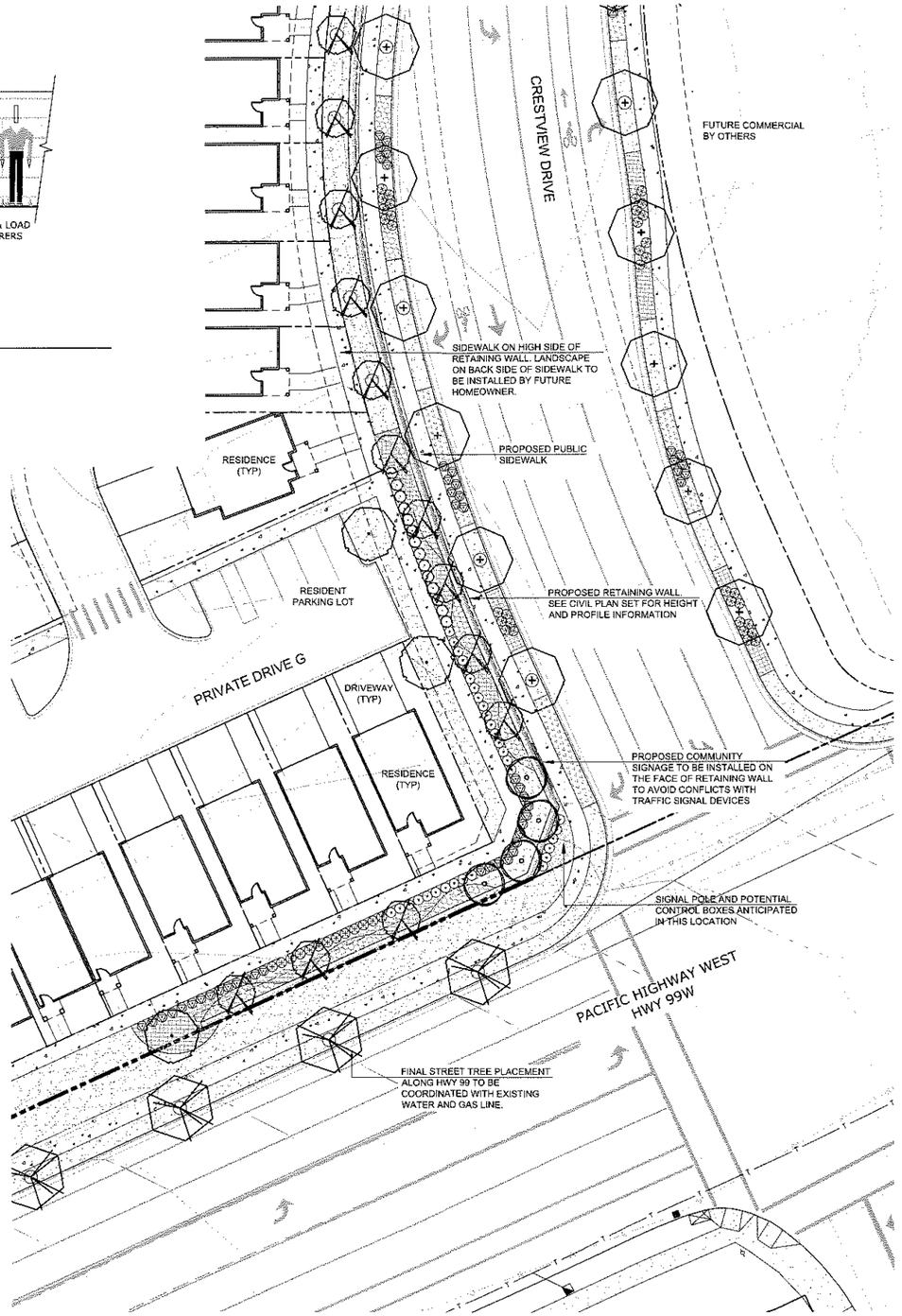
PROJECT NO.:
DATE: 06-06-2018
DESIGNED BY: ADH
DRAWN BY: KIW
CHECKED BY: ADH

STREET TREE PLAN

LS 1.0



A MAIN ENTRY SIGNAGE
SCALE 1/4"= 1'-0"



B MAIN ENTRY AND CRESTVIEW DRIVE ENLARGEMENT
SCALE 1"=20'-0"

SCALE: 1"=20'-0"
0 10 20 40

LANDSCAPE PLANT MATERIAL SCHEDULE

SYMBOL	STREET TREES ITEM	SIZE
+	*ACER RUBRUM 'FRANKSRED'* RED SUNSET MAPLE	2" CAL.
+	*PLATANUS X ACERIFOLIA 'BLOODGOOD'* BLOODGOOD LONDON PLANE TREE	2" CAL.
	TREES ITEM	SIZE
+	*ZELKOVA SERRATA 'GREEN VASE'* GREEN VASE ZELKOVA	2" CAL.
+	*TILIA CORDATA 'GREENSPIRE'* GREENSPIRE LINDEN	2" CAL.
+	*BETULA JACQUEMONTII* HIMALAYAN BIRCH	2" CAL.
+	*CERCIS CANADENSIS* EASTERN REDBUD	1.5" CAL.
+	*PRUNUS SARGENTII* SARGENT CHERRY	1.5" CAL.
+	*STYRAX JAPONICUS* JAPANESE SNOWBELL	1.5" CAL.
+	*ACER CIRCINATUM* VINE MAPLE	7'-8' HT.
	TREES-EVERGREEN ITEM	SIZE
+	*PINUS STROBUS 'FASTIGIATA'* FASTIGIATE WHITE PINE	6' HT. / B&B
+	*CHAMAECYPARIS OBTUSA 'GRACILIS'* SLENDER HINOKI FALSE CYPRESS	6' HT. / B&B
+	*THUJA PLICATA 'HOGAN'* HOGAN'S WESTERN REDCEDAR	6' HT. / B&B
	SHRUBS - DECIDUOUS ITEM	SIZE
+	*VIBURNUM P. TOMENTOSUM 'MARIESII'* DOUBLEFILE VIBURNUM	7 GAL.
+	*HYDRANGEA QUERCIFOLIA 'SNOW QUEEN'* SNOW QUEEN OAKLEAF HYDRANGEA	7 GAL.
+	*CORNUS STOLONIFERA 'FARROW'* ARCTIC FIRE RED TWIG DOGWOOD	3 GAL.
+	*BERBERIS THUN. 'CHERRY BOMB'* CHERRY BOMB BARBERRY	3 GAL.
+	*ROSA X 'RADRAZZ'* KNOCK OUT SHRUB ROSE	3 GAL.
	SHRUBS - EVERGREEN ITEM	SIZE
+	*PRUNUS LAUROCERASUS 'NANA'* DWARF ENGLISH LAUREL	7 GAL.
+	*CHOISYA TERNATA* MEXICAN ORANGE	7 GAL.
+	*ABELIA X GRANDIFLORA* GLOSSY ABELIA	7 GAL.
+	*OSMANTHUS FRAGRANS* SWEET OLIVE	7 GAL.
+	*SARCOCOCCA HOOKERIANA VAR. HUMILIS* HIMALAYAN SWEET BOX	3 GAL.
+	*DAPHNE ODORA 'AUREO-MARGINATA'* VARIEGATED WINTER DAPHNE	3 GAL.
+	*NANDINA DOMESTICA 'COMPACTA'* DWARF HEAVENLY BAMBOO	3 GAL.
+	*BUXUS SEMPERVIRENS 'SUFFRUTICOSA'* EDGING BOXWOOD	3 GAL.
+	*VIBURNUM DAVIDII* DAVID VIBURNUM	3 GAL.
+	*ESCALLONIA 'COMPAKTA'* COMPACT ESCALLONIA	3 GAL.
	GRASSES & ACCENTS ITEM	SIZE
+	*LIRIOPE MUSCARI 'BIG BLUE'* BIG BLUE LILYTURF	1 GAL.
+	*MISCANTHUS SINENSIS 'VARIEGATUS'* VARIEGATED JAPANESE SILVER GRASS	3 GAL.
+	*MISCANTHUS SINENSIS 'LITTLE KITTEN'* LITTLE KITTEN MAIDEN GRASS	3 GAL.
+	*CALAMAGROSTIS X ACUTIFLORA 'OVERDAM'* OVERDAM FEATHER REED GRASS	3 GAL.
	GROUNDCOVERS ITEM	SIZE
+	*COTONEASTER DAMMERI 'LOWFAST'* BEARBERRY COTONEASTER	1 GAL. 3' O.C.
+	*RUBUS CALY 'EMERALD CARPET'* EMERALD CARPET CREEPING BERRY	1 GAL. 3' O.C.
+	ANNUALS	4" FLATS 8" O.C.
+	*PT 769 ROUGH & READY ECO-TURF MIX* BY PRO TIME LAWN SEED	SEED 5-7 LBS. / 1,000 SF

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PORTLAND
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TEL: (503) 419 - 2500 FAX: (503) 419 - 2600
www.cardno.com

J.T. SMITH COMPANIES

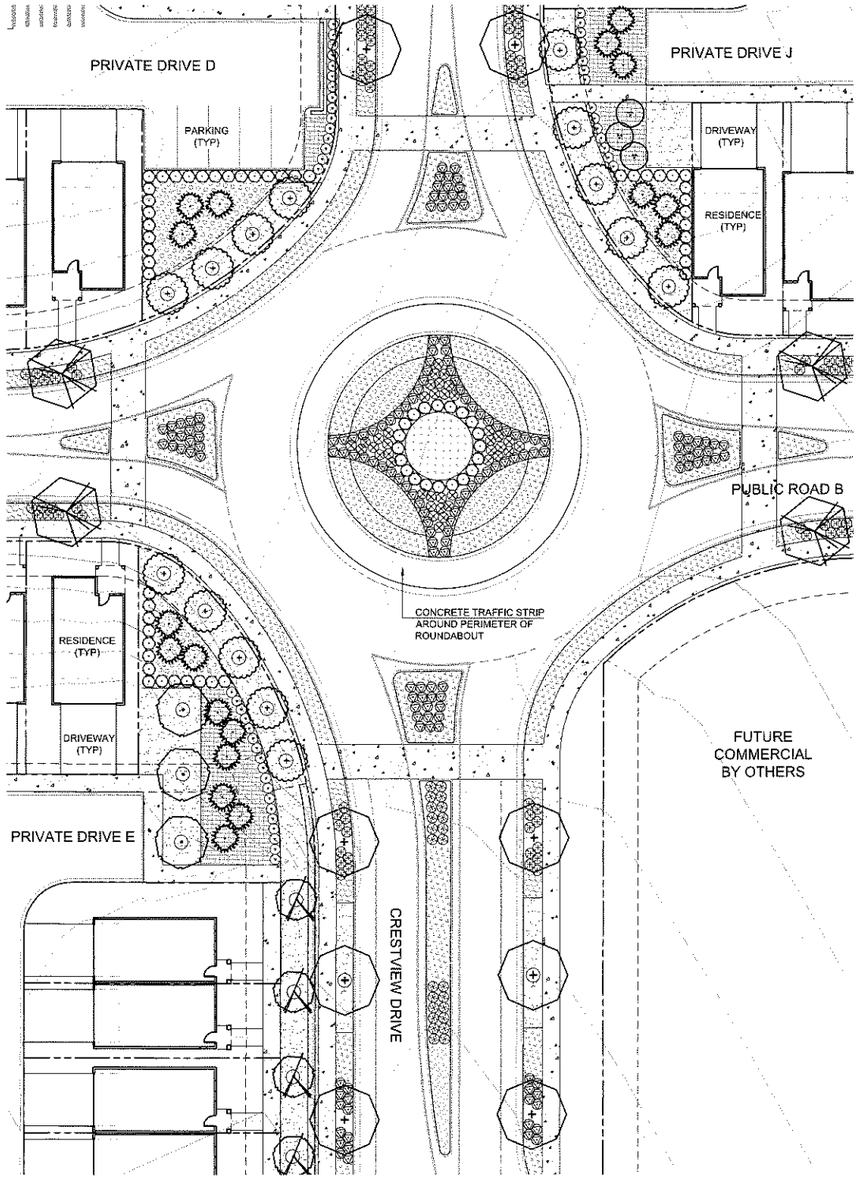
PLANTING PLAN
CRESTVIEW CROSSING
JT SMITH COMPANIES
City of Newberg, Oregon

REGISTERED LA907
ANDREW D. HILL
OREGON 10/19/16
LANDSCAPE ARCHITECT
EXPIRES 10/31/18

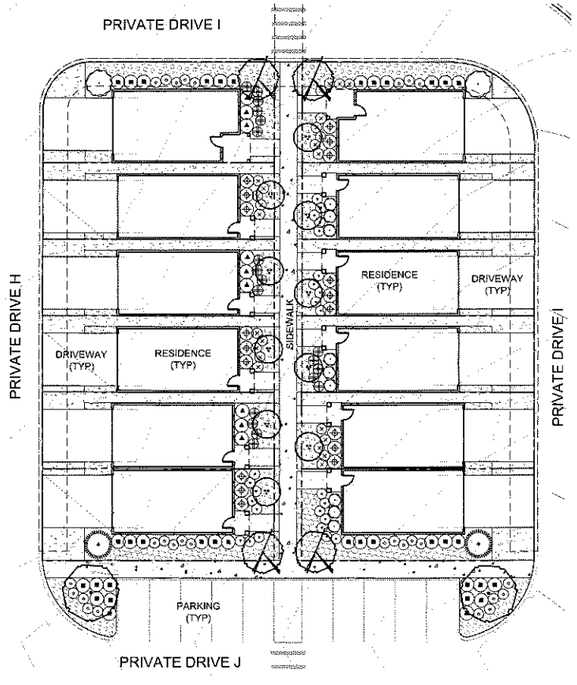
PROJECT NO.:
DATE: 06-06-2018
DESIGNED BY: ADH
DRAWN BY: KW
CHECKED BY: ADH

PLANTING PLAN

LS 1.1



A CRESTVIEW DRIVE AND ROUNDABOUT ENLARGEMENT
SCALE 1"=20'-0"



B COURTYARD ENLARGEMENT
SCALE 1"=20'-0"

SCALE: 1"=20'-0"
0 10 20 40

LANDSCAPE PLANT MATERIAL SCHEDULE

SYMBOL	ITEM	SIZE
	STREET TREES	
	ACER RUBRUM 'FRANKSRED' RED SUNSET MAPLE	2" CAL.
	PLATANUS X ACERIFOLIA 'BLOODGOOD' BLOODGOOD LONDON PLANE TREE	2" CAL.
	TREES	
	ZELKOVA SERRATA 'GREEN VASE' GREEN VASE ZELKOVA	2" CAL.
	TILIA CORDATA 'GREENSPIRE' GREENSPIRE LINDEN	2" CAL.
	BETULA JACQUEMONTII HIMALAYAN BIRCH	2" CAL.
	CERCIS CANADENSIS EASTERN REDBUD	1.5" CAL.
	PRUNUS SARGENTII SARGENT CHERRY	1.5" CAL.
	STYRAX JAPONICUS JAPANESE SNOWBELL	1.5" CAL.
	ACER CIRCINATUM VINE MAPLE	7'-8' HT.
	TREES-EVERGREEN	
	PINUS STROBUS 'FASTIGIATA' FASTIGIATE WHITE PINE	6' HT. / B&B
	CHAMAECYPARIS OBTUSA 'GRACILIS' SLENDER HINOKI FALSE CYPRESS	6' HT. / B&B
	THUJA PLICATA 'HOGAN' HOGAN'S WESTERN REDCEDAR	6' HT. / B&B
	SHRUBS - DECIDUOUS	
	VIBURNUM P. TOMENTOSUM 'MARIESII' DOUBLEFILE VIBURNUM	7 GAL.
	HYDRANGEA QUERCIFOLIA 'SNOW QUEEN' SNOW QUEEN OAKLEAF HYDRANGEA	7 GAL.
	CORNUS STOLONIFERA 'FARROW' ARCTIC FIRE RED TWIG DOGWOOD	3 GAL.
	BERBERIS THUN. 'CHERRY BOMB' CHERRY BOMB BARBERRY	3 GAL.
	ROSA X 'RADRAZZ' KNOCK OUT SHRUB ROSE	3 GAL.
	SHRUBS - EVERGREEN	
	PRUNUS LAUROCERASUS 'NANA' DWARF ENGLISH LAUREL	7 GAL.
	CHOISYA TERNATA MEXICAN ORANGE	7 GAL.
	ABELIA X GRANDIFLORA GLOSSY ABELIA	7 GAL.
	OSMANTHUS FRAGRANS SWEET OLIVE	7 GAL.
	SARCOCOCCA HOOKERIANA VAR. HUMILIS HIMALAYAN SWEET BOX	3 GAL.
	DAPHNE ODORA 'AUREO-MARGINATA' VARIEGATED WINTER DAPHNE	3 GAL.
	NANDINA DOMESTICA 'COMPACTA' DWARF HEAVENLY BAMBOO	3 GAL.
	BUXUS SEMPERVIRENS 'SUFFRUTICOSA' EDGING BOXWOOD	3 GAL.
	VIBURNUM DAVIDII DAVID VIBURNUM	3 GAL.
	ESCALLONIA 'COMPAKTA' COMPACT ESCALLONIA	3 GAL.
	GRASSES & ACCENTS	
	LIRIOPE MUSCARI 'BIG BLUE' BIG BLUE LILYTURF	1 GAL.
	MISCANTHUS SINENSIS 'VARIEGATUS' VARIEGATED JAPANESE SILVER GRASS	3 GAL.
	MISCANTHUS SINENSIS 'LITTLE KITTEN' LITTLE KITTEN MAIDEN GRASS	3 GAL.
	CALAMAGROSTIS X ACUTIFLORA 'OVERDAM' OVERDAM FEATHER REED GRASS	3 GAL.
	GROUNDCOVERS	
	COTONEASTER DAMMERI 'LOWFAST' BEARBERRY COTONEASTER	1 GAL. 3' O.C.
	RUBUS CALY. 'EMERALD CARPET' EMERALD CARPET CREEPING BERRY	1 GAL. 3' O.C.
	ANNUALS	4" FLATS 8" O.C.
	PT 769 ROUGH & READY ECO-TURF MIX BY PRO TIME LAWN SEED	SEED 5-7 LBS. / 1,000 SF

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TEL: (503) 419 - 2500 FAX: (503) 419 - 2600
www.cardno.com

J.T. SMITH COMPANIES

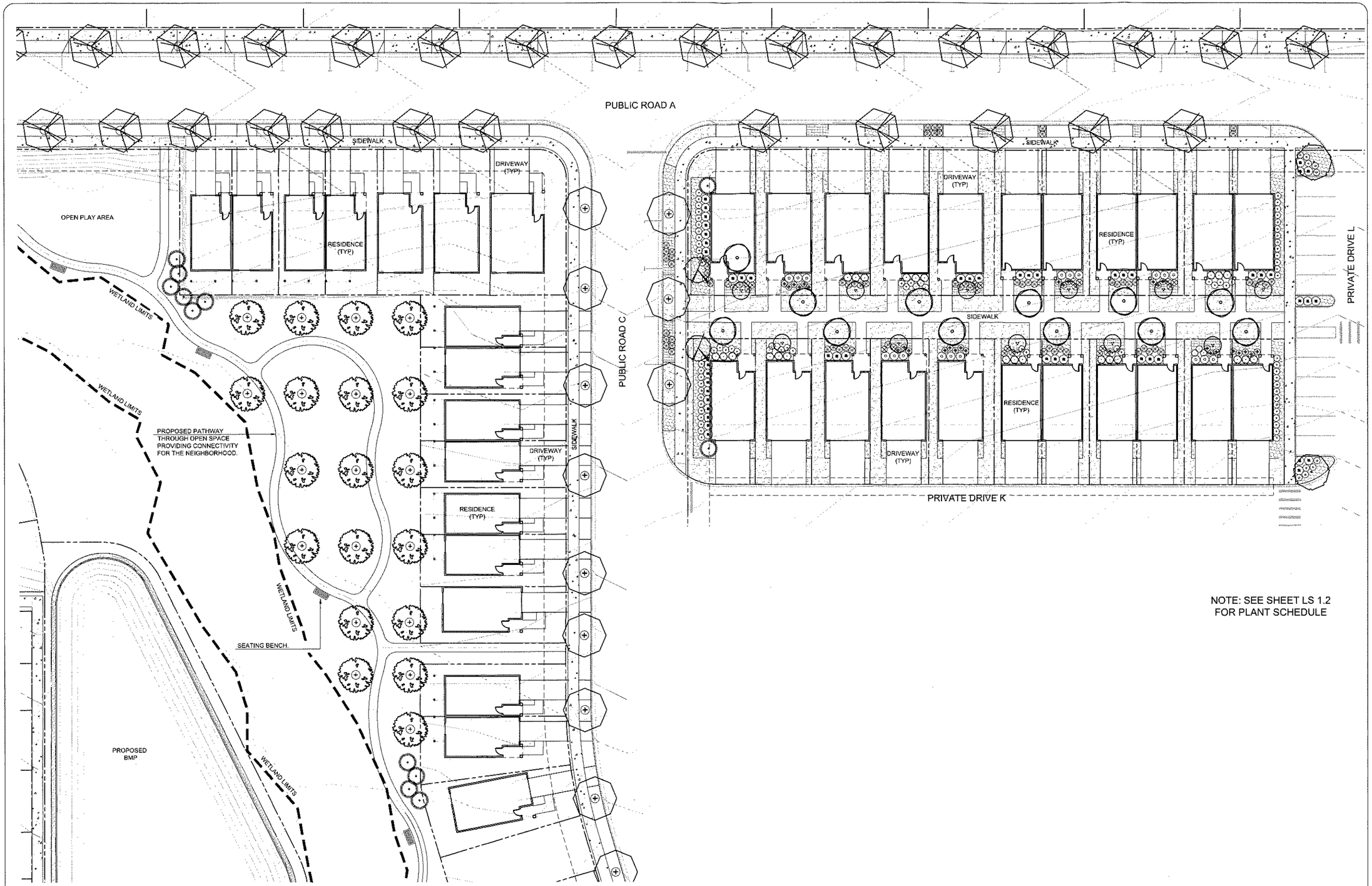
PLANTING PLAN
CRESTVIEW CROSSING
JT SMITH COMPANIES
City of Newberg, Oregon

REGISTERED LA907
ANDREW D. HILL
OREGON 10/19/16
LANDSCAPE ARCHITECT
EXPIRES 10/31/16

PROJECT NO.:	
DATE:	06-06-2018
DESIGNED BY:	ADH
DRAWN BY:	KIW
CHECKED BY:	ADH

PLANTING PLAN

LS 1.2



NOTE: SEE SHEET LS 1.2
FOR PLANT SCHEDULE

A WETLAND/ COMMON OPEN SPACE PATHWAY AND RESIDENTIAL COURTYARD ENLARGEMENT
SCALE 1"=20'-0"

SCALE: 1"=20'-0"
0 10 20 40

Cardno
Shaping the Future
PORTLAND
5415 SW WESTGATE DR, STE 100, PORTLAND, OR 97221
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www.cardno.com

J.T. SMITH COMPANIES

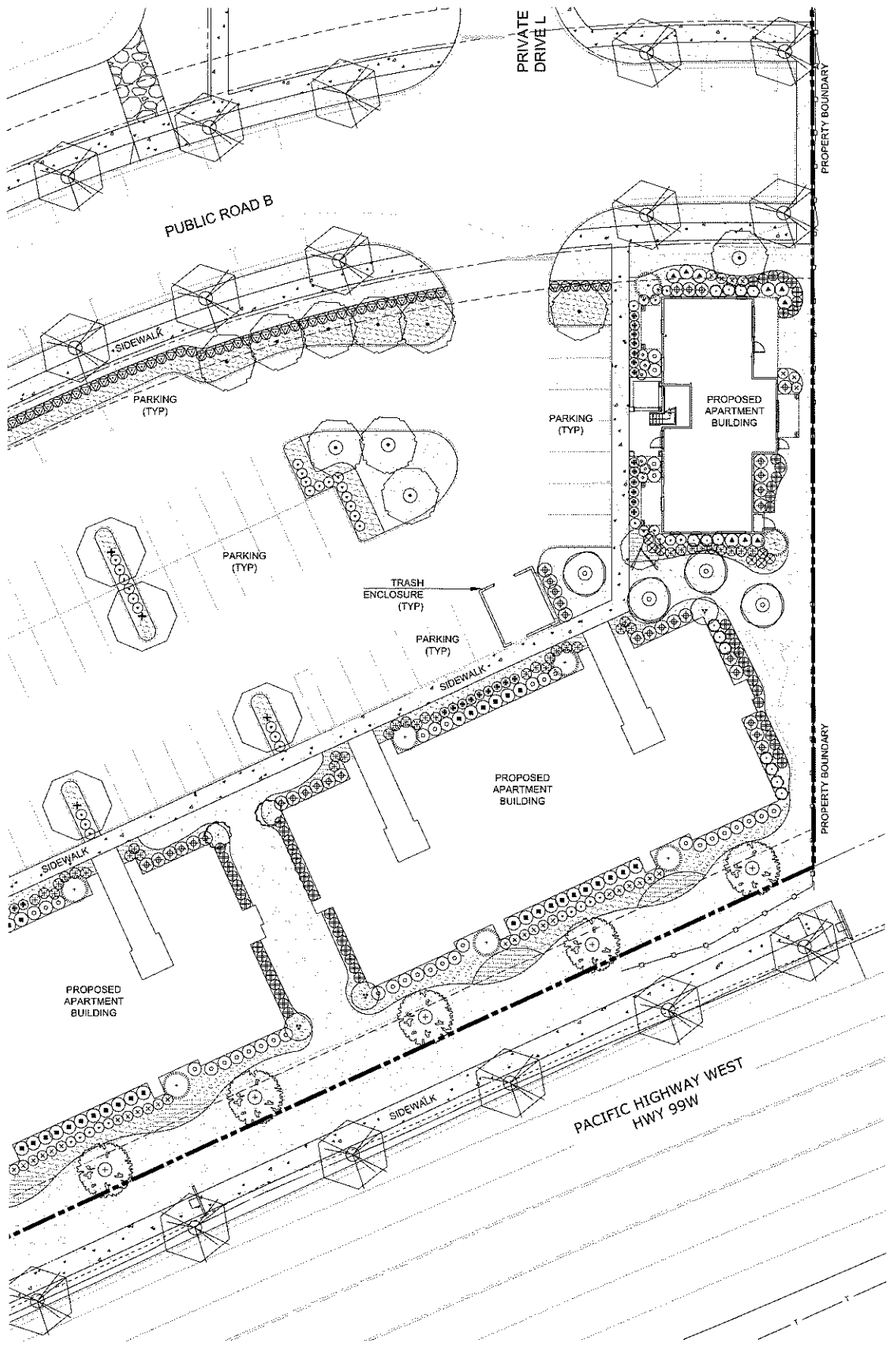
PLANTING PLAN
CRESTVIEW CROSSING
JT SMITH COMPANIES
City of Newberg, Oregon

REGISTERED
LA907
ANDREW D. HILL
OREGON
10/19/16
LANDSCAPE ARCHITECT
EXPIRES 10/31/16

PROJECT NO.:	
DATE:	06-06-2016
DESIGNED BY:	ADH
DRAWN BY:	KIW
CHECKED BY:	ADH

PLANTING PLAN

LS 1.3



A APARTMENT COMPLEX AND HWY 99 FRONTAGE ENLARGEMENT
SCALE 1"=20'-0"

SCALE: 1"=20'-0"
0 10 20 40

LANDSCAPE PLANT MATERIAL SCHEDULE

SYMBOL	ITEM	SIZE
STREET TREES		
	ACER RUBRUM 'FRANKSRED' RED SUNSET MAPLE	2" CAL.
	PLATANUS X ACERIFOLIA 'BLOODGOOD' BLOODGOOD LONDON PLANE TREE	2" CAL.
TREES		
	ZELKOVA SERRATA 'GREEN VASE' GREEN VASE ZELKOVA	2" CAL.
	TILIA CORDATA 'GREENSPIRE' GREENSPIRE LINDEN	2" CAL.
	BETULA JACQUEMONTII HIMALAYAN BIRCH	2" CAL.
	CERCIS CANADENSIS EASTERN REDBUD	1.5" CAL.
	PRUNUS SARGENTII SARGENT CHERRY	1.5" CAL.
	STYRAX JAPONICUS JAPANESE SNOWBELL	1.5" CAL.
	ACER CIRCINATUM VINE MAPLE	7'-8' HT.
TREES-EVERGREEN		
	PINUS STROBUS 'FASTIGIATA' FASTIGIATE WHITE PINE	6' HT. / B&B
	CHAMAECYPARIS OBTUSA 'GRACILIS' SLENDER HINOKI FALSE CYPRESS	6' HT. / B&B
	THUJA PLICATA 'HOGAN' HOGAN'S WESTERN REDCEDAR	6' HT. / B&B
SHRUBS - DECIDUOUS		
	VIBURNUM P. TOMENTOSUM 'MARIESII' DOUBLEFILE VIBURNUM	7 GAL.
	HYDRANGEA QUERCIFOLIA 'SNOW QUEEN' SNOW QUEEN OAKLEAF HYDRANGEA	7 GAL.
	CORNUS STOLONIFERA 'FARROW' ARCTIC FIRE RED TWIG DOGWOOD	3 GAL.
	BERBERIS THUN 'CHERRY BOMB' CHERRY BOMB BARBERRY	3 GAL.
	ROSA X 'RADRAZZ' KNOCK OUT SHRUB ROSE	3 GAL.
SHRUBS - EVERGREEN		
	PRUNUS LAUROCERASUS 'NANA' DWARF ENGLISH LAUREL	7 GAL.
	CHOISYA TERNATA MEXICAN ORANGE	7 GAL.
	ABELIA X GRANDIFLORA GLOSSY ABELIA	7 GAL.
	OSMANTHUS FRAGRANS SWEET OLIVE	7 GAL.
	SARCOCOCCA HOOKERIANA VAR. HUMILIS HIMALAYAN SWEET BOX	3 GAL.
	DAPHNE ODORA 'AUREO-MARGINATA' VARIEGATED WINTER DAPHNE	3 GAL.
	NANDINA DOMESTICA 'COMPACTA' DWARF HEAVENLY BAMBOO	3 GAL.
	BUXUS SEMPERVIRENS 'SUFFRUTICOSA' EDGING BOXWOOD	3 GAL.
	VIBURNUM DAVIDII DAVID VIBURNUM	3 GAL.
	ESCALLONIA 'COMPAKTA' COMPACT ESCALLONIA	3 GAL.
GRASSES & ACCENTS		
	LIRIOPE MUSCARI 'BIG BLUE' BIG BLUE LILYTURF	1 GAL.
	MISCANTHUS SINENSIS 'VARIEGATUS' VARIEGATED JAPANESE SILVER GRASS	3 GAL.
	MISCANTHUS SINENSIS 'LITTLE KITTEN' LITTLE KITTEN MAIDEN GRASS	3 GAL.
	CALAMAGROSTIS X ACUTIFLORA 'OVERDAM' OVERDAM FEATHER REED GRASS	3 GAL.
GROUNDCOVERS		
	COTONEASTER DAMMERI 'LOWFAST' BEARBERRY COTONEASTER	1 GAL. 3' O.C.
	RUBUS CALY. 'EMERALD CARPET' EMERALD CARPET CREEPING BERRY	1 GAL. 3' O.C.
	ANNUALS	4" FLATS 8" O.C.
	PT 769 ROUGH & READY ECO-TURF MIX BY PRO TIME LAWN SEED	SEED 5-7 LBS. / 1,000 SF

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J.T. SMITH COMPANIES

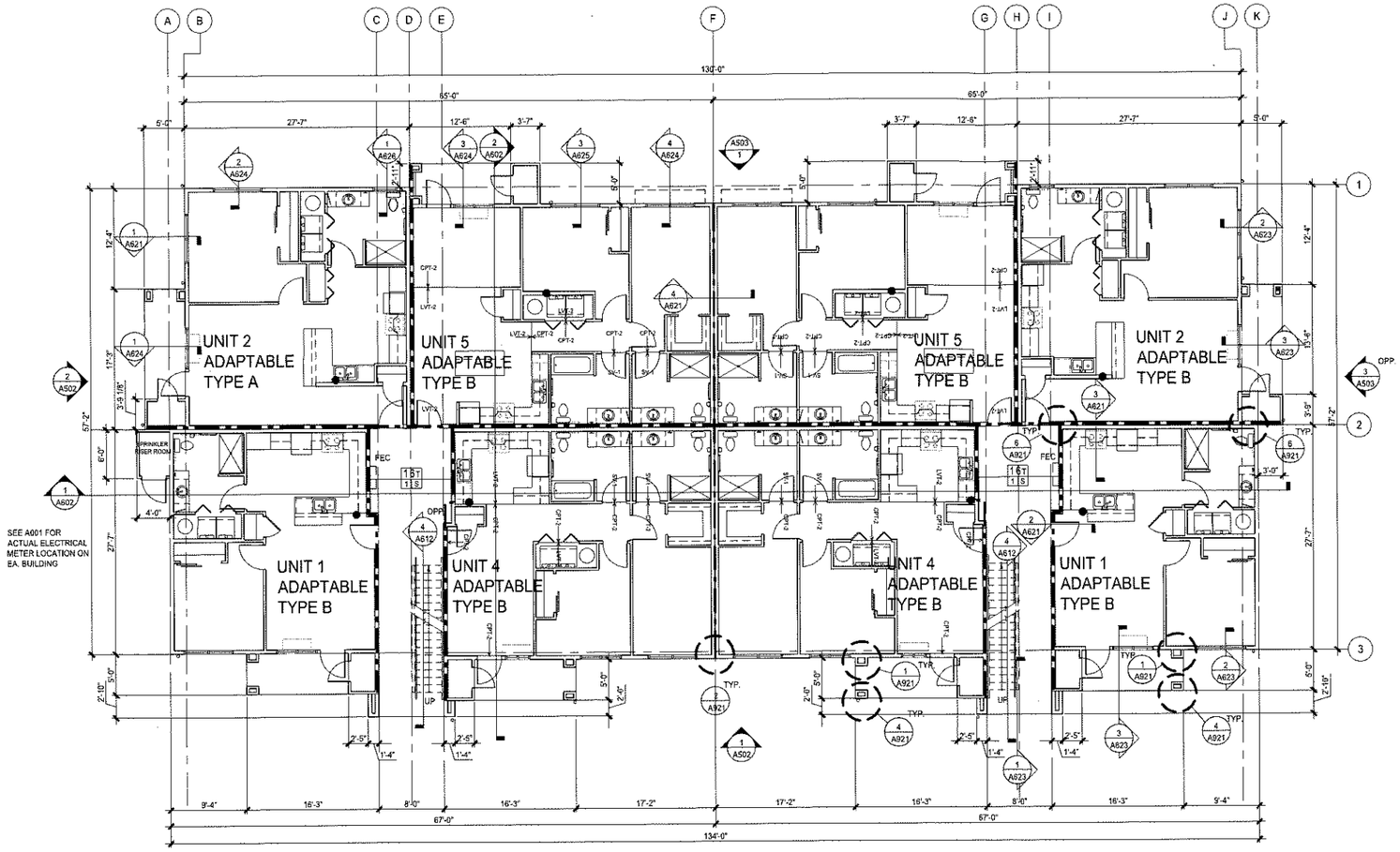
PLANTING PLAN
CRESTVIEW CROSSING
JT SMITH COMPANIES
City of Newberg, Oregon

REGISTERED LA907
ANDREW D. HILL
OREGON
LANDSCAPE ARCHITECT
10/19/16
EXPIRES 10/31/18

PROJECT NO.:	
DATE:	06-06-2018
DESIGNED BY:	ADH
DRAWN BY:	KW
CHECKED BY:	ADH

PLANTING PLAN

LS 1.4



1 BUILDING TYPE A2 - FIRST FLOOR ADAPTABLE UNITS

SCALE: 1/8" = 1'-0"

LRS ARCHITECTS
720 NW Davis 503.221.1121
Suite 300 503.221.2077
Portland OR 97209 www.lrsarchitects.com

PRELIMINARY
NOT FOR
CONSTRUCTION

CONSULTANT:

PROJECT NUMBER:

Crestview
Crossing
NEWBERG, OR

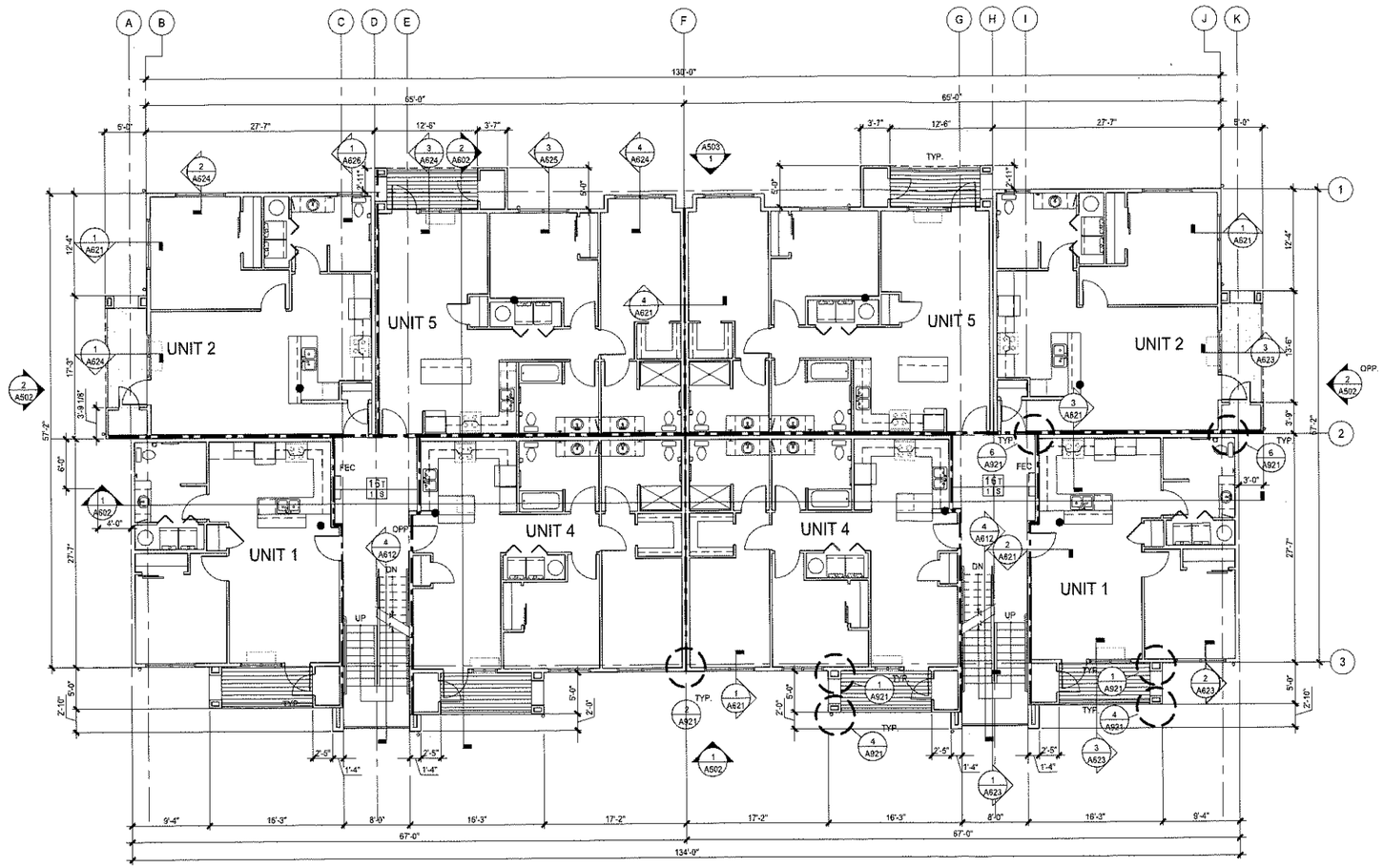
SHEET TITLE:

BUILDING A2
FLOOR PLANS

DRAWN BY: ....

DATE ISSUED:

SHEET: **A204**



1 BUILDING TYPE A2 - SECOND FLOOR UNITS

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SHEET TITLE:

BUILDING A2 FLOOR PLANS

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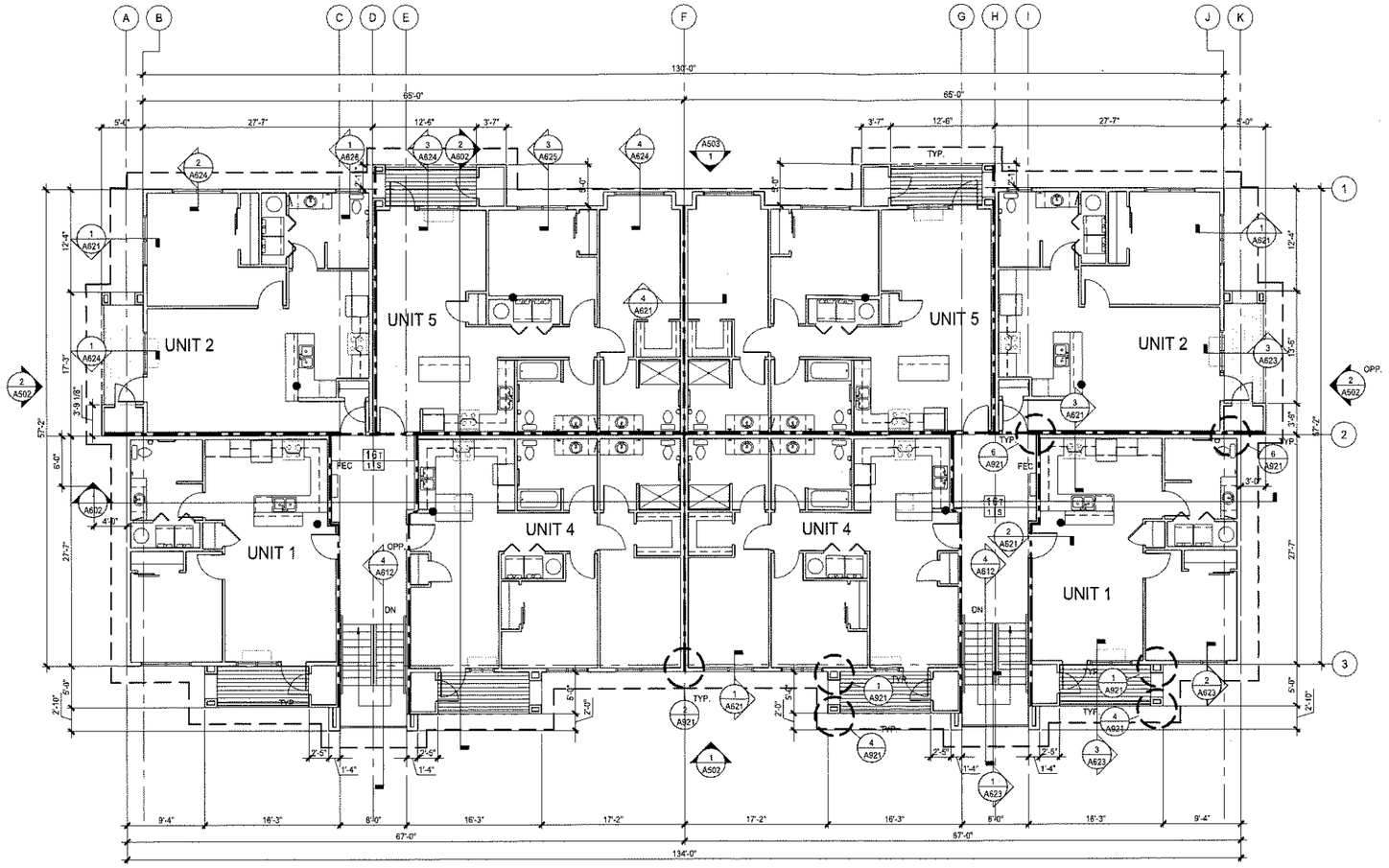
DATE ISSUED:

SHEET: **A205**



1 BUILDING TYPE A2 - THIRD FLOOR UNITS

SCALE: 1/8" = 1'-0"

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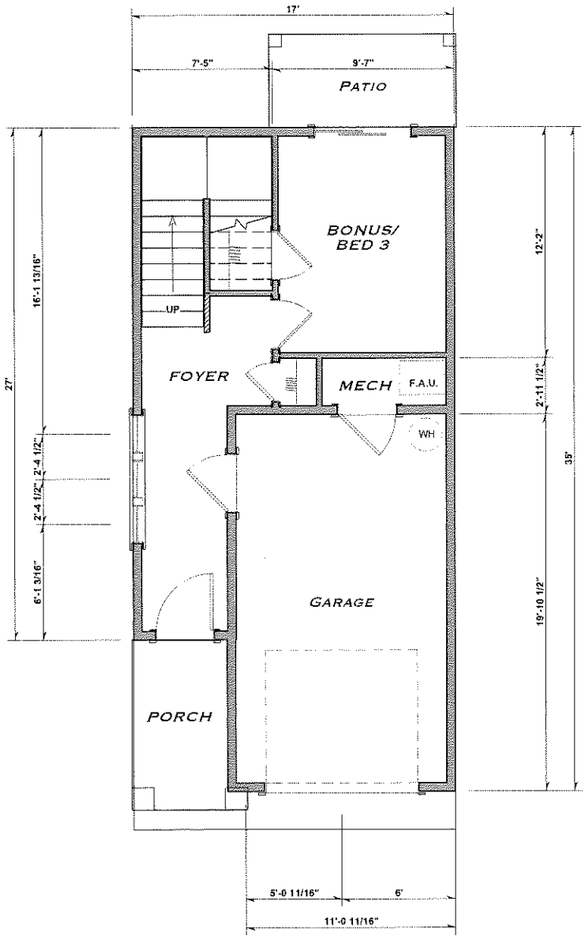
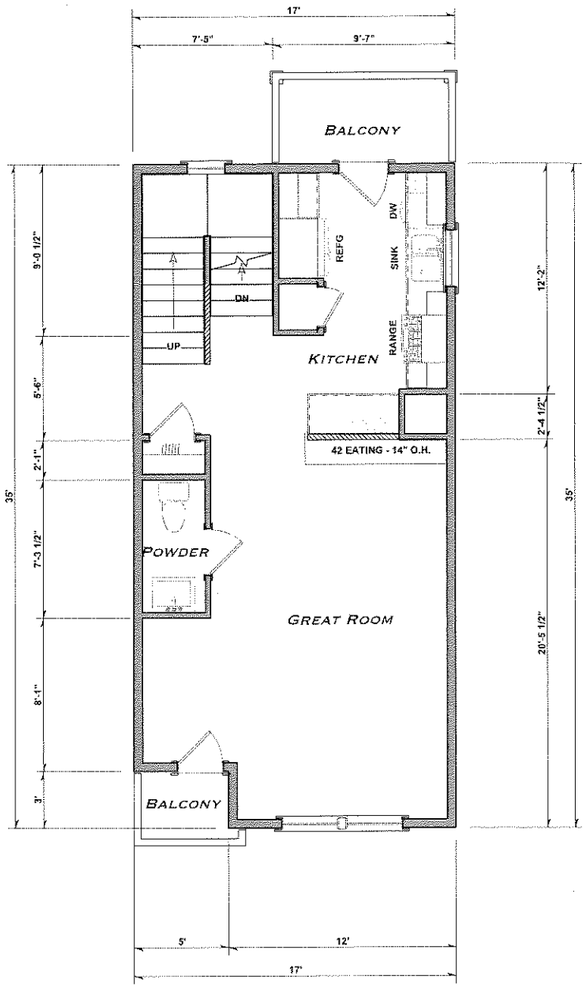
SHEET TITLE:

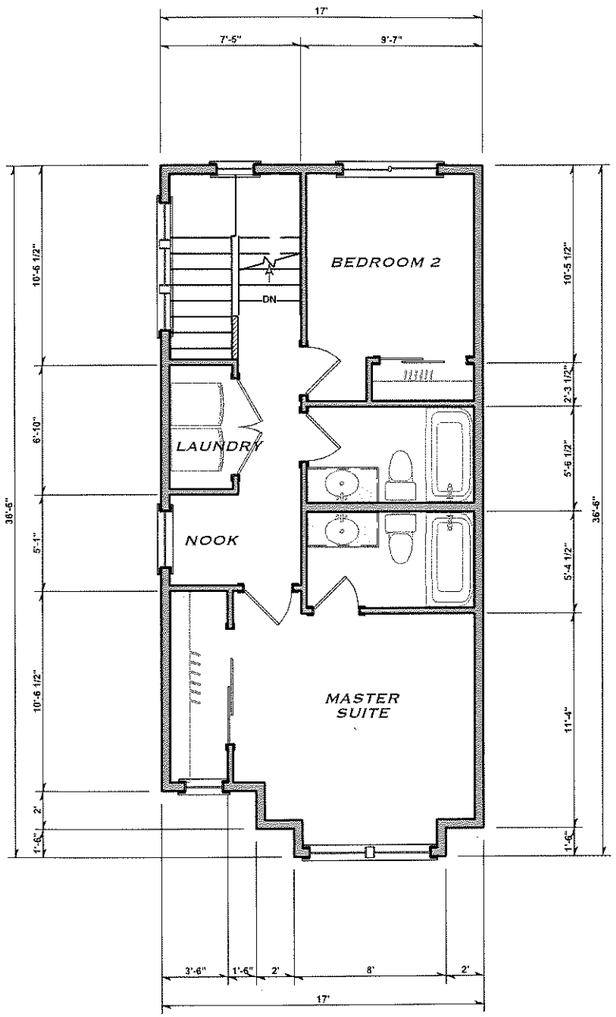
BUILDING A2
FLOOR PLANS

DRAWN BY: ---
DATE ISSUED: 0

SHEET: **A206**







17ft wide plan concept

ground floor		322 sq ft
main floor		518 sq ft
upper floor		529 sq ft
total		1,369 sq ft

twinline design llc
architectural design + documentation

Crestview Crossing 17' wide Front Load Concept Plan | 7/10/18

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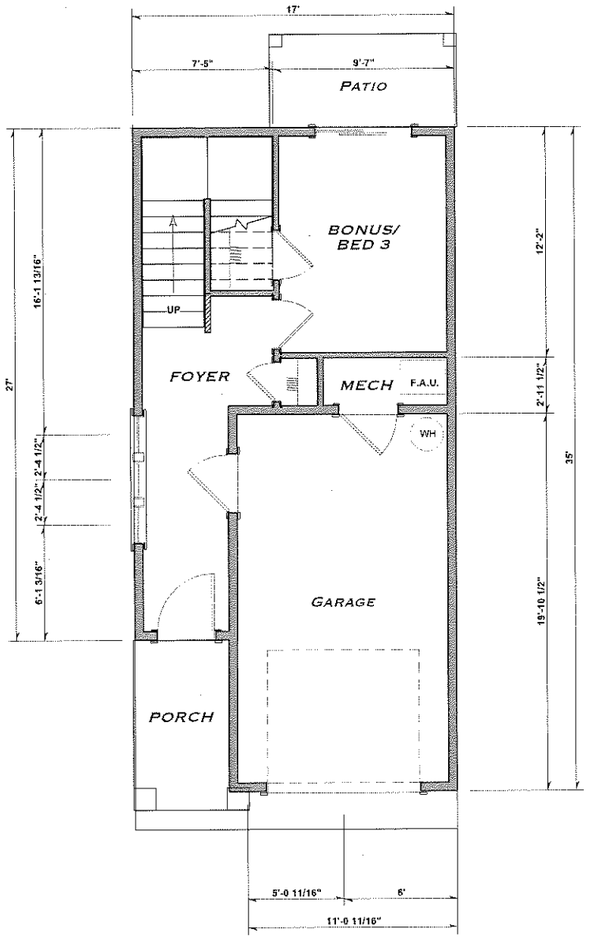

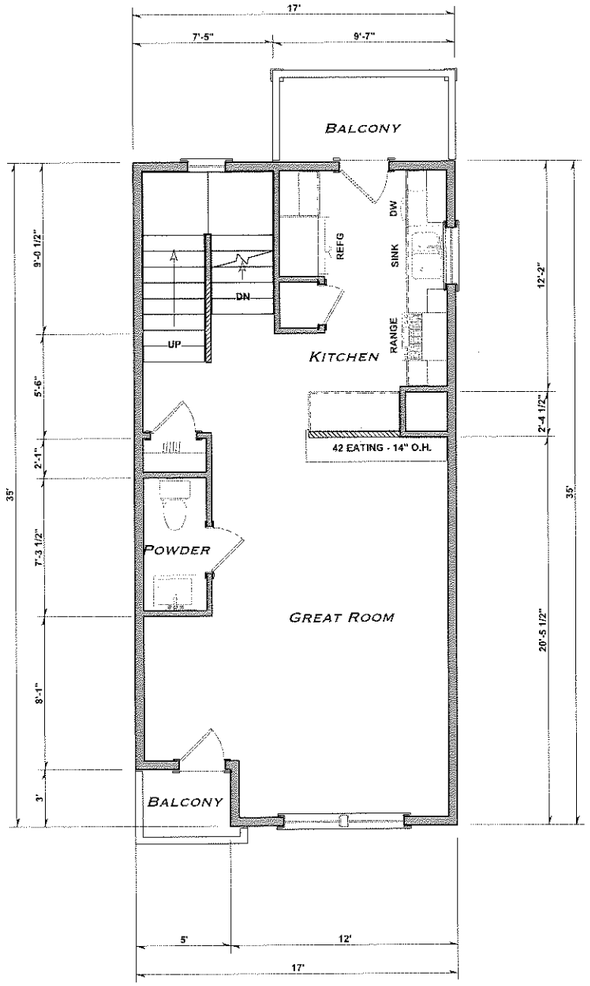

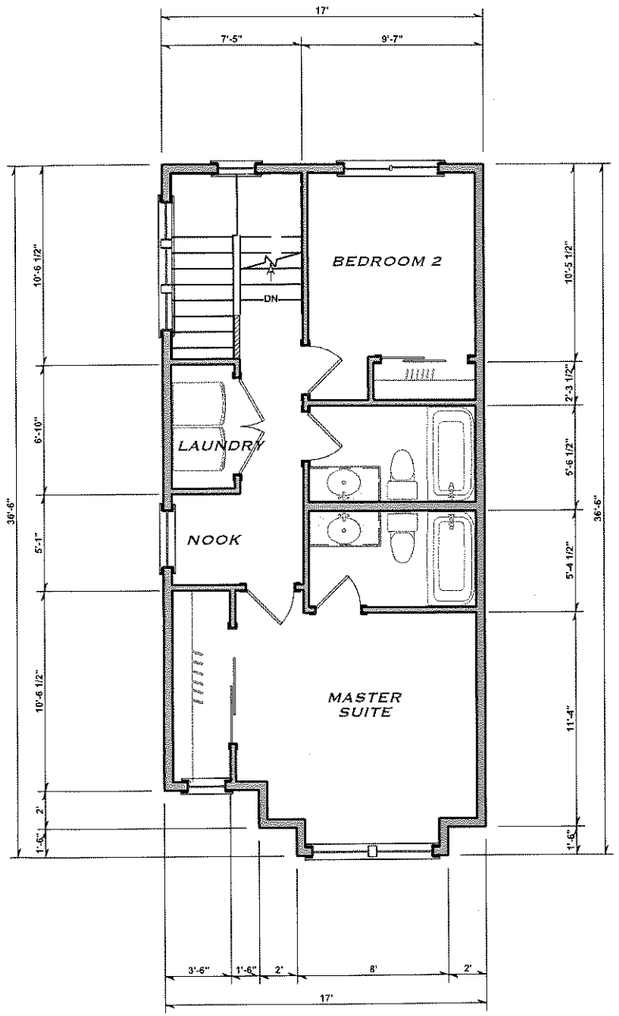

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Crestview Crossing

Newberg, Oregon

August 14, 2018

J.T. SMITH companies

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This perspective is conceptual in nature and may change at the owner's discretion in order to meet jurisdictional codes, final site engineering requirements and budget based on pricing for the final plan.

Highway 99 Frontage

Crestview Crossing

Newberg, Oregon

August 14, 2018

J.T. SMITH companies

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This perspective is conceptual in nature and may change at the owner's discretion in order to meet jurisdictional codes, final site engineering requirements and budget based on pricing for the final plan.

Main Entry Concept

August 14, 2018

Crestview Crossing

Newberg, Oregon

J.T. SMITH companies

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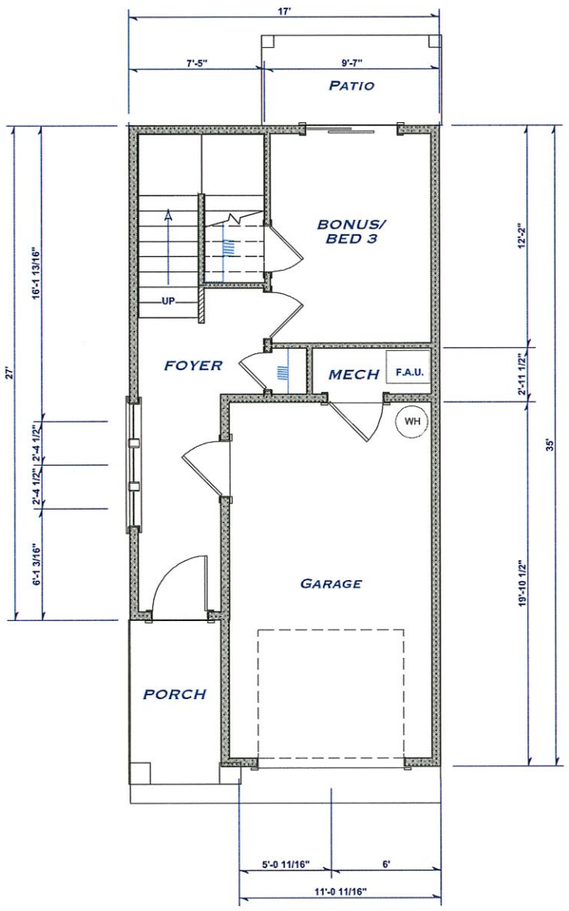
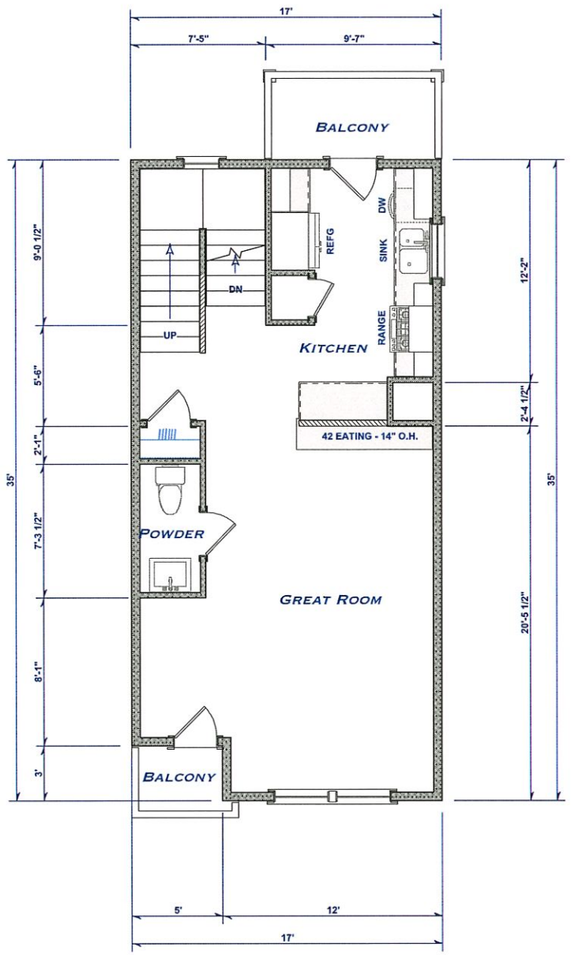
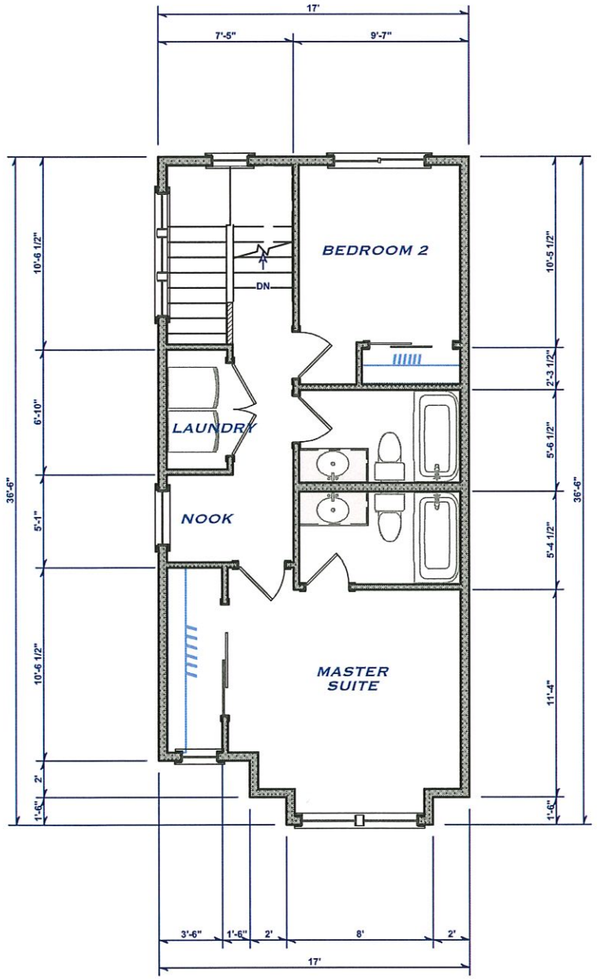
0 5 10 20

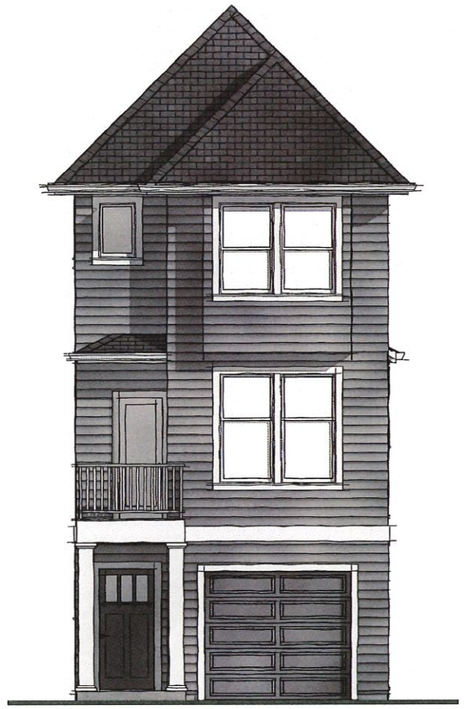
This plan is conceptual in nature and may change at the owner's discretion in order to meet jurisdictional codes, final site engineering requirements and budget based on pricing for the final plan.

Roundabout Concept









17ft wide plan concept

ground floor		322 sq ft
main floor		518 sq ft
upper floor		529 sq ft
total		1,369 sq ft

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01 Crestview Crossing 17' wide Front Load Concept Plan | 7/10/18

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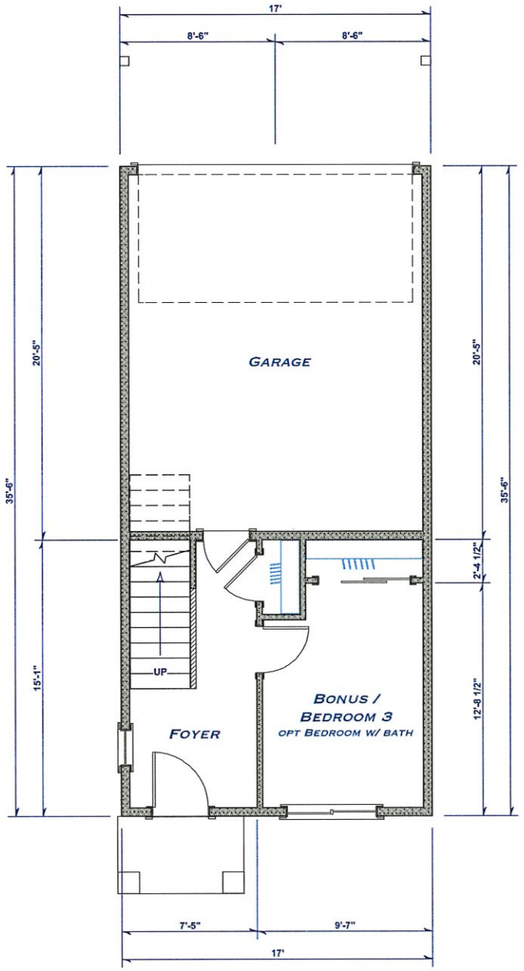

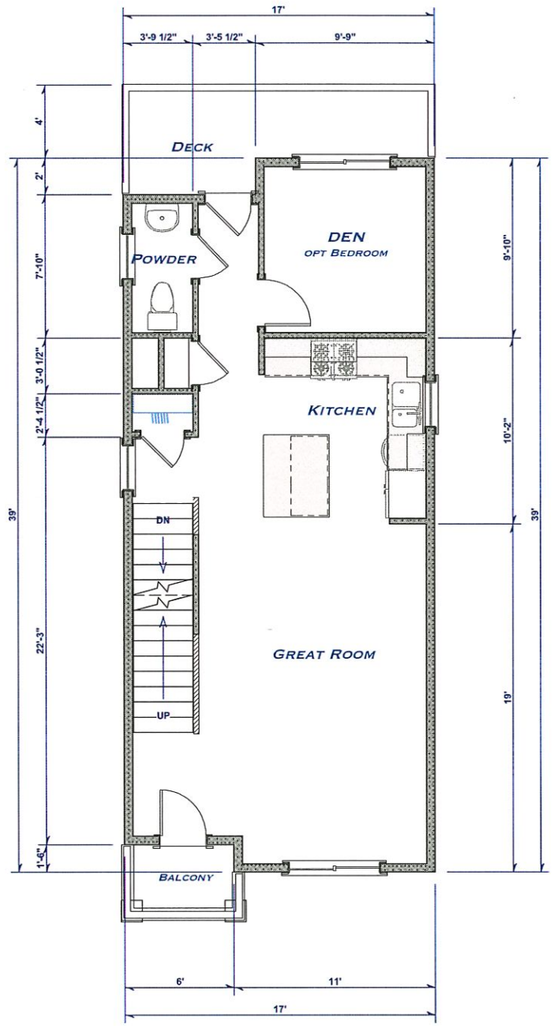

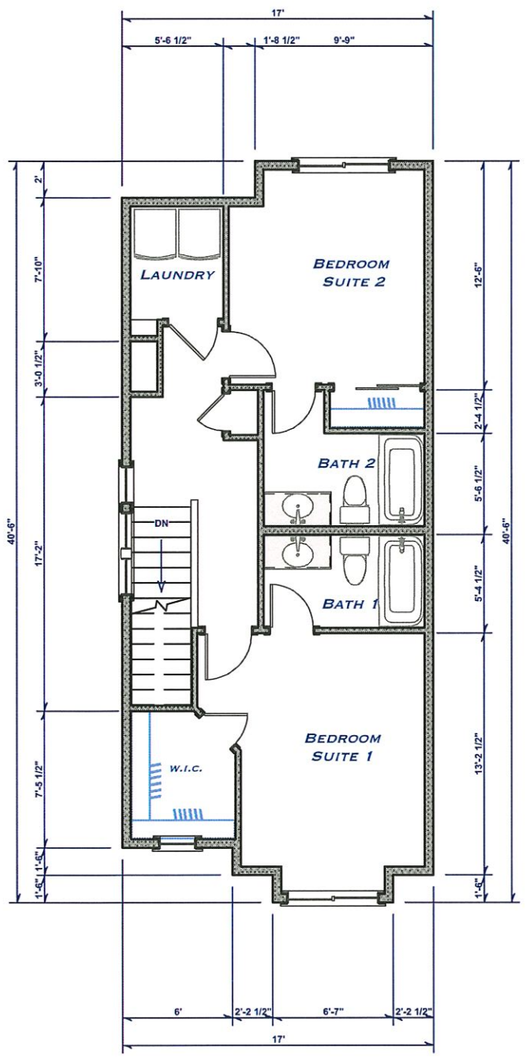

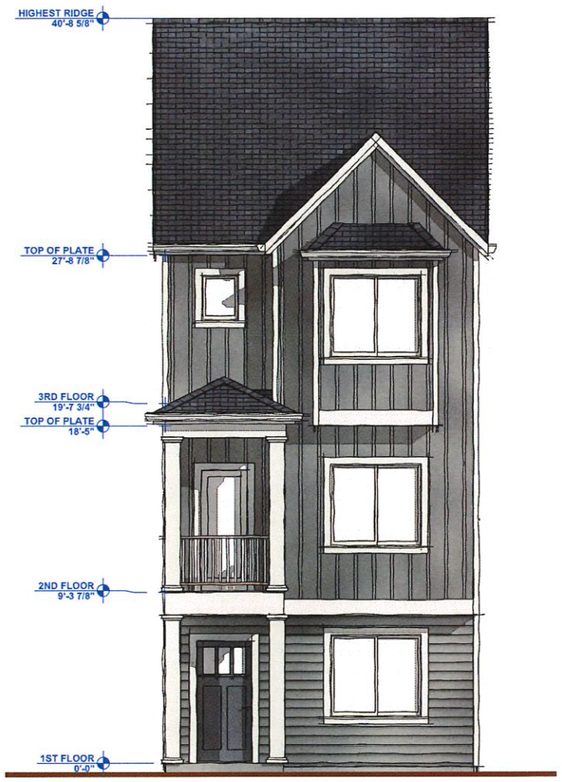

19ft rear loaded townhome plan concept

ground floor	|	264 sq ft
main floor	|	595 sq ft
upper floor	|	608 sq ft
total	|	1,467 sq ft

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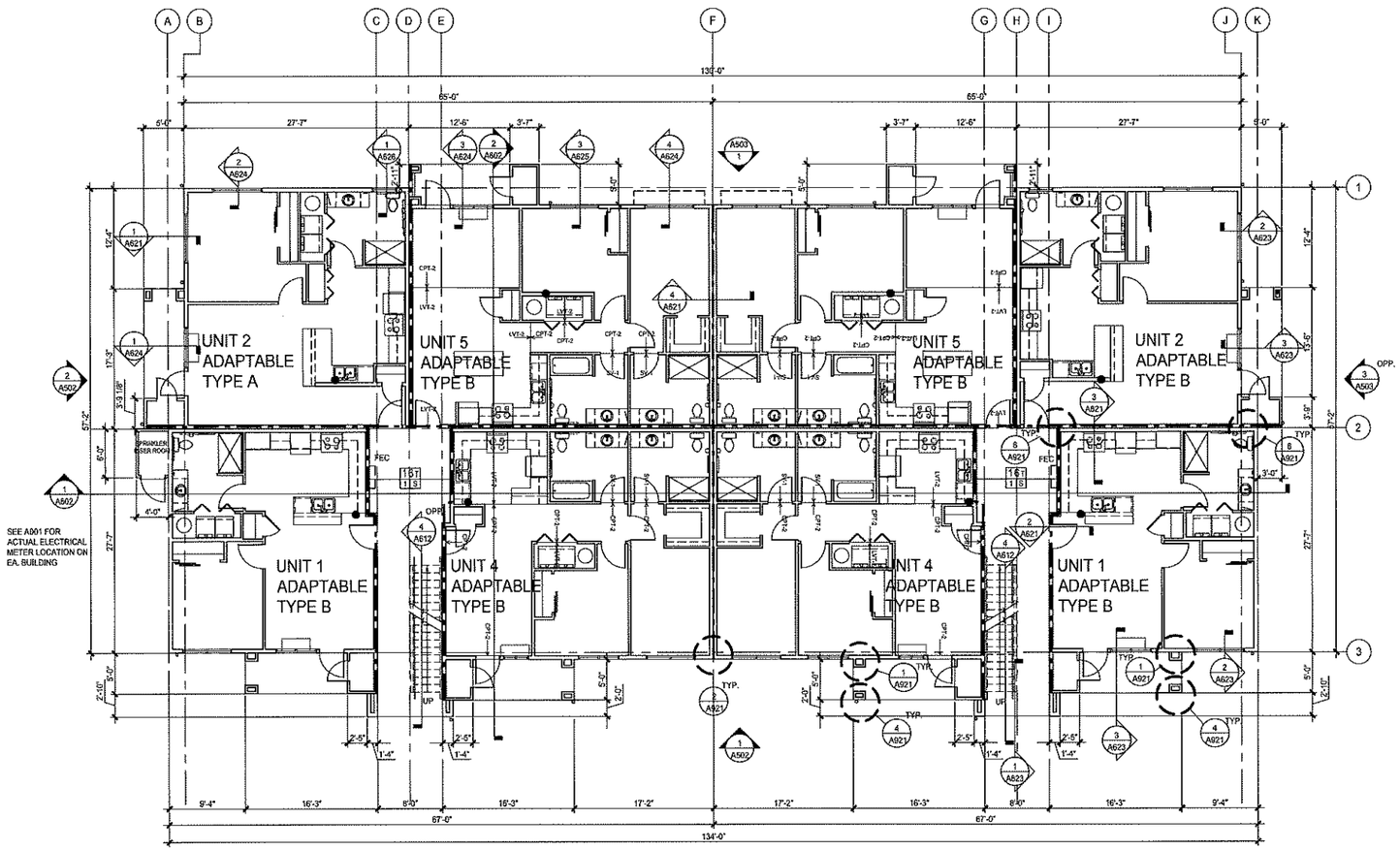
Crestview Crossing 17ft wide rear load Concept | 7/10/18



1 BUILDING TYPE A2 - FIRST FLOOR ADAPTABLE UNITS

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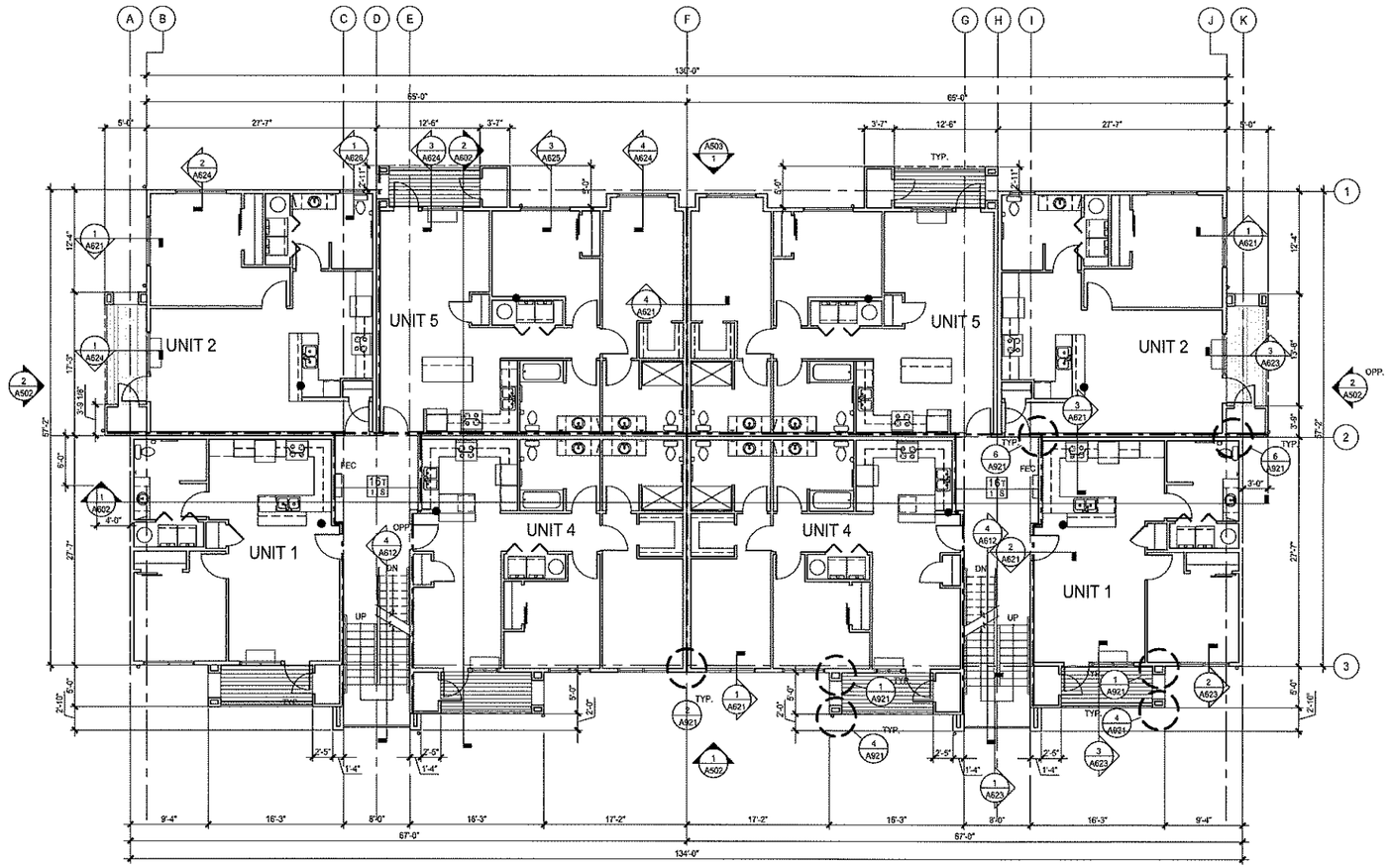

1 BUILDING TYPE A2 - SECOND FLOOR UNITS

SCALE: 1/8" = 1'-0"

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BUILDING A2
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DATE ISSUED:

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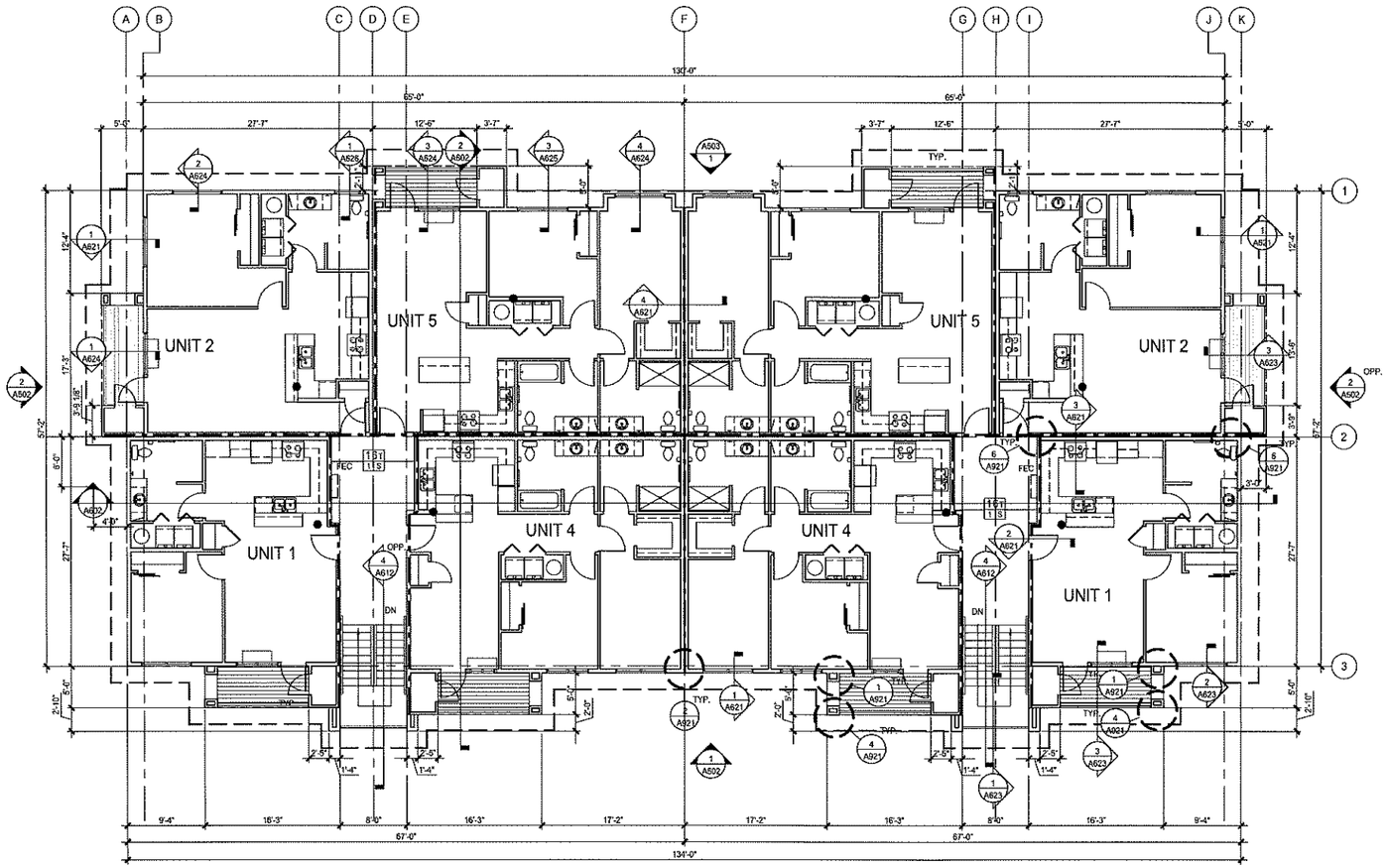

1 BUILDING TYPE A2 - THIRD FLOOR UNITS

SCALE: 1/8" = 1'-0"

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SHEET TITLE:
BUILDING A2
FLOOR PLANS

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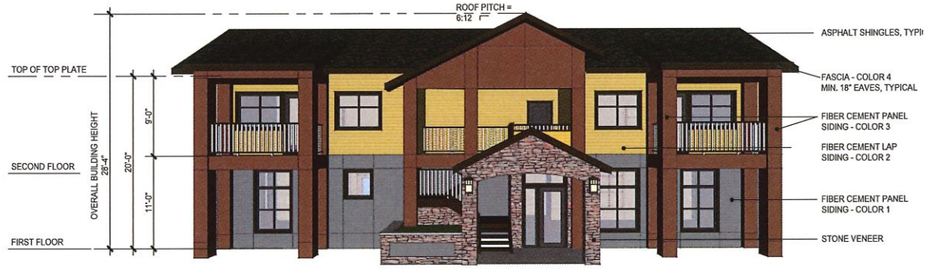
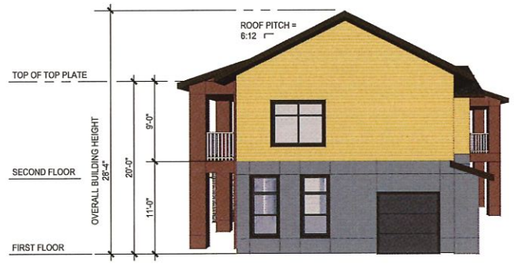
DATE ISSUED: 0

SHEET: **A206**



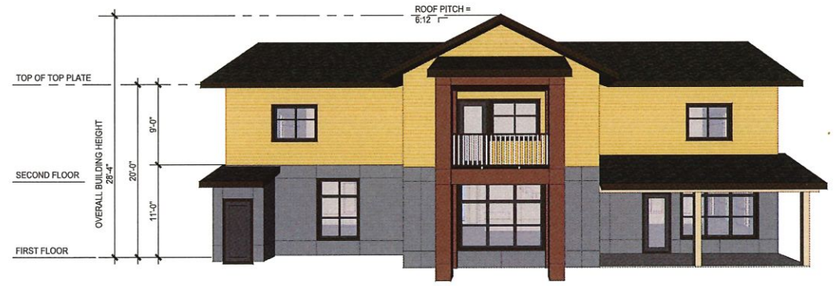
10. SOUTH ELEVATION

SCALE: 1/8"= 1'-0"



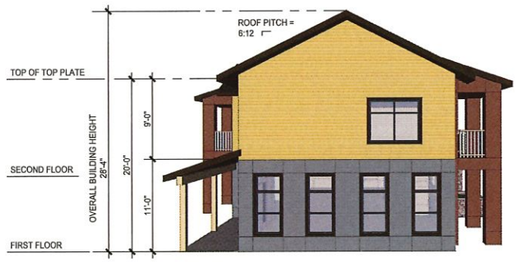
4. WEST ELEVATION

SCALE: NTS



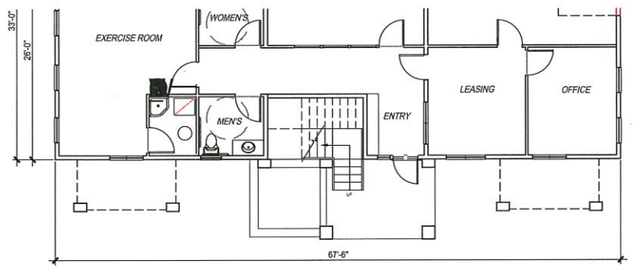
11. NORTH ELEVATION

SCALE: 1/8"= 1'-0"



5. EAST ELEVATION

SCALE: 1/8"= 1'-0"



12. MAIN LEVEL PLAN VIEW

SCALE: 1/8"= 1'-0"

6. PERSPECTIVE

SCALE: NTS

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SHEET TITLE:

CLUBHOUSE EXTERIOR ELEVATIONS

DRAWN BY: SD
DATE ISSUED: 5.06/01/18

SHEET: **A103**

10. BUILDING TYPE A2 - TYPICAL END ELEVATION

SCALE: 1/8"=1'-0"

5. PERSPECTIVE

SCALE: NOT TO SCALE

11. BUILDING TYPE A2 - ENTRY ELEVATION

SCALE: 1/8"=1'-0"

12. BUILDING TYPE A2 - REAR ELEVATION

SCALE: 1/8"=1'-0"

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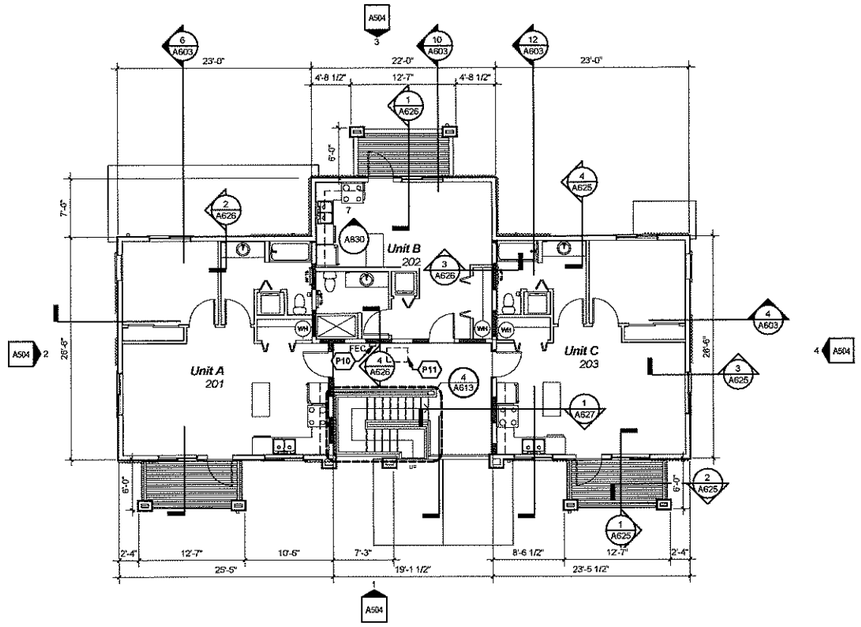
SHEET TITLE:

BUILDING A2 EXTERIOR ELEVATIONS

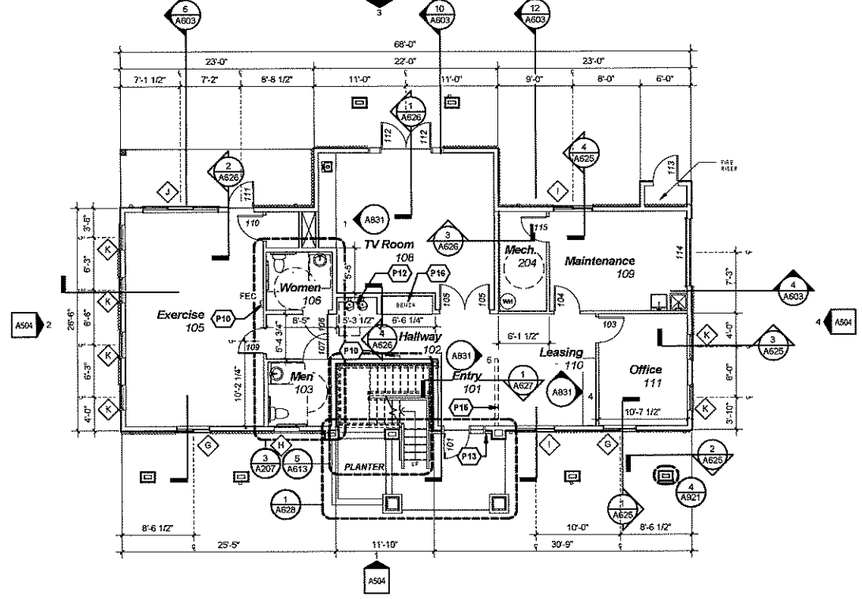
DRAWN BY: JW
DATE ISSUED: 06/01/18

SHEET: **A102**



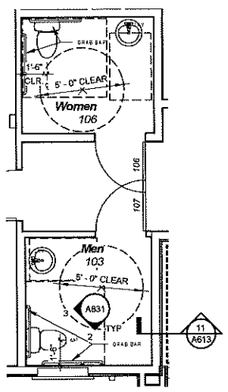
1 CLUBHOUSE - LEVEL 2

SCALE: 1/8" = 1'-0"



2 CLUBHOUSE - LEVEL 1

SCALE: 1/8" = 1'-0"



3 CLUBHOUSE - LEVEL 1 BATHROOMS

SCALE: 1/4" = 1'-0"

C:\300 Revit Local Files\216086_ Alderbrook Apartments_Arch_R16_sdemonte.rvt
10/4/2016 10:56:41 AM

GENERAL NOTES:

A. ALL PLAN WALLS SHOW FRAMING ONLY UON. NO FINISHES ARE DRAWN. ALL DIMENSIONS ARE TO FACE OF FRAMING UON OR CENTER OF WINDOW OPENING, COLUMN, OR GRID. EXTERIOR DIMENSIONS ARE TO FACE OF FOUNDATION/ FACE OF FRAMING. DIMENSIONS INDICATED AS "CLEAR MINIMUM" ARE TO FACE OF FINISH.

B. ALL DOOR OPENINGS PERPENDICULAR TO A WALL ARE 5" TO THE WALL UON.

C. SEE A0 SHEET FOR STANDARD FIXTURE MOUNTING HEIGHTS AND REQUIREMENTS UON.

D. SEE SITE PLAN FOR BUILDING ORIENTATION

E. SQUARE CORNERS AT ALL GYPSUM BOARD CORNERS

F. SEE ENLARGED UNIT PLANS FOR INTERIOR WALL DIMENSIONS AT LEVEL 2

G. FOR ENLARGED UNIT PLANS SEE DRAWING SHEETS BEGINNING AT "A220"

KEYNOTES

P10	FIRE EXT. CABINET
P11	20" X 30" MINIMUM ATTIC ACCESS
P12	DRINKING FOUNDATION COMBO HIGH/LOW
P13	ALLOWABLE OCCUPANCY SIGN
P15	WOOD SLAT PARTITION - GREEN FURNITURE SOLUTIONS: TWO 4'-0" X 6'-0" PARTITIONS.
P16	DENALI LIVE EDGE WOOD BENCH

WALL TYPES

A. EXTERIOR WALLS:

EXTERIOR WALL TYPES VARY. SEE EXTERIOR ELEVATIONS AND WALL SECTIONS FOR LOCATIONS.

- TYPICAL WALL W/ SIDING SYSTEM IS TYPE AT PANEL SIDING [16 / N|E]
- TYPICAL WALL W/ SIDING SYSTEM IS TYPE AT LAP SIDING [26 / N|E]
- TYPICAL WALL IS TYPE [34 / N|E].
- TYPICAL WALL W/ STONE IS TYPE [46 / N|P].

B. INTERIOR WALLS

- TYPICAL INTERIOR WALL IS TYPE [A4 / N|S].
- TYPICAL BATHRM WALL IS [A4 / N|S].
- TYPICAL SHARED UNIT (PARTY) WALL IS TYPE [84 / 1|S]

WALLS WITH WOOD SHEATHING:

- FOR STRUCTURAL SHEAR, LOCATE WOOD SHEATHING ON SIDE OF WALL WITH SAWTOOTH LINE AS INDICATED. SEE STRUCTURAL DRAWINGS FOR SIZE AND NAILING SCHEDULE.

HORIZONTAL ASSEMBLIES

SEE WALL SECTIONS AND CODE ANALYSIS DRAWINGS FOR TYPE, ALL WITH FIRE RESISTANCE OPENING PROTECTION BY SHAFTS, ASSEMBLIES, BY EXCEPTION FOR DUCTS AND PENETRATIONS.

LEGEND

1-HOUR FIRE PARTITION:

SEE CODE ANALYSIS PLANS FOR WALL DESIGNATIONS. FIRE RESISTIVE OPENING PROTECTION AT DOORS, WINDOWS, DUCTS (WITH EXCEPTIONS), PENETRATIONS, AND PROTECTION AT JOINTS. SEE WALL TYPES, DOOR AND WINDOW SCHEDULES, PENETRATION DETAILS, AND JOINT DETAILS WHERE APPLICABLE.

NONRATED WALL: AT NON-BEARING INTERIOR WALLS WITH NO OPENING PROTECTION REQUIRED AT DOORS, WINDOWS, DUCTS, PENETRATIONS, AND JOINTS UON. SEE WALL TYPES. SEE STRUCT.

AT NON-BEARING INTERIOR WALLS WITH NO OPENING PROTECTION REQUIRED AT DOORS, WINDOWS, DUCTS, PENETRATION AT JOINTS, UON. SEE WALL TYPES. SEE STRUCT.

FEC FIRE EXTINGUISHER CABINET

LRS ARCHITECTS
720 NW Davis 503.221.1121
Suite 300 503.221.2077
Portland OR 97209 www.lrsarchitects.com

7916 REGISTERED ARCHITECT
THOMAS PAUL FRANK, JR.
STATE OF WASHINGTON

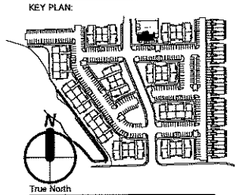
CONSULTANT:

PROJECT NUMBER: 216086

Alderbrook Apartments

Vancouver, WA

KEY PLAN:



True North

SHEET TITLE:

CLUBHOUSE - OVERALL FLOOR PLANS

DRAWN BY: DM
DATE CREATED: 09/09/16

SHEET:

A207

PHASE 1-PERMIT SET
September 09, 2016

Attachment 2: Agency Comments

Keith Leonard

From: CARY Dan <dan.cary@state.or.us>
Sent: Monday, July 30, 2018 1:54 PM
To: Keith Leonard
Cc: Doug Rux; BROWN Jevra
Subject: RE: File No.PUD18-0001/CUP18-0004 Yamhill County Tax Map and Lot Numbers 3216-13800 & 3216-01100

Keith,

I am told by the applicant that there is a new revised application coming but I have not seen it. I am not reviewing any application at this time. They are in an extension of my permit decision deadline until August 31, 2018. They will likely need to request another extension to maintain this file number since I still haven't received a new application. From the informal plans I have seen the project has changed significantly and it will go back out for public review and restart the clock for the whole process when I get a complete application. That is all I have.

Dan

Dan Cary, PWS
Aquatic Resource Coordinator Columbia and Clatsop Counties
Aquatic Resource Management Program
Oregon Department of State Lands
775 Summer Street NE, Suite 100
Salem OR 97301-1279
Phone: (503) 986-5302
DSL websites: www.oregon.gov/dsl; www.statelandsonline.com

From: BROWN Jevra
Sent: Monday, July 30, 2018 12:11 PM
To: 'Keith Leonard'
Cc: CARY Dan ; Doug Rux
Subject: RE: File No.PUD18-0001/CUP18-0004 Yamhill County Tax Map and Lot Numbers 3216-13800 & 3216-01100

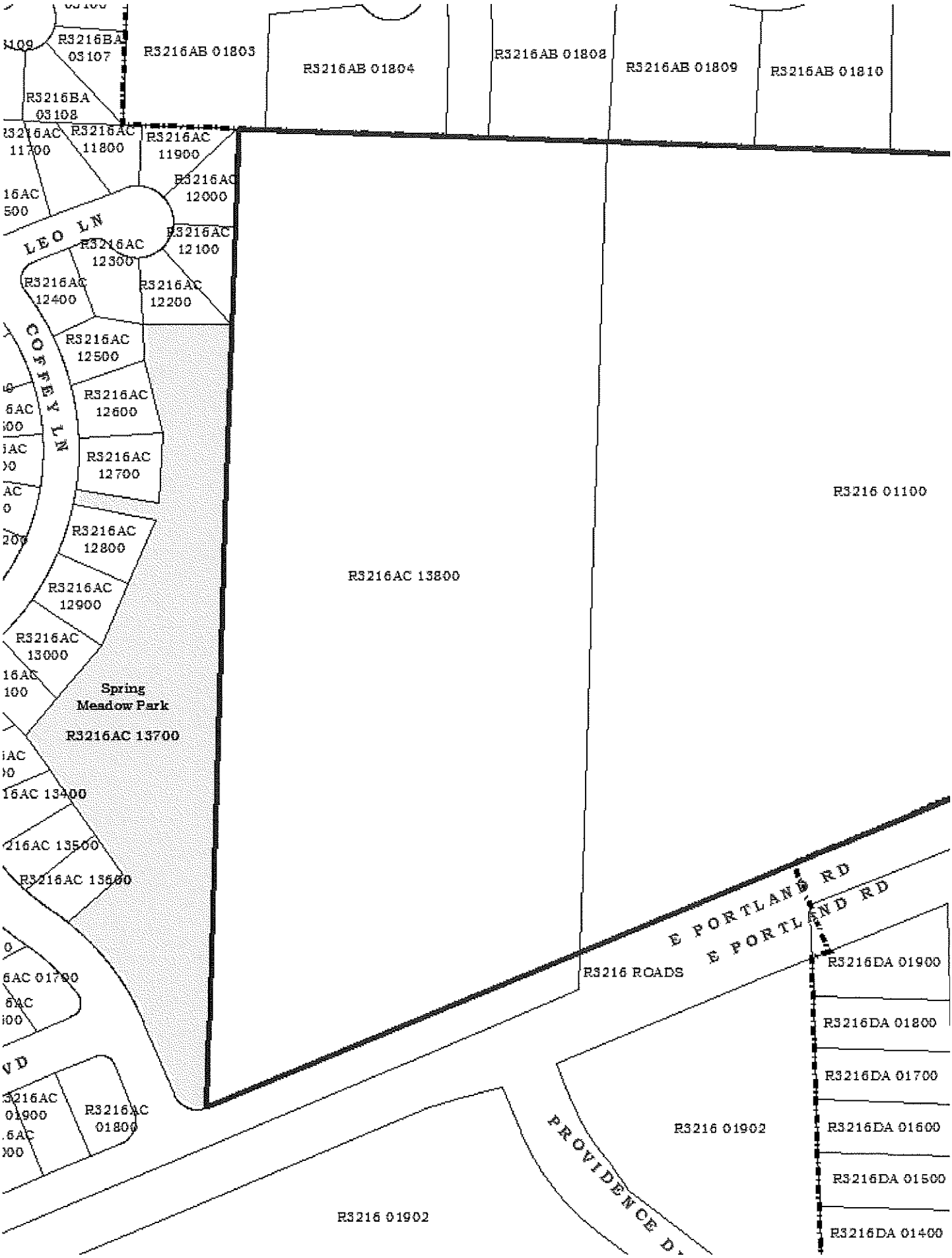
WD2013-0148, delineation, is for tax lots 1100 & 13800. This is still active for a few more months. Technically delineations expire after five years unless 1) there is a request for reissuance within one year of the expiration date (November 8, 2018) or 2) it is associated with an active authorization.
From there I leave it to Dan...

Jevra Brown, Aquatic Resource Planner
Department of State Lands
Office 503-986-5297 (M, T, W); cell: 503-580-3172 (Th, F); fax 503-378-4844
jevra.brown@state.or.us http://www.oregon.gov/DSL/pages/index.aspx

From: Keith Leonard <Keith.Leonard@newbergoregon.gov>
Sent: Friday, July 27, 2018 6:00 AM
To: BROWN Jevra <jevra.brown@dsl.state.or.us>
Cc: CARY Dan <dan.cary@dsl.state.or.us>; Doug Rux <Doug.Rux@newbergoregon.gov>
Subject: RE: File No.PUD18-0001/CUP18-0004 Yamhill County Tax Map and Lot Numbers 3216-13800 & 3216-01100

Hello,

To verify, the property owner does not have a wetlands delineation permit in review for either tax lots 1100 or 13800 due to expiration? Please let me know what time would be good to call Mr. Cary. I am in the office and would like to talk to you regarding this project. Thanks!


R3216BA 03107
R3216AB 01803
R3216AB 01804
R3216AB 01808
R3216AB 01809
R3216AB 01810
R3216BA 03108
R3216AC 11700
R3216AC 11800
R3216AC 11900
R3216AC 12000
LEO LN
R3216AC 12100
R3216AC 12300
R3216AC 12400
R3216AC 12200
COFFEY LN
R3216AC 12500
R3216AC 12600
R3216AC 12700
R3216AC 12800
R3216AC 12900
R3216AC 13000
Spring Meadow Park
R3216AC 13700
R3216AC 13800
R3216 01100
R3216AC 13400
R3216AC 13500
R3216AC 13600
E PORTLAND RD
R3216 ROADS
R3216DA 01900
R3216DA 01800
R3216DA 01700
R3216DA 01600
R3216DA 01500
R3216DA 01400
R3216AC 01900
R3216AC 01800
R3216 01902
PROVIDENCE D
R3216 01902

Keith Leonard, AICP |Associate Planner
City of Newberg
(503) 537-1215
keith.leonard@newbergoregon.gov

From: BROWN Jevra [mailto:jevra.brown@state.or.us]
Sent: Thursday, July 26, 2018 6:36 PM
To: Keith Leonard <Keith.Leonard@newbergoregon.gov>
Cc: CARY Dan <dan.cary@state.or.us>
Subject: File No.PUD18-0001/CUP18-0004 Yamhill County Tax Map and Lot Numbers 3216-13800 & 3216-01100

RE https://www.newbergoregon.gov/cd/page/crestview-crossing-planned-unit-development

Hi Keith,
A database search returned the following:
Expired delineation WD2000-0260 for tax lot 1100
Expired delineation WD2006-0698 associated with administratively closed permits 40337-RF and 48735-RF for Crestview Crossing – Part I.
Crestview Crossing – Part 2 WD2013-0148, administratively closed application 57027-RF, 58464-RF application on extension.
No Wetland Land Use Notices

Dan Cary is reviewing the permit, I have copied him if you have questions.
You may check the status of permits and delineations in review here:
http://www.statelandsonline.com/index.cfm?fuseaction=Home.home

Best,
Jevra Brown, Aquatic Resource Planner
Planning and Policy Unit, Aquatic Resource Management Program
Department of State Lands
775 Summer St. NE Suite 100, Salem, Oregon, 97301
Office (M-W) 503-986-5297; **cell** (Th-F) 503-580-3172; fax 503-378-4844
jevra.brown@state.or.us
http://www.oregon.gov/DSL/pages/index.aspx

City of Newberg
414 E. First Street
P.O. Box 970
Newberg, OR 97132

City Manager
(503) 538-9421
(503) 538-5013 Fax

Community Development Department - Planning Division

P.O. Box 970 - 414 E. First Street - Newberg, Oregon 97132 - (503) 537-1240 - Fax (503) 537-1272

REFERRAL To: Portland General Electric Attn: Service and Design

The enclosed material has been referred to you for your information and comment. Any comments you wish to make should be returned to the Community Development Department prior to August 31, 2018. Please refer questions and comments to Keith Leonard.

NOTE: Full size plans are available at the Community Development Department Office.

APPLICANT: Andrew Tull, 3J Consulting

REQUEST: Crestview Crossing PUD, to mixture of commercial development, single-family homes, cottage style single-family homes, affordable housing and multi-family homes. The proposed development includes 18 single-family homes on large lots, 230 cottage homes and 51 multifamily homes.

SITE ADDRESS: 4504 E Portland Rd

LOCATION:

TAX LOT: R3216-13800 & R3216-01100

FILE NO: PUD18-0001/CUP18-0004

ZONE: R-1, R-2 & C-2

HEARING DATE: September 13, 2018

RECEIVED
AUG 30 2018
Initial: _____

✓ Reviewed; no conflict.

_____ Reviewed; recommend denial for the following reasons:

_____ Require additional information to review. (Please list information required)

_____ Meeting requested.

_____ Comments. (Attach additional pages as needed)

Development cost per current tariff and service requirements. 10' PUE required on all front street lots.

Rick Schiedler
Reviewed By:

8/24/18
Date:

Keith Leonard

From: Rick Schiedler <Rick.Schiedler@pgn.com>
Sent: Tuesday, July 24, 2018 12:58 PM
To: Keith Leonard
Subject: RE: Crestview Crossing-Newberg

Keith,

Tell them that they need 10 ft. PUEs along all street frontages.

Thanks Rick

From: Keith Leonard [mailto:Keith.Leonard@newbergoregon.gov]
Sent: Thursday, July 19, 2018 2:55 PM
To: Rick Schiedler
Subject: RE: Crestview Crossing-Newberg

Please take care when opening links, attachments or responding to this email as it originated outside of PGE.

Thank you! I have forwarded your comment to the applicant, I see they have 8' PUEs along internal streets.

Keith Leonard, AICP |Associate Planner
City of Newberg
(503) 537-1215
keith.leonard@newbergoregon.gov

From: Rick Schiedler [mailto:Rick.Schiedler@pgn.com]
Sent: Thursday, July 19, 2018 1:55 PM
To: Keith Leonard <Keith.Leonard@newbergoregon.gov>
Subject: Crestview Crossing-Newberg

Keith Leonard

From: FRICKE Daniel L <Daniel.L.FRICKE@odot.state.or.us>
Sent: Monday, July 23, 2018 8:21 AM
To: Keith Leonard
Cc: KNECHT Casey; EARL Robert
Subject: ODOT Comments on PUD 18-0001/CUP 18-0004 - Crestview Crossing
Attachments: Crestview Crossing (Newberg) - ODOT TIA Review Comments

Keith –
Thank you for providing the Oregon Department of Transportation (ODOT) with an opportunity to review and comment on the subject application. The project site fronts on OR 99W and proposes to connect a new city street (Crestview Drive) to the highway at the existing signalized intersection at Providence Drive. ODOT staff have reviewed the project plans and the transportation impact analysis that have been submitted to the city. Our comments and recommendations are as follows.

TIA Review
The TIA has been reviewed by Region 2 Traffic – comments and recommendations are in included in the attached document. Questions on the TIA comments should be directed to Fahad Alhajri (503-986-2996 or fahad.alhajri@odot.state.or.us). Note that ODOT supports all improvements identified in the TIA necessary to meet operational standards.

Roadway Improvements
The following roadway improvements have been identified

- Installation of a westbound right-turn deceleration lane on OR 99W approaching Crestview Drive
- At the northeast corner of the OR 99W/Crestview Drive intersection, the sidewalk will need to connect to the highway shoulder with an "End of Walk" ADA compliant connection (ODOT Standard Drawing RD 754).
- The crosswalk on the east leg of the intersection (across OR 99W) must be reinstalled along with appropriate modifications to the traffic signal (signal modifications are addressed in more detail below)
- The required roadway and signal improvements will trigger the need to assess all curb ramps and push buttons at OR 99W/Crestview Drive. Any non-compliant curb ramps shall be remediated to meet State ADA standards.

The following condition of approval is proposed to address required roadway improvements:

> *Prior to the issuance of the first grading or building permit, the applicant shall submit plans and specifications for all improvements/construction within ODOT right-of-way for review and approval by ODOT District 3 and issuance of a permit to construct within ODOT right-of-way. ODOT shall certify that all construction activities have been completed pursuant to the approved plans and specifications prior to the issuance of the first certificate of use and occupancy, or the city's equivalent.*

Signal Modifications
It is likely that the entire signal installation will need to be replaced to accommodate the Crestview Drive leg being added to the existing intersection. The following is a list of the minimum modifications that are anticipated to be necessary:

- The existing signal poles on the north side of the intersection will need to be replaced to accommodate the new Crestview Drive
- A new mast arm will be needed in the southwest quadrant of the intersection to signalize the new Crestview Drive leg.
- New pedestrian signal and push-button pedestal for the pedestrian crossing on the east leg of the intersection.

- New detection will be needed depending on how new ADA ramps affect crosswalk locations (note that Region 2 is using radar detection)

The following condition if approval is proposed to address the required signal modification:

> *Prior to issuance of the first grading or building permit, the applicant shall submit signal modification plans for the review of the ODOT Region 2 Traffic Engineer and the review and approval of the State Traffic Engineer. ODOT shall certify that all required signal modifications have been completed and the signal operational prior to the issuance of the first certificate of use and occupancy, or the city's equivalent.*

This should be included in the record as ODOT testimony. ODOT should be considered a party to the hearing and be entitled to notices of future hearings, or hearing continuances or extensions. Please provide me with a copy of the City's decision, including findings and conditions of approval.

Dan Fricke, Senior Transportation Planner
Oregon Department of Transportation
Region 2
455 Airport Road SE Building B
Salem, OR 97301-5395
Ph: 503-986-2663
e-mail: daniel.l.fricke@odot.state.or.us

Oregon
Kate Brown, Governor

Department of Transportation
Region 2 Tech Center
455 Airport Road SE, Building A
Salem, Oregon 97301-5397
Telephone (503) 986-2990
Fax (503) 986-2839

DATE: July 19, 2018

TO: Dan Fricke
Region 2 Senior Planner

FROM: Fahad Alhajri, E.I.T.
Region 2 Traffic Analyst

SUBJECT: Crestview Crossing (Newberg) – Outright Use
TIA Review Comments

ODOT Region 2 Traffic has completed our review of the submitted traffic impact analysis (dated June 2018) to address traffic impacts due to development of a 33.13-acre property consisting of 260 single family homes and 48 apartment units in Newberg. The property is located north of OR 99W between Vittoria Way and Benjamin Road. The TIA will be reviewed with respect to consistency and compliance with current versions of ODOT's *Analysis Procedures Manual* (*APM*). Both versions of the *APM* were most recently updated in January 2018. Current versions are consistently published online at: http://www.oregon.gov/ODOT/TD/TP/Pages/APM.aspx. As a result, we submit the following comments for the consideration of Region Development Review and the City:

Analysis items to note:

- This study has utilized Highway Capacity Software (HCS) 2010 version 6.9 for roundabout analysis. However, a newer version HCS 7 is available and utilizes the updated Highway Capacity Manual Methodology for roundabouts.

- Region Traffic assumes all land uses and densities offered under the current zones are consistent with the City's code as cited in the report.

Analysis items to be addressed:

1. *Page 16, Saturation Flow Rate* – The base saturation flow rate was calibrated to 1,800 pcphgl, a saturation flow rate study in compliance with the guidelines within the HCM was not provided to justify the use of a higher saturation rate.

2. *Page 19, In-process trips* – ODOT received a TIA for Providence Medical Office Building (63,000 square-feet) located just south of the OR 99W/Providence Dr.

intersection and is anticipated to be constructed/occupied by year 2019. Applicant should verify with the City of Newberg that no further developments have been approved at the time of application.

3. *Per Figure 5*, A two percent annual growth rate was not applied at intersection #7. This will unlikely have impact on conclusion of the study.

4. *Figure 7, intersection #7* - ODOT will not run analyses with zero vehicles making available permitted movements. Rather, if count data does not identify any vehicles within the peak hour making a movement, we recommend assuming a low volume (1 or 2) rather than zero. The algorithms within Synchro utilize different formulas if there are zero conflicting vehicles.

5. *Synchro, Benjamin Rd/OR 99W Background condition (year 2020)* – The PM peak hour eastbound through movement volume is 1414 rather than 1441.

6. *Page 25, Table 4* – per the *Institute of Transportation Engineers* (*ITE*), the proposed weekday trip generation for "Multifamily Housing" (ITE land use code 220) is 323 rather than 1,622.

7. *Figure 9*, The trip distribution pattern of 15 percent arriving/departing to the east of OR 99W appears to be significantly low when taken into account the reassigned traffic volumes in Figure 6.

   According to Figure 6, at Springbrook Rd/Crestview intersection nearly half of traffic (AM peak 204 of 349) was rerouted to Libra St/Crestview Dr., then to Crestview Dr./East-West Connector and finally east from OR 99W/Providence. It appears that there is a greater than 15 percent demand for travel to/from east on OR 99W.

8. *Pages 31-32, Table 5* – When reporting the queue lengths, the reported values should be conservatively rounded **up** to the next 25 feet.

   Additionally, the reported storage lengths in Table 5 should be consistent with the values modeled in SimTraffic.

9. *Per Development Review Guidelines (Chapter 3, Section 3.3),* the analysis should evaluate impacts 5 years out from opening year in addition to opening year. Therefore, the analysis shall evaluate impacts for year 2025.

Application for State Highway Approach comments:

10. *Per 2016 SPIS Report*, the intersection of OR 99W and Providence Road is no longer a top 5% SPIS site.

Proposed mitigation comments:

11. ODOT maintains jurisdiction of Pacific West Highway No. 91 (OR 99W) and ODOT approval shall be required for all proposed mitigation measures to this facility.

12. All proposed intersection and/or signal modifications (new installations or changes to existing phasing or timing), changes to lane configuration, and additional turn or

receiving lanes will require ODOT approval. Both the City and the applicant shall be aware no approval for any proposed mitigations have been issued at this time and proposed mitigations shall not be considered approved for installation until formal written approval has been issued. Approval request will need to be submitted to Region 2 Traffic and be accompanied by the appropriate analysis justifying such request. The approval process takes time and any approval could possibly have added features required to obtain such approval.

13. Reconfiguring the northbound Providence Drive approach to include an exclusive left, exclusive thru and exclusive right lanes, will likely not be accomplished by just restriping. Reconstructing the approach might be necessary to accommodate for adequate lane widths.

Thank you for the opportunity to review this traffic impact analysis. As the Synchro files were not provided, Region 2 Traffic has only reviewed the submitted report. The above comments will merit the need for reanalysis, we look forward to a second round of review at which time we will comment on any and all proposed mitigation measures affecting the state highway system. For any questions regarding these comments, please contact me at Fahad.Alhajri@odot.state.or.us or directly at (503) 986-2996.

Attachment 3: Public Comments

August 30, 2018

City of Newberg
Community Development Department
PO Box 970
Newberg, OR 97132

Written Comments: File No. PUD18-0001/CUP18-0004
Crestview Crossing

To the Planning Commission:

We have owned and occupied the adjacent property at 4410 NE Birdhaven Loop since 2008. We moved here expecting the neighboring properties to be annexed and developed – with the development following a specific set of rules agreed to by the parties involved.

New development can still be a positive addition to the area if it proceeds following the same rules established in 2006-2008:

- The development is appropriate for its location and the neighborhood.
- Effective water management protects the aquifer from which the Oxberg community gets its water.
- Proper traffic calming maintains the collector-route properties intended for Crestview Drive.
- A sound wall separates the new development and existing neighborhoods.

Therefore, we support the efforts of the Oxberg Lake Homeowners Association to resolve these and other development provisions, as expressed in the correspondence from attorney Jeffrey Kleinman.

Regards,

Steve Goodfellow
Joanne Goodfellow

RECEIVED
SEP 04 2018
Initial: _____

Steve and Joanne Goodfellow
4410 NE Birdhaven Loop
Newberg, OR 97132
503-538-8031
sjgoodfellow@gmail.com

cc: Oxberg Lake Homeowners Association Board of Directors

Keith Leonard

From: Doug Rux
Sent: Monday, July 23, 2018 8:25 AM
To: Keith Leonard
Subject: RE: Saving Healthy Trees

I already sent them on to Mike and Andrew over the weekend.

Doug Rux, AICP
Community Development Director
City of Newberg
503.537.1212
Doug.Rux@newbergoregon.gov

From: Keith Leonard
Sent: Monday, July 23, 2018 6:33 AM
To: Doug Rux
Subject: Re: Saving Healthy Trees

I'll get these out to Andrew.

From: Doug Rux
Sent: Saturday, July 21, 2018 5:17:48 PM
To: Keith Leonard
Cc: Andrew Tull; Michael Robinson
Subject: Fwd: Saving Healthy Trees

Here is another comment.

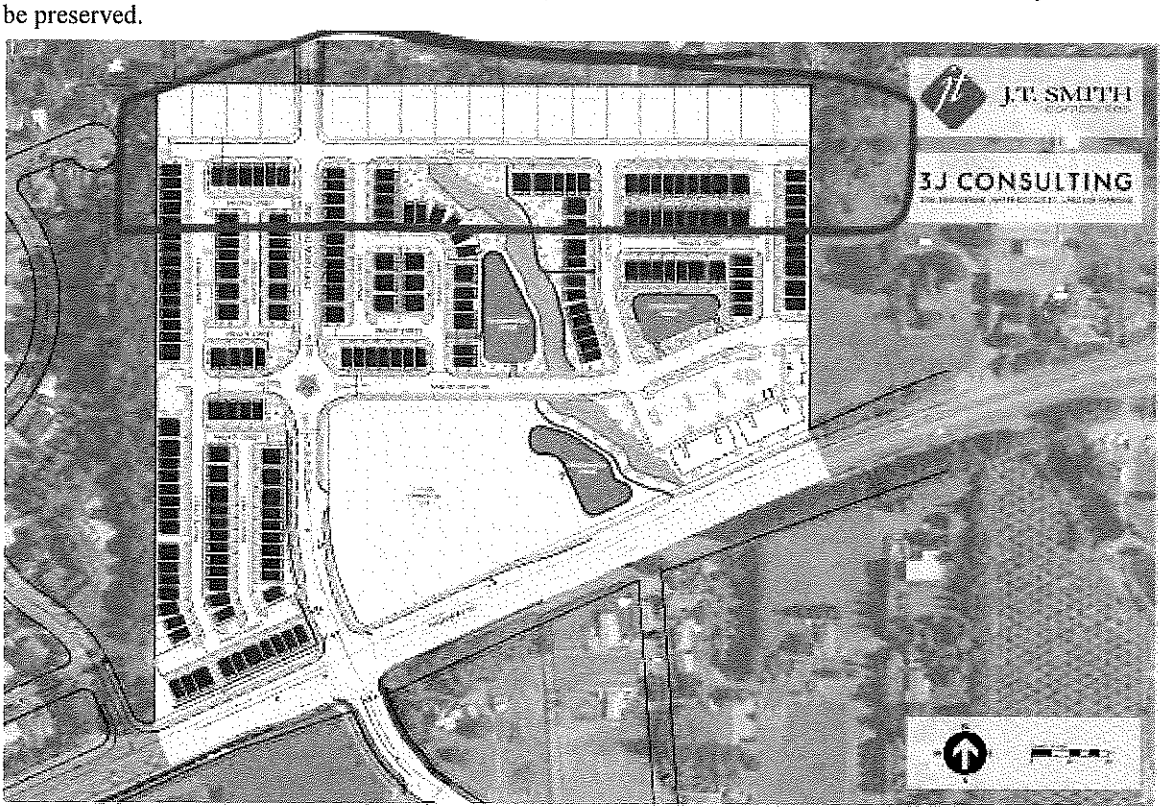
Doug Rux
Community Development Director
City of Newberg
503.537.1212
Doug.rux@newbergoregon.gov

Sent from my iPhone

Begin forwarded message:

> **From:** jessica poetzman <jepoet23@gmail.com>
> **Date:** July 21, 2018 at 4:28:13 PM PDT
> **To:** Doug Rux <Doug.Rux@newbergoregon.gov>
> **Subject: Saving Healthy Trees**
>
> Hello, I go to Newberg High School. I was looking at the planned houses after someone mentioned it and I felt the need to write with a few complaints. Recently a lot of trees have been taken down in town due to growth but I don't

think that should be the case anymore. We are lucky to live in an area with so much natural beauty and it should all be preserved.



CRESTVIEW CROSSING PLANNED DEVELOPMENT

This specific part is what I'm talking about. It looks to be only 18 homes which doesn't seem justifiable for a mini forest to be cut. Just wanted to put that out there!

Sent from my iPhone

Keith Leonard

From: Doug Rux
Sent: Saturday, July 21, 2018 3:49 PM
To: Keith Leonard
Cc: Andrew Tull; Michael Robinson
Subject: Fwd: Crestview Planned Housing

I revived this email Saturday on Crestview Crossing.

Doug Rux
Community Development Director
City of Newberg
503.537.1212
Doug.rux@newbergoregon.gov

Sent from my iPhone

Begin forwarded message:

> **From:** Cooper Foushee <cooperfoushee123@gmail.com>
> **Date:** July 21, 2018 at 1:41:09 PM PDT
> **To:** doug.rux@newbergoregon.gov
> **Subject: Crestview Planned Housing**
>
> Hi I just had a few ideas for the planned neighborhood because it's still in planning. I think the houses on the backend of the lot shouldn't be built and the natural trees should be kept and used for a walking trail possibly. The natural forest we still have left in town should be completely preserved because once it's gone it's gone. Houses can always be built somewhere else too. Hopefully this is taken into consideration because other people my age at the high school don't like the idea of more trees being torn down for houses. Thank you!
>
> Sent from Coopers iPhone

July 23, 2018

Community Development Department
P.O. Box 970
414 E. First Street
Newberg, Oregon 97132

To Whom It May Concern:

As long time residents of Oxberg Lake Estates we have several concerns about the proposed development to be located behind our property.

Our first concern is maintaining the wonderful livability of our neighborhood. We are isolated from transient vehicle and pedestrian traffic. Our neighborhood is a relaxing place to walk without concern for safety from cars. We know our neighbors and the many other people who use our streets from adjacent neighborhoods. We have a strong neighborhood watch program, but without a barrier and sound wall between our neighborhood and the new development our livability will be lowered by uncontrolled access through our properties. Trespassing and other crimes will increase without some form of restriction.

Our second, and most important concern, is protecting and maintaining our level and quality of water in our aquifer. The new development would eliminate wetlands and redirect water that normally filters into the aquifer that we use to supply our 30 homes through one well. The current wetlands and other water run-off from adjacent fields provide a critical source of water to our aquifer and must not be eliminated. This water issue must be addressed to the satisfaction of the Oxberg Water Company and the Oxberg Lake Estates Homeowner's Association.

We recognize Crestview Drive will be completed through to Highway 99, but the livability, safety, and water are critical components to our neighborhood.

Thank you,
Blake and Diane Williams
4500 NE Blue Heron Ct.
Newberg, Oregon 97132

July 28 2018

Attention Newberg City Planners Re: Development @ 4504 E Portland Rd.

We are writing this in hopes you will consider the following items that are of considerable concern to us as we are directly abutting this development.

!. How this project will affect our water supply to the homes in Oxberg Lakes Estates if the wet lands are destroyed.

2. That the developer abide by the same standards set by the Springbrook Master Plan.

3. A roundabout be on Crestview at Northern part of the project.

4. The plan of the previous developer included a Wall on the Northern boundrary of the project.

Sincerely;

Dale & Doris Palmer

4408 Birdhaven Loop

RECEIVED

JUL 31 2018

Initial:

City of Newberg
Community Development Department
PO Box 970
Newberg, OR 97132

7/28/2018

To the City Council:

Some ten years ago an exceptional City Manager, Jim Bennett, touched greatness. Under his leadership problems that had plagued Newberg for decades were resolved because all the involved parties agreed to work together to solve them. Thanks to mutual good faith and hard work, the result is what is now known as "The Five Party Team" agreement.

The Team had six official members, The City, The County, Oxberg Lakes Homeowners (OLHA), and three property developers. The State was not a member, but it made inputs and provided expertise that helped with road infrastructure and traffic issues. Experts and Attorneys helped.

At the time I was President of OLHA. I testified at some 35 hearings, some of which ran until 2 AM, each time speaking in favor of developing the high value properties adjacent to us and the infrastructure needed to support Newberg's future growth.

The result was a miracle, one that was precedent-setting for Newberg, the County, and the State. Rather than the typical staff-driven piecemeal approach to cram in some development, this time all the people involved and effected got involved and drove the plan (with assistance from city and county planners) to assure the best possible outcomes.

No one got everything they wanted, but we got a plan that we could live with. It was signed by all parties. The resultant plan was published in the Newberg Graphic. One good part was a transfer of Crestview from the County to the City that did not destroy our community and met or exceeded design standards.

Newberg got the road access it wanted and the right to run a waterline down our street. We got a road we could live with **AND THE BEST PRACTICES AGREEMENT to protect the aquifer for our water system**. The latter was a proud day for everyone. It was meaningful environmental protection and very much in the spirit of the old Oregon.

There is a lot of misunderstanding about our water system. Development in Newberg has, over the years, destroyed many private wells. That's irrelevant. Our system is a State Licensed

commercial water system, one of three in the County. As such, we are required by law to protect our aquifer. In water law first is everything and our system predates the State of Oregon.

Perhaps best of all for Newberg, the Five Party Team plan was **affordable**. Having an integrated plan paid for infrastructure that allowed many developments, with many more to follow. The first phase paid for itself. Barely. The numbers were thin but workable.

Alas, what was planned never got built. Administrations changed, the economy collapsed, and except for some "shovel ready" money that built out a short section of road through OLHA, everything stopped.

It seems that now we are back to square one. I am concerned. It seems betrayal is afoot. OLHA has been forced to retain legal counsel. Several things were alarming.

Apparently, the current developer's interpretation of "Best Practices" (it was a signatory) is to fill the recharge zone for our aquifer with **dirt** (5 acres of fill, for 7 acres of wetlands!) and to divert as much of our water away as possible so they can cram in more development.

A strange off-the-record public (but not official) meeting was held by the developer in our local fire house on May 14th. This was not recorded, but the room was full, I was there, and names were taken.

You should invite all who attended to testify at length to the City Council. Suffice it to say that many issues were raised, credible answers were lacking, and the developer seems to be depending on grants of taxpayer money to generate profit and make their numbers work.

Most in the room expressed skepticism or opposition. The developer's response was that they were doing the pubic a favor by even having the meeting, and they were not required to tell us anything. In short, "We're going to do it anyway."

My comment at the meeting was that a piecemeal approach, like the one being pursued, would likely create more problems than it solved, and that the Five Party Team agreement and plan should be revisited. I also said that if the Best Practices Agreement was violated and our water system was threatened, my **guess** [as a private citizen and homeowner] was that OLHA would have to assert our legal rights.

Even more alarming is that when our board called our land use lawyer from a decade ago they didn't respond for a time. When they did, it was to report that a conflict existed. It seems that

OUR LAW FIRM HAS BEEN RETAINED BY **THIS DEVELOPER** TO REPRESENT **THEM** FOR **THE SAME PARCEL**.

What a remarkable coincidence. Such a conflict raises all sorts of legal red flags and demonstrates either monumental incompetence or bad intent.

In summary:

- The plan we heard on May 14th was not appealing. It raised concerns.
- The developer is desperate to get this plan approved. All the other developers have distanced themselves. Follow the money and look at the numbers.
- I strongly suggest the City Council and the County should get involved, become familiar with the Five Party Team agreement, and consider other options.
- Please do not leave this to staff. Getting the infrastructure right has been a major issue for Newberg for some 40 years. This issue should not be driven by one developer and one small parcel. Get broader opinions and plans. As before, this development could be one piece of a plan, given the use of BEST PRACTICES to protect our aquifer.
- Traffic calming on the border of OLHA was also part of the Five Party Team agreement. This was implemented on our section of the road, but it still needs to be put in place on the adjacent parcel.
- Whatever you do, please do not destroy our water system.

Thank you for your interest and attention.

Sincerely,

John and Pat Trudel

4303 NE Birdhaven Loop
Newberg, OR 97132

RE: File No.PUD18-0001/CUP18-0004

To Whom It May Concern,

I am a resident of Oxberg Lake Estates located just north of the planned development referenced above. I would like to state for the record my concerns regarding the development as it is currently proposed.

The most pressing issue as I see it is the planned fill of the existing wetland and rerouting of the water away from the recharge zone for our well system and the eventual drainage into the city's storm water system. The HOA for this community actually operates a state licensed water company and provides safe clean drinking water for residents both within the association as well as residences located nearby. It is my belief, based on previous testimony when a development was first planned for this property, that the activity currently proposed would significantly harm our water system and jeopardize our water company.

When looking at the 5 party agreement that was signed over a decade ago and which included city, current developers and this association - it was agreed to that "best practices" would be employed when deciding how to proceed with regards to the wetland and our water supply. Just recently, I spoke on behalf of the HOA at the Springbrook Master Plan meeting in front of the planning board and stated clearly that the developers for SMP had set the gold standard for what "best practices" meant - setting aside a full 1/3rd (150 acres) of the property for water resource preservation and as such, will be left undeveloped. I implored then as I do now that the planning board accept nothing less than that standard as it pertains to the Crestview Crossing project as well.

Furthermore, the other issues with this development as I see it pertains to the issue of "traffic calming measures". Again, everyone acknowledged in the 5 party agreement that roundabouts were needed to limit both size (large tractor trailers) and speed through our community as well as neighboring communities and the placement of the roundabouts was key to achieving this. In the current proposal, the planned roundabout to the northwest is not addressed (as I

understand it, that is part of the SMP) but also in the current proposal, the roundabout which was supposed to be located "immediately to the south" of our community has been moved further south than what was previously agreed to - reducing or negating any benefit of traffic calming measures previously agreed to.

There is no question this as a direct violation of the 5 party agreement. It should be noted that the developers were made aware of the issues to both of my concerns when they unveiled the new improved proposal at a community meeting in May - and it's a shame to see neither were addressed in any meaningful manner. It's up to the planning board to seek the answers and remedies to both these issues.

Finally, the concern of a physical separation between the existing development (Oxberg) and the proposed development is still undefined. While this doesn't concern me directly, it does affect my neighbors and there needs to be specifics laid out in how the properties adjacent to the development will be separated - whether it be a wall, natural barrier or what have you.

I appreciate and applaud all the efforts by the planning board of Newberg. This is not an easy task- and while I'm sad to see we wont be getting the commercial development of prime commercial property as once was proposed - I do ask that they strongly consider rejecting the proposal as submitted. Newberg has a rich history of protecting the environment and putting the residents first and foremost ahead of any new developments.

As you look at this proposal, it doesn't meet the needs of Newberg's existing residents - some of which have called Newberg home for more than 60 years. Crestview Crossing is the gateway to the Allison and as such should be planned with the understanding that what we choose to do now will forever have an impact on the city and its long time residents. The decision to fill in wetlands with little consideration as to the impact on surrounding communities should not be taken lightly.

I ask that impartial experts review the wetland with an updated survey of the area and come to a clear understanding of the expected

impact on our aquifer, positive consent from all adjacent homeowners and traffic calming measures as agreed to installed. I would also ask that should you proceed with the development as proposed, and should there be negative impact on our aquifer to the extent that it becomes no longer viable - there needs to be a compensation package or bond agreed to by both parties.

Again, thank you for your consideration in this matter and I ask that you do what's right for Newberg in the long run and not look at the short term gain exclusively.

Mark Wagner
4403 NE Birdhaven Loop
Newberg, OR 97132

July 31, 2018
Written Comments: PUD 18-0001/CUP18-0004
City of Newberg
Community Development Department
PO Box 970
Newberg,OR 97132

To whom it may concern,

The people of Newberg need to decide what is to be built across the street from our hospital not a for profit developer from Lake Oswego. The new Springbrook road will be the gateway to the Allison Hotel & Spa and future businesses on North Springbrook. So it is important that the Crestview crossing be as aesthetically appealing as possible.

The highest and best use for a property located across the street from a hospital, would be a condominium type retirement village with common lawns to grace our new entry into the city of Newberg. The proposed high density housing project for the Crestview crossing seems to be one that could be located elsewhere in the city, not at the gateway, perhaps along the new bypass.

In the case of an economic downturn, which is always a possibility, some of the new owners of the proposed high density housing project may default on their loans which would in turn create an absentee landlord neighborhood thus sending the gateway to Newberg into a decline and setting the tone for future developments and the economic status of Newberg.

The Lake Oswego developer proposes filling in and paving over our Newberg wetlands to make the development more profitable. A viable option would be for the city to trade a portion of the park on Vittoria for the wetlands and in turn create a park on the wetlands. Given the nature of wetlands the park need not be a conventional park with little more than grass and a basketball half court. The alternative wetland park could be a Japanese style garden with paths, bridges, benches, rock gardens, sculptured trees, tall grasses, and, of course water. This style park would be a source of beauty for the community at large.

In summary, the Lake Oswego developers should not determine the future composition of our Newberg community. The highest and best use would be a retirement community accented by an adjoining Japanese garden with the high density housing to be located along the bypass.

Sincerely,
Terry Coss

RECEIVED

AUG 06 2018

Initial: _____

July 27, 2018

Bruce Thomas

32150 SW Ladd Hill Road

`Wilsonville, OR 97070

City of Newberg

Community Development Department

PO Box 970

Newberg, OR 97132

Re: Proposed New Development at 4504 E Portland Road

I own the property at the corner of Benjamin Road and Highway 99W. (4821 E. Portland Road) At the time of my property's annexation, I understood that the City of Newberg's greatest need for the property along the north end of Highway 99W was additional commercial uses and higher density housing. This proposed change to the existing zoning and land use for the subject property meets one of those criteria.

I have no objection to the proposed change, but I want to make sure that whatever access is created for the subject property will also work for access to my property, including the commercial space on my property. By removing the largest parcels of the previously annexed property from commercial uses, it is more important to preserve the remaining parcels for commercial development.

I will leave it to the City of Newberg's professional planning people to determine the best access and infrastructure design to meet the needs of not only the subject property, but also the Kimball property and my property.

Thank you for your consideration of my comments.

Bruce Thomas

Bruce Thomas

August 1, 2018

Written Comments: PUD18-0001/CUP18-0004
City of Newberg
Community Development Department
P.O. Box 970
Newberg, Oregon 97132

To Members of the Planning Commission:

I am submitting these comments in connection with the Planning Commission's review of the development on the southern boundary of Oxberg Lake Estates. My name is Dick Petrone, former President of the Oxberg Lake Estates Homeowners Association. I served during the initial development of the 5-Party Agreement and was the signatory on the Agreement for the Association.

The City of Newberg, Austin Industries, and JT Smith all approved the use of Best Practices to ensure the protection of our Water source for Oxberg Lake Estates Water System which serves 30 members of the Association. With the proposal as presented, the developer has not demonstrated the use of Best Practices to protect our water supply. To be in compliance with the 5 Party Agreement the developer must demonstrate how it is using Best Practices to protect our water supply as the development is in our well's recharge zone.

My second concern is the use of traffic calming devices to maintain vehicle speeds of 25 MPH on Crestview Drive. In the original plan for the development, the plan included a roundabout south of the Oxberg Lake Boundary Line. Without the planned roundabout traffic will leave HWY 99 and will race up to the first roundabout in Oxberg Lake Estates. The proposed plan must reflect the use of traffic calming devices such as a roundabout to hold speeds down as vehicles enter Oxberg Lake Estates. The plan also called for traffic signs indicating "No Through Trucks".

My third concern is the proposed plan does not include sound walls for the 5 lots on the southern boundary of Oxberg Lake Estates. The original plan included sound walls similar to the sound walls on Crestview Drive.

My final area of concern is the Conflict of Interest for the Legal Representative for JT Smith. During the original development of the 5 Party Agreement, our HOA employed the same attorney who is now representing JT Smith. It is obvious that there is a Conflict of Interest for the Attorney Representing JT Smith.

Thank you for allowing me to express my concerns as they have serious impacts on our Oxberg Community,

Sincerely,

Dick Petrone

Dick Petrone
4301 NE Crestview Drive
Newberg, Oregon 97132

Re: File No. PUD19-0001/CUP18-0004

RECEIVED

AUG 06 2018

July 30, 2018

Dear Newberg City Council Members,

As a resident, living in Oxberg Lake Estates, which is adjacent to the proposed Crestview Crossing Development, I would like it known that we have great concern for the watershed and wetlands that the developer, J.T. Smith, has planned to partially fill as part of their proposed construction. The water supply for approximately 30 families in our neighborhood is entirely dependent on being replenished and filled by the artesian water storage in our aquifer system. The developer has said that the net effect of diminishing the size of the wetland area will be mitigated by an exchange of wetlands in another area in the county, but this will do nothing at all to counteract the obvious effect on those of us living in Oxberg Lake Estates. The additional impervious coverage area that the proposed development is planning will result in the water having to be diverted to other areas instead of being absorbed into our aquifer as nature intended. There can be little doubt that disturbing the soil in this wetland area will certainly affect the viability of our well water and its quality. There are many years of records from our small water company, Highland Water, that will show that we have had access to safe and sufficient water with almost no treatment of any sort. It should be obvious that any negative effect on our water supply would have a large impact on our basic need for access to potable water.

It's also troubling that the most recent public presentation by J.T. Smith does not show the original location of a proposed traffic roundabout that was agreed to by the developer in the "Five Party Agreement" that was agreed upon by the Austins, J.T. Smith, Oxberg Lake HOA and others. It was agreed that a traffic calming roundabout would be located on the north side of the proposed development, near the exit to existing Crestview Road. The relocation of the roundabout will defeat the original purpose of providing a traffic calming effect. Moving the location of the roundabout closer to highway 99 will result in a long straight-away, into and out of this new development, and will encourage its use as a quick shortcut. The result of this change will cause the road to be used not as a "collector", as intended in the Master Plan, but instead, a fast way to circumvent the congested traffic at the intersections on Springbrook Road.

Please make sure that these issues are addressed before approving this proposed development.

Sincerely,

Mark Simmons

Mark Simmons
4307 NE Birdhaven Loop
Newberg, OR 97132
Mobile: 503-707-9035
Email: mark.simmons@yahoo.com

City of Newberg
Community Development Department
File NO: PUD 18-0001/cup 18-0004
August 1, 2018

Newberg Planning Commissioners,

I have concerns with the filling in of wetlands on the proposed development. There are 7 acres of wetlands on this property I understand that 5 of those acres will be filled in as the land is developed.

I have enclosed for the records a wetlands study of tax lot number 1100. This study was in the hands of the Department of State Lands for many years. Janet Morlan, Wetlands Program Manager for the State of Oregon had questions regarding this application, it is as important today as it ever was. This file is one of the reasons this land has been on hold for development for many years. Unfortunately for the developer the previous land owner had denied there were 7 acres of wetlands in public testimony.

This wetland is a tributary to Springbrook Creek. Springbrook Creek flows the entire length of our property at 30230 NE Benjamin Road, it flows under our driveway into the 1 acre pond that is part of the National Historic Wetlands. It then flows under 99W into the ponds located on the South side of 99W continuing to flow into the Willamette River. Any disturbance to the wetlands on this developed property could impact the surrounding tributary, creeks and properties. The filling in should not be allowed for this development, the wetlands should be preserved.

Also the filling of the wetlands will affect the aquifer that provides water to the Oxberg Water Company and the 39 residents that rely on the well. The cost if damaged will ultimately need to be borne by the City of Newberg and the developer.

The water impact to Oxberg's water rights, neighbors, streams corridors and creeks must be protected. Any damage could be very costly to the city.

Respectfully submitted,

Vicki Shepherd
30230 NE Benjamin Rd
Newberg, OR 97132

Enclosed: 52 page report

Oregon
Theodore R. Kulongoski, Governor

Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279
(503) 378-3805
FAX (503) 378-4844
www.oregonstatelands.us.

February 4, 2008

Tim Speakman
New B. Properties, LLC
3401 SW Huber Street
Portland, OR 97219

Re: Wetland Delineation Report for 4505 E Portland Rd, Newberg; Yamhill County; T 3S R 2W Sec. 16 Tax Lots 900, 1000 & 1100; WD #07-0345

Dear Mr. Speakman:

The Department of State Lands has reviewed the wetland delineation report prepared by Schott and Associates for the site referenced above. Based upon the information presented in the report, we concur with the wetland and waterway boundaries as mapped in Wetland Map Pages 1 of 3 and 3 of 3 of the report. Within the study area, three wetlands (totaling approximately 2.24 acres) and two waterways within the mapped wetlands were identified. The wetlands and waterways are subject to the permit requirements of the state Removal-Fill Law. A state permit is required for cumulative fill or annual excavation of 50 cubic yards or more in the wetlands or below the ordinary high water line (OHWL) of a waterway (or the 2 year recurrence interval flood elevation if OHWL cannot be determined).

This concurrence is for purposes of the state Removal-Fill Law only. Federal or local permit requirements may apply as well. The Army Corps of Engineers will review the report and make a determination of jurisdiction for purposes of the Clean Water Act at the time that a permit application is submitted. We recommend that you attach a copy of this concurrence letter to both copies of any subsequent joint permit application to speed application review.

Please be advised that state law establishes a preference for avoidance of wetland impacts. Because measures to avoid and minimize wetland impacts may include reconfiguring parcel layout and size or development design, we recommend that you work with Department staff on appropriate site design before completing the city or county land use approval process.

This concurrence is based on information provided to the agency. The jurisdictional determination is valid for five years from the date of this letter, unless new information necessitates a revision. Circumstances under which the Department may change a determination and procedures for renewal of an expired determination are found in OAR 141-090-0045 (available on our web site or upon request). The applicant, landowner, or agent may submit a request for reconsideration of this determination in writing within 60 calendar days of the date of this letter.

Thank you for having the site evaluated. Please phone me at 503-986-5236 if you have any questions.

Sincerely,

Janet C. Morlan

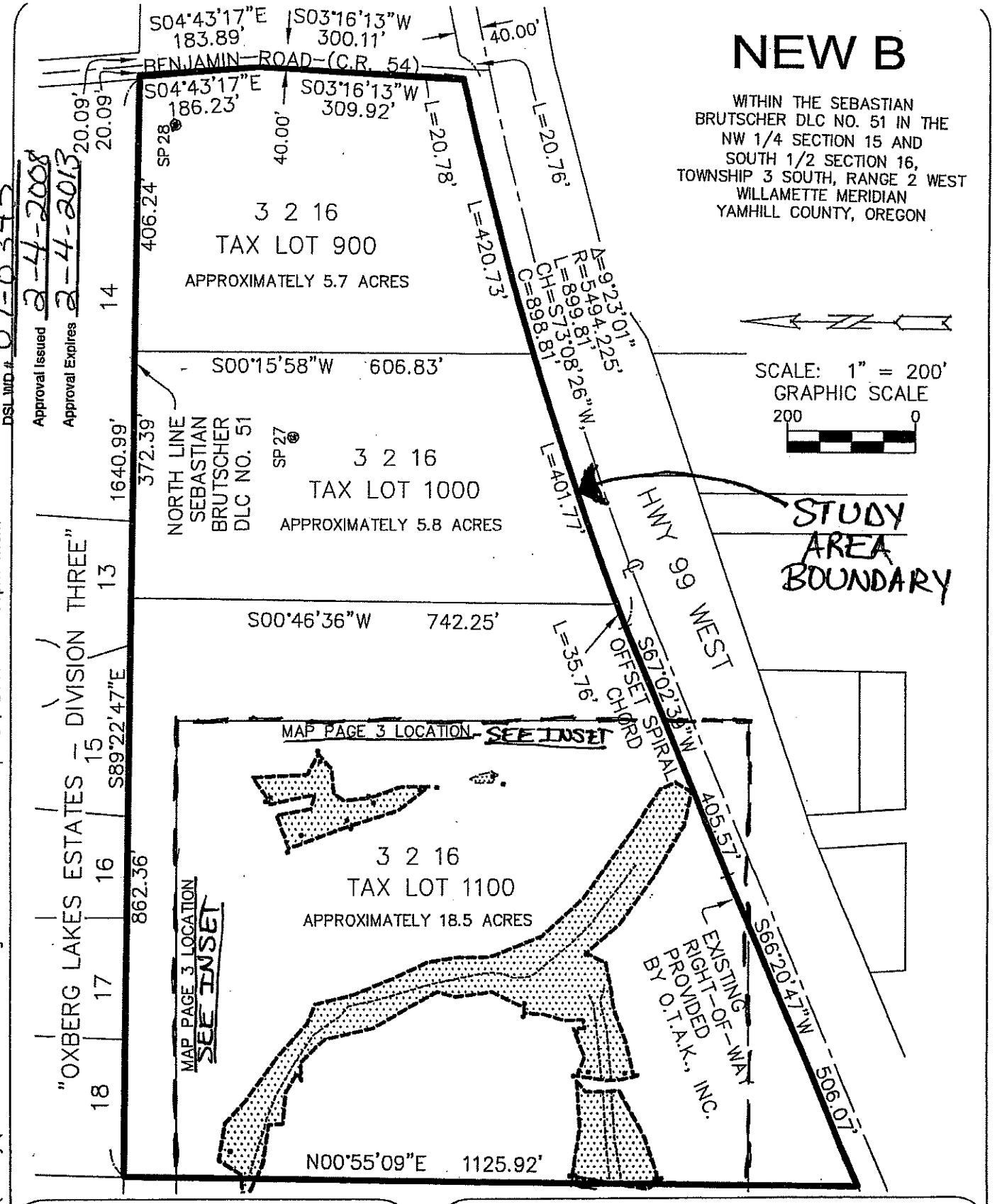
Janet C. Morlan, PWS
Wetlands Program Manager

Enclosures

cc: Claudia Steinkoenig, Schott and Associates
City of Newberg, Planning Department
Tina Teed, Corps of Engineers
Carrie Landrum, DSL

NEW B

WITHIN THE SEBASTIAN BRUTSCHER DLC NO. 51 IN THE NW 1/4 SECTION 15 AND SOUTH 1/2 SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 WEST WILLAMETTE MERIDIAN YAMHILL COUNTY, OREGON

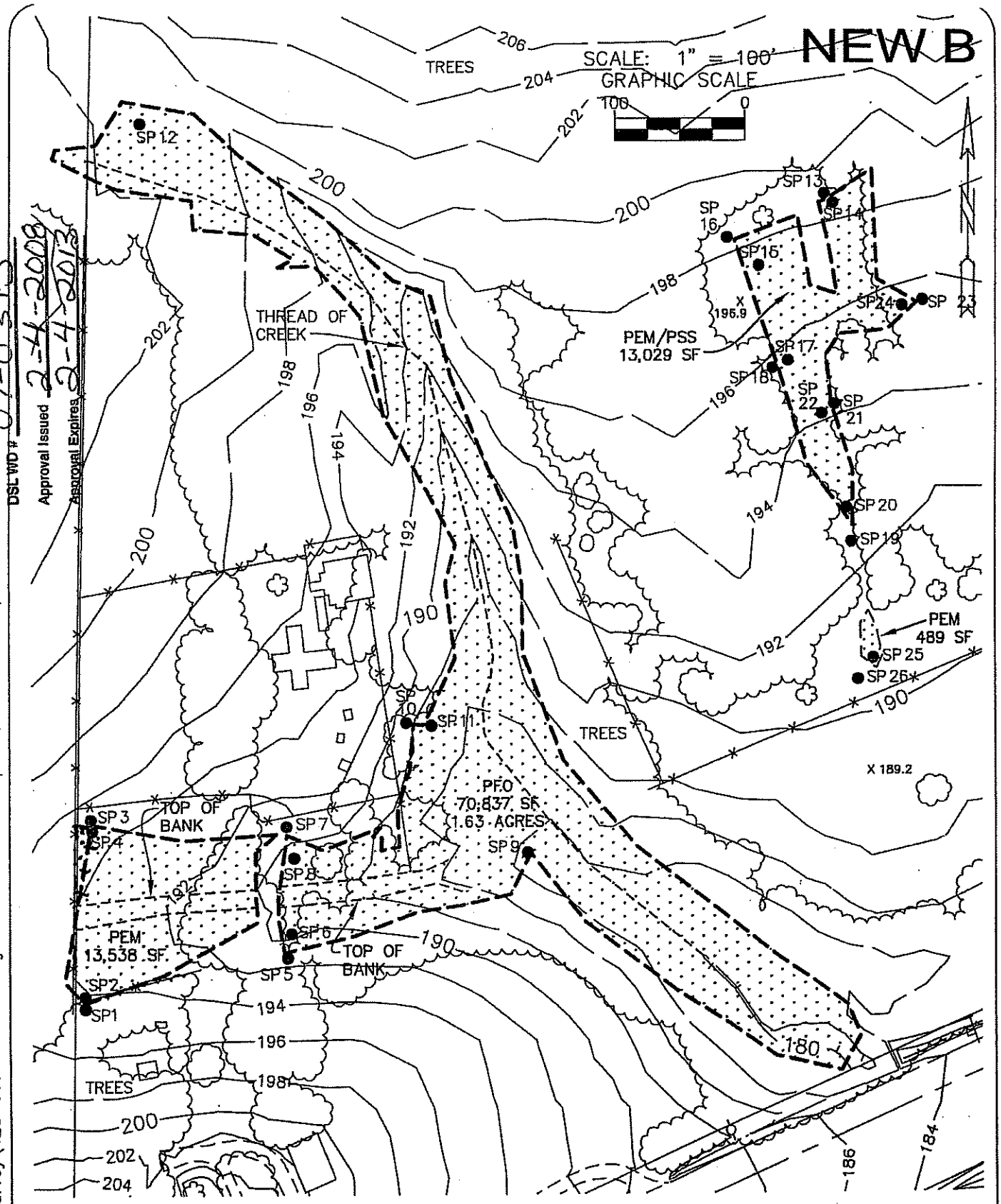


DSL WD # 07-6345
Approval Issued 2-4-2008
Approval Expires 2-4-2013

N: \proj\428-005\dwg\Survey\428-005 WETLAND.dwg - SHEET: 8x11 Apr 23, 2007 - 1:00pm mem

DRAWN BY: MEM DATE: 4-12-07
REVIEWED BY: MRG DATE: 4-12-07
PROJECT NO.: 0428-0005
SCALE: 1"=200'
WETLAND MAP PAGE 1 OF 3

alpha
COMMUNITY DEVELOPMENT



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DRAWN BY: MEM DATE: 4-12-07

REVIEWED BY: MRG DATE: 4-12-07

PROJECT NO.: 0428-0005

SCALE: 1"=100'

WETLAND MAP PAGE 3 OF 3

alpha

COMMUNITY DEVELOPMENT

Site Data Sheet

Project Name:	New B.
Project Number:	1985
Date of Site Visit:	February 21 & 28, 2007
Applicant:	Tim Speakman
Applicant's Address:	3401 SW Huber Street Portland, Oregon 97219
Owner(s):	Same
Owner(s) Address:	
State:	Oregon
County:	Yamhill
Site Location:	East of Victoria Way, North of 99W
USGS Quadrangle:	Newberg
Latitude/Longitude:	45°18.738'N / 122°55.870'W
Tax Map Information:	3S2W Sect.16 TL 1100, 1000, 900
Watershed:	Willamette River
Adjacent Waterbody:	Tributary of Spring Brook Creek
In the Floodplain:	Yes
Topography:	Gentle to moderate slopes
Site Zoning:	Agriculture/Forestry Small Holding (AF-10)
Proposed Use:	Residential/Commercial
Present/Past Use:	Rural/farmed
Surrounding Usage:	residential to the north and west/ rural to the east
Determination:	2 unnamed tributaries of Spring Brook Creek, 0.32 acre PEM wetland, 1.63 acre PFO wetland, 0.29 acre PEM/PSS wetland
Days Since Last Rain:	0
Mapping accuracy:	Alpha Community Development, PLS

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(A) Site Description

The 30-acre project area is located on the eastern edge of Newberg in Yamhill County, Oregon (SW1/4,NE1/4 Sec. 16, T3S, R2W TL#900,1000, 1100)(Figure 1) just outside of the city limits. The southern boundary abuts city limits. The study area is west of Benjamin Road and east of Victoria Way. Hwy 99W forms the southern property boundary. The new Providence Hospital (zoned I- Institutional) is to the southwest. The three tax lots that comprise the study area are designated as Agricultural/Forestry Small Holdings (AF-10).

For the purposes of this report, the project area will be described by tax lot. Tax lot 900 is located west of Benjamin Road and north of Highway 99 West. The lot is approximately 5.7 acres and has two homes and two large barns on it. The topography has gentle to moderate slopes to the east. The majority of the property consists of horse pasture comprised of grasses and forbs that include colonial bentgrass (*Agrostis stolonifera*), Kentucky bluegrass (*Poa pratensis*), tall fescue (*Festuca arundinacea*) and white clover (*Trifolium repens*) as dominants. Ornamental species were observed around the homes.

Tax Lot 1000 is located west of tax lot 900. It is 5.8 acres and has a vet clinic and associated buildings in the center of it. The topography slopes gently to the south, southeast. Fenced pastures are located on the south and north end of the property. Dominant vegetation includes bentgrass, Kentucky bluegrass, tall fescue and orchard grass (*Dactylis glomerata*). Groupings of Oregon Oak (*Quercus garryana*) and Douglas fir (*Pseudotsuga menziesii*) were scattered along the northern and western property perimeter.

Tax lot 1100 is 18.5 acres and located on the west end of the study area. Topography on the west end slopes gently east to two unnamed tributaries. The mid and east section of the tax lot slopes predominantly south. There is an existing residential home on the southwest end of the property and some outbuilding north of the home. A small drainage located behind the home flows to the east and joins a larger tributary of Spring Brook Creek which flows south to the Willamette River. Three meadow communities were identified on site. The first is along the western property boundary. The second is located southeast of the residence and the third is on the south end of the tax lot. The vegetation in the meadow communities consisted of grasses and forbs that included tall fescue, Kentucky bluegrass, bentgrass, orchard grass (*Dactylis glomerata*), and white clover, queen Anne's lace (*Daucus carota*) and cat's ear (*Hypochoeris radicata*) as subdominants. An upland forest community was located on the northern property boundary and included Oregon oak, Douglas fir, and bigleaf maple (*Acer macrophyllum*).

The dominant species found in the shrub layer included Service berry (*Amelanchier alnifolia*), Indian plum (*Oemleria cerasiformis*), beaked hazelnut (*Corylus cornuta*) and common snowberry (*Symphoricarpos albus)*. Sword fern (*Polystichum munitum*) and English ivy (*Hedera helix*) were the dominants in the herbaceous layer.

A forested riparian area was located adjacent to the largest tributary. The tree species in the riparian forest include Oregon ash (*Fraxinus latifolia*) and willow (*Salix sp.*) Shrub communities varied from area to area along the drainage. Portions of the shrub layer consisted of a dense layer of Himalayan blackberry interspersed with dense patches of Nookta rose (*Rosa nutkana*) and Douglas spiraea (*Spiraea douglasii*). Species identified in the herbaceous layer included slough sedge (*Carex obnupta*), water parsley (*Oenanthe sarmentosa*) and bentgrass.

The National Wetland Inventory (NWI) map for Newberg shows a tributary of Spring Brook Creek on the west end of the study area. There is no Local Wetland Inventory (LWI) for the area. The Yamhill County Soil Survey indicated two mapping units on the property that include Woodburn silt loam and Amity silt loam. The topographic map shows a site gently sloping north, northeast.

Project purpose

The site is proposed for commercial development to service the new hospital across the street and the adjacent residential areas. The developer of the site is currently applying for annexation into the city of Newberg and rezoning designation to Community Commercial.

(B) Wetland Description

Based on soil, hydrology and vegetation data taken on site two unnamed tributaries of Spring Brook Creek, and four wetlands were delineated. Two of the wetlands are adjacent to the tributaries. A 0.31 acres palustrine emergent/RFT wetland is located along a short portion of the smaller tributary on the west end of the property. The second wetland is 1.63 acres palustrine forested/RFT wetland adjacent to the remaining portion of the smaller tributary and the entire length of the larger tributary. The other two wetlands are isolated and located in the north mid-section of the property. The larger wetland is 0.29 acre and classified as palustrine emergent/scrub-shrub/slope wetland. The smaller one is 0.011 acres classified as a palustrine emergent/slope wetland.

A small seasonal drainage channel enters on the southwest end of tax lot 1100. It is the extension of a drainage located on the adjoining property to the west. The hydrology of the channel is associated with stormwater runoff from the neighborhood to the west. The drainage channel is u-shaped with a varying width of 2 to 3 feet and depth of approximately 3.5 feet. It has a mud and small cobble substrate bottom. The drainage flows east and drains into a larger tributary of Spring Brook Creek. Duckweed (*Lemna*

minor) was observed growing in portions of the drainage. The drainage has a defined channel for approximately 250 feet and then flattens out, draining as surface and subsurface lateral flow into the tributary of Spring Brook Creek.

A larger, unnamed perennial tributary of Spring Brook Creek enters the northwest corner of tax lot 1100 and exits the property on the south side. It flows to the south joining Spring Brook Creek on the south side of Hwy 99W. Portions of the creek are confined to a single channel while other portions of the channel are braided.

Two wetlands were identified adjacent to the two tributaries. The first is a 0.31 acre palustrine emergent (PEM/RFT) wetland. It was located on the west end of the study site where the smaller drainage entered the site. The plant community in this area is a meadow comprised of grasses and forbs. The dominant species are tall fescue and bentgrass. Hydrology for the wetland on the north and south side of the drainage is associated with precipitation, a seasonal high water table and overflow from the drainage during winter high water.

The second wetland is 1.63 acres and forested (PFO/RFT). The dominant tree in the canopy is Oregon ash (*Fraxinus latifolia*). The shrub layer consists of large dense patches of Douglas spirea (*Spiraea douglasii*) and nootka rose (*Rosa nutkana*). The herbaceous layer includes large patches of slough sedge (*Carex obnupta*) and water parsley (*Oenanthe sarmentosa*). Hydrology of the wetland is associated with precipitation, a seasonal high water table and overflow from the drainage during winter high water. The southern end of the drainage is fed by a perennial spring.

The other two wetlands are isolated and located in the north mid-section of the property. The larger wetland is 0.29 acres and classified as palustrine emergent/scrub-shrub/slope wetland. The dominant vegetation in the emergent portion is meadow foxtail (*Alopecurus pratensis*) and bentgrass (*Agrostis stolonifera*). The shrubs in the scrub shrub communities were nootka rose (*Rosa nutkana*) with scattered patches of hawthorn (*Crataegus sp*). The second isolated wetland is immediately below the first. It consists of a small depressional area with colonial bentgrass and meadow foxtail as the dominants.

The analysis of wetlands conducted on this site was based on published methods for implementing Section 404 of the Clean Water Act. The 1987 manual was used to satisfy the requirements of the COE on non-agricultural land. The manual requires three parameters to be examined: vegetation, soils, and hydrology. According to the 1987 manual, independent evidence of hydrophytic vegetation, hydric soils, and wetland hydrology must be present for an area to be declared a wetland. The analysis of wetlands on the project site was conducted by reviewing and analyzing existing site-specific literature and by field investigation.

(C) Site Analysis

The three tax lots that comprise the study area are designated as Agricultural/Forestry Small Holdings (AF-10). There was no evidence of alterations to the drainages observed onsite. The hydrology associated with the smaller drainage is stormwater runoff from the neighborhood to the west.

(D) Site Specific Methods

The Routine Onsite Determination Method (1987 manual, pp. 52-69) was used to determine the State of Oregon wetland boundaries and the Federal jurisdictional wetlands. The entire study area was walked and observed for wetland characteristics. Sample plots were dug and placed in areas determined to meet all wetland criteria. Adjacent plots were placed in the upland.

The first area investigated was located on the west end of the study site. A drainage swale located on the adjacent property to the west extended east into the study area. A delineation for the property to the west was conducted a year ago and is pending review by DSL. The area consists of a grazed meadow community with dominant grasses of bentgrass and fescue. Areas with wetland characteristics extend north and south of the drainage by approximately 30-40 feet. The source of hydrology for the wetland on the north and south side of the drainage is associated with precipitation, a seasonal high water table and overflow from the drainage during winter high water. The area had recently received days of heavy rain so that the ground water table was exceptionally high.

Along the north side of the swale the wetland boundary was determined predominantly by soil and hydrology since the vegetation in both wetland and upland were the same. On the south side of the swale the vegetation was the determining factor. The soil matrix color in the wetland varied between 10YR3/1 with redox concentrations of 10YR3/4 in sample plot 2 and 10YR3/2 with redox concentrations of 10YR3/6 in sample plot 4. Both sample plots had a depth to free water between 6 and 8 inches.

The upland area on the south side of the swale was determined by the vegetation. The topography was slightly higher and Himalayan blackberry formed a dense hedge. Some Douglas fir trees were planted in this area as well. On the north side of the swale the upland area did not have hydric soil or wetland hydrology.

Approximately 130 feet east of the property line a small berm built for vehicle access to the back barn area crosses the drainage and wetland area. The berm has been in place on the property well over fifty years. The drainage crosses the berm via a small culvert. It flows an additional 120 feet before it becomes an undefined channel and flows as broad sheet flow into the other tributary.

The wetland continues past the berm and is located adjacent to the tributaries. The plant community on the east side of the berm slowly transitions from a meadow into a forested community that joins the riparian community along the main tributary. Soils in this portion of the wetland (Sample plot, 8, 9 & 11) predominantly have a matrix value of 10YR3/2 with redox concentrations of 10YR3/6.

The upland edge was obvious by topography as well as vegetation and hydrology. The overstory transitioned from Oregon ash into Oregon oak and Douglas fir on the north end. Further south the vegetation in the upland riparian area had Oregon ash mixed with common snowberry (*Symphoricarpos alba*), beaked hazelnut (*Corylus cornuta*) and Himalayan blackberry. Upland soils observed along the tributaries included matrix colors of 10YR3/3 (sample plot 5), from 0 to 12 inches, 10YR4/2 (sample plot 7) and (10YR3/2) (sample plot 10). No redox concentration were observed within 10 inches and no evidence of wetland hydrology was observed.

The wetland identified in the middle of tax lot 1100 consists of an emergent and scrub shrub wetland. The majority of it is located in a clearing surrounded by dense thickets of English hawthorn, Himalayan blackberry and various overgrown fruit trees. The vegetation in the northern portion of the wetland consisted of scattered dense thickets of nootka rose (*Rosa nutkana*). Meadow foxtail was the dominant grass. The soil matrix color varied between 10YR3/2 and 10YR4/2 with redox concentrations that varied in color. The hydrology of the wetland was associated with overland sheet flow and a seasonal high water table. The wetland was hummocky with slight shift in topography along the upland edge.

The vegetation in the upland area was similar to the wetland vegetation. The upland area had a predominant soil color of 10YR3/2 with no redox concentrations (sample plot 13, 16, 18, 19, 23, 26) and no wetland hydrology.

(E) Deviation

No deviations were observed. The National Wetland Inventory (NWI) map for Newberg did not show any wetlands in the project area. It did show the tributary of Spring Brook Creek on the western portion of the study area. There is no Local Wetland Inventory (LWI) for the area.

(F) Methods of Determining Other Waters of the State

No other waters of the state were observed onsite. The top of bank was defined for the smaller tributary that flow west to east. The larger tributary had the center line mapped for the main branch of the creek, because the mid section is braided.

(G) Additional Info

None.

(H) Statement of Mapping Accuracy

The wetland boundaries were flagged and the flags were surveyed by Alpha Community Development, PLS.

(I) Date of Investigation

The site was visited on February 21 and 28, 2007.

(J) Weather

The weather on the day of the February 21 site visit was cold and rainy. The day before 0.67 inches of rain were recorded at the Forest Grove weather station. 2.48 inches of rain were recorded for the past two weeks.

The weather on the day of the February 28 site visit was cold interspersed with periods of hail, rain and sun. There was 0.26 inches of rain the day prior to the site visit. 3.21 inches of rain were recorded for the past two weeks. This is 52 percent of the average for the entire month. A total of 36.56 inches were recorded since October 1, 2006. This is 115 percent of the water year average.

(K) Results and Conclusions

The National Wetland Inventory (NWI) map did not show any onsite wetlands however it did show a tributary of Spring Brook Creek on the west end of the site. There is no Local Wetland Inventory for the Newberg area. The Yamhill County Soil Survey mapped two soil series on the subject property: Amity silt loam and Woodburn silt loam 0 to 7 percent slopes and 7 to 12 percent slopes. The Amity series is somewhat poorly drained. This soil series is not listed as hydric however it does have hydric inclusions. Some of the soil observed on site matched the Amity series.

Based on soil, hydrology and vegetation data taken on site two unnamed tributaries of Spring Brook Creek, and four wetlands were delineated. The smaller drainage is seasonal, the larger has recently developed a perennial flow. Two of the wetlands are adjacent to the tributaries. A 0.31 acres palustrine emergent/RFT wetland is located along a short portion of the smaller tributary on the west end of the property. The second wetland is 1.63 acres palustrine forested/RFT wetland adjacent to the tributaries. The other two wetlands are isolated and located in the north mid-section of the property. The larger wetland is 0.29 acre and classified as palustrine emergent/scrub-shrub/slope wetland. The smaller one is 0.011 acres classified as a palustrine emergent/slope wetland.

(L) Required Disclaimer

This report documents the investigation, best professional judgment and the conclusions of the investigator. It is correct and complete to the best of my knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Oregon Department of State lands in accordance with OAR 141-090-0005 through 141-090-0055.

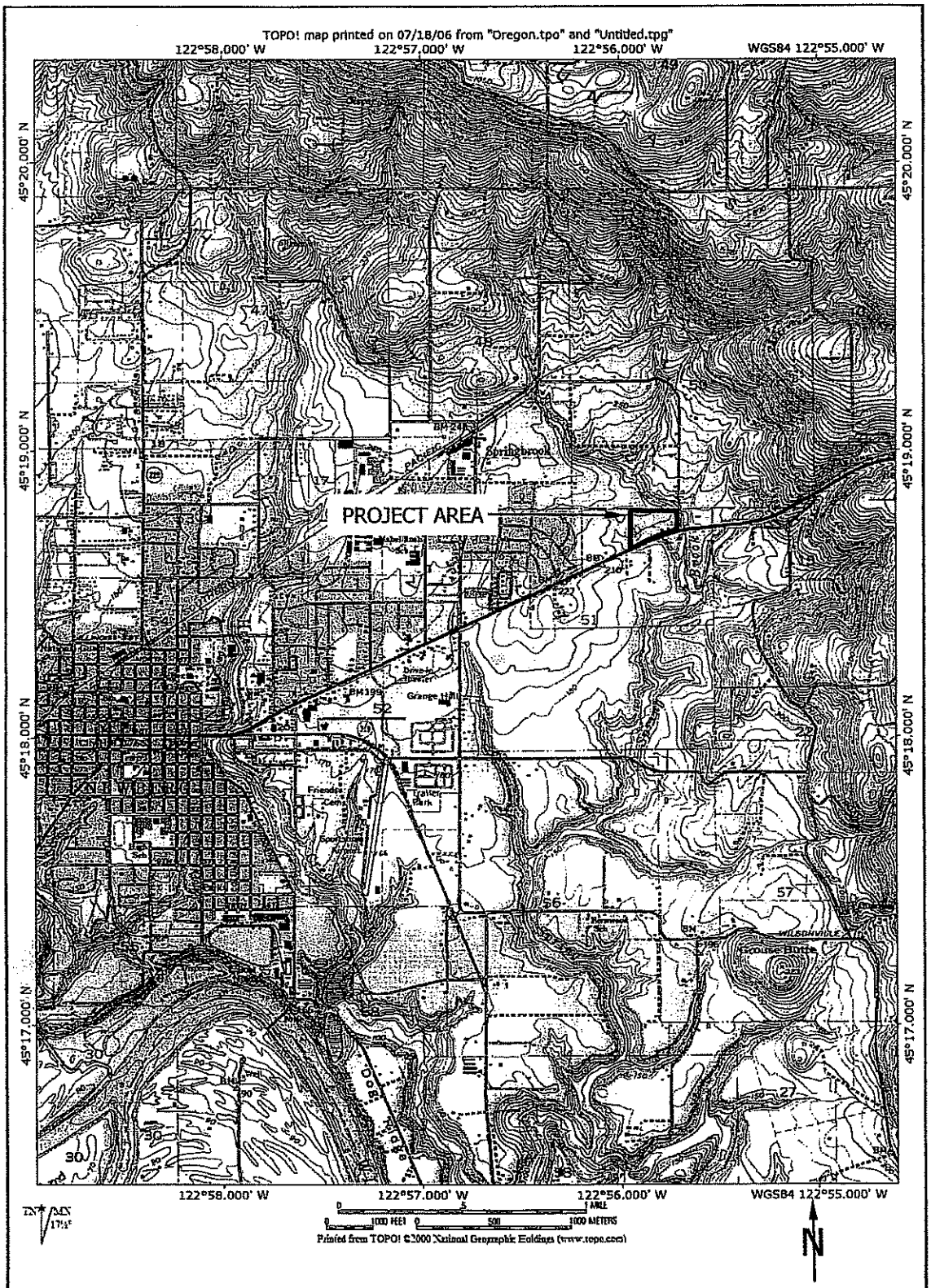


FIGURE 1. SITE VICINITY MAP
S&A #1985

Schott & Associates
P.O. Box 589
Aurora, OR. 97002
503.678.6007

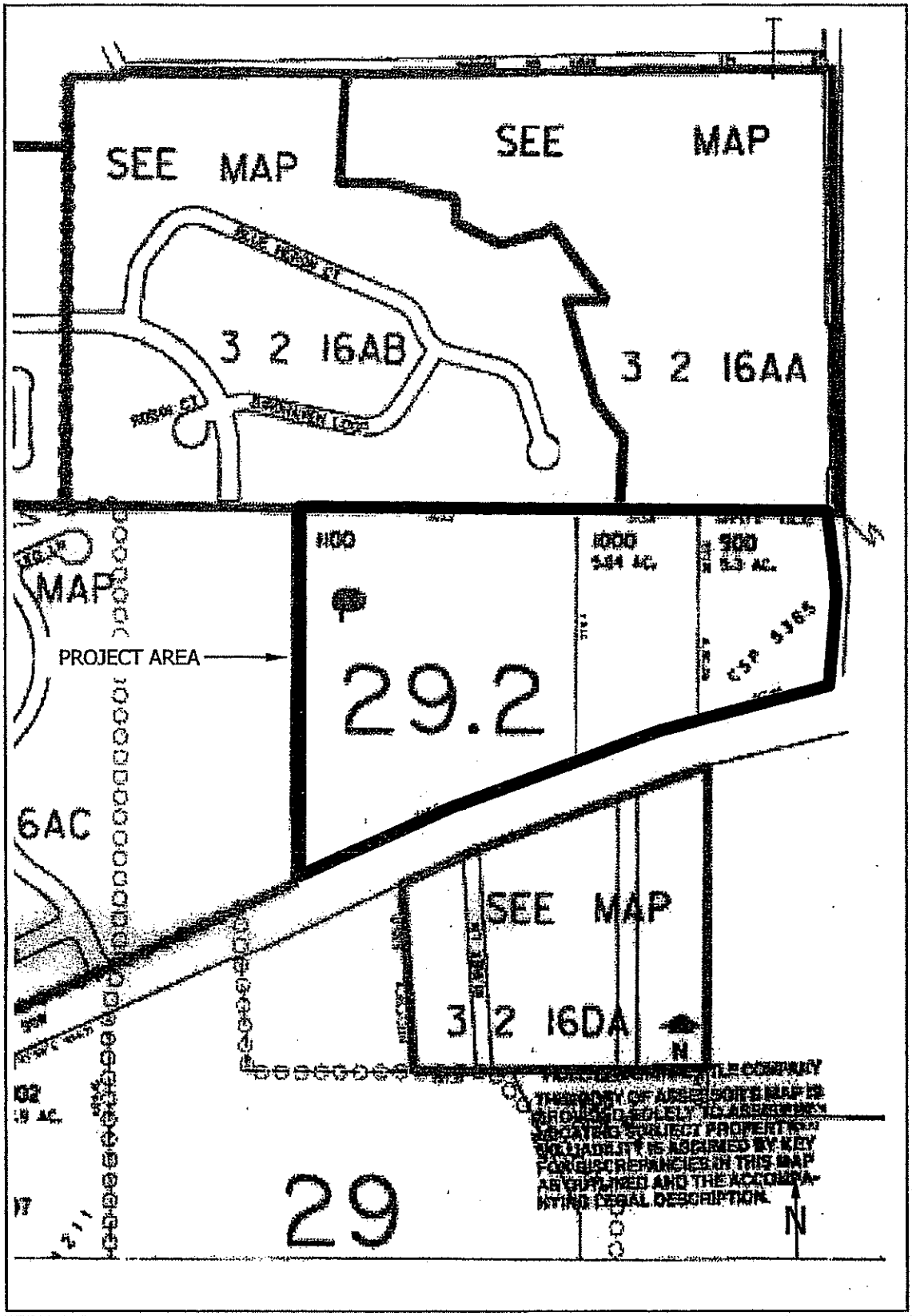


FIGURE 2. TAX MAP
S&A #1985

Schott & Associates
P.O. Box 589
Aurora, OR. 97002
503.678.6007

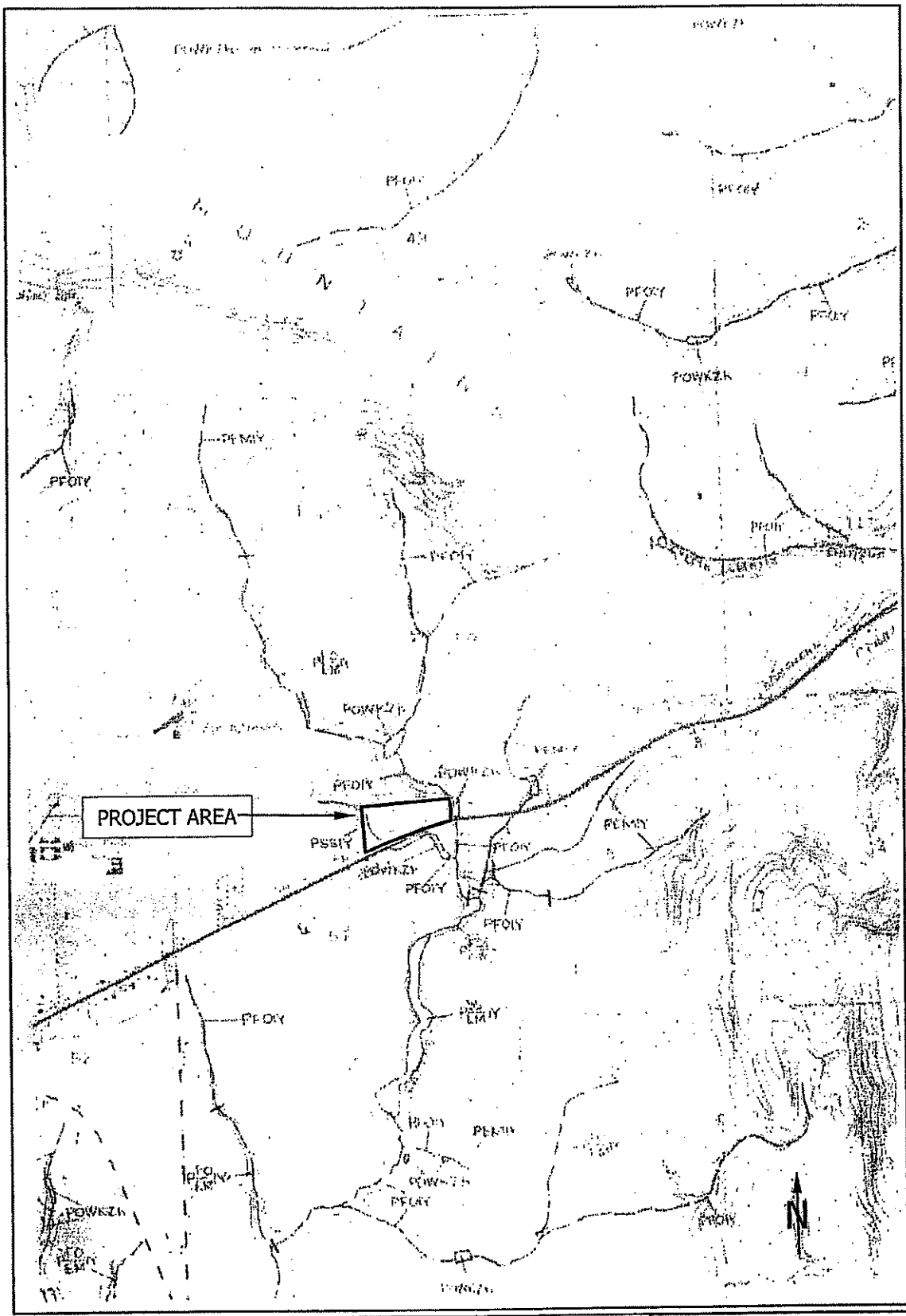


FIGURE 3. NEWBERG NWI
S&A #1985

Schott & Associates
P.O. Box 589
Aurora, OR. 97002
503.678.6007

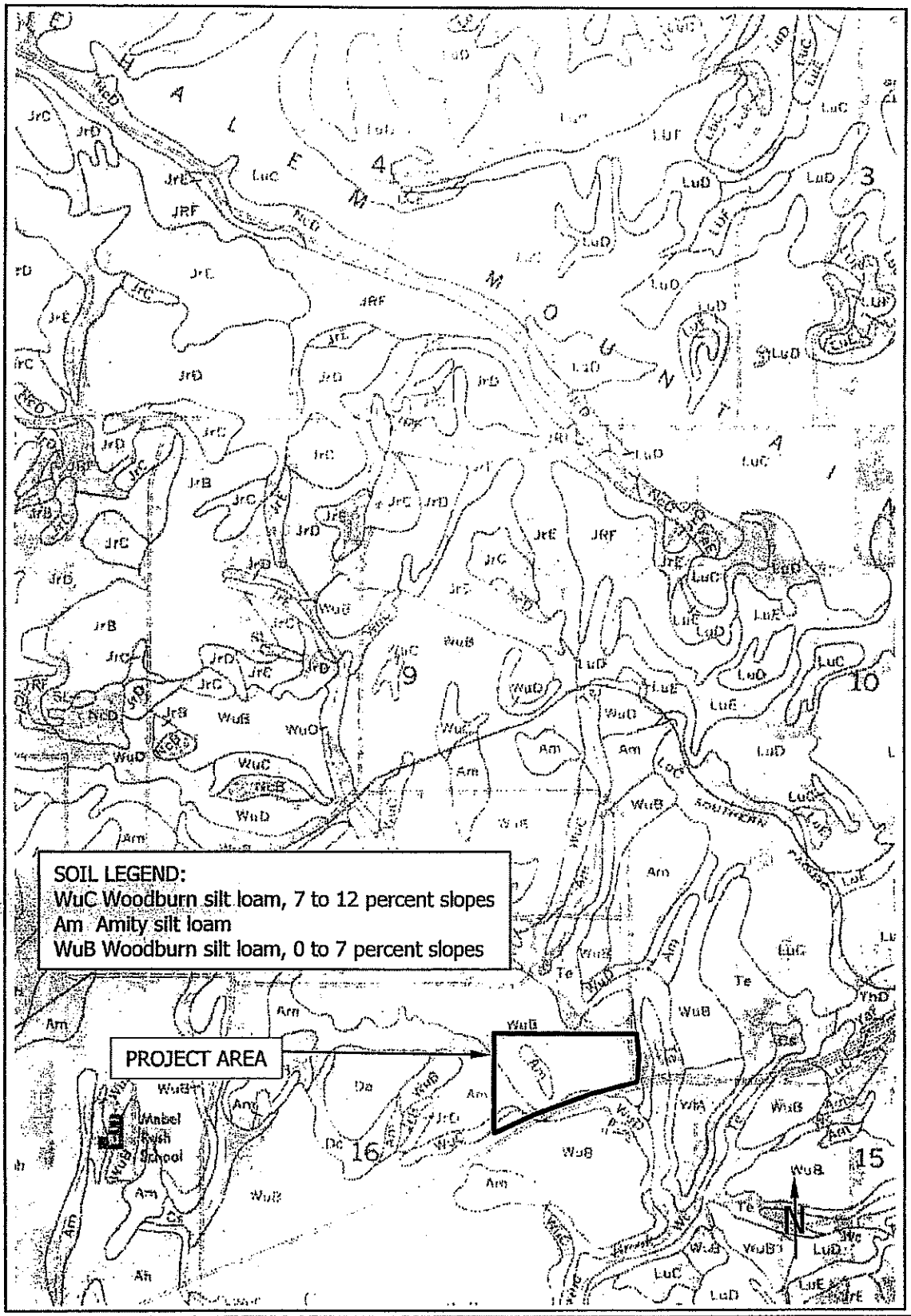


FIGURE 4. YAMHILL COUNTY SOIL SURVEY, SHEET 16
S&A #1985

Schott & Associates
P.O. Box 589
Aurora, OR. 97002
503.678.6007

Data Forms

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/21	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: meadow
Plot Location: south side of swale
Recent Weather: rainy and cold
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

Det. By: C. Steinkoenig
Plot #:1

VEGETATION

Tree Stratum				Herb Stratum			
Total Plot Cover:5	2.5 = 50%	1. = 20%		Total Plot Cover:100	50 = 50%	20 = 20%	
			Status/Raw % Cover				Status/Raw % Cover
1.*Pseudotsuga menziesii*			FACU 5*	1.*Festuca arundinacea*			FAC- 100*
2.				2.			
3.				3.			
4.				4.			
5.				5.			
Sapling/Shrub Stratum				6.			
Total Plot Cover:20	10= 50%	4= 20%	Status/Raw % Cover	7.			
1.*Rubus discolor*			FACU- 20*	8.			
2.				9.			
3.				10.			
4.				11.			
5.				12.			

Hydrophytic Vegetation Indicators:
☐ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):50
Other hydrophytic vegetation indicators:
Criteria Met? ☐**Yes** ☒ **No** **Comments:** Hydrophytic veg. not exceeding 50 percent.

SOILS

Map Unit Name: Amity silt loam
On Hydric Soil List? ☐ Yes ☒ No
Drainage Class: Somewhat poorly drained
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-8	10YR3/1	10YR3/4 FFD		S CL
8-16	10YR3/1	10YR3/4 CMP		CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☐Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☒ **Yes** ☐ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation:
Depth to Saturation:10" Depth to Free Water:

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☒**Yes** ☐ **No**

Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments: Recent heavy rains and high water table.

DETERMINATION

WETLAND? ☐**YES** ☒**NO** **Comments: Area adjacent blackberry thicket and higher topography.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/21	City: Newberg	File #:1985

Project/Contact: NewB./CS
Det. By: C. Steinkoenig
Plant Community: meadow
Plot #:2
Plot Location: paired with sample plot 1
Recent Weather: rainy and cold
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum				Herb Stratum		
Total Plot Cover:0	0 = 50%	0 = 20%		Total Plot Cover:100	50 = 50%	20 = 20%
		Status/Raw % Cover				Status/Raw % Cover
1.				1.*Agrostis stolonifera*		FAC 25*
2.				2.*Poa pratensis*		FAC 10
3.				3.*MOSS*		65
4.				4.		
5.				5.		
Sapling/Shrub Stratum				6.		
Total Plot Cover:	= 50%	= 20%	Status/Raw % Cover	7.		
1.				8.		
2.				9.		
3.				10.		
4.				11.		
5.				12.		

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):100
Other hydrophytic vegetation indicators:
Criteria Met? ☒**Yes** ☐ **No** **Comments:** Hydrophytic veg. exceeds 50 percent.

SOILS

Map Unit Name: Amity silt loam Drainage Class: Somewhat poorly drained
On Hydric Soil List? ☐ Yes ☒ No Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-7	10YR3/1	10YR3/4 FFF		Si CL
7-16	10YR3/1	10YR3/4 CFD		CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☒Gleyed or low chroma colors
☒Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☒ **Yes** ☐ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation: Depth to Saturation:2" Depth to Free Water:6"

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits

Secondary Hydrology Indicators (2 or more required):
☒Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:

Criteria Met? ☒**Yes** ☐ **No** **Comments: A lot of moss growing on ground.**

DETERMINATION

WETLAND? ☒**YES** ☐**NO** **Comments: Wetland criteia is met.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/21	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: meadow
Plot Location: North side of swale
Recent Weather: rainy and cold
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

Det. By: C. Steinkoenig
Plot #:3

VEGETATION

Tree Stratum			Herb Stratum		
Total Plot Cover:0	0 = 50%	0 = 20%	Total Plot Cover:100	50 = 50%	20 = 20%
		Status/Raw % Cover			Status/Raw % Cover
1.			1.*Agrostis stolonifera*		FAC 80*
2.			2.*Festuca arundinacea*		FAC- 15
3.			3.*Trifolium repens*		FACU+ 5
4.			4.*Daucus carota*		NOL trace
5.			5.*Geranium richardsonii*		trace
Sapling/Shrub Stratum			6.*Hypochoeris radicata*		trace
Total Plot Cover:	= 50%	= 20% Status/Raw % Cover	7.		
1.			8.		
2.			9.		
3.			10.		
4.			11.		
5.			12.		

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):100
Other hydrophytic vegetation indicators:
Criteria Met? ☒Yes ☐ No **Comments:** Hydrophytic veg. exceeds 50 percent.

SOILS

Map Unit Name: Amity silt loam
On Hydric Soil List? ☐ Yes ☒ No
Drainage Class: Somewhat poorly drained
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-12	10YR3/2	None		CL L
12-16	10YR4/2	10YR4/4 CCP		Sl Cl

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☐Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☐ Yes ☒ No

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation: Depth to Saturation: Depth to Free Water:

Primary Hydrology Indicators:
☐Inundated
☐Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits

Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:

Criteria Met? ☐Yes ☒ No
Comments: .

DETERMINATION

WETLAND? ☐YES ☒NO **Comments: No wetland soils or hydrology.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/21	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: meadow
Plot Location: Paired with sample plot 3
Recent Weather: rainy and cold
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

Det. By: C. Steinkoenig
Plot #:4

VEGETATION

Tree Stratum				Herb Stratum		
Total Plot Cover:0	0 = 50%	0 = 20%		Total Plot Cover:100	50 = 50%	20 = 20%
		Status/Raw % Cover				Status/Raw % Cover
1.				1.*Agrostis stolonifera*		FAC 80*
2.				2.*Festuca arundinacea*		FAC- 15
3.				3.*Moss*		NI 20
4.				4.*Daucus carota*		NOL trace
5.				5.*Geranium richardsonii*		trace
Sapling/Shrub Stratum				6.		
Total Plot Cover:	= 50%	= 20%	Status/Raw % Cover	7.		
1.				8.		
2.				9.		
3.				10.		
4.				11.		
5.				12.		

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):100
Other hydrophytic vegetation indicators:
Criteria Met? ☒Yes ☐ No **Comments:** Hydrophytic veg. exceeds 50 percent.

SOILS

Map Unit Name: Amity silt loam
On Hydric Soil List? ☐ Yes ☒ No
Drainage Class: Somewhat poorly drained
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-12	10YR3/2	10YR3/6 FFF		CL L
12-18	10YR4/2	10YR4/6 CMD		Sl Cl

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☒Redox features within 10" (e.g., concentrations)

☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☒ **Yes** ☐ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation: Depth to Saturation:5" Depth to Free Water:8"

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☒Yes ☐ No

Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments: .

DETERMINATION

WETLAND? ☒YES ☐NO **Comments: Wetland Criteria met.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/21	City: Newberg	File #:1985

Project/Contact: NewB./CS
Det. By: C. Steinkoenig
Plant Community: Scrub-shrub
Plot #:5
Plot Location: South side of tributary.
Recent Weather: rainy and cold
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum				Herb Stratum		
Total Plot Cover:45	22.5 = 50%	9 = 20%		Total Plot Cover:100	50 = 50%	20 = 20%
		Status/Raw % Cover				Status/Raw % Cover
1.*Malus sp.*		NOL 30*		1.*Agrostis stolonifera*		FAC 25*
2.*Crataegus monogyna*		FACU+ 15*		2.*Festuca arundinacea*		FAC- 50*
3.				3.*Dactylis glomerata*		FACU 25*
4.				4.		
5.				5.		
Sapling/Shrub Stratum				6.		
Total Plot Cover:20	10= 50%	4= 20%	Status/Raw % Cover	7.		
1.*Rubus discolor*			FACU- 20*	8.		
2.				9.		
3.				10.		
4.				11.		
5.				12.		

Hydrophytic Vegetation Indicators:
☐ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):40
Other hydrophytic vegetation indicators:
Criteria Met? ☐**Yes** ☒ **No** **Comments:** Hydrophytic veg does not exceed 50%. FEAR used as FAC veg.

SOILS

Map Unit Name: Amity silt loam Drainage Class: Somewhat poorly drained
On Hydric Soil List? ☐ Yes ☒ No Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-12	10YR3/3	None		CL L
12-16	10YR3/4			Sl Cl

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☐Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☐ **Yes** ☒ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available
Field Data
Depth of inundation: Depth to Saturation: Depth to Free Water:14"
Primary Hydrology Indicators:
☐Inundated
☐Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☐**Yes** ☒ **No**
Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments: Depth to free water in pit at 14 inches.

DETERMINATION

WETLAND? ☐**YES** ☒**NO** **Comments: Wetland criteria not met.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/21	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: meadow
Plot Location: Paired with sample plot 5
Recent Weather: rainy and cold
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

Det. By: C. Steinkoenig
Plot #:6

VEGETATION

Tree Stratum				Herb Stratum			
Total Plot Cover:0	= 50%	= 20%		Total Plot Cover:100	50 = 50%	20 = 20%	
		Status/Raw % Cover				Status/Raw % Cover	
1.				1.*Agrostis stolonifera*		FAC 25*	
2.				2.*Festuca arundinacea*		FAC- 50*	
3.				3.*Dactylis glomerata*		FACU 25*	
4.				4.			
5.				5.			
Sapling/Shrub Stratum				6.			
Total Plot Cover:	= 50%	= 20%	Status/Raw % Cover	7.			
1.				8.			
2.				9.			
3.				10.			
4.				11.			
5.				12.			

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):66
Other hydrophytic vegetation indicators:
Criteria Met? ☒**Yes** ☐ **No** **Comments:** Hydrophytic veg exceeds 50%. FEAR used as FAC veg.

SOILS

Map Unit Name: Amity silt loam
On Hydric Soil List? ☐ Yes ☒ No
Drainage Class: Somewhat poorly drained
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-11	10YR4/1	10YR4/4 FFD		Si CL
11-15	10YR3/4			Si Cl

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☒Gleyed or low chroma colors
☒Redox features within 10" (e.g., concentrations)

☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☒ **Yes** ☐ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation:
Depth to Saturation:
Depth to Free Water:7"

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☒**Yes** ☐ **No**

Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments: Wetland hydrology observed.

DETERMINATION

WETLAND? ☒**YES** ☐**NO** **Comments: Wetland criteria is met.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/21	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: meadow
Plot Location: Paired w/8-N side of seasonal drainage-E. of berm
Recent Weather: rainy and cold
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

Det. By: C. Steinkoenig
Plot #:7

VEGETATION

Tree Stratum				Herb Stratum			
Total Plot Cover:0	= 50%	= 20%		Total Plot Cover:100	50 = 50%	20 = 20%	
		Status/Raw % Cover					Status/Raw % Cover
1.				1.*Poa pratensis*			FAC 75*
2.				2.*Festuca arundinacea*			FAC- 10
3.				3.*Trifolium latifolia*			FACU+ 15
4.				4.*Chrysanthemum Leu.*			NI trace
5.				5.			
Sapling/Shrub Stratum				6.			
Total Plot Cover:	= 50%	= 20%	Status/Raw % Cover	7.			
1.				8.			
2.				9.			
3.				10.			
4.				11.			
5.				12.			

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):100
Other hydrophytic vegetation indicators:
Criteria Met? ☒Yes ☐ No **Comments:** FEAR (FAC-) used as FAC veg.

SOILS

Map Unit Name: Amity silt loam
On Hydric Soil List? ☐ Yes ☒ No
Drainage Class: Somewhat poorly drained
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-12	10YR4/2	None		Si CL
12-17	10YR4/2	10YR4/6 FFP		CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☐Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☐ Yes ☒ No

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation: Depth to Saturation:10 Depth to Free Water:12"

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☒Yes ☐ No

Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments: Recent heavy rainfall.

DETERMINATION

WETLAND? ☐YES ☒NO **Comments: Wetland soil criterion is not met. Subdominant veg. is upland and higher topgraphy.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/21	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: meadow
Plot Location:
Recent Weather: rainy and cold
Det. By: C. Steinkoenig
Plot #:8

Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum			Herb Stratum		
Total Plot Cover:0	= 50%	= 20%	Total Plot Cover:100	50 = 50%	20 = 20%
		Status/Raw % Cover			Status/Raw % Cover
1.			1.*Poa pratensis*		FAC 85*
2.			2.*Rumex crispus*		FAC+ 5
3.			3.*Gernaium richardsoni*		FACU+ 10
4.			4.		
5.			5.		
Sapling/Shrub Stratum			6.		
Total Plot Cover:	= 50%	= 20% Status/Raw % Cover	7.		
1.			8.		
2.			9.		
3.			10.		
4.			11.		
5.			12.		

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):100
Other hydrophytic vegetation indicators:
Criteria Met? ☒**Yes** ☐ **No** **Comments:** .

SOILS

Map Unit Name: Amity silt loam
On Hydric Soil List? ☐ Yes ☒ No
Drainage Class: Somewhat poorly drained
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-12	10YR3/2	10YR3/6 MFD		Si CL
12-17	10YR4/2	10YR4/4 FFD		CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☒Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☒ **Yes** ☐ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation: Depth to Saturation:to Surface Depth to Free Water:1"

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits

Secondary Hydrology Indicators (2 or more required):
☒Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:

Criteria Met? ☒**Yes** ☐ **No** **Comments: Recent heavy rainfall and high water table.**

DETERMINATION

WETLAND? ☒**YES** ☐**NO** **Comments: Wetland criteia met.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/21	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: forested
Plot Location: SW side of stream
Recent Weather: rainy and cold
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

Det. By: C. Steinkoenig
Plot #:9

VEGETATION

Tree Stratum				Herb Stratum			
Total Plot Cover:100	50 = 50%	20 = 20%		Total Plot Cover:70	35 = 50%	14 = 20%	
			Status/Raw % Cover				Status/Raw % Cover
1.*Fraxinus latifolia*			FACW 100*	1.*Carex obnupta*			OBL 60*
2.				2.*Oenanthe sarmentosa*			OBL 10
3.				3.			
4.				4.			
5.				5.			
Sapling/Shrub Stratum				6.			
Total Plot Cover:55	27.5= 50%	11= 20%	Status/Raw % Cover	7.			
1.*Rosa nutkana*			FAC 10	8.			
2.*Crataegus monogyna*			FACU+ 5	9.			
3.*Spirea douglasii*			FACW 40*	10.			
4.				11.			
5.				12.			

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant **Species** that are OBL, FACW, FAC (not FAC-):100
Other hydrophytic vegetation indicators:
Criteria Met? ☒**Yes** ☐ **No** **Comments:** .

SOILS

Map Unit Name: Amity silt loam
On Hydric Soil List? ☐ Yes ☒ No
Drainage Class: Somewhat poorly drained
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-12	10YR3/2	10YR3/6 MFD		Si CL
12-17	10YR4/2	10YR4/4 FFD		CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☒Redox features within 10" (e.g., concentrations)

☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☒ **Yes** ☐ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation:
Depth to Saturation:to Surface
Depth to Free Water:1"

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☒**Yes** ☐ **No**

Secondary Hydrology Indicators (2 or more required):
☒Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments: Recent heavy rainfall and high water table.

DETERMINATION

WETLAND? ☒**YES** ☐**NO** **Comments: Wetland criteia met.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/21	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: forested
Plot Location: West side of stream
Recent Weather: rainy and cold
Det. By: C. Steinkoenig
Plot #:10
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum				Herb Stratum		
Total Plot Cover:30	15 = 50%	6 = 20%		Total Plot Cover:100	50 = 50%	20 = 20%
		Status/Raw % Cover				Status/Raw % Cover
1.*Fraxinus latifolia*		FACW+30*		1.*Festuca arundinacea*		FAC- 15
2.				2.*Dactylis glomerata*		FACU 35*
3.				3.*Poa pratensis*		FAC 40*
4.				4.*Taraxacum officinale*		NOL 10
5.				5.		
Sapling/Shrub Stratum				6.		
Total Plot Cover:5	2.5= 50%	1= 20%	Status/Raw % Cover	7.		
1.*Corylus cornuta*			FACU+ 5*	8.		
2.				9.		
3.				10.		
4.				11.		
5.				12.		

Hydrophytic Vegetation Indicators:
☐ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):50
Other hydrophytic vegetation indicators:
Criteria Met? ☐**Yes** ☒ **No** **Comments:** Does not exceed fifty percent.

SOILS

Map Unit Name: Amity silt loam Drainage Class: Somewhat poorly drained
On Hydric Soil List? ☐ Yes ☒ No Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-11	10YR3/2	None		Si CL
11-17	10YR3/3			CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☐Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☐ **Yes** ☒ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available
Field Data
Depth of inundation: Depth to Saturation:13" Depth to Free Water:
Primary Hydrology Indicators:
☐Inundated
☐Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Criteria Met? ☐**Yes** ☒ **No** **Comments: Recent heavy rainfall and high water table.**

DETERMINATION

WETLAND? ☐**YES** ☒**NO** **Comments: Criteria not met.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/21	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: forested
Plot Location: paired with sample plot 10
Recent Weather: rainy and cold
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

Det. By: C. Steinkoenig
Plot #:11

VEGETATION

Tree Stratum				Herb Stratum			
Total Plot Cover:50	25 = 50%	10 = 20%		Total Plot Cover:100	50 = 50%	20 = 20%	
		Status/Raw % Cover				Status/Raw % Cover	
1.*Fraxinus latifolia*		FACW+ 50*		1.*Poa pratensis*		FAC 50*	
2.				2.*Rumex crispus*		FAC+ 10	
3.				3.*Agrostis stolonifera*		FAC 40*	
4.				4.			
5.				5.			
Sapling/Shrub Stratum				6.			
Total Plot Cover:	= 50%	= 20%	Status/Raw % Cover	7.			
1.				8.			
2.				9.			
3.				10.			
4.				11.			
5.				12.			

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):100
Other hydrophytic vegetation indicators:
Criteria Met? ☒Yes ☐ No Comments: .

SOILS

Map Unit Name: Amity silt loam
On Hydric Soil List? ☐ Yes ☒ No
Drainage Class: Somewhat poorly drained
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-11	10YR3/2	10YR3/6 FFF		Si CL
11-17	10YR4/2	10YR4/6 CFP		CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☒Redox features within 10" (e.g., concentrations)

☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☒ Yes ☐ No

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation: Depth to Saturation:6" Depth to Free Water:9"

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☒Yes ☐ No

Secondary Hydrology Indicators (2 or more required):
☒Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments: .

DETERMINATION

WETLAND? ☒YES ☐NO Comments: Wetland Criteria is met.

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/21	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: forested
Plot Location: NW end of the property
Recent Weather: rainy and cold
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

Det. By: C. Steinkoenig
Plot #:12

VEGETATION

Tree Stratum				Herb Stratum		
Total Plot Cover:95	47.5 = 50%	19 = 20%		Total Plot Cover:	= 50%	= 20%
			Status/Raw % Cover			Status/Raw % Cover
1.*Fraxinus latifolia*		FACW+ 95*		1.		
2.				2.		
3.				3.		
4.				4.		
5.				5.		
Sapling/Shrub Stratum				6.		
Total Plot Cover:10	5= 50%	2.5= 20%	Status/Raw % Cover	7.		
1.*Rubus discolor*			FACU 10*	8.		
2.				9.		
3.				10.		
4.				11.		
5.				12.		

Hydrophytic Vegetation Indicators:
☐ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):50
Other hydrophytic vegetation indicators:
Criteria Met? ☒**Yes** ☐ **No** **Comments:** BPJ. Blackberry not rooted in sample plot. Dominant cover is ash

SOILS

Map Unit Name: Amity silt loam
On Hydric Soil List? ☐ Yes ☒ No
Drainage Class: Somewhat poorly drained
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-18	10YR2/1			Si CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☒Gleyed or low chroma colors
☐Redox features within 10" (e.g., concentrations)

☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☒ **Yes** ☐ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation: Depth to Saturation:3" Depth to Free Water:8"

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☒**Yes** ☐ **No**

Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☒Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments: .

DETERMINATION

WETLAND? ☒**YES** ☐**NO** **Comments: Wetland area adjacent to the creek. Wetland characteristc are met.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/28/07	City: Newberg	File #:1985

Project/Contact: NewB./CS
Det. By: C. Steinkoenig
Plant Community: scrub-shrub/meadow
Plot #:13
Plot Location: northeast side if isolated wetland
Recent Weather: cold and wet/hail
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum			Herb Stratum		
Total Plot Cover:	= 50%	= 20%	Total Plot Cover:100	50 = 50%	20 = 20%
		Status/Raw % Cover			Status/Raw % Cover
1.			1.*Alopecurus pratensis*		FACW 60*
2.			2.*Agrostis stolonifera*		FAC 40*
3.			3.		
4.			4.		
5.			5.		
Sapling/Shrub Stratum			6.		
Total Plot Cover:10	5= 50%	2.5= 20%	7.		
1.*Rubus discolor*		FACU 5*	8.		
2.*Rosa nutkana*		FAC 5*	9.		
3.			10.		
4.			11.		
5.			12.		

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):75
Other hydrophytic vegetation indicators:
Criteria Met? ☒**Yes** ☐ **No** **Comments:** Exceeds fifty percent.

SOILS

Map Unit Name: Amity silt loam
Drainage Class: Somewhat poorly drained
On Hydric Soil List? ☐ Yes ☒ No
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-13	10YR3/2	None		Si CL
13-18	10YR3/2	10YR3/4 FFF		CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☐Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☐ **Yes** ☒ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation: Depth to Saturation:3" Depth to Free Water:6"

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits

Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:

Criteria Met? ☒**Yes** ☐ **No** **Comments: Very high water table.**

DETERMINATION

WETLAND? ☐**YES** ☒**NO** **Comments: No hydric soil, rise in topogrpahy.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/28/07	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: scrub-shrub/meadow
Plot Location: paired w/sample plot 13
Recent Weather: cold and wet/hail
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

Det. By: C. Steinkoenig
Plot #:14

VEGETATION

Tree Stratum				Herb Stratum			
Total Plot Cover:0	= 50%	= 20%		Total Plot Cover:100	50 = 50%	20 = 20%	
		Status/Raw % Cover					Status/Raw % Cover
1.				1.*Alopecurus pratensis*			FACW 60*
2.				2.*Agrostis stolonifera*			FAC 40*
3.				3.			
4.				4.			
5.				5.			
Sapling/Shrub Stratum				6.			
Total Plot Cover:10	5= 50%	2.5= 20%	Status/Raw % Cover	7.			
1.*Rubus discolor*			FACU 5*	8.			
2.*Rosa nutkana*			FAC 5*	9.			
3.				10.			
4.				11.			
5.				12.			

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):75
Other hydrophytic vegetation indicators:
Criteria Met? ☒**Yes** ☐ **No** **Comments:** Exceeds fifty percent.

SOILS

Map Unit Name: Amity silt loam
On Hydric Soil List? ☐ Yes ☒ No
Drainage Class: Somewhat poorly drained
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-12	10YR4/2	10YR4/6 CFD		Si CL
12-18	10YR4/2	10YR4/4 FFF		CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☒Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☒ **Yes** ☐ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation:
Depth to Saturation:to surface
Depth to Free Water:0.5"

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits

Secondary Hydrology Indicators (2 or more required):
☒Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:

Criteria Met? ☒**Yes** ☐ **No**
Comments: .

DETERMINATION

WETLAND? ☒**YES** ☐**NO** **Comments: All wetland criteria met.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/28/07	City: Newberg	File #:1985

Project/Contact: NewB./CS
Det. By: C. Steinkoenig
Plant Community: meadow
Plot #:15
Plot Location: Northwest end of wetland
Recent Weather: cold and wet/hail
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum				Herb Stratum		
Total Plot Cover:0	= 50%	= 20%		Total Plot Cover:100	50 = 50%	20 = 20%
		Status/Raw % Cover				Status/Raw % Cover
1.				1.*Alopecurus pratensis*		FACW 60*
2.				2.*Agrostis stolonifera*		FAC 40*
3.				3.		
4.				4.		
5.				5.		
Sapling/Shrub Stratum				6.		
Total Plot Cover:10	5= 50%	2.5= 20%	Status/Raw % Cover	7.		
1.*Rubus discolor*			FACU 5*	8.		
2.*Rosa nutkana*			FAC 5*	9.		
3.				10.		
4.				11.		
5.				12.		

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):75
Other hydrophytic vegetation indicators:
Criteria Met? ☒Yes ☐ No **Comments:** Exceeds fifty percent.

SOILS

Map Unit Name: Amity silt loam
Drainage Class: Somewhat poorly drained
On Hydric Soil List? ☐ Yes ☒ No
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-12	10YR4/2	10YR4/6 CFD		Si CL
12-18	10YR4/2	10YR4/4 FFF		CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☒Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☒ Yes ☐ No

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation: Depth to Saturation:to surface Depth to Free Water:0.5"

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits

Secondary Hydrology Indicators (2 or more required):
☒Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:

Criteria Met? ☒Yes ☐ No **Comments: .**

DETERMINATION

WETLAND? ☒YES ☐NO **Comments: All wetland criteria met.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/28/07	City: Newberg	File #:1985

Project/Contact: NewB./CS
Det. By: C. Steinkoenig
Plant Community: meadow/scrub-shrub
Plot #:16
Plot Location: Paired with sample plot 15
Recent Weather: cold and wet/hail
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum				Herb Stratum		
Total Plot Cover:15	7.5 = 50%	3 = 20%		Total Plot Cover:100	50 = 50%	20 = 20%
		Status/Raw % Cover				Status/Raw % Cover
1.*Quercus garryana*		UPL 5*		1. *Alopecurus pratensis*		FACW 40*
2.*Malus sp.*		NOL 5*		2.*Agrostis stolonifera*		FAC 40*
3.				3.*Dactylis glomerata*		FACU 15
4.				4.*Chrysanthemum l.*		NOL 5
5.				5.*Hypocheris radicata*		FACU trace
Sapling/Shrub Stratum				6.		
Total Plot Cover:15	7.5= 50%	3= 20%	Status/Raw % Cover	7.		
1.*Rubus discolor*			FACU 10*	8.		
2.*Crataegus sp.*			FAC/FACU+ 5*	9.		
3.				10.		
4.				11.		
5.				12.		

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):66
Other hydrophytic vegetation indicators:
Criteria Met? ☒Yes ☐ No **Comments:** Exceeds fifty percent. Sundominants are upland

SOILS

Map Unit Name: Amity silt loam
Drainage Class: Somewhat poorly drained
On Hydric Soil List? ☐ Yes ☒ No
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-12	10YR3/2	None		Si CL
12-18	10YR4/2	None		CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☐Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☐ Yes ☒ No

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation: Depth to Saturation:6" Depth to Free Water:9"

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☒Yes ☐ No

Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments: .

DETERMINATION

WETLAND? ☐YES ☒NO **Comments: Wetland soil criterion is not met.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/28/07	City: Newberg	File #:1985

Project/Contact: NewB./CS
Det. By: C. Steinkoenig
Plant Community: meadow/scrub-shrub
Plot #:17
Plot Location: west side of wetland
Recent Weather: cold/wet
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum				Herb Stratum			
Total Plot Cover:	= 50%	= 20%		Total Plot Cover:100	50 = 50%	20 = 20%	
		Status/Raw % Cover					Status/Raw % Cover
1.				1. *Alopecurus pratensis*			FACW 30*
2.				2. *Agrostis stolonifera*			FAC 55*
3.				3. *Juncus patens*			FACW 15
4.				4. *Vicia americana*			trace
5.				5.			
Sapling/Shrub Stratum				6.			
Total Plot Cover:15	7.5= 50%	3= 20%	Status/Raw % Cover	7.			
1. *Rosa nutkana*			FAC 15*	8.			
2.				9.			
3.				10.			
4.				11.			
5.				12.			

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):100
Other hydrophytic vegetation indicators:
Criteria Met? ☒**Yes** ☐ **No** **Comments:** Mets wetland vegetation criteria.

SOILS

Map Unit Name: Amity silt loam
Drainage Class: Somewhat poorly drained
On Hydric Soil List? ☐ Yes ☒ No
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-11	10YR3/2	10YR4/6 FFF		CL L
11-16	10YR4/1	10YR4/6 CFD		Si CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☒Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☒ **Yes** ☐ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation:
Depth to Saturation:1.5" Depth to Free Water:1.5"

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☒**Yes** ☐ **No**

Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments: .

DETERMINATION

WETLAND? ☒**YES** ☐**NO** **Comments: Wetland criteria met.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/28/07	City: Newberg	File #:1985

Project/Contact: NewB./CS
Det. By: C. Steinkoenig
Plant Community: meadow/scrub-shrub
Plot #:18
Plot Location: Paired w/17
Recent Weather: cold /wet
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum				Herb Stratum		
Total Plot Cover:0	= 50%	= 20%		Total Plot Cover:100	50 = 50%	20 = 20%
		Status/Raw % Cover				Status/Raw % Cover
1.				1. *Alopecurus pratensis*		FACW 30*
2.				2. *Agrostis stolonifera*		FAC 55*
3.				3. *Juncus patens*		FACW 15
4.				4. *Vicia americana*		trace
5.				5.		
Sapling/Shrub Stratum				6.		
Total Plot Cover:15	7.5= 50%	3= 20%	Status/Raw % Cover	7.		
1. *Rosa nutkana*			FAC 15*	8.		
2.				9.		
3.				10.		
4.				11.		
5.				12.		

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):100
Other hydrophytic vegetation indicators:
Criteria Met? ☒**Yes** ☐ **No** **Comments:** Mets wetland vegetation criteria.

SOILS

Map Unit Name: Amity silt loam
Drainage Class: Somewhat poorly drained
On Hydric Soil List? ☐ Yes ☒ No
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-13	10YR3/2	None		Sl L
13-18	10YR4/2	10YR4/6 CFD		Si CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☐Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☐ **Yes** ☒ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation:
Depth to Saturation:4" Depth to Free Water:4"

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☒**Yes** ☐ **No**

Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments: .

DETERMINATION

WETLAND? ☐**YES** ☒**NO** **Comments: Slight shift in topography, no hydric soil inidcators observed.**

.

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/28/07	City: Newberg	File #:1985

Project/Contact: NewB./CS
Det. By: C. Steinkoenig
Plant Community: meadow/scrub-shrub
Plot #:19
Plot Location: South end of wetland
Recent Weather: cold/wet
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum				Herb Stratum		
Total Plot Cover:0	= 50%	= 20%		Total Plot Cover:55	27.5 = 50%	11 = 20%
			Status/Raw % Cover			Status/Raw % Cover
1.				1. *Alopecurus pratensis*		FACW 20*
2.				2.*Agrostis stolonifera*		FAC 35*
3.				3.		
4.				4.		
5.				5.		
Sapling/Shrub Stratum				6.		
Total Plot Cover:60	30= 50%	6= 20%	Status/Raw % Cover	7.		
1.*Rubus discolor*			FACU 45*	8.		
2.*Quercus garryana*			UPL 5	9.		
3.*Crataegus sp.*			FAC/FACU 5	10.		
4.*Malus sp.*			NOL 5	11.		
5.				12.		

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant **Species** that are OBL, FACW, FAC (not FAC-):66
Other hydrophytic vegetation indicators:
Criteria Met? ☒**Yes** ☐ **No** **Comments:** Mets wetland vegetation criteria.

SOILS

Map Unit Name: Amity silt loam Drainage Class: Somewhat poorly drained
On Hydric Soil List? ☐ Yes ☒ No Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-13	10YR3/2	None		SI L
13-18	10YR4/2	10YR4/6 CFD		Si CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☐Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☐ **Yes** ☒ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available
Field Data
Depth of inundation: Depth to Saturation:4" Depth to Free Water:6"
Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☒**Yes** ☐ **No**
Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments: .

DETERMINATION

WETLAND? ☐**YES** ☒**NO** **Comments: Slight shift in topography, no hydric soil inidcators observed.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/28/07	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: meadow/scrub-shrub
Plot Location: paired w/19
Recent Weather: cold/~~wet~~
Det. By: C. Steinkoenig
Plot #:20

Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum				Herb Stratum			
Total Plot Cover:0	= 50%	= 20%		Total Plot Cover:100	50 = 50%	20 = 20%	
		Status/Raw % Cover					Status/Raw % Cover
1.				1. *Alopecurus pratensis*			FACW 20*
2.				2.*Agrostis stolonifera*			FAC 80*
3.				3.			
4.				4.			
5.				5.			
Sapling/Shrub Stratum				6.			
Total Plot Cover:15	7.5= 50%	3= 20%	Status/Raw % Cover	7.			
1.*Crataegus sp.*			FAC or FACU+ 15	8.			
2.				9.			
3.				10.			
4.				11.			
5.				12.			

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant **Species** that are OBL, FACW, FAC (not FAC-):100
Other hydrophytic vegetation indicators:
Criteria Met? ☒**Yes** ☐ **No** **Comments:** Did not include hawthorn.

SOILS

Map Unit Name: Amity silt loam
On Hydric Soil List? ☐ Yes ☒ No
Drainage Class: Somewhat poorly drained
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-12	10YR3/2	10YR3/6 MFD		Sl CL
12-18	10YR4/2	10YR4/6 CFD		Si CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☒Redox features within 10" (e.g., concentrations)

☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☒ **Yes** ☐ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation:
Depth to Saturation:to surface
Depth to Free Water:1"

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☒**Yes** ☐ **No**

Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments: Area has patches of standing water.

DETERMINATION

WETLAND? ☒**YES** ☐**NO** **Comments: Wetland criteria met.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/28/07	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: meadow/scrub-shrub
Plot Location: east side if isolated wetland
Recent Weather: cold
Det. By: C. Steinkoenig
Plot #:21

Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum				Herb Stratum		
Total Plot Cover:0	= 50%	= 20%		Total Plot Cover:55	27.5 = 50%	11 = 20%
		Status/Raw % Cover				Status/Raw % Cover
1.				1. *Alopecurus pratensis*		FACW 20*
2.				2.*Agrostis stolonifera*		FAC 60*
3.				3.*Festuca aruninacea*		FAC- 20*
4.				4.		
5.				5.		
Sapling/Shrub Stratum				6.		
Total Plot Cover:50	25= 50%	10= 20%	Status/Raw % Cover	7.		
1.*Rubus discolor*			FACU 50*	8.		
2.				9.		
3.				10.		
4.				11.		
5.				12.		

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):75
Other hydrophytic vegetation indicators:
Criteria Met? ☒**Yes** ☐ **No** **Comments:** Mets wetland vegetation criteria.

SOILS

Map Unit Name: Amity silt loam
On Hydric Soil List? ☐ Yes ☒ No
Drainage Class: Somewhat poorly drained
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-13	10YR3/2	None		Sl CL
13-18	10YR4/2	10YR4/6 FFD		Si CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☐Redox features within 10" (e.g., concentrations)

☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☐ **Yes** ☒ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation: Depth to Saturation: Depth to Free Water:

Primary Hydrology Indicators:
☐Inundated
☐Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☐**Yes** ☒ **No**

Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments: .

DETERMINATION

WETLAND? ☐**YES** ☒**NO** **Comments: No wetland hydrology or hydric soils.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/28/07	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: meadow/scrub-shrub
Plot Location: Paired w/ sample plot 21
Recent Weather: cold/wet
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

Det. By: C. Steinkoenig
Plot #:22

VEGETATION

Tree Stratum				Herb Stratum		
Total Plot Cover:0	= 50%	= 20%		Total Plot Cover:100	50 = 50%	20 = 20%
		Status/Raw % Cover				Status/Raw % Cover
1.				1. *Alopecurus pratensis*		FACW 50*
2.				2.*Agrostis stolonifera*		FAC 45*
3.				3.*Moss*		5
4.				4.		
5.				5.		
Sapling/Shrub Stratum				6.		
Total Plot Cover:5	2.5= 50%	1= 20%	Status/Raw % Cover	7.		
1.*Rubus discolor*			FACU 5 *	8.		
2.				9.		
3.				10.		
4.				11.		
5.				12.		

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):100
Other hydrophytic vegetation indicators:
Criteria Met? ☒**Yes** ☐ **No** **Comments:** Vegetation criterion is met.

SOILS

Map Unit Name: Amity silt loam
On Hydric Soil List? ☐ Yes ☒ No
Drainage Class: Somewhat poorly drained
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-12	10YR3/2	10YR3/6 CFF		Sl L
12-18	10YR4/2	10YR4/6 MFD		Si CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☒Redox features within 10" (e.g., concentrations)

☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☒ **Yes** ☐ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation:
Depth to Saturation:Saturated to the surface
Depth to Free Water:

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits

Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:

Criteria Met? ☒**Yes** ☐ **No**
Comments: .

DETERMINATION

WETLAND? ☒**YES** ☐**NO** **Comments: All wetland criteria is met.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/28/07	City: Newberg	File #:1985

Project/Contact: NewB./CS
Det. By: C. Steinkoenig
Plant Community: meadow/scrub-shrub
Plot #:23
Plot Location:
Recent Weather: cold
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum				Herb Stratum			
Total Plot Cover:0	= 50%	= 20%		Total Plot Cover:100	50 = 50%	20 = 20%	
		Status/Raw % Cover				Status/Raw % Cover	
1.				1. *Alopecurus pratensis*		FACW 20*	
2.				2. *Agrostis stolonifera*		FAC 50*	
3.				3. *Dactylis glomerata*		FACU 20*	
4.				4. *Chrysanthemum ;euc.*		NOL 5	
5.				5. *Aster sp.*		Unknown 5	
Sapling/Shrub Stratum				6.			
Total Plot Cover:35	17.5= 50%	7= 20%	Status/Raw % Cover	7.			
1. *Rubus discolor*			FACU- 10*	8.			
2. *Rubus laciniatus*			FACU+ trace	9.			
3. *Rhamnus purshiana*			FAC- 5	10.			
4. *Crataegus sp*			FAC/FACU 20*	11.			
5.				12.			

Hydrophytic Vegetation Indicators:
☐ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):50
Other hydrophytic vegetation indicators:
Criteria Met? ☐**Yes** ☒**No** **Comments:** Hawthron species not included.

SOILS

Map Unit Name: Amity silt loam
Drainage Class: Somewhat poorly drained
On Hydric Soil List? ☐ Yes ☒ No
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-13	10YR3/2	None		SI L
13-18	10YR4/2	10YR4/6 MFD		Si CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☐Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☐ **Yes** ☒ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available
Field Data
Depth of inundation: Depth to Saturation: Depth to Free Water:10"
Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☒**Yes** ☐ **No**
Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments: .

DETERMINATION

WETLAND? ☐**YES** ☒**NO** **Comments: Vegetation and soil did not met wetland criteria.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/28/07	City: Newberg	File #:1985

Project/Contact: NewB./CS
Det. By: C. Steinkoenig
Plant Community: meadow/scrub-shrub
Plot #:24
Plot Location: Paired w/ sample plot 23
Recent Weather: cold
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum				Herb Stratum			
Total Plot Cover:0	= 50%	= 20%		Total Plot Cover:100	50 = 50%	20 = 20%	
		Status/Raw % Cover				Status/Raw % Cover	
1.				1. *Alopecurus pratensis*		FACW 50*	
2.				2. *Agrostis stolonifera*		FAC 45*	
3.				3. *Moss*		5	
4.				4.			
5.				5.			
Sapling/Shrub Stratum				6.			
Total Plot Cover:30	15= 50%	6= 20%	Status/Raw % Cover	7.			
1. *Rosa nutkana*			FAC 30*	8.			
2.				9.			
3.				10.			
4.				11.			
5.				12.			

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):100
Other hydrophytic vegetation indicators:
Criteria Met? ☒Yes ☐ No **Comments:** Vegetation criterion is met.

SOILS

Map Unit Name: Amity silt loam Drainage Class: Somewhat poorly drained
On Hydric Soil List? ☐ Yes ☒ No Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-10	10YR3/2	10YR3/6 MMF		Sl L
10-16	10YR4/2	10YR4/6 MFD		Si CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☒Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☒ **Yes** ☐ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation: Depth to Saturation:Saturated to the surface Depth to Free Water:

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☒Yes ☐ No

Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments: .

DETERMINATION

WETLAND? ☒YES ☐NO **Comments: All wetland criteria is met.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/28/07	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: meadow
Plot Location: south of isolated wetland
Recent Weather: cold/wet
Det. By: C. Steinkoenig
Plot #:25

Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum				Herb Stratum			
Total Plot Cover:0	= 50%	= 20%		Total Plot Cover:100	50 = 50%	20 = 20%	
		Status/Raw % Cover					Status/Raw % Cover
1.				1. *Alopecurus pratensis*			FACW 20*
2.				2.*Agrostis stolonifera*			FAC 80*
3.				3.			
4.				4.			
5.				5.			
Sapling/Shrub Stratum				6.			
Total Plot Cover:	= 50%	= 20%	Status/Raw % Cover	7.			
1.				8.			
2.				9.			
3.				10.			
4.				11.			
5.				12.			

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):100
Other hydrophytic vegetation indicators:
Criteria Met? ☒**Yes** ☐ **No** **Comments:** Did not include hawthorn.

SOILS

Map Unit Name: Amity silt loam Drainage Class: Somewhat poorly drained
On Hydric Soil List? ☐ Yes ☒ No Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-12	10YR3/2	10YR3/6 MFD		Sl CL
12-18	10YR4/2	10YR4/6 CFD		Si CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☒Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☒ **Yes** ☐ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation: Depth to Saturation:to surface Depth to Free Water:1"

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits

Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:

Criteria Met? ☒**Yes** ☐ **No** **Comments: Area has patches of standing water.**

DETERMINATION

WETLAND? ☒**YES** ☐**NO** **Comments: Wetland criteria met.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/28/07	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: meadow
Plot Location: Paired w/sampleplot 25
Recent Weather: cold
Det. By: C. Steinkoenig
Plot #:26

Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum				Herb Stratum			
Total Plot Cover:0	= 50%	= 20%		Total Plot Cover:100	50 = 50%	20 = 20%	
		Status/Raw % Cover					Status/Raw % Cover
1.				1. *Alopecurus pratensis*			FACW 45*
2.				2. *Agrostis stolonifera*			FAC 55*
3.				3.			
4.				4.			
5.				5.			
Sapling/Shrub Stratum				6.			
Total Plot Cover:10	5= 50%	2.5= 20%	Status/Raw % Cover	7.			
1. *Rubus discolor*			FACU 5*	8.			
2. *Malus sp.*			NOL 5*	9.			
3.				10.			
4.				11.			
5.				12.			

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):66
Other hydrophytic vegetation indicators:
Criteria Met? ☒**Yes** ☐ **No** **Comments:** Mets wetland vegetation criteria.

SOILS

Map Unit Name: Amity silt loam
On Hydric Soil List? ☐ Yes ☒ No
Drainage Class: Somewhat poorly drained
Has Hydric Inclusions? ☒ Yes ☐ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-12	10YR3/2	None		Sl L
12-18	10YR4/2	10YR4/6 CFD		Si CL

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☐Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☐ **Yes** ☒ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation: Depth to Saturation:5" Depth to Free Water:5"

Primary Hydrology Indicators:
☐Inundated
☒Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits

Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:

Criteria Met? ☒**Yes** ☐ **No** **Comments:** .

DETERMINATION

WETLAND? ☐**YES** ☒**NO** **Comments: Soil did not met wetland criterion.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/28/07	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: meadow
Plot Location: Tax lot 1000 Vet Clinic
Recent Weather: cold
Det. By: C. Steinkoenig
Plot #:27
Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum				Herb Stratum		
Total Plot Cover:0	= 50%	= 20%		Total Plot Cover:100	50 = 50%	20 = 20%
		Status/Raw % Cover				Status/Raw % Cover
1.				1.*Poa pratenisis*		FAC 45*
2.				2.*Agrostis stolonifera*		FAC 50*
3.				3.*Rumex crispus*		FAC+ trace
4.				4.*Chrysanthemum Leuc.*		UPL trace
5.				5.*Trifolium repens*		FAC 15
Sapling/Shrub Stratum				6.		
Total Plot Cover:	= 50%	= 20%	Status/Raw % Cover	7.		
1.				8.		
2.				9.		
3.				10.		
4.				11.		
5.				12.		

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):100
Other hydrophytic vegetation indicators:
Criteria Met? ☒**Yes** ☐ **No** **Comments:** .

SOILS

Map Unit Name: Woodburn silt loam 0-7% Drainage Class: Moderately well drained
On Hydric Soil List? ☐ Yes ☒ No Has Hydric Inclusions? ☐ Yes ☒ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-16	10YR3/3	None		Si L

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☐Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☐ **Yes** ☒ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available
Field Data
Depth of inundation: Depth to Saturation: Depth to Free Water:
Primary Hydrology Indicators:
☐Inundated
☐Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☐**Yes** ☒ **No**
Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments:

DETERMINATION

WETLAND? ☐**YES** ☒**NO** **Comments: No hydric soil or wetland hydrology observed.**

DEPARTMENT OF STATE LANDS WETLAND DETERMINATION DATA FORM – Quick Method

County: Yamhill	Date: 2/28/07	City: Newberg	File #:1985

Project/Contact: NewB./CS
Plant Community: meadow
Plot Location: Tax lot 900
Recent Weather: cold
Det. By: C. Steinkoenig
Plot #:28

Do normal environmental conditions exist? Y☒ N☐ If no, explain:
Has Vegetation ☐ Soil☐ Hydrology ☐ been significantly disturbed?
Explain:

VEGETATION

Tree Stratum				Herb Stratum		
Total Plot Cover:0	= 50%	= 20%		Total Plot Cover:100	50 = 50%	20 = 20%
			Status/Raw % Cover			Status/Raw % Cover
1.				1.*Poa pratenisis*		FAC 45*
2.				2.*Agrostis stolonifera*		FAC 50*
3.				3.*Rumex crispus*		FAC+ trace
4.				4.*Chrysanthemum Leuc.*		UPL trace
5.				5.*Trifolium repens*		FAC 15
Sapling/Shrub Stratum				6.		
Total Plot Cover:	= 50%	= 20%	Status/Raw % Cover	7.		
1.				8.		
2.				9.		
3.				10.		
4.				11.		
5.				12.		

Hydrophytic Vegetation Indicators:
☒ > 50% of dominants are OBL, FACW or FAC Percent of Dominant Species that are OBL, FACW, FAC (not FAC-):100
Other hydrophytic vegetation indicators:
Criteria Met? ☒**Yes** ☐ **No** **Comments:** .

SOILS

Map Unit Name: Woodburn silt loam 0-7% Drainage Class: Moderately well drained
On Hydric Soil List? ☐ Yes ☒ No Has Hydric Inclusions? ☐ Yes ☒ No

Depth Range of Horizon	Matrix Color	Redox Concentrations	Redox Depletions	Texture
0-17	10YR3/3	None		Sl L

Hydric Soil Indicators:
☐Histosol
☐Histic Epipedon
☐Sulfidic Odor
☐Reducing Conditions (tests positive)
☐Gleyed or low chroma colors
☐Redox features within 10" (e.g., concentrations)
☐Concretions/Nodules (w/in 3", > 2mm)
☐High organic content in surface (in Sandy Soils)
☐Organic streaking (in Sandy Soils)
☐Organic pan (in Sandy Soils)
☐ Listed on Hydric Soils List (and soil profile matches)
☐ Meets hydric soil criteria 3 or 4 (ponded or flooded for long duration)
☐ Supplemental indicator (e.g., NRCS field indicator)

Criteria Met? ☐ **Yes** ☒ **No**

HYDROLOGY

Recorded Data:
☐Recorded Data Available ☐Aerial Photos ☐Stream Gauge ☐ Other ☒ No Recorded Data Available

Field Data
Depth of inundation: Depth to Saturation: Depth to Free Water:

Primary Hydrology Indicators:
☐Inundated
☐Saturated in upper 12 inches
☐Water Marks
☐Drift Lines
☐Sediment Deposits
Criteria Met? ☐**Yes** ☒ **No**

Secondary Hydrology Indicators (2 or more required):
☐Oxidized Root Channels (upper 12")
☐Water-stained leaves
☐Local Soil Survey Data
☐FAC – Neutral Test
☐Other:
Comments:

DETERMINATION

WETLAND? ☐**YES** ☒**NO** **Comments: No hydric soil or wetland hydrology observed.**

Appendices

Boiler Plate Information
References

Boiler Plate Information

Wetland Definition and Authority

The U.S. Army Corps of Engineers (COE) regulates the discharge of dredged or fill materials into waters and adjacent wetlands of the United States under authority of Section 404 of the Clean Water Act (*Federal Register,* 1986). For purposes of the Section 404 permitting program, the COE and other federal agencies define wetlands as follows (*Federal Register,* 1980, 1982):

> "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

In Oregon, the Department of State Lands (DSL) regulates removal/fill permitting in wetlands under ORS 196.800 to 196.990, and OAR 141-85-005 to OAR 141-85-090, and uses the same definition.

Regulatory Context

In 1987, the COE published a manual (Corps of Engineers Wetlands Delineation Manual or 1987 manual), which describes methods for determining the extent of jurisdictional wetlands under Section 404 of the Clean Water Act (Environmental Laboratory, 1987). *The Federal Manual for Identifying and Delineating Jurisdictional Wetlands* was published two years later as a collaborative effort by the COE, U.S. Fish and Wildlife Service (USFWS), U.S. Environmental Protection Agency (EPA), and U.S. Soil Conservation Service (SCS), revised the 1987 manual (Federal Interagency Committee for Wetland Delineation, or 1989 manual).

Both the COE and DSL used the 1989 manual until 1992 when the 1992 Energy and Water Development Appropriation Act went into effect. The Act limited the COE (federal permitting agency) to using the 1987 manual for determining the extent of wetlands under federal jurisdiction. Oregon continued to use the 1989 manual until March 23, 1993, when the Director of DSL signed a policy statement requiring the agency to use the 1987 manual. The policy statement was the result of the EPA agreement to use the 1987 manual.

Vegetation

Plants growing in wetlands must be specifically adapted for life under saturated or anaerobic conditions and are commonly referred to as hydrophytic vegetation. The U.S.F.W.S. in cooperation with the National and Regional Interagency Review Panels publishes regional lists estimating the probability of plant species' occurrence in wetlands (e.g., Fish and Wildlife Service, 1988). Each species is given an *indicator status*, which represents the likelihood that it will be found in a wetland. Categories defined in Table 1

are obligate (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), or upland (UPL). Plants with an indicator status of OBL, FACW, or FAC are considered adapted for life in saturated or anaerobic soil conditions.

The percent coverage of each plant species within the herb, shrub, and tree layers was estimated at each sample plot. Shrubs within a five-foot radius and trees within a 30-foot radius of the center of each plot were identified and recorded. Within the plot, all species were recorded in descending order of coverage, and dominant species were determined. The presence of wetland vegetation was determined according to the indicator status of the dominant species within each vegetative stratum. According to the manual, a sample plot is considered to have wetland vegetation if more than 50% of the number of dominant species present has an indicator status of OBL, FACW, and/or FAC. By 1987 standards, dominant species are chosen by selecting the three most dominant species from each of the four strata (herbs, saplings/shrubs, woody vines, trees). If only one or two strata are represented, then the five most dominant species from each stratum are selected.

TABLE 1: DEFINITIONS OF INDICATOR STATUS

Indicator Symbol	Definition
OBL	Obligate. Species that occur in wetlands under natural conditions with an estimated probability of greater than 99%
FACW	Facultative wetland. Species that usually occur in wetlands (estimated probability 67 to 99%), but occasionally are found in non-wetlands.
FAC	Facultative. Species that are equally likely to occur in wetlands or non-wetlands (estimated probability 34 to 66%).
FACU	Facultative upland. Species that usually occur in non-wetlands (estimated probability 67 to 99%), but occasionally are found in wetlands.
UPL	Upland. Species that occur in non-wetlands under natural conditions with an estimated probability of greater than 99%
NI	No indicator. Species for which insufficient information was available to determine an indicator status.

Sources: Federal Interagency Committee for Wetland Delineation, 1989. Environmental Laboratory, 1987. Reed, 1988.

Soils

Hydric soils, defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile, are one characteristic of wetlands (USDA Soil Conservation Service, 1987). A list of hydric soils of the United States was compiled by the Soil Conservation Service (SCS), in cooperation with the National Technical Committee for Hydric Soils (NTCHS). All soils are mapped in county soil surveys. However, the mapped boundaries of SCS soil types are not at a fine enough resolution for delineating boundaries of jurisdictional wetlands. Errors of omission can occur on SCS maps. Inclusions of upland (non-wetland) soil may exist in hydric soils and uplands may have inclusions of hydric soil. Therefore, field examination of soils is important for accurately delineating the extent of hydric soils. Hydric soils exhibit certain characteristics that can be observed in the field. Field indicators include: high organic content, accumulation of sulfidic material (rotten egg odor), greenish or bluish gray color (gley formation), iron and manganese concretions, spots or blotches of color (mottling), and/or dark soil colors (low soil chroma).

A shovel, excavating down to a depth of at least 16 inches, was used to sample soil along the wetland boundary. Soil samples were checked for presence of sulfide gases; organic content was estimated visually and texturally; and soil colors were determined by using a Munsell soil color chart (Kollmorgen 1975). The Munsell soil color chart provides the standard for three attributes of color: hue, value, and chroma.

According to the 1987 manual, hydric soils are required to be inundated or saturated for seven or more consecutive days during the growing season. Soil color is examined in the horizon immediately below the A-horizon, or within 10 inches of the surface, whichever is shallower.

Hydrology

Wetlands, by their very name, must have water. Jurisdictional wetlands are characterized as having permanent or periodic inundation, or soil saturation for five percent or more of the growing season. Saturation occurs when the capillary fringe is within the major portion of the root zone (usually within 12 inches of the surface). Areas meeting one of these criteria are considered to have wetland hydrology.

Ponding or soil saturation for five percent or more of the growing season during the growing season is direct evidence of wetland hydrology. Bare soil and dried algae are evidence that a site was previously inundated. Oxidized rhizospheres along live root channels also indicate soil saturation for five percent or more of the growing season. At each sample plot, wetland hydrology was assumed if positive indicators were present.

Wetland Determination

Presence or absence of wetlands was based on soil, vegetation, and hydrology data collected at sample plots. Following procedures outlined in the 1987 manual, sample plots with homogeneous vegetation were determined to be wetlands if wetland characteristics were present or judged to be normally present (barring human or unusual natural events) for all three parameters.

Difficulties in wetland determination can arise because of disturbance or in problem areas. Both human (e.g., clearing vegetation, agriculture, filling, and excavation) and natural (e.g., mudslides, fire, and beaver dams) events have potential for obliterating field indicators of the three wetland parameters. In disturbed sites, both field and offsite data may be used to determine the presence of a wetland. Offsite information such as historical records, aerial photographs, previous soil, and vegetation surveys may indicate the presence of a jurisdictional wetland.

Some sites are difficult to evaluate because field indicators may not be present throughout the year. Field indicators may vary because of changing environmental conditions that occur seasonally and not necessarily the result of human or natural disturbance.

According to the 1987 manual, all three parameters (hydric soils, hydrophytic vegetation, and wetland hydrology) must be present for an area to be determined as wetland. Drumlins, seasonal wetlands, prairie potholes, and vegetated flats exemplify areas that are difficult to evaluate.

REFERENCES

Environmental Laboratory, 1987. *Corps of Engineers Wetlands Delineation Manual,* Technical Report Y-87-1, U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS.

Federal Interagency Committee for Wetland Delineation, 1989. *Federal Manual for Identifying and Delineating Jurisdictional Wetlands,* U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and U.S.D.A. Soil Conservation Service, Washington, D.C. Cooperative technical publication. 138 pp.

Federal Register, 1980. 40 CFR Part 230: Section 404(b)(1), *Guidelines for Specification of Disposal Sites of Dredged or Fill Material,* Vol. 45, No. 249, pp. 85352-85353, U.S. Govt. Printing Office, Washington, D.C.

Federal Register, 1982. Title 33, *Navigation and Navigable Waters; Chapter II, Regulatory Programs of the Corps of Engineers.* Vol. 47, No. 138, p. 31810, U.S. Govt. Printing Office, Washington, D.C.

Federal Register, 1986. 33 CFR Parts 320 through 330, *Regulatory Programs of the Corps of Engineers; Final Rule,* Vol. 51, No. 219 pp. 41206-41259, U.S. Govt. Printing Office, Washington, D.C.

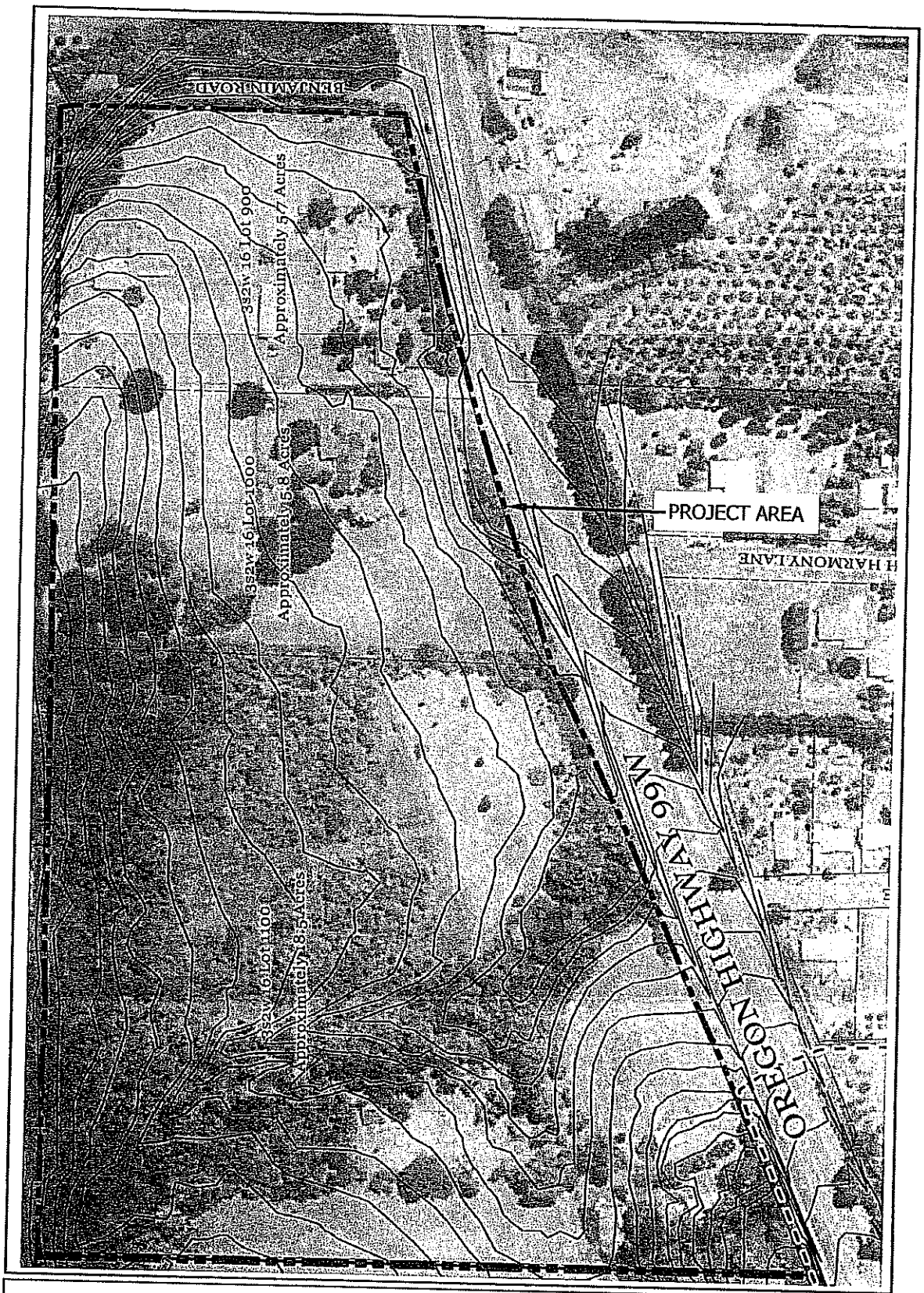
Kollmorgen Corporation, 1975. *Munsell Soil Color Charts.* Macbeth Division of Kollmorgen Corporation, Baltimore, MD.

Reed, P. B., Jr., 1988. *National List of Plant Species that Occur in Wetlands: Northwest (Region 9)*, U.S. Fish and Wildlife Service, Biological Report 88 (26.9) 89 pp.

Reed, P. B., Jr., et al., 1993. *Supplement to List of Plant Species That Occur in Wetlands: Northwest (Region 9)*, U.S. Fish and Wildlife Service. Washington D.C. 10p.

U.S. Department of Agriculture, Soil Conservation Service 1991. *Hydric Soils of the United States in Cooperation with the National Technical Committee for Hydric Soils*. Misc. Pub. No. 1491.

U.S. Department of Agriculture, Soil Conservation Service, 1982. *Soil Survey of Yamhill County, Oregon.* U.S.D.A. Soil Conservation Service, Washington, D.C., 138 pp.



AERIAL
S&A #1985

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Keith Leonard

From: Kleinmanjl <kleinmanjl@aol.com>
Sent: Thursday, August 02, 2018 9:41 AM
To: Keith Leonard
Subject: Crestview Crossing, File No. PUD18-0001/CUP18-0004
Attachments: Six-Party Agreement (signed) 4-10-2006.pdf; Oxberg Source Water Assessment - April 2004_1of2.pdf; Oxberg Source Water Assessment-Appendices - April 2004_2of2.pdf

Hi Keith,

In order to avoid potential problems with oversized transmissions later, I am submitting the following exhibits for the above case file now. I will send one more large document separately, and will email my memorandum to the Planning Commission later this morning.

1. Six-Party Agreement dated April 10, 2006.
2. Source Water Assessment Report by the State of Oregon for the Oxberg Water System, April 2004.
3. Appendices to the above report.

Please confirm receipt of this message and the attachments. Thanks very much.

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M E M O R A N D U M

To: **Newberg Planning Commission**

From: **Jeffrey L. Kleinman**

Date: **August 2, 2018**

Re: **Crestview Crossing, File No. PUD18-0001/CUP18-0004**

I. INTRODUCTION

I represent Oxberg Lake Homeowners Association (the "HOA"). The HOA objects to the above application on several grounds, as set out below. For each of the specified reasons, the applicant has failed to meet the requisite burden of proof under the city's approval criteria.

II. THE SIX-PARTY AGREEMENT

On April 10, 2006, the City of Newberg, Yamhill County, Oxberg Lake Homeowners Association, Ken and Joan Austin, JT Smith Companies, and MeadowWood Development, LLC entered into an agreement (the "Agreement"), regarding the Northerly Arterial designated in the city's Transportation System Plan. A

copy of the Agreement is attached for reference. Initially, the Northern Arterial was to be Crestview Drive connecting to Highway 99W. Under the Agreement, the city agreed to amend its TSP to designate Springbrook Road as its Northern Arterial and to designate Crestview Drive as a Major Collector, instead. The general design and alignment of that road is depicted in Exhibit A to the Agreement. It was agreed that the Crestview Drive Major Collector will be posted as "no through trucks" and designed to encourage a 25 mph speed limit. To provide traffic calming for this purpose, it was agreed that a roundabout is to be placed on Crestview Drive directly south of its intersection with Robin Court, as shown on page two of Exhibit A.

The Agreement also includes as Exhibit B an engineering study completed by JRH Transportation Engineering, dated March 27, 2006. This study analyzes and supports the designation of Springbrook as the Northern Arterial and the conversion of Crestview to a Major Collector.

The Agreement is not time-limited. It is not dependent upon any particular development proposal. It remains binding upon all of the parties and their successors and assigns. Nonetheless, the within application appears to move the location of the designated roundabout on Crestview significantly further to the south. There, it may benefit traffic flow for the development itself but will not have the traffic-calming effects within Oxberg Lake for which it was duly negotiated and agreed by the parties.

Thus, approval of this development in its approved form would violate the Agreement and is simply impermissible. Moreover, Oxberg Lake Homeowners Association hereby gives notice that it intends to enforce its rights under the Agreement

moderate overall water system sensitivity.

The report concludes that, "[u]nder a 'worst case' scenario, where it is assumed that nothing is being done to protect groundwater quality at the identified potential contaminant sources, the assessment results indicate that the water system would be highly susceptible to the identified moderate-risk potential contaminant sources." *Id.* at 12.

In 2008, the Oregon Department of State Lands ("DSL") reviewed a wetland delineation report prepared for an earlier development proposal on the site. A copy of this report has also been provided for reference. The report identifies two unnamed tributaries of Spring Brook Creek on the property and .32 acre of PEM wetland, 1.638 acre of PFO wetland, and .29 acre of PEM/PSS wetland. The larger perennial tributary of Spring Brook Creek enters the northwest corner of Tax Lot 1100 and exits on the south side.

In addition to failing to address impacts upon the Water System, the applicant's materials fail to properly take the above wetlands into account. More fundamentally, though, we understand that given the completely different nature of the development now proposed for the site, DSL will require an entirely new delineation for its review and approval or rejection. Given the prominence of wetlands on the property, we cannot now know what an approvable delineation would look like *vis-a-vis* the current proposal, and whether the development as proposed is feasible in the first place. LUBA has held:

"[A]s the initial feasibility of the subdivision must be shown at the preliminary plat stage, the initial feasibility of the PUD project must be shown at the preliminary development plan stage. *See Van Volkinburg v Marion County*, 2 Or LUBA 112 (1980), and *Atwood v Portland*, 2 Or LUBA 397 (1981)."

Meyer v. City of Portland, 7 Or LUBA 184, 196, *aff'd* 67 Or App 274, 678 P2d 741 (1983), *rev den*, 297 Or 82, 679 P2d 1367 (1984).

On the face of the record before this Commission, no present finding of "initial feasibility" is possible. As a result, this application must be denied.

IV. CONDITIONAL USE CRITERIA

Newberg Development Code (NDC) 15.225.060 sets out the conditional use approval standards which apply to this application:

"15.225.060 General Conditional Use Permit Criteria -Type III.

A conditional use permit may be granted through a Type III procedure only if the proposal conforms to all the following criteria:

A. The location, size, design and operating characteristics of the proposed development are such that it can be made reasonably compatible with and have minimal impact on the livability or appropriate development of abutting properties and the surrounding neighborhood, with consideration to be given to harmony in scale, bulk, coverage and density; to the availability of public facilities and utilities; to the generation of traffic and the capacity of surrounding streets, and to any other relevant impact of the development.

B. The location, design, and site planning of the proposed development will provide a convenient and functional living, working, shopping or civic environment, and will be as attractive as the nature of the use and its location and setting warrants.

C. The proposed development will be consistent with this code."

For the reasons set out above with respect to (1) the elimination of and failure to provide the agreed traffic-calming roundabout on Crestview Drive and (2) failure to show

how or whether the Water System will be protected and remain operable, the applicant has not met its burden of proving compliance with NDC 15.225.060.A. It has not demonstrated that its proposal "can be made reasonably compatible with and have minimal impact on the livability or appropriate development of abutting properties and the surrounding neighborhood, with consideration to be given to * * * the availability of public facilities and utilities; to the generation of traffic and the capacity of surrounding streets, and to any other relevant impact of the development."

V. PLANNED UNIT DEVELOPMENT CRITERIA

The applicant has failed to demonstrate compliance with the city's Planned Unit Development Criteria, set out in NDC Chapter 15.240. Section 15.240.030.C requires in material part that:

> "1. The proposed development is consistent with standards, plans, policies and ordinances adopted by the city; and
>
> 2. The proposed development's general design and character, including but not limited to anticipated building locations, bulk and height, location and distribution of recreation space, parking, roads, access and other uses, will be reasonably compatible with appropriate development of abutting properties and the surrounding neighborhood * * *"

For the reasons explained above, this application does not comply with the city's standards and ordinances. Beyond that, the applicant has failed to demonstrate compliance with the comprehensive plan goals and policies relevant to the development of so much commercially zoned land with residential uses instead.

Further, as we have set out, the proposed distribution of roads will be incompatible with development of the abutting properties and the Oxberg Lake neighborhood.

VI. STREET STANDARDS

NDC 15.505.030.R. governs "Vehicular Access Standards" and provides in material part:

> "9. ODOT or Yamhill County Right-of-Way. Where a property abuts an ODOT or Yamhill County right-of-way, the applicant for any development project shall obtain an access permit from ODOT or Yamhill County."

The applicant's proposal would provide ingress and egress via the existing portion of Crestview Drive which now abuts the site on the north. Based upon all information available to us, that portion of Crestview remains Yamhill County right-of-way. The applicant has not obtained an access permit from the county or demonstrated the feasibility of obtaining one. This, too, goes to the question of whether the initial feasibility of the proposal has been proven. One or more preexisting agreements make it unlikely that such a permit could be obtained. For this reason alone, the application must be denied.

VII. CONCLUSION

For all of the reasons set out above, the applicant has not met its burden of proof to show compliance with the relevant city approval standards herein. Accordingly, this application must be denied.

Dated: August 2, 2018.

Respectfully submitted,

Jeffrey L. Kleinman, OSB #743726
Attorney for Oxberg Lake Homeowners Association

SOURCE WATER ASSESSMENT REPORT

Summary of Analysis

Oxberg Water System
Newberg, Oregon
Yamhill County
PWS #4105308

April, 2004

Prepared By

Oregon Department of Human Services
Health Services
Drinking Water Program

And

Oregon Department of Environmental Quality
Water Quality Division
Drinking Water Protection

DHS
Oregon Department of Human Services

DEQ
State of Oregon Department of Environmental Quality

Available in Alternate Formats by contacting the DHS DWP at (541) 726-2587

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Oxberg Water System
Source Water Assessment Report
Summary of Analysis

1. Introduction

The Source Water Assessment Program, mandated by the 1996 Amendments to the Safe Drinking Water Act, requires that states provide the information needed by public water systems to develop drinking water protection plans if they choose. That information includes the identification of the area most critical to maintaining safe drinking water, i.e., the Drinking Water Protection Area, an inventory of potential sources of contamination within the Drinking Water Protection Area, and an assessment of the relative threat that these potential sources pose to the water system.

The intent of this report is to present our conclusions regarding the source water assessment analysis for your water system. It is our hope that this information will be used as a basis for reducing the risk of contamination to your water source through the development of a voluntary Drinking Water Protection Plan (DWPP). Should you decided to proceed with the development of a DWPP, this document can serve as the foundation for the plan. If, however, a more in depth analysis of the local hydrogeology, water system susceptibility, and/or the water system specific assumptions is needed to help promote the development of a DWPP, a more comprehensive assessment analysis can be made available to you by contacting either the DHS Project Manager or the DHS Drinking Water Program Groundwater Coordinator.

The methodology that the Source Water Assessment results are based on is included in Appendix I, "Source Water Assessment Methodology". Appendix I includes a discussion of the source water assessment project; groundwater basics; and the processes involved with conducting the delineation, sensitivity analysis, potential contaminant source inventory, and overall water system susceptibility. Therefore, it is our intention that the assessment results, identified in this portion of the report, be used in conjunction with the methodology and rational presented in Appendix I. For instance, if questions arise regarding our conclusions with respect to a specific element of the assessment (i.e. type of delineation used, aquifer sensitivity, well construction sensitivity, etc...), the methodology that lead to our conclusions can be reviewed in Appendix I for further clarification.

We believe public awareness is a powerful tool for protecting drinking water and that the information provided in this report will help you increase local awareness regarding land use activities and local drinking water quality. We have also included a groundwater fact sheet in Appendix E and a list of Oregon specific drinking water protection information and resources in Appendix H.

2. Water System Background

Oxberg Water System is located in Yamhill County and serves approximately 80 people through 27 connections. Drinking water is supplied by one well, commonly referred to as Well #2. According to DHS Drinking Water Program records, this well serves as the only permanent water source.

2.1 Location of the Drinking Water Source(s)

We have located your drinking water source(s) using a Trimble GeoExplorer II Global Positioning System (GPS) unit. The data has been differentially corrected to remove some of the common positioning errors. The location of the source(s), with the corresponding Drinking Water Protection Area, has been placed in a Geographic Information System (GIS) layer and projected onto a USGS 7.5 minute topographic map that is included within this report. In order to be consistent with the topographic map, the projection uses the NAD1927 datum. The latitude and longitude values given on the map and below, however, reflect a projection in the more commonly used WGS1984 datum.

Data collection specifics include:

- 150 individual measurements,
- linked to a minimum of four satellites,
- a PDOP of less than 6 (pertains to precision of measurement), and
- a signal to noise ratio of greater than 5.

The raw data was subjected to differential correction using the PATHFINDER software. The location data for your drinking water source(s) using the WGS84 datum is as follows:

Source	Latitude	Longitude
Well #2 - Source AA	45° 18' 53.679" N	122° 56' 00.350" W

2.2 Source Construction

The well was constructed in November and December 1986. A 12-inch diameter hole was drilled to a depth of 30 feet, with an eight-inch diameter hole continuing to 200 feet. Eight-inch diameter casing was installed from one foot above the surface to a depth of 162 feet and six-inch diameter liner was installed from 160 to 200 feet. Cement was placed between the casing and the outer wall of the hole from the surface to a depth of 30 feet to serve as a casing seal. This casing seal is considered adequate. In a sanitary survey conducted on 8/4/98, DHS Drinking Water Program staff determined that there are no visible well construction deficiencies pertaining to drinking water protection. A copy of the well report for this well is included in Appendix D.

2.3 Nature and Characteristics of the Aquifer

The aquifer supplying the drinking water to the Oxberg Water System well consists of layered basalt and sedimentary interbeds of the Columbia River Basalt Group. The well log identifies the first water-bearing zone at a depth of 50 feet.

Based on the well log and regional geologic maps, the aquifer supplying the well consists of interflow zones of layered volcanic rocks associated with the Columbia River Basalt Group. According to the well log, water was found from 50 to 200 feet and the static water level (water level when well is not being pumped) was reported as 29 feet below the surface. The aquifer is directly overlain by 48 feet of basalt and silt. Since the water level in the well has risen approximately 21 feet above the first water-bearing zone water in the aquifer is assumed to be under pressure. **Therefore, we consider the aquifer supplying the well to be a confined layered volcanic aquifer with a minimum depth to the first water-bearing zone of 50 feet.** Thickness of the water-bearing zone exploited in the aquifer is estimated to be 15 feet.

3. Delineation Results

The purpose of the Drinking Water Protection Area (DWPA) delineation is to identify the area at the surface which overlies the critical portion of the aquifer that's supplying groundwater to the water system's well(s) and/or spring(s). Therefore, DHS Drinking Water Program staff have collected and reviewed data for the purpose of delineating the DWPA for your water system. The area included in the DWPA is designed to approximate the next 10 or 15 years of groundwater supply for the water system, depending on delineation method, and is shown in Figure 1 (Appendix B). We have enhanced the usefulness of the DWPA map by identifying additional five-year, two-year, and one-year "Time-Of-Travel Zones" inside the DWPA.

The scope of work for this portion of the assessment included interviewing the water system operator, researching written reports, reviewing well logs, and establishing a base map of the delineated area. Based on the service population and the fact that only one well supplies the water system, the Calculated Fixed Radius Method was used to delineate the DWPA (See Appendix I for explanation of delineation process). The resulting DWPA for the Oxberg Water System Well is shown in Appendix B, Figure 1. Specific information regarding the parameters used in the delineation process including; the delineation method, estimated pump rate, and aquifer characteristics can be found in Appendix E.

4. Sensitivity Analysis Results

After the Drinking Water Protection Area (DWPA) has been identified, aquifer susceptibility to potential contaminant sources inside the DWPA can be evaluated. Aquifer susceptibility is dependent on two factors, the natural environment's characteristics that permit migration of a contaminant into the aquifer (i.e., aquifer sensitivity) and the presence, distribution, and nature of the potential contaminant sources within the DWPA. It should be understood that the public water system's drinking water source cannot be susceptible to contamination, even if potential contaminant sources are present, unless the aquifer or the constructed source water intake are sensitive to contamination. Therefore, the intent of the sensitivity analysis is to identify those areas within the DWPA where the aquifer is most sensitive to contamination. The analysis is based on data collected or generated during the DWPA delineation process and is designed to meet the needs of other existing or developing programs such as Monitoring Waivers and the Groundwater Rule.

The results of the sensitivity analysis are provided in the tables that follow. Information and sensitivity ratings regarding the aquifer and water quality are provided in Table 4.1 while information and sensitivity ratings regarding the well and its construction is provided in Table 4.2. Clarification of the ratings are provided as comments where appropriate.

Based on this analysis, both the well and the aquifer <u>are</u> <u>not</u> considered highly sensitive contamination. However, the moderate Infiltration Potential score for the aquifer, the close proximity of surface water to the well, and the presence of highly permeable soils within the DWPA contribute to a moderate overall water systems sensitivity. Sensitivity Analysis Tables follow, beginning on the next page.

Table 4.1 Aquifer Sensitivity Analysis.				
	Sensitivity			
Parameter	**H**	**M**	**L**	**Comments**
Depth to first water-bearing zone below casing seal.				50 feet.
Aquifer characteristics and hydraulic nature.			✔	Confined layered volcanic aquifer.
Overburden thickness and characteristics.			✔	~50 feet of silt and basalt
Highest soil sensitivity in Protection Area.	✔			Contributes to moderate aquifer sensitivity.
Traverse potential score (10 = High).			✔	Score = 1
Infiltration potential score (10 = High).		✔		Score = 4
Organic chemical detections.			✔	None detected.
Inorganic chemical detections.			✔	Copper, and barium <50% MCL; see paragraph following Table 4.1
Source related coliform detections.			✔	None detected.
Nitrate concentrations (Drinking Water Standard = 10 mg/L).			✔	Up to 0.10 mg/L; considered to come from natural sources.
Fractured bedrock near surface in Protection Area.			✔	None present.
Other wells score (Significant Risk = 400).			✔	Score = 83
Surface water within 500 feet of wellhead.		✔		Spring Brook ~315 feet from well; Oxberg Lake ~280 feet from well.
Other: Sodium Concentration > 20 mg/L		✔		Sodium concentrations have been as great as 63 mg/L (7/9/1998); see paragraphs following Table 4.1.

The presence of barium (see "Inorganic Chemical Detections" in Table 4.1) at a concentration less than 50% of the MCL is likely due to natural sources; however, be aware that the possibility of unnatural contributions exists. The detected copper is likely derived from pipes and/or plumbing fixtures.

Sodium was detected up to 63 mg/L (see "Sodium detection >20 mg/L" in the above Table). **Water systems having greater than 20 mg/L of sodium in their drinking water source are encouraged to inform their customers of the presence of this constituent so that those individuals on a physician-prescribed, low-sodium diet can inform their doctors of this source of sodium in their diet.**

Table 4.2. Well Construction Sensitivity Analysis.

	Sensitivity			
Parameter	**H**	**M**	**L**	**Comments**
Casing depth.				162 feet
Casing seal depth.				30 feet
Well construction/setback deficiencies from site visit.			✔	None observed.
Well report information missing or unknown.			✔	No
Casing seal information missing or unknown.			✔	No
Casing seal material.			✔	Cement
Well open to multiple aquifers (commingling suspected).			✔	No
Casing seal construction.			✔	Adequate
Age of well.			✔	Constructed in 1986.

5. Potential Contaminant Source Inventory

An inventory of potential contamination sources was performed within the Drinking Water Protection Area and the results are shown in Figure 2, Appendix B. The primary intent of the inventory was to identify and locate significant potential contaminant sources of concern. This inventory was conducted by reviewing applicable state and federal regulatory databases and land use maps, interviewing persons knowledgeable of the area, and conducting a windshield survey by driving through the drinking water protection area to field locate and verify as many of the potential contaminant source activities as possible. It is important to remember the sites and areas identified are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.

5.1 Potential Contaminant Sources within the Two-Year Time-of-Travel Zone for the Well

The delineated two-year time of travel zone is primarily dominated by residential land use. Two potential contaminant source locations (Reference Numbers one through two on Figure 2 and Appendix C, Table 2) were identified in the two-year time-of-travel zone and include rural homes and a fire protection well. The potential contaminant sources within the two-year time-of-travel all pose a relatively higher to moderate risk to the drinking water supply. The septic systems associated with the rural homes may have a risk of transmitting micro-organisms to the groundwater.

5.2 Potential Contaminant Sources within the Five-Year and Fifteen-Year Time-of-Travel Zones for the Well

The drinking water protection area within the five-year and fifteen-year time-of-travel zones is primarily occupied by residential and agricultural land uses. One potential contaminant source location was identified in this area which is detailed on Table 2 in Appendix C and includes irrigated crops. The potential contaminant sources within the five-year and fifteen-year time-of-travel all pose relatively higher to moderate risk to the drinking water supply. Area-wide potential sources such as the residential areas extend from the two-year time-of-travel zone into the fifteen-year time-of-travel zone. These land uses occur throughout the drinking water protection area and are shown on Figure 2 in the location nearest to the well.

6. Susceptibility of the Drinking Water Source

In general, Potential Contaminant Sources (PCSs) within the shorter time-of-travel zones pose a greater risk than those in the longer time-of-travel zones. Also of concern is the location and distribution of these sources with respect to high and moderately sensitive areas. Overlaying the PCS location map (Figure 2, Appendix B) on top of the sensitivity map for the water system provides a tool to determine the susceptibility of the community's drinking water supply to contamination from each PCS (see Figure 3, Appendix B).

6.1 Aquifer Susceptibility to Potential Contaminant Sources Inside the Drinking Water Protection Area.

Table 6.1, indicates the relationship between potential contaminant source risk, aquifer sensitivity, and estimated contaminant arrival time at the well, wellfield, and/or spring. The community can use the PCS location numbers on the inventory map in conjunction with the displayed aquifer sensitivity and relative risk rankings for each PCS from Table 2 (Appendix C) to identify the susceptibility of the drinking water source to contamination from each PCS and take steps to reduce the risk accordingly.

We have attempted to quantify the relative susceptibility of the water system with regard to the PCSs present in the Drinking Water Protection Area (DWPA) using Table 6.1. Across the top of the table, each Time-of-Travel (TOT) zone is subdivided to account for areas of high, moderate, and low sensitivity that may exist between each TOT. Potential contaminant source risk categories (high, moderate, and low) are listed down the left hand side of the table. The relative aquifer susceptibility to each PCS is demonstrated by the shading of each cell in the table. Cells that are shaded dark gray indicate a highly-susceptible condition, light gray shaded cells indicate a moderately-susceptible condition, and white cells indicate conditions of low susceptibility. The number in each cell indicates the number of potential contaminant sources that meet the conditions for that cell. Cells that do not contain a number indicate that there are no known potential contaminant sources that meet the conditions for the cell. Potential contaminant sources that meet the specific criteria for a cell in Table 6.1 can be identified by reviewing Table 2 in Appendix C. The number of potential contaminant sources is totaled across the bottom of the table.

Table 6.1. Oxberg Water System Susceptibility as a Function of PCS Risk, TOT Zone, and Aquifer Sensitivity.									
	2-Yr TOT			2- to 5-Yr TOT			5- to 15-Yr TOT		
	High	Mod	Low	High	Mod	Low	High	Mod	Low
High Risk PCSs									
Moderate Risk PCSs									
Low Risk PCSs	1			1			1		
Total PCSs	3			2			3		

The distribution of high, moderate, and low sensitivity areas inside the Drinking Water Protection Area can be determined using either soil sensitivity or the mapped distribution of Traverse Potential (TP) or Infiltration Potential (IP). In the case of the Oxberg Water System, we have decided to rely upon the distribution of soil sensitivity throughout the DWPA. The soils overlying the aquifer represent the first line of natural protection for the aquifer.

During the potential contaminant source inventory, a total of three potential contaminant source locations and eight potential contaminant sources were identified inside the DWPA. If any of these potential contaminant sources have been identified as an area-wide source, they have been evaluated with respect to each time-of-travel zone in which they occur. As a result, the total number of potential contaminant sources evaluated in the above susceptibility table may exceed the number identified on the potential contaminant source inventory map (Figure 2, Appendix B).

As indicated in the above table, three potential contaminant sources occur inside the 2-year TOT, two sources fall between the 2- and 5-year TOTs, and three sources have been identified between the 5- and 15-year TOTs. Of the potential contaminant sources identified inside the 2-year TOT, two are of moderate-risk, and one is of low-risk. Based on the analysis results shown in the relative susceptibility table, we consider the Oxberg Water System to be highly susceptible to the moderate-risk potential contaminant sources identified inside the 2-year TOT (Potential contaminant Source Reference No. 1 and 2 on Figure 3, Appendix B). **Therefore we recommend that these potential contaminant sources not only be addressed in any Drinking Water Protection Plan but also in any Water System Emergency Response Plan.**

As a result of this analysis, we recommend that the water system develop a Drinking Water Protection Plan that addresses all high- and moderate-risk potential contaminant sources within the DWPA, beginning with those sources which represent the greatest susceptibility risk. At a minimum, the water system should work with representatives from those PCSs posing a moderate- to high-susceptibility risk within the DWPA to (1) determine the level of environmental protection employed in the day-to-day operations of the facility and (2) identify

any reasonable Best Management Practices that will lead to an overall reduction of contamination risk.

6.2 Water System Susceptibility to Viral Contaminant Sources within the Two-Year Time-of-Travel Zone.

The area within the two-year TOT roughly identifies the next two years of groundwater supply for the water system. The two-year time frame is used as a conservative estimate of the survival time for some viruses. Viral contaminant sources (septic systems and a fire protection pipe connected to Oxberg Lake) were identified inside the two-year TOT. **However, based on the assessment results, neither the aquifer nor the well is considered sensitive to viral contamination. Therefore, we do not consider the Oxberg Water System water supply to be susceptible to viral contamination.** Regardless of the outcome of this assessment, it is in the water system's best interest to reduce the potential for future viral contamination through compliance with all Oregon Department of Human Services setback standards related to public drinking water supply sources.

7. Conclusions

The Oxberg Water System draws water from a confined layered volcanic aquifer associated with the Columbia River Basalt Group. Assessment results indicate that the water system would be moderately sensitive to a contamination event inside the identified Drinking Water Protection Area. The presence of a few moderate-risk potential contaminant sources within the protection area was confirmed through a potential contaminant source inventory. Under a "worst case" scenario, where it is assumed that nothing is being done to protect groundwater quality at the identified potential contaminant sources, the assessment results indicate that the water system would be highly susceptible to the identified moderate-risk potential contaminant sources. In addition, the assessment results indicate that, at this time, the water system is not considered susceptible to viral contamination.

8. Recommended Use of the Source Water Assessment Report

The costs associated with contaminated drinking water are high. Developing an approach to protect that resource, such as a Drinking Water Protection Plan, can reduce the potential for contamination of the local drinking water supply. This report contains a summary of the local geology and well construction issues as they pertain to the quality of your drinking water source. We have identified the area we believe to be most critical to preserving your water quality (the Drinking Water Protection Area) and have identified potential sources of contamination within that area. In addition, we provide you with recommendations, i.e., Best Management Practices, regarding the proper use and practices associated with some common potential contamination sources (Appendix G). We believe public awareness is a powerful tool for protecting drinking water and that the information provided in this report will help you increase local awareness regarding the relationship between land use activities and drinking water quality. To that end, the process for developing a Drinking Water Protection Plan can be summarized as follows:

Assessment Phase (Source Water Assessment Provided by DHS and DEQ)

- Delineate the area that serves as the source of the public water supply (Drinking Water Protection Area (DWPA))
- Inventory the potential risks or sources of contamination within the DWPA
- Determine the areas most susceptible to contamination

Protection Phase (performed by the water system or community)

- Assemble a local Drinking Water Protection Team
- Enhance the Source Water Assessment if necessary
- Develop a plan to reduce the risk of contamination (protect the resource)
- Develop a contingency plan to address the potential loss of the drinking water supply
- Certify (optional) and implement the Drinking Water Protection Plan

The assessment phase was funded by the federal Safe Drinking Water Act. Its purpose is to supply the water system with the information necessary to develop a Drinking Water Protection Plan. In Oregon, development of a protection plan is voluntary.

Prior to moving into the protection phase, DEQ recommends the inventory presented in this document be reviewed in detail to clarify the presence, location, operational practices, actual risks, etc., of the identified facilities and land use activities. The Source Water Assessment (SWA) inventory should be regarded as a preliminary review of potential sources of contamination within the drinking water protection area. Resources within the community

should be used to do an "enhanced inventory" to refine this preliminary list of potential contaminant sources.

It is also important to remember that not all of the inventoried activities will need to be addressed if you choose to develop a Drinking Water Protection Plan. When developing a protection plan, potential contaminant sources which pose little or no threat to your drinking water supply can be screened out. For example, if any of the land use activities are conducted in a manner that already significantly reduces the risk of a contamination release, the facility would not need to re-evaluate their practices based on drinking water protection "management". One of the goals for developing a plan based on the inventory results is to address those land use activities that do pose high or moderate risks to your public water supply. The system should target these facilities with greater levels of education and technical assistance to minimize the risk of contamination.

Limited technical assistance is available through the DEQ and Drinking Water Program at DHS for water systems that choose to move beyond the assessments and voluntarily develop a Drinking Water Protection Plan. By using the results of the assessment, the water system/community can form a Drinking Water Protection Team comprised of individuals that have a stake in the plan's implementation.

Forming a local team to help with the development of a protection plan is very important. Oregon's drinking water protection approach relies upon the concept of "community based protection", as are many other water quality programs. This simply refers to the concept of allowing local control and decision-making to implement the water quality protection effort. Community-based protection is successful only with significant local citizen stakeholder involvement. Community-based protection can draw on the knowledge and successful adaptive practices within the area. Landowners generally know best how to achieve water resource restoration and protection as long as a thorough explanation of the problem is provided, the objectives to solve the problem are clearly defined, and technical assistance is available.

In community-based protection, citizens have more control and are therefore more likely to participate in the program and be more willing to assist with the educational and outreach effort which will make the plan successful. We recommend that the protection plan be developed so as to minimize any burdens on individual property owners, but maximize the equity in responsibility for reducing the risks of future contamination.

Protecting the drinking water supply in a community can also be a very effective way to encourage all citizens to participate in issues which directly affect everyone in that community. This often leads to more public involvement in other significant local decisions concerning future livability issues, e.g., land use planning. In communities already developing and implementing Drinking Water Protection Plans, the process has served to bring many diverse interests together on a common goal and strengthen the local rural and urban relationships through communication and increased understanding. The risks and sources of water quality problems are not only from industries, farmers, and managed forest, but every individual living, commuting, and working in that area.

Communities/water systems interested in developing Drinking Water Protection Plans may contact the Department of Environmental Quality (503-229-5413) or the DHS Drinking Water Program (541-726-2587) for further information.

Appendices

A. References

B. Figures

C. Inventory of Potential Contaminant Sources

D. Well Reports

E. Parameters Used in Delineation Model

F. Groundwater Fact Sheet

G. BMPs for Activities Commonly found in Drinking Water Protection Areas

H. Drinking Water Protection in Oregon

I. Source Water Assessment Methodology

Additional copies of the appendix materials are available upon written request to the following address:

Groundwater Coordinator
Drinking Water Program
Department of Human Services
442 A Street
Springfield, OR 97477

Appendix A: References

National Oceanic and Atmospheric Administration (NOAA), 1982. Monthly Normals of Temperature, Precipitation, and Heating and Cooling Degree Days 1951-80 Oregon, Climatography of the United States No. 81 (By State).

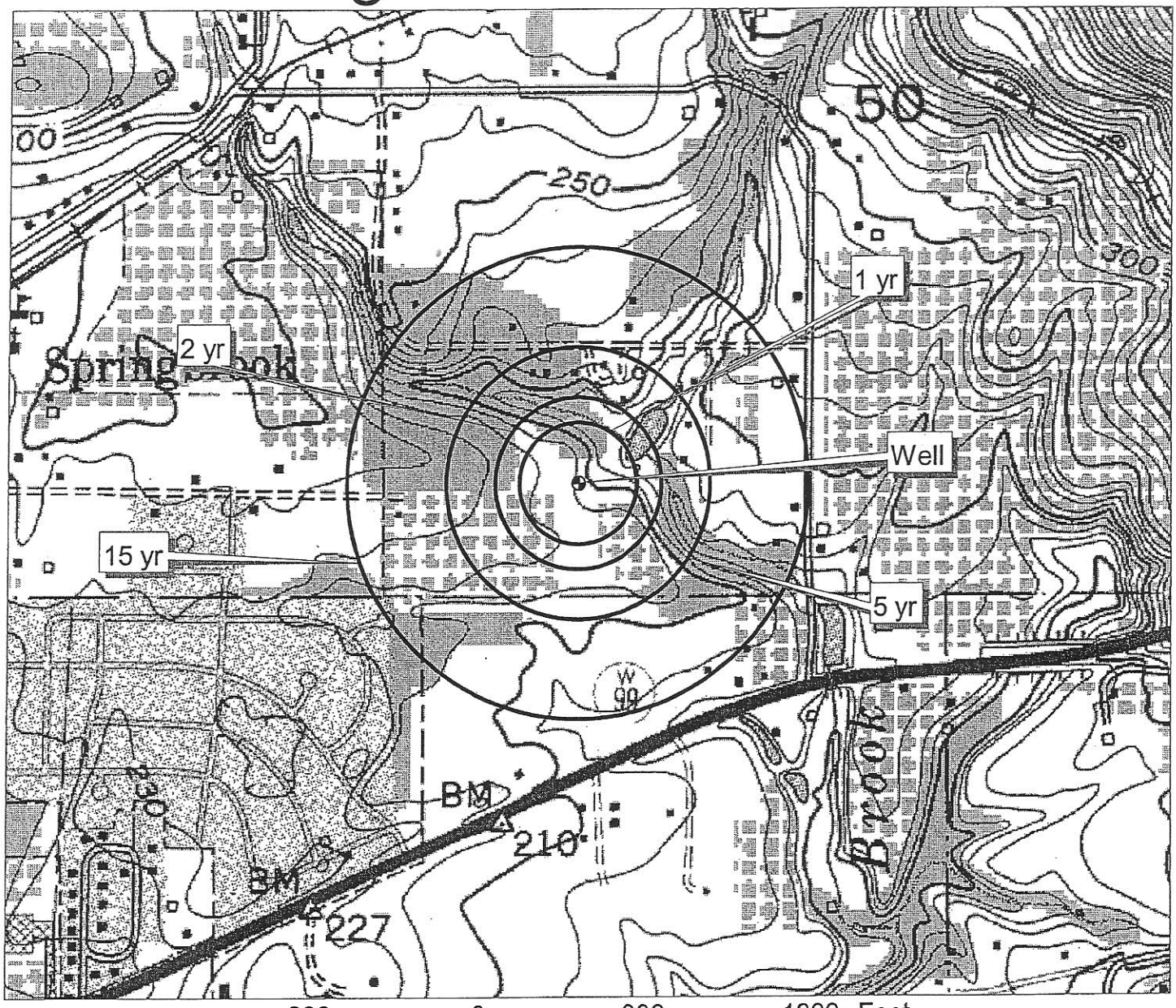
Stewart, S. and Nelson, D., 1996. Oregon Wellhead Protection Program Guidance Manual. Oregon Department of Environmental Quality (available at http://www.deq.state.or.us/wq/dwp/dwphome.htm).

Stewart, S. and Nelson, D., 1999. Oregon Source Water Assessment Plan. Oregon Department of Environmental Quality.

Walker, G.W. and MacLeod, N.S., 1991. Geologic Map of Oregon. U.S. Geological Survey.

Otte, G.E., Setness, D.K., Anderson, W.A., Herbert, F.J., and Knezevich, C.A., 1974. Soil Survey of Yamhill Area, Oregon. U.S. Department of Agriculture, Soil Conservation Service.

O..berg Water System
Drinking Water Protection Area



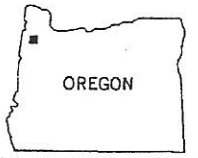
Drinking Water Protection Area (DWPA)
1, 2, 5, and 15 year Time-of-Travel (TOT)
Calculated Fixed Radius Method

Model Parameters
Effective Porosity: 0.2
Water Use (gal/day): 20,000
Production Interval (ft): 15

Prepared by: KG Date: 4/16/04
Project Manager: AP
Reviewed by: DN RG#: 1224
File#: 4105308

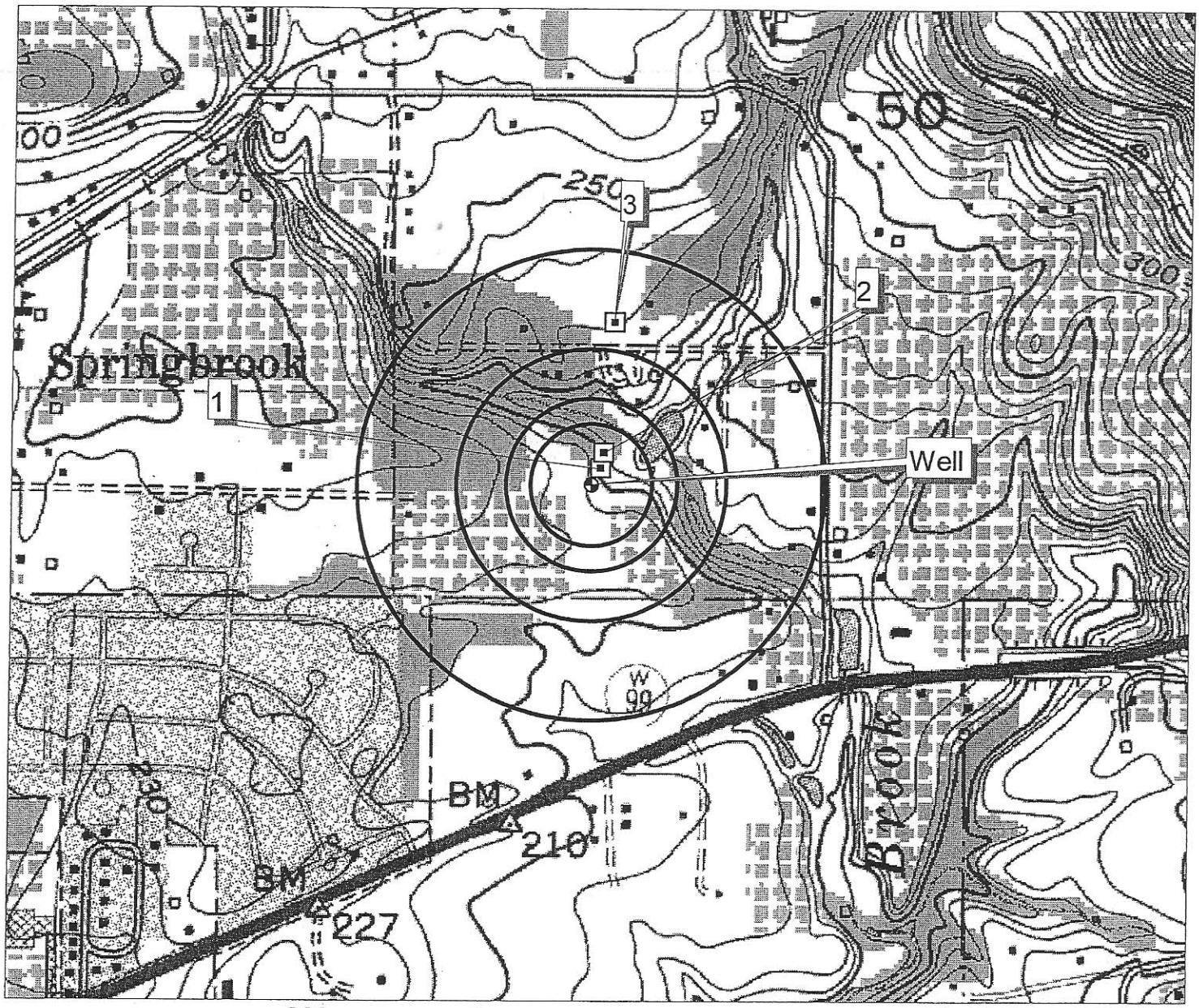
Well Location:
WGS 1984 Datum
45°18'53.679" N 122°56'00.350" W
USGS Newberg 7.5-Minute
Quadrangle (topographic)
T: 3S R: 2W Sec: 16
Yamhill County

N



QUADRANGLE LOCATION

Oxberg Water System
Potential Contaminant Sources



Scale 1: 10,000

Drinking Water Protection Area (DWPA)
1, 2, 5, and 15 year Time of Travel (TOT)
Calculated Fixed Radius Method

Prepared by: KG 4/16/04
Project Manager: AP
Reviewed by: DN RG# 1224
File# 4105308

N

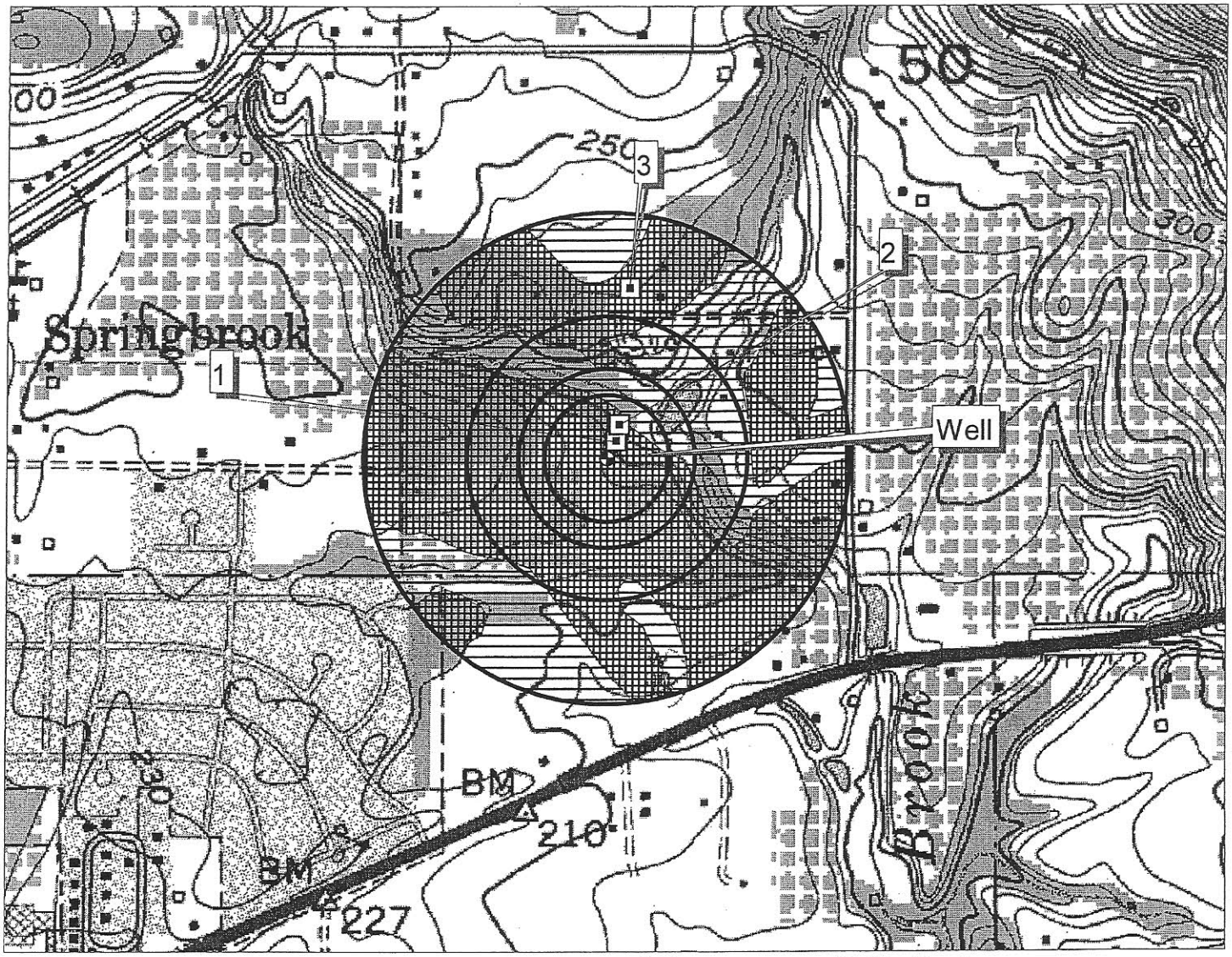
Potential Contaminant Sources
- ⊕ **Higher Relative Risk**
- ▣ **Moderate Relative Risk**
- △ **Low Relative Risk**

Note: Sites and areas noted in this figure are potential sources of contamination to the drinking water identified by Oregon drinking water protection staff. Environmental contamination is not likely to occur when chemicals are used and managed properly.

Numbers indicate potential contaminant sources which are explained in Appendix C, table 2.

QUADRANGLE LOCATION

Oxberg Water System
Drinking Water Source Susceptibility



Drinking Water Protection Area (DWPA)
1, 2, 5, and 15 Year Time of Travel (TOT)
Calculated Fixed Radius Method

Potential Contaminant Sources
- ⊕ **Higher Relative Risk**
- ▣ **Moderate Relative Risk**
- △ **Low Relative Risk**

Sensitivity Analysis
- **High Soil Sensitivity**
- **Medium Soil Sensitivity**
- **Low Soil Sensitivity**

Note: Sites and areas noted in this figure are potential sources of contamination to the drinking water as identified by Oregon Drinking Water Protection Staff.
Environmental contamination is not likely to occur when chemicals are used and managed properly.

Features or activities that are identified as high or moderate risk that occur within an area designated as high or moderate sensitivity pose a greater risk to drinking water quality than those in areas of low sensitivity.

Numbers indicate potential contaminant sources indexed to Appendix C, Table 2.

N

APPENDIX C - INVENTORY OF POTENTIAL CONTAMINANT SOURCES
OXBERG WATER SYSTEM - PWS # 4105308
OREGON SOURCE WATER ASSESSMENT

Inventory Results

Table 1. Summary of Potential Contaminant Sources by Land Use

Table 2. Inventory Results - List of Potential Contaminant Sources

Notes for Tables:

Sites and areas identified in these Tables are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.

Total number of sources listed in Table 1 in the DWPA may not add up to the total number of potential contaminants sources in Table 2 because more than one type of potential contaminant source may be present at any given facility.

Data collected by Sue Gries Oregon DEQ on 6/17/2002.

Acronyms:

AST - Aboveground Storage Tank
DC - DEQ's Dry Cleaner database
DEQ - Oregon Department of Environmental Quality
DWPA - Drinking Water Protection Area
ECSI - DEQ's Environmental Cleanup Site Information database
HWIMSY - DEQ's Hazardous Waste Information Management System database
LUST - DEQ's Leaking Underground Storage Tank database
NPDES - National Pollution Discharge Elimination System
PCS - Potential Contaminant Source
PWS - Public Water System
SFM - State Fire Marshall's database of hazardous materials
SIS - DEQ's Source Information System database (includes WPCF & NPDES permits)
SWMS - DEQ's Solid Waste Management System database
UST - DEQ's Underground Storage Tank database or Underground Storage Tank
WPCF - Water Pollution Control Facility
WRD - Oregon Water Resources Division database for water rights information

TABLE 1. SUMMARY OF POTENTIAL CONTAMINANT SOURCES BY LAND USE

PWS # 4105308 OXBERG WATER SYSTEM

Residential/Municipal Land Uses

Potential Contamination Source	Note	Relative Risk Level	Total in DWPA
Airport - Maintenance/Fueling Area		Higher	0
Apartments and Condominiums		Lower	0
Campgrounds/RV Parks	(1)	Lower	0
Cemeteries - Pre-1945		Moderate	0
Drinking Water Treatment Plants		Moderate	0
Fire Station		Lower	0
Fire Training Facilities		Moderate	0
Golf Courses		Moderate	0
Housing - High Density (> 1 House/0.5 acres)		Moderate	0
Landfill/Dumps	(1)	Higher	0
Lawn Care - Highly Maintained Areas		Moderate	1
Motor Pools		Moderate	0
Parks		Moderate	0
Railroad Yards/Maintenance/Fueling Areas		Higher	0
Schools		Lower	0
Septic Systems - High Density (> 1 system/acre)	(1)	Higher	0
Sewer Lines - Close Proximity to PWS	(1)	Higher	0
Utility Stations - Maintenance Transformer Storage		Higher	0
Waste Transfer/Recycling Stations	(1)	Moderate	0
Wastewater Treatment Plants/Collection Stations	(1)	Moderate	0
Other			0

NOTES:
Sites and areas identified in this Table are only potential sources of contamination to the drinking water.
Environmental contamination is not likely to occur when contaminants are used and managed properly.
(1) - Potential source of microbial contamination
(2) - Drip irrigated crops, such as vineyards and some vegetables, are considered lower risk than spray irrigation
(3) - For groundwater public water systems, septic systems located within the 2-year time-of-travel (TOT) are considered moderate risks.

TABLE 1. SUMMARY OF POTENTIAL CONTAMINANT SOURCES BY LAND USE

PWS # 4105308 OXBERG WATER SYSTEM

Commercial/Industrial Land Uses

Potential Contamination Source	Note	Relative Risk Level	Total in DWPA
Automobiles - Body Shops		Higher	0
Automobiles - Car Washes		Moderate	0
Automobiles - Gas Stations		Higher	0
Automobiles - Repair Shops		Higher	0
Boat Services/Repair/Refinishing		Higher	0
Cement/Concrete Plants		Moderate	0
Chemical/Petroleum Processing/Storage		Higher	0
Dry Cleaners		Higher	0
Electrical/Electronic Manufacturing		Higher	0
Fleet/Trucking/Bus Terminals		Higher	0
Food Processing		Moderate	0
Furniture/Lumber/Parts Stores		Moderate	0
Home Manufacturing		Higher	0
Junk/Scrap/Salvage Yards		Higher	0
Machine Shops		Higher	0
Medical/Vet Offices	(1)	Moderate	0
Metal Plating/Finishing/Fabrication		Higher	0
Mines/Gravel Pits		Higher	0
Office Buildings/Complexes		Lower	0
Parking Lots/Malls (> 50 Spaces)		Higher	0
Photo Processing/Printing		Higher	0
Plastics/Synthetics Producer		Higher	0
Research Laboratories		Higher	0
RV/Mini Storage		Lower	0
Wood Preserving/Treating		Higher	0
Wood/Pulp/Paper Processing and Mills		Higher	0
Other			0

NOTES:
Sites and areas identified in this Table are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.
(1) - Potential source of microbial contamination
(2) - Drip irrigated crops, such as vineyards and some vegetables, are considered lower risk than spray irrigation
(3) - For groundwater public water systems, septic systems located within the 2-year time-of-travel (TOT) are considered moderate risks.

TABLE 1. SUMMARY OF POTENTIAL CONTAMINANT SOURCES BY LAND USE

PWS # 4105308 OXBERG WATER SYSTEM

Agricultural/Forest Land Uses

Potential Contamination Source	Note	Relative Risk Level	Total in DWPA
Auction Lots	(1)	Higher	0
Boarding Stables	(1)	Moderate	0
Confined Animal Feeding Operations (CAFOs)	(1)	Higher	0
Crops - Irrigated (inc. orchards, vineyards, nurseries, greenhouses)	(2)	Moderate	1
Crops - Nonirrigated (inc. Christmas trees, grains, grass seed, pasture)		Lower	0
Farm Machinery Repair		Higher	0
Grazing Animals (> 5 large animals or equivalent/acre)	(1)	Moderate	0
Lagoons/Liquid Wastes	(1)	Higher	0
Land Application Sites	(1)	Moderate	0
Managed Forest Land - Broadcast Fertilized Areas		Lower	0
Managed Forest Land - Clearcut Harvest (< 35 yrs.)		Moderate	0
Managed Forest Land - Partial Harvest (< 10 yrs.)		Moderate	0
Managed Forest Land - Road Density (> 2 mi./sq. mi.)		Moderate	0
Pesticide/Fertilizer/Petroleum Storage, Handling, Mixing, & Cleaning Ar		Higher	0
Recent Burn Areas (< 10 yrs.)		Lower	0
Managed Forest Lands - Status Unknown		Moderate	0
Other			0

NOTES:
Sites and areas identified in this Table are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.
(1) - Potential source of microbial contamination
(2) - Drip irrigated crops, such as vineyards and some vegetables, are considered lower risk than spray irrigation
(3) - For groundwater public water systems, septic systems located within the 2-year time-of-travel (TOT) are considered moderate risks.

TABLE 1. SUMMARY OF POTENTIAL CONTAMINANT SOURCES BY LAND USE

PWS # 4105308 OXBERG WATER SYSTEM

Miscellaneous Land Uses

Potential Contamination Source	Note	Relative Risk Level	Total in DWPA
Above Ground Storage Tanks - Excluding Water		Moderate	0
Channel Alterations - Heavy		Lower	0
Combined Sewer Outfalls	(1)	Lower	0
Stormwater Outfalls	(1)	Lower	0
Composting Facilities	(1)	Moderate	0
Historic Gas Stations		Higher	0
Historic Waste Dumps/Landfills	(1)	Higher	0
Homesteads - Rural - Machine Shops/Equipment Maintenance		Higher	0
Homesteads - Rural - Septic Systems (< 1/acre)	(1)(3)	Lower	1
Injection/Dry Wells, Sumps - Class V UICs	(1)	Higher	0
Kennels (> 20 Pens)	(1)	Lower	0
Military Installations		Higher	0
Random Dump Sites		Moderate	0
River Recreation - Heavy Use (inc. campgrounds)	(1)	Lower	0
Sludge Disposal Areas	(1)	Moderate	0
Stormwater Retention Basins	(1)	Moderate	0
Transmission Lines - Right-of-Ways		Lower	0
Transportation - Freeways/State Highways/Other Heavy Use Roads		Moderate	0
Transportation - Railroads		Moderate	0
Transportation - Right-Of-Ways - Herbicide Use Areas		Moderate	0
Transportation - River Traffic - Heavy		Lower	0
Transportation - Stream Crossing - Perennial		Lower	0
UST - Confirmed Leaking Tanks - DEQ List		Higher	0
UST - Decommissioned/Inactive		Lower	0
UST - Nonregulated Tanks (< 1,100 gals or Large Heating Oil Tanks)		Higher	0
UST - Not Upgraded and/or Registered Tanks		Higher	0
UST - Upgraded/Registered - Active		Lower	0
UST - Status Unknown		Higher	0
Upstream Reservoirs/Dams		Lower	0
Wells/Abandoned Wells		Higher	0
Large Capacity Septic Systems (serves > 20 people) - Class V UICs	(1)	Higher	0
Construction/Demolition Areas		Moderate	0
Other:		Moderate	1

NOTES:
Sites and areas identified in this Table are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.
(1) - Potential source of microbial contamination
(2) - Drip irrigated crops, such as vineyards and some vegetables, are considered lower risk than spray irrigation
(3) - For groundwater public water systems, septic systems located within the 2-year time-of-travel (TOT) are considered moderate risks.

TABLE 2. INVENTORY RESULTS - LIST OF POTENTIAL CONTAMINANT SOURCES

PWS# 4105308 OXBERG WATER SYSTEM

Reference No. (See Figure)	Potential Contaminant Source Type	Name	Approximate Location	City	Method for Listing	Proximity to Sensitive Areas	Relative Risk Level (1)	Potential Impacts	Comments
1	Lawn Care - Highly Maintained Areas	Rural Homes	Throughout DWPA	Newberg	Field-Observation Interview	Within the 2-yr TOT.	Moderate	Over-application or improper handling of pesticides or fertilizers may impact drinking water. Excessive irrigation may cause transport of contaminants to groundwater or surface water through runoff.	Homes within the 2 year TOT do not have individual wells. Some of the homes outside the 2 year TOT do have wells. All houses are on septic. PWS contact indicates a 3 lane highway might be developed within 5 and 15 year TOT.
	Homesteads - Rural - Septic Systems (< 1/acre)						Lower	If not properly sited, designed, installed, and maintained, septic systems can impact drinking water. Use of drain cleaners and dumping household hazardous wastes can result in groundwater contamination.	Homes within the 2 year TOT do not have individual wells. Some of the homes outside the 2 year TOT do have wells. All houses are on septic. PWS contact indicates a 3 lane highway might be developed within 5 and 15 year TOT.
2	Other	Fire protection well	Next to well	Newberg	Interview	Within the 2-yr TOT.	Moderate	The impacts of this potential contaminant source will be addressed during the enhanced inventory.	PWS contact indicates a pipe from Oxberg Lake connects to a drywell used for fire protection. The pipe might be broken.
3	Crops - Irrigated (inc. orchards, vineyards, nurseries, greenhouses)	Non-irrigated crops	Northeast portion of DWPA	Newberg	Field-Observation	Between 5-yr and 15-yr TOT	Moderate	Over-application or improper handling of pesticides/fertilizers may impact drinking water. Excessive irrigation may transport contaminants or sediments to groundwater/surface water through runoff. Drip-irrigated crops are considered to be a low risk.	Nurseries are at intersection of Benjamin and Putnam Road, and north of Putnam Road.

Note: Sites and areas identified in this Table are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.

(1) Where multiple potential contaminant sources exist at a site, the highest level of risk is used.

(2) See Table 3 for database listings (if necessary).

ATE OF OREGON

TER WELL REPORT

as required by ORS 537.765)

WELL #2

7S/2W-16

DEC 26 1986

WATER RESOURCES DEPT. SALEM, OREGON

(1) OWNER:

name OXBERG INC.

Address P.O. BOX 467

City NEWBERG State OREG Zip 97132

(2) TYPE OF WORK:

☒ New Well ☐ Deepen ☐ Recondition ☐ Abandon

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable

☐ Other

(4) PROPOSED USE:

☐ Domestic ☒ Community ☐ Industrial ☐ Irrigation

☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval Yes ☐ No ☐ Depth of Completed Well 200 ft.

Explosives used Yes ☐ No ☒ Type ____ Amount ____

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
12	0	139	CEMENT	0	30	20
8	139	200				

How was seal placed: Method ☐ A ☐ B ☒ C ☐ D ☐ E

☐ Other

Backfill placed from ____ ft. to ____ ft. Material ____

Gravel placed from 30 ft. to 139 ft. Size of gravel 3/4" TO 1/4"

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8	+1	162	.250"	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:	6	160	200	160 LB	☐	☒	☐	☐
					☐	☐	☐	☐

...al location of shoe(s) ____

(7) PERFORATIONS/SCREENS:

☒ Perforations Method MILLS KNIFE

☐ Screens Type ____ Material ____

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
50	162		475	1/4"		☒	☐
162	200		160	1/4"		☐	☒
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☒ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
			1 hr.
45	50		1

Temperature of water ____ Depth Artesian Flow Found ____

Was a water analysis done? ☐ Yes By whom ____

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other ____

Depth of strata: ____

(9) LOCATION OF WELL by legal description:

County YAMHILL Latitude ____ Longitude ____

Township 3S N or S, Range 2W E or W, WM.

Section 16 ¼ ¼

Tax Lot ____ Lot ____ Block ____ Subdivision ____

Street Address of Well (or nearest address) 400 E. CRESTVIEW, NEWBERG, OREGON

(10) STATIC WATER LEVEL:

29 ft. below land surface. Date 12/11/86

Artesian pressure ____ lb. per square inch. Date ____

(11) WATER BEARING ZONES:

Depth at which water was first found ____

From	To	Estimated Flow Rate	SWL
50	200	45	29

(12) WELL LOG:

Ground elevation ____

Material	From	To	SWL
TOP SOIL	0	2	
BROWN CLAY	2	25	
SOFT DECOMPOSED			
BROWN ROCK WITH			
CLAY STREAKS	25	152	29
SOFT BROWN ROCK	152	172	29
BROWN CLAY	172	178	29
SOFT BROWN ROCK	178	200	29

Date started 11/26/86 Completed 12/11/86

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.

WWC Number ____

Signed ____ Date ____

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. all work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.

WWC Number 462

Signed C.C. Keller Date 12/24/86

PINK COPY - CUSTOMER

Appendix E: Parameters Used in Delineation Model

Delineation Method: ☐ Analytical ☒ Calculated Fixed Radius ☐ Enhanced CFR
☐ Numerical ☐ Hydrogeologic Mapping ☐ Analytic Element

Pump Rate (Q in gpm): **13.9 gpm**

Source: ☐ System ☐ Water Resources Dept ☐ Comparable Community
☐ Pump Capacity ☒ Population Estimate ☐ 90% of Safe Yield

Nature of the Aquifer: ☐ Unknown ☐ Unconfined
☐ Semi-confined ☒ Confined

Aquifer name: **Layered Basalt**
(Columbia River Basalt Group)

Confining Unit lithology: basalt/clay
Depth to Confining Unit: 2
Confining Unit thickness: 48
Depth to Aquifer: 50 feet

Aquifer Characteristics:

Lithology:

☐ Unknown ☐ Sandy Silt ☒ Layered Volcanic Rocks
☐ Sand ☐ Sand & Gravel ☐ Fractured Volcanic Rocks
☐ Gravel ☐ Cobbles/Gravel ☐ Fractured Sedimentary Rocks
☐ Other: _____

Thickness (b): 15 feet

Effective Porosity (n): 0.20

Hydraulic Conductivity (Permeability): _____ ft/day ☒ N/A
☐ Estimated from lithology ☐ Specific Capacity (Well Report)
☐ Published Report ☐ Aquifer Test

Hydraulic Gradient: _____ Flow Direction: _____ ☒ N/A
☐ Published Report ☐ Graphical Solution ☐ Estimate
☐ Field Measurements ☐ Model Results

Other High Capacity Wells Accounted for: None

DEVELOPMENT AGREEMENT

This Development Agreement ("DEVELOPMENT AGREEMENT") is made and executed this 16th day of June 2008, by and between GC Commercial, an Oregon Limited Liability Company ("**GC**"), and Terry Coss, Amelia Coss, Charles Alex Miller, Daniel Peek and Rebecca Peek the "**Homeowners**") GC and the Homeowners are collectively referred to herein as, the "**Parties**".

RECITALS:

A. GC owns and plans to develop the real property located in the City of Newberg, Yamhill County, Oregon, shown on the attached Exhibit "A" (the "**GC Development**").

B. GC, with respect to the GC Development, intends to develop the Property into one mixed-use commercial and residential development (collectively, the "**Project**"). A map of the Project is attached as Exhibit "B."

C. The Homeowners are owners of those certain parcels of residential real property located in the Oxberg Lakes Subdivision, Yamhill County, Oregon, the southern boundaries of which abut and are adjacent to the northern boundary of the GC Development (individually, each a "**Homeowner Parcel**" and collectively, the "**Homeowners' Parcels**").

D. The Homeowners anticipate significant negative impacts from the GC Development, including reduced security, increased noise, light pollution, increased traffic, and may experience problems with storm drainage and the Oxberg Lake Estates water system and aquifer.

E. GC desires to help mitigate any potential negative impacts to which the Project and the GC Development might subject the Homeowners.

AGREEMENT:

In consideration of the foregoing and of the mutual agreements, promises, covenants and restrictions set forth herein, GC and the Homeowners agree as follows:

1. Incorporation of Recitals. The parties agree that the foregoing Recitals are true and correct and that the Recitals are incorporated herein as if set forth in full.

2. Construction of the Sound Wall.

a. GC shall construct or cause to be constructed, at its sole cost and expense, a pre-cast concrete wall approximately six (6) feet in height along the boundary shared by the GC Development and the Homeowners' Parcels (the "**Sound Wall**). The approximate location and length of the Sound Wall are more particularly illustrated on the attached Exhibit "B." However, the exact location and length of the Sound Wall shall be determined by GC in compliance with applicable plans approved by the City of Newberg, or

any other governmental agency having jurisdiction. The design style of the Sound Wall and its construction type shall be consistent with Exhibit "C" attached hereto.

b. GC shall construct and install the Sound Wall in such a manner as to preserve, to the best of GC's ability, those trees with trunks greater than twelve (12) inches in diameter that are located along the boundary shared by the GC Development and the Homeowners' Parcels.

c. GC shall provide the Homeowners with copies of any proposed designs and drawings of the Sound Wall, and consider, in good faith, all timely comments GC receives from the Homeowners with respect to the Sound Wall. However, the final design and specifications of the Sound Wall shall be in accordance with plans approved by the City of Newberg, or any other governmental agency having jurisdiction.

d. GC shall include a ten-foot (10') wide landscape buffer zone along the boundary shared by the GC Development and the Homeowners' Parcels (the "**Landscape Buffer Zone**"), and a 30-foot (30') setback (the "**Setback Zone**") between the Sound Wall and any buildings in any subdivision plat maps for its respective parcels submitted for approval to any governmental entity with jurisdiction over the GC Development. The Landscape Buffer Zone and Setback Zone shall be negative easements, binding GC and its successors in interest by encumbering the lots along the boundary shared by the GC Development and the Homeowners' Parcels.

e. GC shall complete the construction and installation of the Sound Wall on or before the date of final lift of asphalt concrete within the GC Development.

3. Construction of the Storm Water Drainage System

a. GC shall construct and install, at its sole cost and expense a storm water and surface water drainage system on a portion of the Homeowners' Parcels adjacent to the GC Development (the "**Storm Water Drainage System**").

b. GC shall provide the Homeowners with copies of any proposed designs and drawings of the Storm Water Drainage System and consider, in good faith, all timely comments GC receives from the Homeowners with respect to the Storm Water Drainage System. However, the final design and specifications of the Storm Water Drainage System shall be in accordance with plans approved by the City of Newberg, or any other governmental agency having jurisdiction.

c. GC shall complete the construction and installation of the Storm Water Drainage System on or before the date installation of the Sound Wall begins.

5. **Easements.**

a. The Homeowners shall grant to GC temporary easements across their respective Homeowner Parcels for the construction of the Storm Water Drainage System and the Sound Wall, and;

b. The Homeowners shall grant permanent easements to GC and its successors and assigns, where necessary pursuant to the approved design specifications, to permit encroachments of the Sound Wall onto the Homeowners' Parcels and placement of the Storm Water Drainage system and any catch basins or drain lines appurtenant thereto;

6. **Permitting.** GC shall begin construction of the Sound Wall and the Storm Water Drainage System after it has received all site design approvals, land use permits, entitlements and other permits required for the development of the Project, and has begun construction of the Project. If GC does not receive the aforementioned permits and entitlements it shall not be obligated to build either the Sound Wall or the Storm Water Drainage System.

7. **Maintenance.** The parties shall share in all costs and expenses related to the maintenance and general upkeep of the Sound Wall and Storm Water Drainage System after their respective completion. This maintenance obligation shall bind the Parties and their respective successors in interest and shall be made a part of any permanent easement granted by the Homeowners pursuant to paragraph 5.b., above. In addition to the encumbrances referenced in paragraph 2.d., above, GC shall encumber the lots along the boundary shared by the GC Development and the Homeowners' Parcels to the extent of the maintenance obligation contained herein.

8. **Assignability.** This DEVELOPMENT AGREEMENT is assignable and/or delegable with respect to the rights and duties of GC and the Homeowners, both jointly and severally, to any transferee or other successor in interest to the GC Development or the Project.

9. **Severability.** Should any provision of this DEVELOPMENT AGREEMENT be declared or determined by any forum of competent jurisdiction to be illegal, invalid, or unenforceable, the legality, validity and enforceability of the remaining parts, terms, or provisions shall not be affected thereby, and said illegal, unenforceable or invalid part, term or provision shall be deemed not to be part of this DEVELOPMENT AGREEMENT.

10. **Counterparts.** This DEVELOPMENT AGREEMENT may be executed in any number of counterparts and by each party on a separate counterpart page, each of which when so executed shall be deemed an original.

11. **Waiver.** No waiver of any provision of this DEVELOPMENT AGREEMENT shall be deemed, or shall constitute, a waiver of any other provisions, whether or not similar, not shall any waiver constitute a continuing waiver. No waiver shall be binding unless executed in writing by the party making the waiver.

12. **Binding Effect.** All rights, remedies and liabilities herein given to or imposed upon the parties shall extend to, inure to the benefit of and bind, as the circumstances may

require, the parties and their respective heirs, personal representatives, administrators, successors and permitted assigns and designees.

13. Notices. Any notice or other communication required or permitted under this DEVELOPMENT AGREEMENT shall be in writing and shall be deemed given on the date of transmission when sent by telex or facsimile transmission, or on the third business date after the date of mailing when mailed by certified mail, postage prepaid, return receipt requested, from within the United States, or on the date of actual delivery, whichever is the earliest, and shall be sent to the parties at the addresses shown provided below, or at such other address as either party may hereafter designate by written notice to the other.

To GC:	Jeffrey D. Smith 4386 SW Macadam Avenue Suite 305 Portland, OR 97239
With a copy to:	Jessica S. Cain Gunn & Cain, LLP P.O. Box 1046 Newberg, Oregon 97132
To Terry Coss and Amelia Coss:	Terry Coss and Amelia Coss 4304 Robin Court Newberg, OR 97132
To Alex Miller:	~~Alex Miller~~ Nikula + Warren Stone 4308 E. Robin Court Newberg, OR 97132
To Dan Peek and Rebecca Peek:	Dan Peek and Rebecca Peek 4402 Birdhaven Loop Newberg, OR 97132

14. Amendment. No supplement, modification or amendment of this DEVELOPMENT AGREEMENT shall be valid unless the same if in writing and signed by all of the Parties.

15. Attorney's Fees. In the event any suit, action or other legal proceeding shall be instituted to declare or enforce any right created by this DEVELOPMENT AGREEMENT, or by reason on any breach of this DEVELOPMENT AGREEMENT, both parties shall be individually responsible for their respective legal fees.

16. **Governing Law and Venue.** This DEVELOPMENT AGREEMENT and the rights of the parties hereunder shall be governed, construed and enforced in accordance with the law of the State of Oregon, without regard to its conflict of law principles. Venue for any such suit, action or other legal proceeding regarding this DEVELOPMENT AGREEMENT or the Real Property shall be brought in Yamhill County Circuit Court.

17. **Interpretation.** This DEVELOPMENT AGREEMENT shall be deemed to have been drafted jointly by the parties and shall be interpreted in accordance with the plain meaning of its terms and not strictly for or against any of the parties hereto.

18. **Indemnification.** GC hereby agrees to indemnify the Homeowners and hold them harmless from and against any and all claims, demands, liabilities, costs, expenses, penalties, damages and losses, including, without limitation, reasonable attorneys' fees before or at trial, on appeal, and on any petition for review, resulting from any injuries made by contractors performing work to satisfy this DEVELOPMENT AGREEMENT.

19. **Third-Party Beneficiaries.** Nothing in this DEVELOPMENT AGREEMENT, express or implied, is intended to confer on any person, other than the parties to this DEVELOPMENT AGREEMENT, any right or remedy of any nature whatsoever.

20. **Advice of Counsel.** Each of the parties also represent that they have read this DEVELOPMENT AGREEMENT and discussed it with an attorney of their choosing, that they understand each of the terms of this Agreement, and that they enter into and execute this DEVELOPMENT AGREEMENT voluntarily and willingly.

21. **Preparation by Gunn & Cain.** The Homeowners acknowledge that this DEVELOPMENT AGREEMENT has been prepared by Gunn & Cain LLP, attorneys for GC, and that the Homeowners have been advised to consult with their own respective legal counsel should they have any questions regarding the matter.

DEVELOPERS:

GC Commercial LLC, an Oregon Limited Liability Company

By: _____
Name: Jeffery D. Smith
Title: Manager
Date: 6/16/08

On this 1st day of July, 2008, personally appeared before me the above-named Charles Alex Miller who acknowledged the execution of the foregoing instrument to be his voluntary act and deed.

OFFICIAL SEAL
ROBERT L RENK
NOTARY PUBLIC - OREGON
COMMISSION NO. 407846
MY COMMISSION EXPIRES JUN. 29, 2010

Notary Public for Oregon
My commission expires: 6/29/2010

STATE OF OREGON)
) ss.
County of Yamhill)

On this _____ day of June, 2008, personally appeared before me the above-named Daniel Peek who acknowledged the execution of the foregoing instrument to be his voluntary act and deed.

Notary Public for Oregon
My commission expires: _____

STATE OF OREGON)
) ss.
County of Yamhill)

On this _____ day of June, 2008, personally appeared before me the above-named Rebecca Peek who acknowledged the execution of the foregoing instrument to be her voluntary act and deed.

Notary Public for Oregon
My commission expires: _____

THE HOMEOWNERS:

TERRY COSS

AMELIA COSS

Date: _____

Property Address:
4304 Robin Court
Newberg, OR 97132

CHARLES ALEX MILLER, a single man

Date: July 1, 2008

Property Address:
4308 E. Robin Court
Newberg, OR 97132

DANIEL PEEK

REBECCA PEEK

Date: _____

Property Address:
4402 Birdhaven Loop
Newberg, OR 97132

Attachment 4: 5-Party Agreement

City of Newberg "City"

Yamhill County "County"
535 NE Fifth St.
McMinnville, OR 97128

Oxberg Lake Homeowners Association. "Association"

Ken Austin
Joan Austin "Austin"

JT Smith Companies "JT Smith"
(T3S R2W Tax Lot 13800)

MeadowWood Development, LLC "MeadowWood"
(T3S R2W Tax Lots 900, 1000 and 1100)

Dated: April 10, 2006

RECITALS

A. City's Transportation System Plan ("TSP") calls for a northerly arterial via Crestview Drive connecting to Hwy. 99W (the "TSP Northern Arterial").

B. Association has expressed its concern about a northerly arterial Crestview Drive terminating at Hwy. 99W.

C. Austin intends to submit for master plan approval for the development of an approximately 400-acre site (the "Austin Master Plan") located in the City. Austin desires a transportation system that will have adequate capacity to serve the development on the Austin Master Plan parcel.

D. County has contracted with JRH Transportation Engineering ("JRH") to determine the transportation impacts of an alternative to the TSP Northern Arterial (the "Springbrook Northern Arterial Plan"). The Springbrook Northern Arterial designates Springbrook Road between HWY 99W and Crestview as the northern arterial and amends the designation of Crestview from Springbrook to Hwy 99W as a major collector.

E. Association has requested certain stipulations on the Crestview Drive to Hwy. 99W link which are also under study by JRH.

F. The Springbrook Northern Arterial Plan is diagrammatically depicted on Exhibit "A" attached hereto.

G. The JRH study has demonstrated the feasibility and transportation system adequacy of the Springbrook Northern Arterial Plan, assuming year 2025 projections and buildout of the Austin Master Plan.

H. The purpose of this Agreement is to finalize the agreement of the parties and to begin the process of amending City's TSP to implement the Springbrook Northern Arterial Plan.

AGREEMENT

1. The parties hereto agree to accept the Springbrook Northern Arterial Plan attached hereto as Exhibit "A" and specifically accept and rely upon the JRH study attached hereto as Exhibit "B".

2. City will initiate a process to amend its TSP to designate Springbrook Road as the Northern Arterial for the City. The City Manager and City Engineer will support this effort through the Planning Commission and City Council with the intended modification to the TSP as described. All parties to this Agreement will support this designation. If the City considers amending the Northern Arterial designation of Springbrook Road in the future it will be by public process.

3. City will initiate a process to amend its TSP to designate Crestview Drive as a Major Collector, with the general design and alignment of the road as depicted in Exhibit A. The City Manager and City Engineer will support this effort through the Planning Commission and City Council with the intended modification to the TSP as described. All parties to this Agreement will support this designation. If the City considers amending the Major Collector designation of Crestview Drive in the future it will be by public process.

4. The proposed design of the Crestview Drive Major Collector will be posted as "no through trucks" and be designed to encourage a 25mph speed limit. Truck size limitation language for posted signs will be determined by JRH. City will maintain Crestview Drive as two-lane road between the roundabout immediately to the south of Robin Court extending to the western edge of the Oxberg Lake Estates property. Turn lane features, if required, will be determined at a later date.

5. Improvements on the proposed Crestview Drive Major Collector will be paid for as a capital improvement subject to City's transportation SDC program.

6. The parties agree to support an amendment to County Board Order 06-070 to delete the condition requiring a study and County approval before the City can construct a roundabout on Springbrook Road.

7. County will expeditiously initiate a process to surrender jurisdiction of that portion of Crestview Drive as originally requested by City.

8. The parties agree with the findings of the initial study that the capacity in the transportation system achieved through the Springbrook Northern Arterial Plan will have virtually no effect on Springbrook Road operations and will maintain the capacity and functionality of the City of Newberg's Transportation System Plan.

9. This agreement has no bearing on the City's consideration to annex or not annex Oxberg Lake Estates.

10. Each party hereto represents to the other parties that the party has all necessary power and authority to perform under and be bound by the terms and conditions of this Agreement.

11. All of the terms and provisions contained herein shall inure to the benefit of and shall be binding upon the parties hereto and their respective heirs, successors, and assigns.

12. Counterparts and facsimile signatures. The parties may execute this agreement in counterparts, each of which shall be deemed to be an original thereof. The parties agree that facsimile signatures shall be accepted as original signatures with respect to this agreement.

CITY OF NEWBERG

By: J M Bennett
Its: CITY MANAGER

YAMHILL COUNTY

By: Leslie A. Adams
Its: Chair, Yamhill County commissioners

OXBERG LAKE HOMEOWNERS ASSOCIATION

By: Jack Ketrow
Its: President

KEN AUSTIN
JOAN AUSTIN

By: George K. Austin J
Its: Joan D. Austin

JT SMITH COMPANIES

By:
Its: PRESIDENT

MEADOWWOOD DEVELOPMENT LLC

By: Timothy Speakman
Its: MEMBER / MANAGER

Accepted by Yamhill County
Board of Commissioners on
4/19/06 by Board Order
06-265

4/10/2006 02:49PM

EXHIBIT A

B.O.06-265

CRESTVIEW DRIVE IMPROVEMENT PROJECT
FROM ROBIN COURT TO HIGHWAY 99W
ALIGNMENT EXPLORATION
PRELIMINARY
NOT FOR CONSTRUCTION
SCALE: 1" = 100' (APPROX.)
SEE SHEET 2 OF 2 FOR AN ENLARGEMENT OF THIS AREA
HARRISON LN
PUTNAM RD
CRESTVIEW DR
ROBIN CT
SPRUCE CT
SPRUCE DR
SPRUCE LOOP
SPRUCE WAY
SPRUCE CIR
SPRUCE PL
SPRUCE TER
SPRUCE LN
SPRUCE AVE
SPRUCE BLVD
SPRUCE ST
SPRUCE RD
SPRUCE PKWY
SPRUCE HWY
SPRUCE 99W

CRESTVIEW DRIVE IMPROVEMENT PROJECT
FROM ROBIN COURT TO HIGHWAY 99W
ALIGNMENT EXPLORATION
FOR REVIEW & DISCUSSION ONLY
SCALE: 1" = 60' (APPROX.)
ROBIN CT.
ROUNDABOUT 100' INSCRIBED CIRCLE DIAMETER
newberg
SCALE:
DATE: Feb 21, 2006
DRAWN: Paul Chiu, PE
DESIGNED:
APPROVED:
NO. REVISION DATE
SHEET 2 OF 2

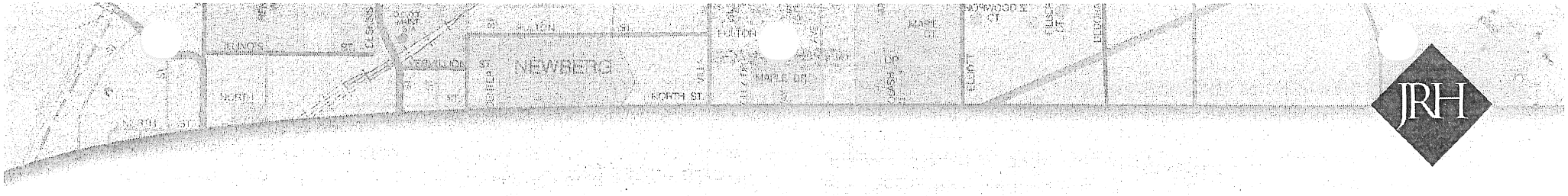
EXHIBIT B

JRH Engineering Study
March 27, 2006

B.O.06-265

THE EFFECT ON SPRINGBROOK STREET OF CONVERTING THE NEWBERG NORTHERN ARTERIAL (CRESTVIEW DRIVE) TO A MAJOR COLLECTOR

March 27, 2006



THE EFFECT ON SPRINGBROOK STREET OF CONVERTING THE NEWBERG NORTHERN ARTERIAL (CRESTVIEW DRIVE) TO A MAJOR COLLECTOR

This memo outlines JRH Transportation Engineering's findings relating to the effect on Springbrook Street resulting from changing the Newberg Northern Arterial (Crestview Drive) from an arterial classification to a traffic-calmed major collector.

Briefly stated, the conclusions of the report are:

1) The physical capacity of Crestview Drive will not be materially reduced. Therefore, capacity restrictions will not divert traffic from Crestview Drive to Springbrook Street.

2) A ten mile per hour operating speed reduction on Crestview Drive (as might be expected from the reclassification of the street and the addition of traffic calming measures) would have virtually no effect on Springbrook Street operations.

The following contains the analysis used to develop these conclusions.

BACKGROUND

The City of Newberg Transportation System Plan envisions a northern arterial connecting Mountain View Drive at the north, crossing the railroad tracks and continuing east from Springbrook Street along the alignment of Crestview Drive to the Oxburg neighborhood, and then south to an intersection with ORE 99W. Residents along the proposed arterial are concerned that this facility would have a negative effect on the livability of their neighborhood. They have proposed that this arterial be changed to a major collector with traffic calming to reduce operating speeds to 25 miles per hour to help mitigate traffic impacts.

There is concern by others that this downgrading of classification on Crestview Drive will produce traffic spill over onto Springbrook Street. This, in turn, would require additional transportation mitigation should vacant property be developed. Our challenge is to evaluate the relative traffic demand on Springbrook, resulting from the conversion of Crestview from an arterial to a major collector.

There are two ways that this conversion might impact Springbrook. The first would be the reduction in capacity on Crestview Drive to the extent that traffic would be forced to divert from Crestview to Springbrook. The second question is, would reducing speeds on Crestview Drive make Springbrook become relatively more attractive and, thus, increase traffic volumes? This memo analyzes both effects.

EFFECT ON CRESTVIEW CAPACITY

A review of the projected traffic volumes along this collector shows that there will be adequate capacity along Crestview to meet the traffic demand. Under roadway design standards contained in the Newberg Transportation System Plan (TSP), the primary difference between a major collector and a minor arterial is that the arterial has a continuous two way left-turn lane, while the major collector has turn lanes, where appropriate, at intersections. Given the traffic volumes projected, both of these would have sufficient capacity to handle future traffic demands.

The two capacity constraints on both the original Northern Arterial as proposed in the Newberg TSP and the neighborhood proposed Crestview Drive major collector are at the intersections with Springbrook Street and at OR 99W. The geometry and thus the capacity at both intersections are not anticipated to change under either scenario. At the north end, the design of the roundabout between Springbrook and Crestview does not change with the proposed change in Crestview classification. At the south end, the design will be dictated by the needs of the commercial development along Crestview and will have more lanes than commonly associated with a major collector.

Future development may dictate that new intersections be constructed on Crestview between Springbrook and OR 99W. The design of these intersections will be subject to a traffic impact analysis to ensure the capacity is adequate to meet demands. Intersection turn lanes may be required; however, the low traffic volumes projected midway between Springbrook and OR 99W make it unlikely that even these minimal improvements will be required.

Traffic calming measures may also influence capacity; however, these impacts are more closely evaluated by examining speed reductions. This is the subject of the next portion of this report.

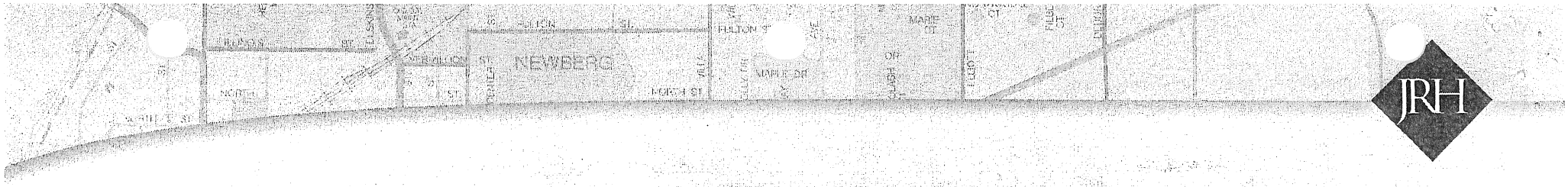
Because intersection geometry does not change, intersection capacity is not affected and, because capacity does not change, capacity constraints will not divert traffic from the Northern Arterial (Crestview Drive) to Springbrook Street.

EFFECT OF SPEED REDUCTION

The second way the change of classification could impact Springbrook is the result of the change in travel speed between two classifications. If the relative speed on Springbrook between Crestview diminishes, then there may be additional trips induced onto Springbrook. This report is primarily focused on determining the impacts of these induced trips. In conducting this analysis, we looked effect on the traffic volumes using two separate methodologies.

For the first methodology, we reviewed the year 2025 projections for both Crestview and Springbrook as shown in Figure 2 of the Newberg Transportation System Plan. Appendix 1 contains this figure. The amount of through traffic on Crestview was determined by subtracting existing traffic and traffic from future development along Crestview from the projected 2025 turning movement volumes on Crestview, as shown in the Transportation System Plan.

After calculating southbound traffic, similar methodology was used to develop the northbound traffic on Crestview. The number of driveways, intersections, etc., along Springbrook, makes it difficult to determine the thru traffic on Springbrook. As a result, we developed



the thru traffic volumes on Springbrook using California Department of Transportation "Freeway Diversion" curves.[1] These calculations determine relative traffic volumes along parallel routes based on differentials in time and distance. We calculated the arterial travel times along Crestview assuming a 35 MPH speed for traffic driven on that route as well as a 35 MPH speed for Springbrook. To these travel times, we placed a delay factor on Springbrook for delay at signalized intersections along OR 99W, between Springbrook and the proposed intersection between Crestview and OR 99W.

Table 1 provides the Year 2025 projected through traffic volumes for Crestview and Springbrook with Crestview as an arterial and as a collector assuming a ten MPH reduction in speed.

A ten mile per hour speed differential was selected using information contained in Appendix A "Traffic Calming, State of the Proactive", by ITE/ FHWA. This is available on the web at http://ite.org/traffic/tcstate.htm#tcsop

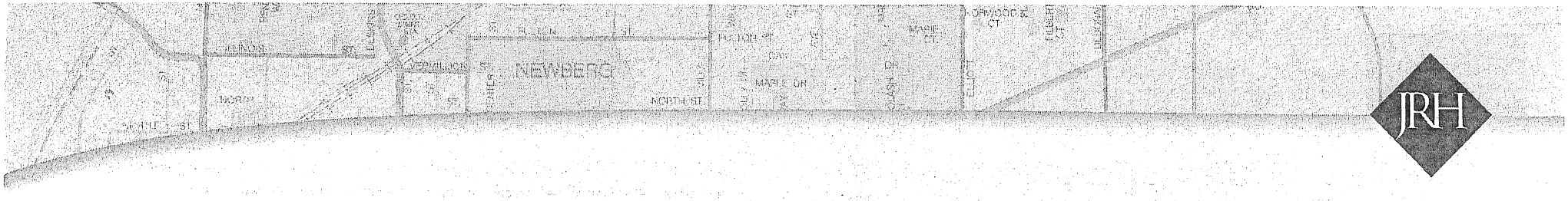
A review of the data indicates that a ten MPH speed is a reasonable best case for effective traffic calming measures, and conservative for use in determining the impacts on Springbrook. If the speed reduction is less, then fewer cars will transfer from Crestview to Springbrook and the impacts will be less.

[1] Freeway Diversion curves, more properly, should be called parallel route diversion curves. They are using relative time and distance as variable. Appendix 4 provides the Freeway Diversion Curves.

Merely knowing the difference in numbers is not sufficient to determine the impact on Springbrook. To do this difference, we adjusted 2025 turning movements shown in the Transportation System Plan to reflect the increase in traffic on Springbrook. We then ran these adjusted traffic volumes using the SYNCHRO traffic evaluation model to determine the effect on level of service at both the Crestview intersection with ORE 99W, and the Springbrook intersection with ORE 99W. These volumes were compared with the traffic volumes in a SYNCHRO run using the unadjusted volumes representing the current classification. Both of these runs were for the year 2025. The results of this analysis are shown in Table 2. As can be seen, the traffic volumes change is so small that there is no effect in level of service or volume-to-capacity ratio at Springbrook and Highway 99 West. There is a 0.1 second increase in delay at Crestview and OR 99W due to a diversion of vehicles turning right onto Crestview changing to through traffic on OR 99W. Appendix 2 contains the outputs from the SYNCHRO runs.

TABLE 1: Year 2025 Through Traffic Volumes Crestview/Springbrook Intersection to Crestview/OR 99W Intersection

	CRESTVIEW SPEED			
	35 MPH		25 MPH	
	Northbound	Southbound	Northbound	Southbound
Crestview Drive	473	317	426	291
Springbrook Street	214	117	261	143



Analysis is based on 2025 traffic volumes in Newberg Transportation System Plan (Figure 2).

As a check to this methodology, we obtained a model run for the two alternatives for the year 2030 from ODOT's Transportation Planning Analysis Unit (TPAU). These analysis numbers allow us to directly calculate the difference in traffic volumes along the two, and furthermore, allow calculation of the volume to capacity ratios in levels of service at critical intersections potentially impacted by the reclassification. The TPAU model is based on a change in classification and roadway geometry, as well as a speed reduction. Appendix 3 contains the ODOT TPAU 2030 model runs.

Table 3 compares the entering and exiting volumes on Springbrook and Crestview at Highway 99 using the ODOT numbers with the volumes generated earlier in this report.

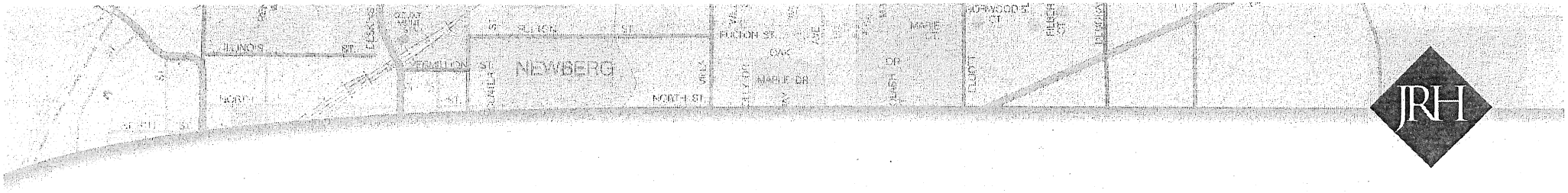
This table indicates that the regional model methodology used by ODOT and the "Freeway Diversion" curve methodology track very closely. The traffic volumes generated by JRH indicate a diversion in traffic volumes of 73 trips from Crestview to Springbrook. The TPAU Model indicates a diversion of 63 trips from Crestview and an increase in traffic to 16 trips to Springbrook. Both indicate that the traffic volumes diverted from Crestview to Springbrook as a result of the reclassification and reduction in speed is expected to not exceed more than a total of 75 trips for both the northbound and southbound movements. The methodology following the Freeway Diversion

TABLE 2: Traffic Operational Effect of Changing Crestview From Minor Arterial to Major Collector.

Functional Classification	Additional Trips To Springbrook At Highway 99		Springbrook at Highway 99		Crestview at Highway 99	
	SB Left	WB Right	Delay (Seconds) (LOS)	Volume to Capacity	Delay (seconds) (LOS)	Volume to Capacity
Minor Arterial	N/A	N/A	34.4 (C)	0.83	46.4 (D)	0.85
Major Collector	26	47	34.4 (C)	0.83	46.3 (D)	0.85

TABLE 3: Comparison of Entering and Exiting Volumes On Springbrook and Crestview at Highway 99.

	Crestview as a Minor Arterial				Crestview as a Major Arterial			
	Springbrook at Highway 99		Crestview at Highway 99		Springbrook at Highway 99		Crestview at Highway 99	
	Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting
TPAU Model	719	702	396	445	719	718	370	402
TPAU Volumes	730	630	770	680				
Adjustment to TSP Volumes for Diverted Traffic					777	656	723	654
Total Diverted Traffic								
TPAU Model	N/A		N/A		16*		69**	
TPAU Volumes	N/A		N/A		73*		73**	



Curve indicates a higher traffic volume estimated to be diverted and, therefore, represents a more conservative analysis.

All of the analysis in this study assumes land development in accordance with the adopted Comprehensive Plan. In discussions with ODOT staff, they indicated that this development includes full development of the Austin Industries property. It should be noted, however, that property may develop with more or less intensity than anticipated in the Plan. This should not impact the conclusions of this study, as this study is focused on the relative impact on Springbrook due to changes in the functional classification of Crestview. It is not focused on the absolute impacts on Springbrook due to any specific land use.

Attachment 5: Kittelson and Associates Memorandum with Attachment received August 29, 2018

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

MEMORANDUM

Date: August 15, 2018

Project #: 21709

To: Jesse Nemec
JT Smith Companies
5285 Meadows Road, Suite 171
Lake Oswego, OR 97035

From: Diego Arguea and Matt Hughart

Project: Crestview Crossing Development

Subject: 6-Party Agreement Transportation Considerations

Pursuant to your request, we have reviewed the *Crestview Improvement Project (From Robin Court to Highway 99W Alignment Exploration)* that was referenced in a six-party agreement (Yamhill County Board Order 06-265) executed in April 2006. The purpose of this agreement was to begin the process to amend the 2005 Newberg Transportation System Plan (TSP) and reclassify the Crestview Drive extension from a Minor Arterial to a Major Collector designation.

The current development proposed by JT Smith Companies will be required to construct a portion of the Crestview Improvement Project, connecting Highway 99W to the existing terminus of Crestview Drive at the southern boundary of the Oxberg Lake and MeadowWood subdivisions.

EXECUTIVE SUMMARY

Our assessment of the six-party agreement (Agreement) concludes that the proposed Crestview Drive alignment, intersection treatments, and cross-sectional elements are consistent with the guiding principles established in the Agreement, and as such, provides equivalent transportation infrastructure as that identified in the Agreement. Additional details are provided herein.

SIX-PARTY AGREEMENT BACKGROUND

In April 2006, the Yamhill County Board of Commissioners accepted an agreement to begin the amendment of the then-current 2005 TSP. The agreement's purpose authorized the City to conduct an amendment to the 2005 TSP that would designate Crestview Drive as a Major Collector roadway and identify a general design and alignment of the Crestview Drive extension (Reference 1, Agreement, #3). A traffic study was prepared by JRH Engineering concluding the change in classification of Crestview Drive

to a Major Collector would not measurably affect the City's transportation network. The TSP was subsequently amended to reflect Crestview Drive as a Major Collector.

Conceptual Alignment

The alignment identified in the Agreement extends Robin Court to Highway 99W and includes one roundabout intersection (located approximately 380 feet from 99W) and one traffic calming circle located approximately 850 feet north of the roundabout location. As stated in the Agreement, this represents a **"*general design and alignment*"** to provide direction for future development. Site-specific characteristics, unforeseen challenges, and street connectivity and layout were not addressed in the Agreement, and turn lanes, if required, were to be determined at a later date. The general design and alignment shown in the Agreement Exhibit A is shown below in Figure 1.

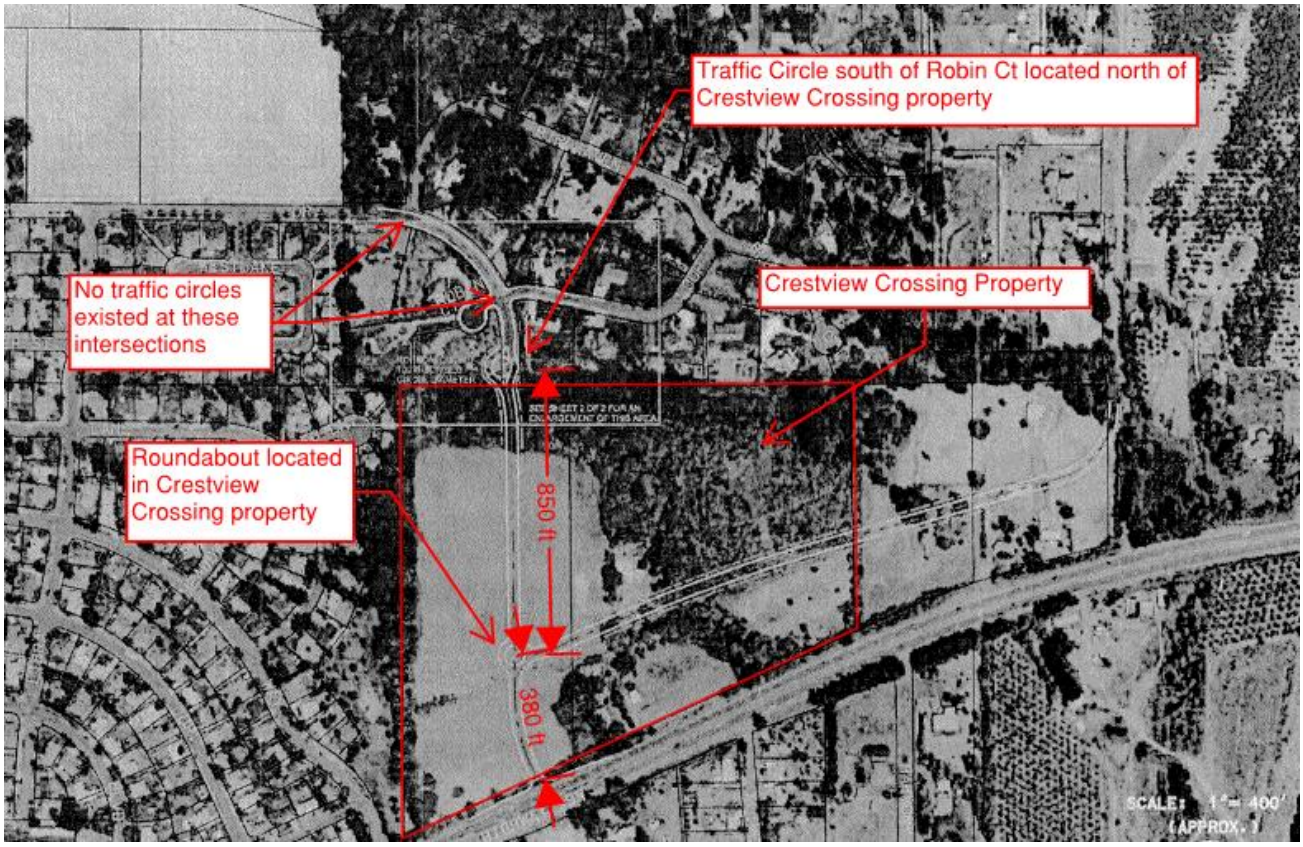


Figure 1. 6-Party Agreement Exhibit A

As shown above, the Agreement identifies a general alignment with two intersection treatments addressing intersection operations and traffic calming. As stated in the Agreement, the alignment should be *designed to encourage a 25 mph speed limit*.

PROPOSED DEVELOPMENT

The proposed residential application acknowledges responsibility to construct the extension of Crestview Drive, connecting from Robin Court to Highway 99W, and has developed an alignment consistent with that shown in the 2006 Agreement.

Constructed To-Date

As shown in Figure 1, Crestview Drive, from Birdhaven Loop to the northern edge of Crestview Crossing, was reconstructed in 2011/2012 to include two intersection traffic calming traffic circles on Crestview Drive at Birdhaven Loop and Robin Court, depicted in Figure 2 below.

Figure 2. Traffic Calming Treatments along Crestview Drive

Neither of these traffic calming circles were identified in the Agreement. The traffic calming circles were constructed after the 2006 Agreement was adopted and are recognized to have a traffic calming effect to limit speeds to 25 mph.

PROPOSED ALIGNMENT

The June 2018 Crestview Crossing Traffic Impact Analysis (TIA) evaluated the impacts of the proposed development and identified recommended mitigation measures. The mitigation measures were selected considering anticipated traffic volumes along Crestview Drive and include the number and configuration travel lanes on the southbound approach to 99W, turn lane storage lengths, as well as transition tapers approaching the roundabout.

Roundabout Intersection

In accordance with the Agreement, construction of a roundabout is proposed to serve traffic into the residential areas north of Highway 99W, and connect to the future Benjamin Road Realignment (a Minor Collector). The roundabout location was determined based on the required queue storage length as an outcome of the TIA as well as roundabout design parameters, including entry deflection angles and transition tapers. As shown in Crestview Crossing site plan application, the roundabout is located approximately 545 feet north of Highway 99W (measured from the center of roundabout to the stop bar at Highway 99W). A southbound left-turn lane on Crestview Drive approaching Highway 99W provides 250 feet of storage and requires at least 50 feet of transition. The northbound transition taper into the roundabout is approximately 200 feet, and has been designed to accommodate all turning movements including u-turns. A detailed exhibit illustrates these distances and is included as an attachment to this memorandum.

The Public Improvement Standards of the Newberg Development Code (Chapter 15.505) were also reviewed to ensure consistency with Collector Roadway spacing standards (400 feet for a Major Collector designation). As such, the location of the roundabout has been designed to comply with the Newberg Development Code and the 6-Party Agreement in the context of the projected traffic operations while recognizing site-specific design considerations and constraints.

Two-way Stop Controlled Intersection

To provide efficient connectivity to adjacent residential development, a two-way stop-controlled intersection (Public Street C) has been designed approximately 500 feet north of the proposed roundabout. The location of this intersection is influenced by intersection spacing on a Major Collector (greater than 400 feet minimum spacing requirement), location of wetlands (site constraints), meeting minimum intersection sight distance requirements, and ability to provide an east-west roadway serving the proposed large lot homes of the Development. The location of this intersection is approximately 410 feet south of Robin Court, the closest public street intersection to the north.

Additional Considerations

Consideration was given to the 6-Party Agreement and the spacing between traffic calming devices during the roadway and site design process. The intersection spacing shown in the conceptual alignment of the 6-Party Agreement and the proposed alignment is shown in a detailed exhibit included as an attachment to this memorandum

As shown in the attachment and in Figure 1, the conceptual spacing shown in the Agreement between the roundabout and traffic calming circle is approximately 850 feet. The proposed site layout and intersection design maintains similar distance between the proposed roundabout and the constructed traffic calming circle on Robin Court (approximately 910 feet). We conclude that the difference in spacing (60 feet) will not impact travel speeds and that the 25 mph roadway design speed is consistent with the 6-Party Agreement.

6-PARTY AGREEMENT CONSISTENCY

In summary, we conclude the proposed alignment and intersection treatments are consistent with and satisfy the terms of the 6-Party Agreement for the following reasons.

1. The purpose of the Agreement is to re-designate Crestview Drive from a Minor Arterial to a Major Collector designation. The re-designation was successfully incorporated into the City's Transportation System Plan based in part on the JRH traffic study.

2. The current Crestview Crossing development proposal acknowledges the Agreement and proposes a roadway extension design consistent with City Major Collector requirements as well as key Agreement elements.

3. The spacing difference between the proposed roundabout and the recently constructed traffic calming circle at Robin Court is not expected to impact travel speeds on Crestview Drive extension and thus is consistent with the traffic calming south in the 6-Party Agreement.

4. With construction of the proposed roundabout, there will be a total of three traffic calming intersection treatments along Crestview Drive between Highway 99W and Birdhaven Loop. This is a greater amount of traffic calming than originally identified in the Agreement, indicating consistency in design and fulfillment of intent by the Applicant.

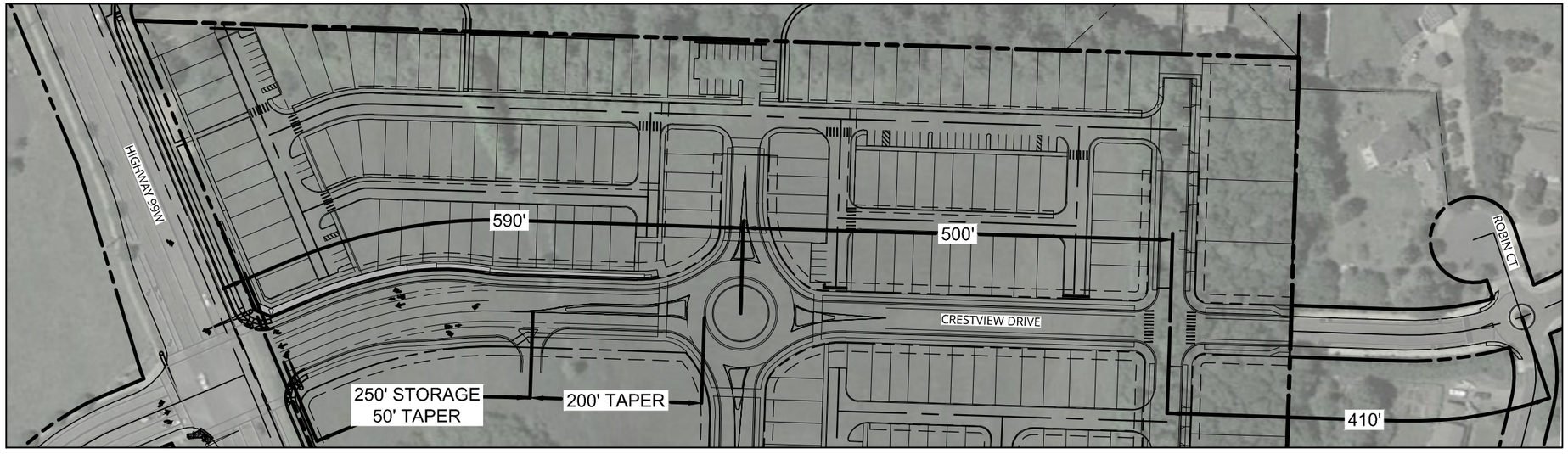
We trust this memorandum demonstrates consistency with the 6-Party Agreement.

REFERENCES

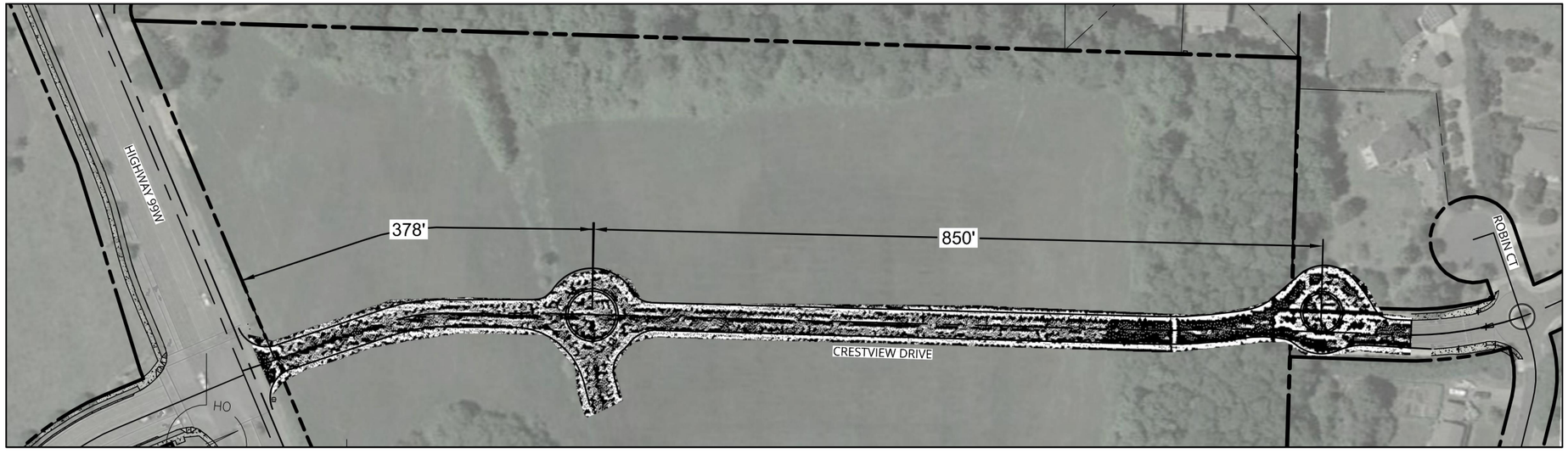
1. Yamhill County Board of Commissioners. *6-Party Agreement, Crestview Improvement Project (From Robin Court to Highway 99W Alignment Exploration).* Board Order #06-265. April 19, 2006.

ATTACHMENT

Crestview Drive Exhibit: Intersection Spacing Distances



CRESTVIEW DRIVE DESIGN, PROPOSED



CRESTVIEW DRIVE GENERAL DESIGN AND ALIGNMENT, SIX-PARTY AGREEMENT 2006

W
S
N
E

SCALE: 1" = 150'
0 150' FT

08/15/18

CRESTVIEW CROSSING

J.T. SMITH COMPANIES

CRESTVIEW DRIVE DESIGN EXHIBIT

3J CONSULTING
CIVIL ENGINEERING . WATER RESOURCES . COMMUNITY PLANNING

Attachment 6: Related Resolutions, Orders and Ordinances

NUAMC RESOLUTION NO. 2006-15

A RESOLUTION OF THE NEWBERG URBAN AREA MANAGEMENT COMMISSION RECOMMENDING APPROVAL OF FILE UGB-06-01, AN URBAN GROWTH BOUNDARY AMENDMENT AND COMPREHENSIVE PLAN AMENDMENT TO COM (COMMERCIAL) FOR PROPERTY LOCATED IN THE 4200 BLOCK OF PORTLAND ROAD, YAMHILL COUNTY TAX LOT 3216AC-13800

RECITALS

1. On May 17, 2006, Jeffery D. Smith submitted a request for an urban growth boundary amendment of approximately and comprehensive plan change to COM (Commercial) for 14.74 acres located in the 4200 block of Portland Road, Yamhill County Tax Lots 3216AC-13800

2. On August 3, 2006 notice of this proposed urban growth boundary amendment was mailed to the owner of record as identified in Yamhill County Assessor's Office, and all adjoining property owners within a distance of 500 feet.

3. On July 29, 2006, notice was published in the *Graphic* Newspaper, and on July 28, 2006 notice was posted in four public places.

4. On September 11, 2006, the Newberg Urban Area Management Commission (NUAMC) held a hearing to consider the request.

5. NUAMC finds that the applicable criteria have been met, and that approval of the application is in the best interests of the community.

NOW THEREFORE, BE IT RESOLVED by the Newberg Urban Area Management Commission that it recommends that the City Council and Yamhill County Board of Commissioners:

1. Include the property shown in Exhibit A and described in Exhibit B in the Newberg Urban Growth Boundary.

2. Amend the comprehensive plan to include the subject property to a mixture of COM (commercial) and LDR (low density residential) comprehensive plan districts. The applicant should submit a plan showing the location of this mixed use. The residential should provide a buffer to existing residential uses to the west.

3. Make approval of the above contingent on final adoption of amendments to the Newberg Transportation System plan as shown in the agreement by the parties.

4. Require that, upon future development of the property, the development contribute its share, based on traffic volume, of the future cost of capacity improvements to the Springbrook/99W intersection.

5. Require the tree buffer along the north property line as described in the application.

6. Require a wetland determination prior to any development on the site.

This recommendation is based on the staff report, findings and testimony.

DATED this 21st day of September, 2006.

AYES: NAYS: ABSTAIN: ABSENT:

ATTEST:

_____ _____

Recording Secretary NUAMC Chair

Exhibits:

Exhibit A: Legal Description and Map
Exhibit B: Findings

EXHIBIT "A-1"

LEGAL DESCRIPTION:
JULY 11, 2006
PAGE 1 OF 2

A TRACT OF LAND SITUATED IN THE NORTHEAST ONE-QUARTER OF SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 WEST, WILLAMETTE MERIDIAN, YAMHILL COUNTY, OREGON, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEASTERLY CORNER OF THE PLAT OF "SPRING MEADOW SUBDIVISION STAGE 2" RECORDED IN VOLUME 9, PAGE 46, YAMHILL COUNTY SURVEY RECORDS BEING AN ANGLE POINT OF THE NEWBERG CITY LIMIT BOUNDARY ON THE SOUTHERLY LINE OF THE BENJAMIN HEATER DONATION LAND CLAIM NUMBER 50; THENCE ALONG SAID DONATION LAND CLAIM LINE SOUTH 89° 57' EAST, 515.8 FEET TO THE NORTHWEST CORNER OF THAT CERTAIN TRACT DESCRIBED IN DEED RECORDED IN DOCUMENT NUMBER 199715739; THENCE ALONG THE WESTERLY LINE OF SAID TRACT SOUTH, 1124.5 FEET TO THE NORTHERLY RIGHT-OF-WAY OF PACIFIC HIGHWAY (HIGHWAY 99 WEST) AS DESCRIBED IN DEED BOOK 110, PAGE 220; THENCE ALONG SAID RIGHT-OF-WAY LINE SOUTH 65° 30' WEST, 568.2 FEET TO A POINT BEING THE SOUTHEASTERLY CORNER OF SAID PLAT OF "SPRING MEADOW SUBDIVISION STAGE 2"; THENCE LEAVING SAID RIGHT-OF-WAY LINE ALONG THE EASTERLY BOUNDARY OF SAID PLAT (BEING COINCIDENT WITH AN EASTERLY NEWBERG CITY LIMIT LINE) NORTH 00°03' EAST, 1360.6 FEET TO SAID **POINT OF BEGINNING**.

CONTAINS 14.729 ACRES, MORE OR LESS.

THE ATTACHED EXHIBIT ENTITLED "EXHIBIT A-2 ANNEXATION MAP" IS MADE APART HEREOF.

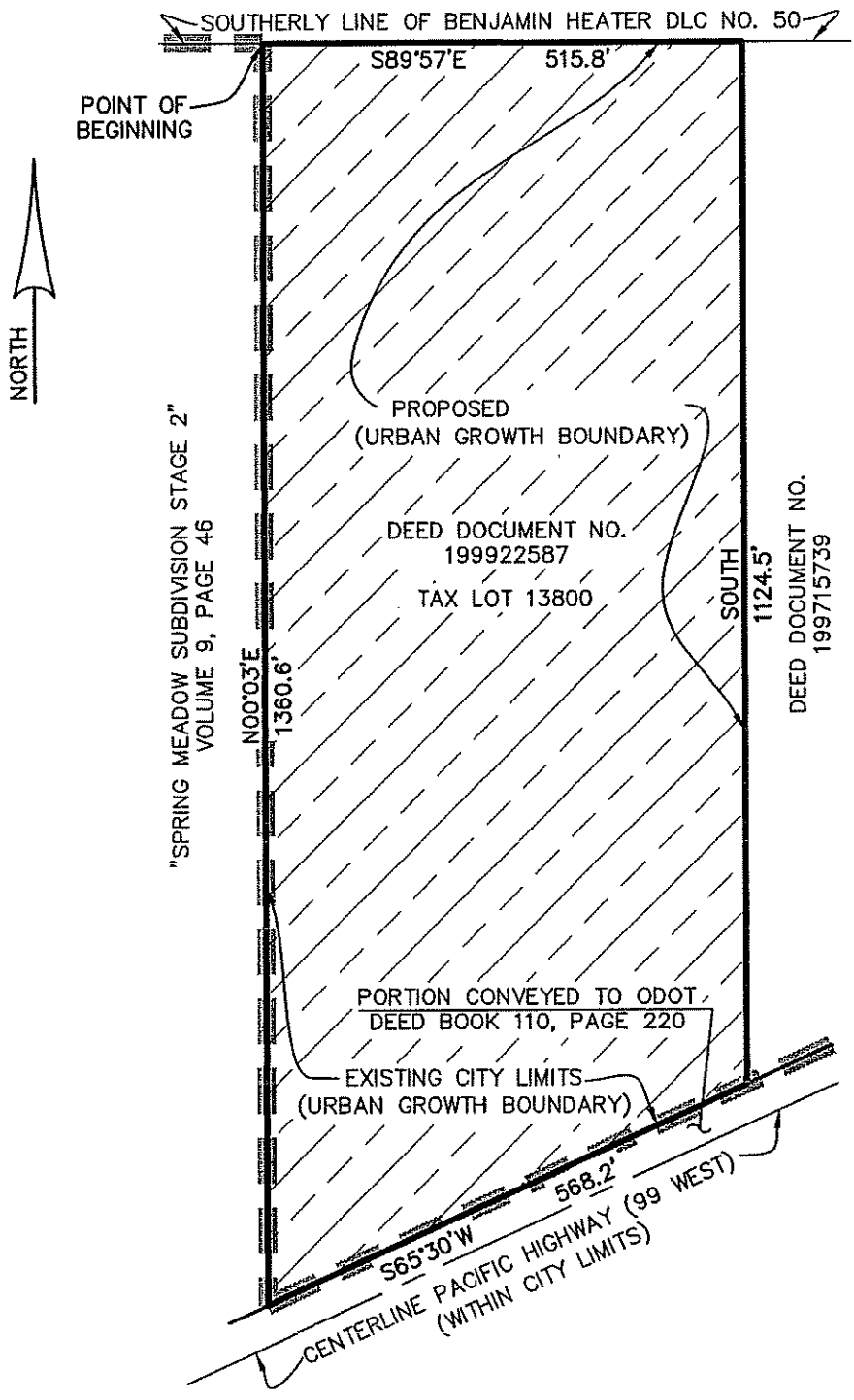
THIS DESCRIPTION IS MEANT FOR ANNEXATION PURPOSES ONLY. IT IS NOT INTENDED TO BE USED IN THE TRANSFER OF REAL PROPERTY.

7/11/06

REGISTERED
PROFESSIONAL
LAND SURVEYOR

OREGON
JANUARY 10, 2006
PAUL D. GALLI
76970

EXPIRATION DATE 6/30/07



W R G
DESIGN INC.
5415 SW Westgate Dr,
Ste 100 / Portland, OR
97221 / Tel. 503.419.2500

EXHIBIT A-2
ANNEXATION MAP

NE1/4 S16, T3S, R2W, W.M.
YAMHILL COUNTY, OREGON

PROJECT NO.	JTS5136
DATE:	07/11/2006
BY:	CEP
SCALE:	1" = 100'
SHEET NO.	2 OF 2

EXHIBIT B: URBAN GROWTH BOUNDARY FINDINGS
UGB-06-01
Approval of an urban growth boundary amendment for 14.74acres.

ORS Standards:

ORS 197.298. *ORS 197.298 establishes priorities for land to be included within an urban growth boundary. ORS 197.298 (1)(a) states: "In addition to any requirements established by rule addressing urbanization, land may not be included within an urban growth boundary except under the following priorities: (a) First priority is land that is designated urban reserve land under ORS 195.145, rule or metropolitan service district action plan."*

Finding: The property under review is designated as Urban Reserve land, as adopted by the City of Newberg and Yamhill County in 1993, and therefore is first priority for inclusion in the Urban Growth Boundary.

OAR Standards:

660-021-0060 ***Urban Growth Boundary Expansion.*** *All lands within urban reserve areas established pursuant to this division shall be included within an urban growth boundary before inclusion of other lands, except where an identified need for a particular type of land cannot be met by lands within an established urban reserve area.*

Finding: The property under review is designated as Urban Reserve land, as adopted by the City of Newberg and Yamhill County in 1993, and therefore is first priority for inclusion in the Urban Growth Boundary.

Statewide LCDC Goals:

Goals 4, 15, 16, 17, 18, and 19 do not apply to this application. The remaining goals are addressed below:

Goal 1. Citizen Involvement.

Finding: The property under review is located within the Study Area C of the Newberg Urban Reserve Area Project adopted by the City and Yamhill County in 1995. A public involvement program was implemented as part of the initial Urban Reserve Area Project in 1992 and 1993. In 1997, a study was prepared that examined the six Urban Reserve Areas (URAs) in detail. The study provided a buildable lands inventory and a land use needs analysis, preliminary infrastructure and transportation plans, and an amended urban services agreement between the City of Newberg and Yamhill County. In conjunction with this 1997 study, a citizen involvement and inter-governmental coordination program was prepared and implemented to assure that the results of the study accurately reflected the desires of residents and property owners in the City and County. In 1997, approximately 70 people attended two workshops for property owners and other parties interested in the URAs. A questionnaire was also distributed at that time to solicit additional input in the URA planning process. Additionally, in 2004, the Newberg City Council created the Ad Hoc Committee on Newberg's Future (the Committee) to provide a forum for citizen involvement in planning for Newberg's future land use patterns. Between April 2004 and

June 2005, the Ad Hoc Committee on Newberg's Future sought the input from the general public. During that time, the Committee held two open houses, conducted two surveys, received comments at each of their meetings, and received several letters. The hearing process for this request also fulfills the citizen involvement requirements.

At the hearing, neighbors raised concerns about the compatibility of the proposed commercial uses with adjacent established residential uses. A proposed tree buffer and an existing park provide separation along most of the boundary between the uses, except for a small amount of frontage on the northwest side of the property. Accordingly, NUAMC recommends a residential designation of this part of the property to respond to citizen concerns.

Goal 2. Land Use Planning.

Finding: This goal stipulates that land use decisions be made in accordance with a comprehensive plan and that suitable "implementation ordinances" to the plan's policies must be adopted. It requires that plans be based on "factual information," that local plans and ordinances are coordinated with those of other jurisdictions and agencies, and that plans be reviewed periodically and amended as needed.

The proposed amendment is based on a wealth of factual information including recently adopted population projections and land needs assessments, the report of the Ad Hoc Committee on Newberg's future, Newberg's recently adopted Transportation System Plan, the City's recently adopted Economic Opportunity Analysis, and site information and utility information as described in the application.

This amendment is being concurrently reviewed by Yamhill County and the City of Newberg. Referrals of this application have been sent to a number of agencies, including ODOT, DLCD, DSL, Newberg School District, and utility companies.

Goal 2 also contains standards for taking exceptions to statewide goals. An exception may be taken when a statewide goal cannot or should not be applied to a particular area or situation. In 1980, Yamhill County identified the property under review as "lands committed to rural residential use" in Exceptions Statement 11. Under the recently revised Statewide Planning Goal 14, a goal exception is no longer required for amending and Urban Growth Boundary.

Goal 3. Agricultural Lands.

Finding: This goal requires local governments to inventory agricultural lands and to "preserve and maintain" them for farm use. The property under review is currently planned VLDR (Low Density Residential) and is zoned AF-10 (Agriculture/Forestry Small Holding) under the County Zoning Ordinance. In 1980, Yamhill County identified the property under review as "lands committed to rural residential use" in Exceptions Statement 11. The exception land definition identified the general area as having a mixture of soil types ranging from Class II to Class VI soil type. The City of Newberg *Inventory of Natural and Cultural Resources* indicates that most soils in the vicinity are flat and at least moderately fertile, though nearly all types have some problems with drainage. Sheet 16 of the Yamhill County soil survey shows that the majority of the parcel, approximately 55% is Woodburn silt loam (WuB, 0.00 - 7.0%), which is designated as Class II

soil type. Approximately 25% is Laurelwood (La , 12 - 20%) and approximately 20% is Woodburn Clay (WuC, 3-12%). Woodburn Clay is classified as Class III soil type. The property has previously been used primarily for hay production. In the last several years, however, the property has been little used and has produced no economic agricultural products. The Exceptions Statement II document includes a discussion noting that the area involved is characterized by good roads, rural fire service, fair or better water availability, and has mostly fair soil suitability for septic systems. This area is currently committed to rural residential development. The Inventory of Natural and Cultural Resources report states the City's recognition that urban expansion will undoubtedly occur on prime Class II soils, but notes that wasteful land use practices should be discouraged. The proposed addition of the project site into the UGB would provide needed land for urban expansion adjacent to the City where services are available or can be readily extended, thereby avoiding leap-frog development or other land consumptive practices.

Goal 5. Open Spaces, Scenic and Historic Areas, and Natural Resources.
Finding: This goal encompasses twelve resource types, including wildlife habitats, mineral resources, and wetlands and waterways. Goal 5 requires inventories of resources to be conducted and policies to be adopted whereby the local jurisdiction can manage these resources. The City of Newberg prepared an inventory of natural and cultural resources in 1981 as part of its comprehensive planning program. This inventory includes the following resources: agricultural lands; forest lands; mineral and aggregate resources; fish and wildlife; water; air quality; and open space, scenic, natural, historic, and recreational resources. The property under review consists primarily of WuB Woodburn silt loam soils with La Laurelwood silt clay soils in the vicinity of the drainage ditch. Woodburn soils are identified as Class II soils by SCS; Laurelwood soils are identified as Class III as indicated on the USGS soil map. Much of the area has been used for hay pasture.

The parcel contains a wooded area along the north property line. The applicant has proposed that this area be retained as a buffer and open space area. Therefore, there are no conflicting uses for preservation of this area.

Residential development on the west and north of the property currently releases all their storm water onto this parcel. This has resulted in the development of some very low quality wetlands along the drainage ditches created by off site stormwater runoff. Further information is needed to determine whether these are jurisdictional wetlands or waterways and what protections may be needed.

Goal 6. Air, Water and Land Resources Quality.
Finding: This goal requires local comprehensive plans and implementing measures to be consistent with state and federal regulations regarding air, water, and land resources quality. The Newberg Comprehensive Plan, Ordinance 1967 contains several policies intended to ensure conformance with state and federal regulations governing air, water, and land resources quality. Negligible impacts are anticipated to existing air quality in the area. A C-2 land use designation is intended for local service retail uses. This will reduce the distance that Newberg residents need to travel for goods and services, and therefore improve air quality. The completion of the

Crestview Drive collector will shorten the length of miles traveled by the overall community by reducing out of direction travel, improving air quality. The proposed UGB amendment would be consistent with the City's Comprehensive Plan policies by providing water and sanitary sewer services capable of supporting future urban level development in the vicinity.

Goal 7. Areas Subject to Natural Disasters and Hazards
Finding: The subject site does not include any flood hazard areas or other areas especially subject to natural disasters or hazards.

Goal 8. Recreation Needs
Finding: This goal requires a community to evaluate its areas and facilities for recreation and to develop plans to deal with the projected demand for them. The City's Comprehensive Plan includes policies designed to ensure recreational facilities and services are expanded to meet growing recreation demands of the community. Chehalem Park and Recreation District (CPRD) has established a neighborhood park along the west border of the property.

Goal 9. Economic Development
Finding: This goal requires local governments to provide adequate opportunities for a variety of economic activities. It requires local governments to analyze economic opportunities and constraints in the area. It requires local governments to provide an adequate supply of land to meet the needs identified. Further, it requires limits on uses on or near sites zoned for specific industrial and commercial uses to those which are compatible with proposed uses.

Newberg has recently adopted an economic opportunity analysis and land needs projections. Those projections identify a need for additional commercial land in the community. In particular, the plans identify a need for 2-3 community commercial centers of 10-15 acres each. The subject property was identified as a potential property for meeting this identified need. Thus, inclusion of this 14.74 acre property would help partly meet the community's need for a community commercial center.

The property abuts a park site to the west, future urban property to the east, and Providence Hospital to the south. These are compatible land uses. On the north side, however, the property is zoned rural residential and contains a rural residential subdivision. The applicant has proposed leaving a buffer of trees between the commercial property and that subdivision. This would be a limit on uses near the proposed commercial area that could provide for compatibility between the uses.

<u>On a portion of the west side, the property abuts residential uses. The applicant should develop a plan for a mixture of residential and commercial uses that would place residential uses adjacent to the existing residences to insure compatibility.</u>

Goal 10. Housing
Finding: This goal requires a community to plan for and accommodate needed housing types, including multifamily and manufactured housing. The community is also required to inventory developable residential lands, conduct an analysis of projected future demand for various

housing types, and to plan and zone enough buildable land to meet those needs. The goal prohibits local plans from discriminating against needed housing types. The goals for housing in the City of Newberg's Comprehensive Plan is to provide for diversity in the type, density, and location of housing to ensure there is an adequate supply of affordable housing units to meet the needs of City residents of various income levels. The Newberg Comprehensive Plan projects a future population of 38, 352 by 2025 and 54,097 by 2040. Inclusion of the Gueldner Property into the UGB will help offset the City's projected shortfall of land for commercial development. The commercial development on the site will provide needed commercial services to serve the growing community. ~~No housing units are proposed for this property.~~ A small amount of residential development could be provided to serve as a buffer to existing residential uses to the west.

Goal 11. Public Facilities and Services.

Finding: This goal aims for efficient planning of public services such as sewers, water, law enforcement and fire protection. It encourages planning of public services to meet the community's needs and capacities rather than responding to development as it occurs. Newberg's comprehensive plan includes the goal to plan and develop a timely, orderly, and efficient arrangement of public facilities and services to serve as a framework for urban development. **Sewer** service is anticipated to be provided by extending an existing sewer main in Klimek Lane to the property. Some upgrades to the Fernwood Road pump station may be needed to serve the property. General sewage treatment capacity for the community is addressed in the City's sewage master plan.

Water service is available fronting the site, and can be extended to serve the development. General water capacity for the community is addressed in the City's water master plans.

Storm drainage for the property is currently provided by two storm drainage ditches that currently cross the property and outfall to the property to the east. These eventually drain to a 24-inch diameter culvert under Highway 99W. This culvert is identified in the Newberg Drainage Master Plan as undersized and needing to be replaced with a 36-inch culvert. Certain improvements to the storm drainage system will be required upon development, which may include some combination of new storm drainage lines and storm water detention.

City police and fire services will be provided upon annexation. Separate findings of the availability of these services will be required upon annexation. The property has excellent access to Providence Newberg Hospital.

Goal 12. Transportation

Finding: The primary objective of this goal is to provide a safe, convenient and economic transportation system. The City's comprehensive plan contains several goals and policies designed to guide the planning and provision of a safe, convenient, and economic transportation system in cooperation with state, county, and neighboring communities in the region. The City's 1997 Urban Reserve Project report includes an analysis of transportation system impacts and possible improvements based on a comparison of two alternative land-use scenarios. The orderly and economic provision of public services and facilities, including the transportation system, was among the criteria used to evaluate the URAs. In addition, the City recently adopted a new Transportation System Plan. This plan evaluated not only the transportation needs of the future

development within the Urban Growth Boundary, but also the transportation needs of development of the designated urban reserve areas. The transportation plan used the land use assumption that the subject property would be designated commercial. Therefore, this plan can be relied upon for consideration of this UGB amendment.

Newberg's Transportation System Plan (TSP) includes several planned road improvements in the general vicinity of the site. They include: Northern Arterial Street Connection - Existing Crestview Drive to Oregon 99W. The City's existing TSP recommends that Crestview Drive be completed through the Gueldner property to OR Highway 99W. This connection is of the City's plan to construct a Northern Arterial connecting OR 99W at the project site to Villa Road and College Street north of the downtown core via Mountainview Drive and Crestview Drive. It also includes an east-west connection between the Crestview Drive extension and Benjamin Road.

Through extensive public involvement effort, the City has initiated a change to the TSP. This change is based on a report from JRH Transportation Engineers that evaluate potential changes to the designations of Crestview Drive and Springbrook Road. The study supports the redesignation of Crestview Drive to a major collector from the middle of the Gueldner Property to Springbrook an incorporating traffic calming improvements. The Gueldner property will provide a central traffic at the center intersection to provide traffic calming in compliance with the JRH recommendations.

A Traffic Impact Study was prepared for this project by the Transpo Group (and assuming the construction of the Crestview Drive to Highway 99W connection). The proposed conceptual commercial development on the site is expected to generate a total of 3,488 new daily, and 349 new weekday PM peak hour trips. Much of the traffic for the commercial center would not be new trips, but would be pass-by or internal trips. This shows that this center will be primarily serving the residents of Newberg and will reduce the number of overall vehicle miles traveled for the residents of Newberg. A total of 2,292 weekday daily and 223 weekday PM peak hour passby trips would be generated by the project, and a total of 4,146 weekday internal trips and 254 weekday PM peak internal trips are generated. Details of the study methodology, findings, and recommendations are provided in the traffic impact study report.

The Transpo study estimates trip generation rates that are higher than those assumed in the TSP. The study also finds failures in the future transportation system due to the site generated traffic, particularly at the Springbrook Road/99W intersection. If the actual development is similar to that projected in the conceptual plan, then the development will need to mitigate these impacts. In a similar case of Providence Hospital, the hospital was required to make a payment for a proportional share of improvements to the intersection. A similar requirement could be made for this project to mitigate these impacts.

In general, with the improvements included in the transportation plan and traffic mitigation measures, and including the recommendations of the JRH study, adequate transportation facilities will be available to serve the proposed use.

Goal 13. Energy Conservation

Finding: This goal states that land and uses developed on the land shall be managed and controlled so as to maximize the conservation of all forms of energy, based upon sound economic principles. This particular amendment will aid the conservation of energy largely by providing opportunities for shorter automobile trips. Currently, many shoppers in Newberg travel outside the community for various goods and services. Development of a community shopping center on this site will provide the opportunity for these Newberg shoppers to meet their needs in Newberg without traveling to shopping areas outside the area. Also, bringing the property into the UGB will facilitate construction of the Crestview/Providence Drive connection. This connection will provide a significantly shorter travel distance for many users in the area, again conserving energy.

Goal 14. Urbanization

This goal is to provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities. The goal requires that cities and counties establish urban growth boundaries to meet future land needs. The goal establishes land need factors and boundary location factors that must be addressed for any change to the urban growth boundary. The following addresses these factors.

Land Need

Establishment and change of urban growth boundaries shall be based on the following:

(1) Demonstrated need to accommodate long range urban population, consistent with a 20-year population forecast coordinated with affected local governments; and

(2) Demonstrated need for housing, employment opportunities, livability or uses such as public facilities, streets and roads, schools, parks or open space, or any combination of the need categories in this subsection (2).

Finding: The City of Newberg has acknowledged population projections for the Newberg UGB. These projection are shown in Table III-2 in the Comprehensive Plan, and are as follows:

Table III-2. Future Population Forecast – Newberg Urban Area

Year	Population Forecast
20004	18,438
2005	21,132
2010	24,497
2015	28,559
2020	33,683
2025	38,352
2030	42,870
2035	48,316
2040	54,097

The City and County have coordinated population projection sufficiently for this and other UGB amendments. Most recently, Yamhill County adopted Ordinance 781 on March 29, 2006, which amended the Newberg UGB. The findings for that amendment base needs for a 2025 population of 38,352, as adopted in the Newberg Comprehensive Plan.

The Newberg Comprehensive identifies a shortfall of 6 acres of commercial land for the period 2005-2025. It also identifies a need for 2-3 community commercial centers of 10-15 acres each. This amendment would partly meet Newberg's future commercial needs by providing a site for a community commercial center.

In determining need, local government may specify characteristics, such as parcel size, topography or proximity, necessary for land to be suitable for an identified need. Prior to expanding an urban growth boundary, local governments shall demonstrate that needs cannot reasonably be accommodated on land already inside the urban growth boundary.

Finding: The *Ad Hoc Committee on Newberg's Future, Report to Newberg City Council: Recommendations for Newberg's Future* (July 21, 2005) addresses the above factors. This report is incorporated into these findings by reference. The report examined various site characteristics that would make land suitable for commercial needs. The report identifies the subject property as particularly suitable for commercial needs based on its size, topography, ownership patterns, level of development, natural features, access, shape, services, and compatibility. That report also examined a number of potential sites that potentially could meet the need for community commercial uses. These include the Mountainview/Zimri site and the Riverfront site. While both of these areas are suitable for commercial uses, both are already designated commercial, and contribute to meeting the overall commercial land needs. With these, there is still a deficit of commercial land. Therefore, that report concluded that there were inadequate sites within the urban growth boundary to accommodate the need, and therefore sites outside the UGB should be included to meet the future land needs.

Boundary Location *The location of the urban growth boundary and changes to the boundary shall be determined by evaluating alternative boundary locations consistent with ORS 197.298 and with consideration of the following factors:*
(1) Efficient accommodation of identified land needs;
(2) Orderly and economic provision of public facilities and services;
(3) Comparative environmental, energy, economic and social consequences; and
(4) Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.

Finding: The subject site is locating within the Newberg Urban Reserve Area. As such, it is the highest priority for inclusion in the UGB under ORS 107.298. All alternative boundary locations outside the Urban Reserve Area would not be as high priority, thus can be dismissed for consideration of this amendment. The Ad Hoc Committee's report examines a number of potential sites for community commercial centers within the existing Urban Reserve.

The study identified several parcels large enough to accommodated commercial development in the urban reserve areas south of Bell Road and North Valley Road. These sites do not have adequate access to arterial streets however, and could not efficiently provide for commercial needs. In addition, they cannot orderly and economically be provided with public facilities due to their elevation above the existing water service level. There would be severe negative environmental, energy, economic, and social (EEES) consequences, including incompatibility with proposed residential uses in this area, significant grading necessary to accommodate commercial uses, and energy consequences caused by commercial traffic traveling to the this area.

There are several parcels along Wynooski Street that have the needed site characteristics for a community commercial center. These parcels, however are intermixed in an existing industrial area, and are anticipated to be designated industrial upon inclusion in the UGB. Designating these as commercial would have severe negative EEES consequences, including loss of job opportunities in the community, and increase need for residents of Newberg to commute to other communities for employment. It would negative consequences to the functioning of the proposed Highway 219/Bypass interchange. Commercial use also would not be compatible with adjacent industrial uses.

The result of that analysis was a recommendation that only the Northeast Urban Reserve (of which the subject property is a part) would be suitable for community commercial uses. The findings of this report are incorporated herein by reference.

The property can efficiently accommodate the proposed commercial land needs. The property has the site characteristics needed for commercial development. In particular, its good access to 99W and its proximity to other commercial services make the property efficient for meeting future commercial land needs. Public facilities and services can be provided orderly and economically to this site, as addressed in the findings under Goal 11: Public Facilities and Services. It would have the positive environmental consequence of preserving the existing wooded area. It would have positive environmental and energy consequences of providing for shorter auto travel trips, as addressed under Goal 12: Transportation. It would provide positive economic and social consequences of providing areas for shopping, commercial services, and employment within Newberg, as addressed under Goal 9: Economic Development.

The property abuts a park site to the west, future urban property to the east, and Providence Hospital to the south. These are compatible land uses. On the north side, however, the property is zoned rural residential and contains a rural residential subdivision. The applicant has proposed leaving a buffer of trees between the commercial property and that subdivision. This would be a limit on uses near the proposed commercial area that could provide for compatibility between the uses. On a portion of the west side, the property abuts residential uses. The applicant should develop a plan for a mixture of residential and commercial uses that would place residential uses adjacent to the existing residences to insure compatibility.

***Newberg Urban Area Management Agreement -Urban Growth Boundary Amendment Criteria**: Amendment of the Urban Growth Boundary shall be treated as a map amendment to both City and County Comprehensive Plan maps. Change of the boundary shall be based upon consideration of the following factors:*

(a) Demonstrated need to accommodate long-range urban population growth requirements consistent with LCDC goals;

(b) Need for housing, employment opportunities, and livability;

(c) Orderly and economic provision for public facilities and services;

(d) Maximum efficiency of land uses within and on the fringe of the existing urban area;

(e) Environmental, energy, economic and social consequences;

(f) Retention of agricultural land as defined, with Class I being the highest priority for retention and Class VI the lowest priority; and

(g) Compatibility of the proposed urban uses with other adjacent uses.

Finding: These criteria are all addressed under previous findings.

Newberg Comprehensive Plan Amendment - Newberg Development Code, Section § 151.122:
The applicant must demonstrate compliance with the following criteria:

(a) The proposed change is consistent with and promotes the goals and policies of the Newberg Comprehensive Plan and this Code;

The following addresses particular comprehensive plan policies.

A. Citizen Involvement.

Goal: To maintain a Citizen Involvement Program that offers citizens the opportunity for involvement in all phases of the planning process.

Finding: A citizen involvement program was a part of the 1997 Urban Reserve Project. In recent months, members of the public have been invited to and involved in community meetings with the Ad Hoc Committee and Newberg Urban Area Management Committee to discuss UGB expansion opportunities in Newberg. Additionally, with respect to this project, public notices have been provided to property owners within 500 feet of the property.

At the hearing, neighbors raised concerns about the compatibility of the proposed commercial uses with adjacent established residential uses. A proposed tree buffer and an existing park provide separation along most of the boundary between the uses, except for a small amount of frontage on the northwest side of the property. Accordingly, NUAMC recommends a residential designation of this part of the property to respond to citizen concerns.

B. Land Use Planning.

Goal: To maintain an on-going land use planning program to implement statewide and local goals. The program shall be consistent with natural and cultural resources and needs.

Finding: Inclusion of this property into the UGB aligns with the city's and state's goal of providing enough land for growth. As land designated Urban Reserve and abutting the

edge of the City's current limit, this property is appropriate in which to efficiently expand the City's boundary. Additionally, inclusion of this property within the UGB can facilitate the completion of Crestview Drive extension to Highway 99W as envisioned in the City's Transportation System Plan (TSP).

C. Agricultural Lands.

Goal: To provide for the orderly and efficient transition from rural to urban lands.

Policy (1): The conversion of land from agricultural to urban land uses shall be orderly and efficient.

Finding: In 1992 and 1993 an urban reserve area project was completed. The Urban Reserve Area land supply was intended to provide adequate land for the City's needs to 2020. Expanding the UGB to include this property would be a natural progression of the City's expansion. The property abuts the current city boundary would be an appropriate place for the UGB to expand. It would be adjacent, or in very close proximity, to an anticipated interchange built on Highway 99W. The land will provide an opportunity to develop a gateway to the city and local neighborhoods and serve as a buffer between the planned Highway 99W interchange and existing residential development.

Policy (2): Inclusion of lands in agricultural use within the Urban Growth Boundary is recognition of a commitment of future urbanization, as such lands are necessary to meet long-range population and economic needs, based on criteria outlined in the statewide Urbanization Goal.

Finding: Expanding the UGB to include the property within its boundary would contribute to alleviating the projected shortfall for commercial development.

D. Wooded Areas

Goal: To retain and protect wooded areas.

Policy (1): Existing wooded areas shall be encouraged to remain as open areas for wildlife habitat and limited recreational uses.

Policy (2): Development in drainageways shall be limited in order to prevent erosion and protect water quality. Trees provide needed protection from erosion and should be maintained.

Finding: The wooded area on the north side of the Guelder property will be retained for a buffer between the proposed commercial center and the existing homes to the north. A drainage ditch is located within the wooded area. The majority of the wooded area to the west is contained within the open space tract park in the adjacent residential community, and is therefore protected.

E. Air, Water, and Land Resource Quality.

Goal: To maintain, and where feasible, enhance air water and land resource qualities within the community.

Policy(3): As public sanitary sewer becomes available all development shall connect to the public system.

Policy (4): The Newberg airshed shall be protected from excessive pollution levels resulting from urbanization.

Finding: The completed Fernwood Road pump station can serve future development within the project area and adjoining properties currently inside the City limits, possibly with some upgrades, thereby reducing the overall number of pump stations that might be needed to serve these areas as development occurs. The preferred option is to extend the Klimek Lane line along the Klimek right-of-way across Highway 99W. The airshed shall be protected by the reduction of vehicle miles traveled by the residents of Newberg, as noted under Goal 12: Transportation.

K. Transportation

Goal 4, Policies m and q

m. To enable the City and ODOT to adequately plan land uses and local circulation for the interchange areas, the City of Newberg will retain existing base zoning within the Interchange Overlay District in the interim period before IAMPs are prepared and adopted, except as follows. Annexations will be allowed if the associated zone change is consistent with the acknowledged Newberg Comprehensive Plan designation for the property in effect at the date of adoption of the Interchange Overlay. Consistent with the exception under policy q. below for the East Newberg interchange, for the land north of Highway 99W within the Urban Reserve Area C, the City may adopt a comprehensive plan designation and implement that comprehensive plan map designation with a zoning map amendment consistent with its annexation requirements. Permitted and conditional uses that are authorized under existing base city zones will generally be allowed within the Interchange Overlay, with certain limitations on commercial uses in the industrial zones.

q. The City agrees not to approve expansion of the Newberg UGB or Urban Reserve Areas around the East Newberg or Oregon 219 interchanges until IAMPs for the two interchanges are prepared and adopted by ODOT, Yamhill County and the City of Newberg. An exception to this policy will be allowed for a limited expansion of the Newberg UGB into the westerly portion of Urban Reserve Area C to accommodate construction of the Northern Arterial in the general location shown on the City of Newberg acknowledged Transportation System Plan, including that land north of Highway 99W within Urban Reserve Area C.

Finding: The property is within Urban Reserve Area C, north of Highway 99W, and thus falls within the exception above. Note that completion and adoption of the IAMP may involve additional conditions or mitigation measures.

Goal 9: Create effective circulation and access for the local transportation system.

Finding: Improvements at the intersection of Providence Drive and Highway 99W are possible with the proposed project. The scope of these improvements and the impact on operations will be coordinated with ODOT and the City. The construction of the Crestview connector provides a planned link in the City's overall roadway network as shown in the Newberg Transportation System Plan that would otherwise result in increased need for Highway 99W and the current key intersections to provide circulation for Newberg residents (especially those north of Highway 99W). The east –west connection to

Benjamin Road, partly within this area planned for UGB amendment, would also help create effective circulation and access.

L. Public Facilities and Services.

Policy l(a): The provision of public facilities and services shall be used as tools to implement the land use plan and encourage an orderly and efficient development pattern.

Policy2(c): Developments with urban densities should be encouraged to locate within the area which can be served by Newberg's present sanitary sewer system.

Finding: New public utilities-including a pump station in Fernwood Road-have been completed in the near vicinity which will serve this site, possibly with some upgrades, and the balance of the Springbrook Oaks development. A 10-inch waterline fronts the property. Storm drainage ditches traverse the property and connect to storm drain pipes on the western edge of the property. This site can be efficiently served by public facilities and services.

N. Urbanization. Goal 1: To provide for the orderly and efficient transition from rural to urban land uses.

Finding: The land is within Newberg's urban reserve area. The urban reserve is intended to maintain an adequate of supply land for the City's needs by 2020. Lands designated "Urban Reserve" are the most appropriate to include within a UGB expansion. Conversion of this property from rural to urban uses would qualify as orderly and efficient transition. Projected road improvements will be linked to adjacent urbanized area within the City of Newberg. The project proposal includes modifications to the Providence Drive/Highway 99W intersection to maintain adequate operations for the new hospital directly across Highway 99W and the proposed project.

Policy l(f): In expanding or otherwise altering the Urban Growth Boundary, the Boundary shall follow road rights-of-way, lot lines, or natural features.

Finding: The proposed UGB expansion would modify the existing boundary to extend to the east edge boundary of the property. This would allow adequate room for the extension of Crestview Drive. Overall, the UGB expansion will follow the property's lot line.

Policy l(h): The designated Urban Reserve Area identifies the priority lands to include within the Newberg Urban Growth Boundary to meet projected growth needs to provide a thirty (30) to fifty (50) year land supply. Designated Urban Reserve Area lands will be included within the Urban Growth Boundary on a phased basis at periodic review. Property owners will also have the opportunity to request that land within the designated Urban Reserve Area be included within the Newberg Urban Growth Boundary based on the criteria outlined in the LCDC Goal 14 and the Urban Growth Management [Agreement].

Finding: The Urban Reserve Areas were evaluated and prioritized for inclusion in the UGB approximately eight to ten years ago. Since that time, few URAs have been incorporated into the City's UGB. These amendments have been small and have not provided adequate lands to meet the growth needs of the City. This application demonstrates compliance

with criteria specified in Statewide Goal 14, Urbanization. Responses to Goal 14 criteria are found at the beginning of this report.

(b) Public facilities and services are or can be reasonably made available to support the uses allowed by the proposed change.

Finding: See the findings under Goal 11: Public Facilities and Services.

(c) Compliance with the State Transportation Planning Rule (OAR 660-012-0060) for proposals that significantly affect transportation facilities.

Finding: See the findings under Goal 12: Transportation

Yamhill Comprehensive Plan Policies

Yamhill County comprehensive plan policies are addressed in the Yamhill County staff report and in the application.

CONCLUSION:

Based on all of the above mentioned findings, and with the conditions noted, the application meets the criteria for an Urban Growth Boundary amendment.

NUAMC RESOLUTION NO. 2006-18

A RESOLUTION OF THE NEWBERG URBAN AREA MANAGEMENT COMMISSION RECOMMENDING APPROVAL AS CONDITIONED OF FILE UGB-06-002, AN URBAN GROWTH BOUNDARY AMENDMENT AND COMPREHENSIVE PLAN AMENDMENT TO COM (COMMERCIAL), LDR (LOW DENSITY RESIDENTIAL, MDR (MEDIUM DENSITY RESIDENTIAL) WITH A SC (STREAM CORRIDOR OVERLAY) FOR PROPERTY LOCATED AT 4505, 4813, 4821 & 4825 E. PORTLAND ROAD, YAMHILL COUNTY TAX LOTS 3216-900, -1000, -1100.

RECITALS

1. On August 25, 2006, NewB Properties LLC submitted a request for an urban growth boundary amendment and comprehensive plan change to COM (Commercial), HDR (High Density Residential), MDR (Medium Density Residential), and LDR (Low Density Residential) for approximately 30 acres located at 4505, 4813, 4821 & 4825 Portland Road, Yamhill County Tax Lots 3216-900, -1000, and -1100.

2. On November 4, 2006 notice of this proposed urban growth boundary amendment was mailed to the owner of record as identified in Yamhill County Assessor's Office, and all adjoining property owners within a distance of 500 feet.

3. On November 11, 2006, notice was published in the *Graphic* Newspaper and in four public places.

4. On November 30, 2006, the Newberg Urban Area Management Commission (NUAMC) held a hearing to consider the request. The hearing was continued to December 6, 2006.

5. On December 6, 2006, NUAMC held the continued hearing. The applicant submitted a new proposal for the site which changed the portion of the site planned for HDR to MDR.

6. NUAMC finds that the applicable criteria have been met, and that approval of the application as conditioned is in the best interests of the community.

NOW THEREFORE, BE IT RESOLVED by the Newberg Urban Area Management Commission that it recommends that the City Council and Yamhill County Board of Commissioners:

1. Include the property shown in Exhibit A and described in Exhibit B in the Newberg Urban Growth Boundary.

2. Amend the comprehensive plan to include the subject property in the COM (Commercial), MDR (Medium Density Residential) and LDR (Low Density Residential) as shown in document presented by applicant at the 12/6/06 public hearing (Exhibit C).

3. Amend the comprehensive plan to include a SC (Stream Corridor) overlay on the northeast corner of the site. The SC delineation shall be at the top of bank or 50 feet from the wetland, whichever is greater.

4. Approval is contingent on final adoption of amendments to the Newberg Transportation System plan as initiated by Resolution 2006-2661.

5. Require that, upon future development of the property, the development contribute its share, based on traffic volume, of the future cost of capacity improvements to the Springbrook/99W intersection.

6. A refined traffic study will be required upon future development. No direct access to Highway 99W will be allowed, but the east-west connector on site could connect to a frontage road along the proposed bypass. If the bypass is not built then the east-west connector should connect to Benjamin Road as far north as possible. The traffic study should determine the appropriate mitigation for the unacceptable levels of service at the Crestview Drive/Highway 99W intersection, Crestview Drive/east-west connector intersection.

7. A wetland determination and delineation report, following state and federal standards, shall be prepared prior to development on the site. Development shall comply with applicable state and federal wetland standards.

8. Require a 30 foot setback from the northern property line of these parcels for all future buildings on the site.

9. Require a 20 foot wide dense buffer along the Benjamin Road commercial frontage of the site to block light, noise and sight. The buffer could include vegetative elements, a wall, and a berm.

10. Require that development follow best management practices for storm drainage as outlined in the letter from James Bennett to the Yamhill County Board of Commissioners dated 1/30/06.

11. Upon development, verify the capacity of the Fernwood Road sanitary sewer pump station and upsize if necessary. All public sewer lines must be gravity flow. Coordinate with DSL and the US Army Corps of Engineers regarding changes to the existing on-site stormwater drainage ways. Complete street frontage improvements along Hwy 99W. The Crestview Drive extension from Oxberg Lakes to 99W must be in place at the time of development.

This recommendation is based on the staff report, findings and testimony.

DATED this 6th day of December, 2006.

AYES: 6 NAYS: Ø ABSTAIN: Ø ABSENT: 1 Halstead

ATTEST:

Ruth Schlachter
Recording Secretary

NUAMC Chair

Exhibits:

Exhibit A: Legal Description and Map
Exhibit B: Findings
Exhibit C: Comprehensive Plan Map

EXHIBIT A: LEGAL DESCRIPTION AND MAP

alpha
COMMUNITY DEVELOPMENT

EXHIBIT "A"

LEGAL DESCRIPTION
URBAN GROWTH BOUNDARY EXPANSION
TAX LOTS 900, 1000, 1100 AND BENJAMIN ROAD
TAX MAP NO. 3 2 16

JOB NO. 0428-0005

A PARCEL OF LAND LOCATED IN THE SEBASTIAN BRUTSCHER D.L.C. NO. 51, IN THE NORTHWEST ONE-QUARTER OF SECTION 15, AND THE EAST ONE-HALF OF SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 WEST, WILLAMETTE MERIDIAN, YAMHILL COUNTY, OREGON, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF THE PROPERTY DESCRIBED IN INSTRUMENT NUMBER 1997-15739 A POINT ON THE NORTH LINE OF THE BRUTSCHER D.L.C. NO. 51 FROM WHICH THE SOUTHWEST CORNER OF THE BENJAMIN HEATER D.L.C., AN ANGLE POINT IN THE NORTH LINE OF THE SEBASTIAN BRUTSCHER D.L.C. NO. 51, BEARS NORTH 89°22'47" WEST 678.12 FEET; THENCE ALONG SAID D.L.C. LINE SOUTH 89°22'47" EAST 1640.99 FEET TO THE WEST RIGHT-OF-WAY LINE OF BENJAMIN ROAD (COUNTY ROAD NO. 54); THENCE CONTINUING ON SAID D.L.C. LINE SOUTH 89°22'47" EAST 40.17 FEET TO A POINT ON THE EAST RIGHT-OF-WAY LINE OF SAID ROADWAY; THENCE LEAVING SAID D.L.C. LINE ALONG THE EAST RIGHT-OF-WAY LINE SOUTH 04°43'17" EAST 185.29 FEET; THENCE SOUTH 03°16'13" WEST 301.50 FEET TO A POINT ON THE NORTH RIGHT-OF-WAY LINE OF PACIFIC HIGHWAY 99W (40.00 FEET NORTH, RIGHT ANGLE MEASURE OF THE CENTERLINE OF SAID HIGHWAY); THENCE ALONG SAID NORTH RIGHT-OF-WAY LINE ON A CURVE CONCAVE TO THE SOUTH HAVING A RADIUS OF 5494.225 FEET, THE RADIUS POINT OF WHICH BEARS SOUTH 12°10'04" EAST, THROUGH A CENTRAL ANGLE OF 00°26'00", AN ARC LENGTH OF 41.54 FEET (CHORD BEARS SOUTH 77°36'57" WEST 41.54 FEET) TO A POINT OF INTERSECTION WITH THE WEST RIGHT-OF-WAY LINE OF SAID BENJAMIN ROAD; THENCE CONTINUING ON THE NORTH RIGHT-OF-WAY LINE ON SAID CURVE, THROUGH A CENTRAL ANGLE OF 08°57'01", AN ARC LENGTH OF 858.27 FEET (CHORD BEARS SOUTH 72°55'26" WEST 857.40 FEET); THENCE ON AN OFFSET SPIRAL CURVE ON SAID NORTH RIGHT-OF-WAY LINE SOUTH 67°02'39" WEST 405.57 FEET; THENCE SOUTH 66°20'47" WEST 506.07 FEET TO THE SOUTHWEST CORNER OF PROPERTY DESCRIBED IN INSTRUMENT NUMBER 1997-15739; THENCE LEAVING SAID RIGHT-OF-WAY LINE ALONG THE WEST LINE OF SAID PROPERTY NORTH 00°55'10" EAST 1125.92 FEET TO THE POINT OF BEGINNING.

CONTAINING APPROXIMATELY 29.91 ACRES.

THE BASIS OF BEARINGS FOR THE DESCRIPTION IS PARTITION PLAT NO. 97-52 YAMHILL COUNTY, PLAT RECORDS.

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Plaza West – Suite 230 – 9600 SW Oak – Portland – Oregon 97223
Office 503 452-8003 – Fax 503 452-8043
www.alphacommunity.com

EXHIBIT A: LEGAL DESCRIPTION AND MAP (CONTINUED)

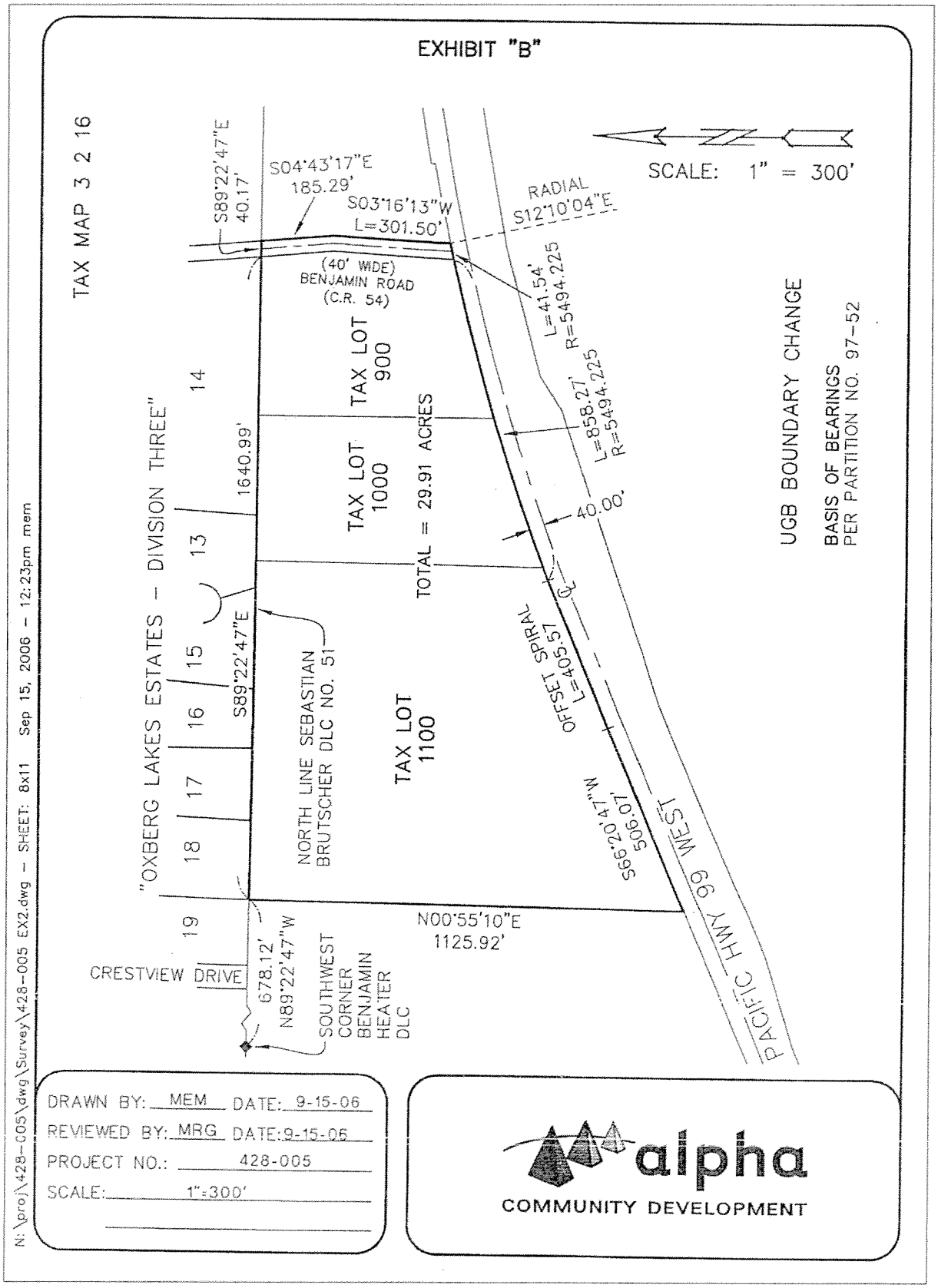


EXHIBIT B: URBAN GROWTH BOUNDARY FINDINGS
UGB-06-002
Approval of an urban growth boundary amendment for 30 acres.

ORS Standards:

ORS 197.298. *ORS 197.298 establishes priorities for land to be included within an urban growth boundary. ORS 197.298 (1)(a) states: "In addition to any requirements established by rule addressing urbanization, land may not be included within an urban growth boundary except under the following priorities: (a) First priority is land that is designated urban reserve land under ORS 195.145, rule or metropolitan service district action plan."*

Finding: The property under review is designated as Urban Reserve land, as adopted by the City of Newberg and Yamhill County in 1993, and therefore is first priority for inclusion in the Urban Growth Boundary.

OAR Standards:

660-021-0060 ***Urban Growth Boundary Expansion.*** *All lands within urban reserve areas established pursuant to this division shall be included within an urban growth boundary before inclusion of other lands, except where an identified need for a particular type of land cannot be met by lands within an established urban reserve area.*

Finding: The property under review is designated as Urban Reserve land, as adopted by the City of Newberg and Yamhill County in 1993, and therefore is first priority for inclusion in the Urban Growth Boundary.

Statewide LCDC Goals:

Goals 4, 15, 16, 17, 18, and 19 do not apply to this application. The remaining goals are addressed below:

Goal 1. Citizen Involvement.

Finding: The property under review is located within the Study Area C of the Newberg Urban Reserve Area Project adopted by the City and Yamhill County in 1995. A public involvement program was implemented as part of the initial Urban Reserve Area Project in 1992 and 1993. In 1997, a study was prepared that examined the six Urban Reserve Areas (URAs) in detail. The study provided a buildable lands inventory and a land use needs analysis, preliminary infrastructure and transportation plans, and an amended urban services agreement between the City of Newberg and Yamhill County. In conjunction with this 1997 study, a citizen involvement and inter-governmental coordination program was prepared and implemented to assure that the results of the study accurately reflected the desires of residents and property owners in the City and County. In 1997, approximately 70 people attended two workshops for property owners and other parties interested in the URAs. A questionnaire was also distributed at that time to solicit additional input in the URA planning process. Additionally, in 2004, the Newberg City Council created the Ad Hoc Committee on Newberg's Future (the Committee) to provide a forum for citizen involvement in planning for Newberg's future land use patterns. Between April 2004 and June 2005, the Ad Hoc Committee on Newberg's Future sought the input from the general public. During that time, the Committee held two open houses, conducted two surveys, received

comments at each of their meetings, and received several letters. The hearing process for this request also fulfills the citizen involvement requirements.

Goal 2. Land Use Planning.
Finding: This goal stipulates that land use decisions be made in accordance with a comprehensive plan and that suitable "implementation ordinances" to the plan's policies must be adopted. It requires that plans be based on "factual information," that local plans and ordinances are coordinated with those of other jurisdictions and agencies, and that plans be reviewed periodically and amended as needed.

The proposed amendment is based on a wealth of factual information including recently adopted population projections and land needs assessments, the report of the Ad Hoc Committee on Newberg's future, Newberg's recently adopted Transportation System Plan, the City's recently adopted Economic Opportunity Analysis, and site information and utility information as described in the application.

This amendment is being concurrently reviewed by Yamhill County and the City of Newberg. Referrals of this application have been sent to a number of agencies, including ODOT, DLCD, DSL, Newberg School District, and utility companies.

Goal 2 also contains standards for taking exceptions to statewide goals. An exception may be taken when a statewide goal cannot or should not be applied to a particular area or situation. In 1980, Yamhill County identified the property under review as "lands committed to rural residential use" in Exceptions Statement 11. Under the recently revised Statewide Planning Goal 14, a goal exception is no longer required for amending and Urban Growth Boundary.

Goal 3. Agricultural Lands.
Finding: This goal requires local governments to inventory agricultural lands and to "preserve and maintain" them for farm use. The property under review is currently planned AFSH and is zoned AF-10 (Agriculture/Forestry Small Holding) under the County Zoning Ordinance. In 1980, Yamhill County identified the property under review as "lands committed to rural residential use" in Exceptions Statement 11. The exception land definition identified the general area as having a mixture of soil types ranging from Class II to Class VI soil type. The City of Newberg *Inventory of Natural and Cultural Resources* indicates that most soils in the vicinity are flat and at least moderately fertile, though nearly all types have some problems with drainage. According to the Soil Conservation Service of the US Department of Agriculture, the subject site contains three soil types, including Woodburn Silt Loam (0-7%), Woodburn silt loam (12-20%) and Amity Silt Loam (0%). All of these are considered Class II agricultural soils, based on DLCDs hierarchy of soil types. However, virtually all of the soils surrounding the current Newberg UGB bear Class II and III designations, and thus this was taken into consideration by Yamhill County in granting the Goal 2 exception and during the URA designation process. The properties are all used for single family residential, with a veterinary clinic on one lot. The Exceptions Statement II document includes a discussion noting that the area involved is characterized by good roads, rural fire service, fair or better water availability, and has mostly fair soil suitability for septic systems. This area is currently committed to rural residential development. The Inventory of Natural and Cultural Resources report states the City's recognition that urban expansion will undoubtedly occur on prime Class II soils, but notes that wasteful land use practices should be discouraged. The proposed addition of the project site into

the UGB would provide needed land for urban expansion adjacent to the City where services are available or can be readily extended, thereby avoiding leap-frog development or other land consumptive practices.

Goal 5. Open Spaces, Scenic and Historic Areas, and Natural Resources.
Finding: This goal encompasses twelve resource types, including wildlife habitats, mineral resources, and wetlands and waterways. Goal 5 requires inventories of resources to be conducted and policies to be adopted whereby the local jurisdiction can manage these resources. The City of Newberg prepared an inventory of natural and cultural resources in 1981 as part of its comprehensive planning program. This inventory includes the following resources: agricultural lands; forest lands; mineral and aggregate resources; fish and wildlife; water; air quality; and open space, scenic, natural, historic, and recreational resources. The property under review consists primarily of Woodburn Silt Loam (0-7%), Woodburn silt loam (12-20%) and Amity Silt Loam (0%). All of these are considered Class II agricultural soils.
The parcels contain wooded areas that will be largely be replaced by development. Woods within the small Stream Corridor area in the NE corner will be retained.

Residential development on the west and north of the property currently releases all their storm water onto this parcel. This has resulted in the development of some very low quality wetlands along the drainage ditches created by off site stormwater runoff. Further information is needed to determine whether these are jurisdictional wetlands or waterways and what protections may be needed. The City's study of lands within the URA also located a stream corridor that covers a small portion of the NE corner of the site.

One public comment (McClure) stated that the 9.5 acre farm ensemble directly across Benjamin Road from this site is listed on the National Historic Register and requested buffering on the commercial property so that the buildings and light sources there cannot be seen from the historic property. There is value in protecting historic properties in and around the city, and there is already some buffering between the sites. The Benjamin Road right of way is 40 feet wide, and any development on the Speakman site will probably be required to dedicate 10 feet of additional right of way for Benjamin Road. Any development on the commercial portion of the site will be required to have a minimum 10 foot front yard setback from the property line. The HDR portion of the site will be required to have a minimum 12 foot front yard setback, and the LDR portion of the site will be required to have a minimum 15 foot front yard setback from the property line. The front yard setbacks are required to be landscaped, and required to include street trees. Any development on the commercial portion of the site will probably be at least 60 feet away from the McClure property line, and buffered by at least 10 feet of landscaping with street trees. The City development code limits light trespass from the site to no more than 0.5 foot-candles at the property line, so very little light would reach across Benjamin Road. The lights could still be seen from the McClure site, however, unless blocked by landscaping. The farmhouse on the McClure property is separated from Benjamin Road by a pond and some substantial trees, so it is not immediately adjacent to Benjamin Road. NUAMC recommends that a 20 foot wide dense buffer be added along the Benjamin Road commercial frontage of the site to block light, noise and sight. The buffer could include vegetative elements, a wall, and a berm.

Goal 6. Air, Water and Land Resources Quality.
Finding: This goal requires local comprehensive plans and implementing measures to be consistent with state and federal regulations regarding air, water, and land resources quality. The Newberg Comprehensive Plan, Ordinance 1967 contains several policies intended to ensure conformance with state and federal regulations governing air, water, and land resources quality. Negligible impacts are anticipated to existing air quality in the area. A C-2 land use designation is intended for local service retail uses. This will reduce the distance that Newberg residents need to travel for goods and services, and therefore improve air quality. The proposed UGB amendment would be consistent with the City's Comprehensive Plan policies by providing water and sanitary sewer services capable of supporting future urban level development in the vicinity. Any development on the site will be required to follow best management practices for stormwater.

Goal 7. Areas Subject to Natural Disasters and Hazards
Finding: The subject site does not include any flood hazard areas or other areas especially subject to natural disasters or hazards.

Goal 8. Recreation Needs
Finding: This goal requires a community to evaluate its areas and facilities for recreation and to develop plans to deal with the projected demand for them. The City's Comprehensive Plan includes policies designed to ensure recreational facilities and services are expanded to meet growing recreation demands of the community. Chehalem Park and Recreation District (CPRD) has established a neighborhood park along the west border of the Gueldner property, just west of this site.

Goal 9. Economic Development
Finding: This goal requires local governments to provide adequate opportunities for a variety of economic activities. It requires local governments to analyze economic opportunities and constraints in the area. It requires local governments to provide an adequate supply of land to meet the needs identified. Further, it requires limits on uses on or near sites zoned for specific industrial and commercial uses to those which are compatible with proposed uses.

Newberg has recently adopted an economic opportunity analysis and land needs projections. Those projections identify a need for additional commercial land in the community. In particular, the plans identify a need for 2-3 community commercial centers of 10-15 acres each. The subject property was identified as a potential property for meeting this identified need. Thus, inclusion of this 30 acre property, with approximately 17.64 acres designated commercial, would help partly meet the community's need for a community commercial center.

The property abuts a future urban property to the west (pending UGB amendment for commercial/residential development), rural residential/farm across Benjamin Road to the east, and Providence Hospital to the south. These are compatible land uses. On the north side, however, the property is zoned rural residential and contains a rural residential subdivision. The applicant has proposed leaving a strip of low density residential development and medium density residential between the commercial development and that subdivision. The LDR/MDR section would provide a buffer for compatibility between the uses. A 30 foot setback from the northern property line within the LDR section will provide additional buffering and improve compatibility with the rural residential subdivision to the north.

Goal 10. Housing

Finding: This goal requires a community to plan for and accommodate needed housing types, including multifamily and manufactured housing. The community is also required to inventory developable residential lands, conduct an analysis of projected future demand for various housing types, and to plan and zone enough buildable land to meet those needs. The goal prohibits local plans from discriminating against needed housing types. The goals for housing in the City of Newberg's Comprehensive Plan are to provide for diversity in the type, density, and location of housing to ensure there is an adequate supply of affordable housing units to meet the needs of City residents of various income levels. The proposed LDR section serves as a buffer for the low density subdivision to the north. The MDR section also serves to buffer the LDR section and the rural residential subdivision to the north from the commercial area. The dimensions of the LDR and MDR sections align closely with the pending UGB amendment for the property to the west (Gueldner).

The Newberg Comprehensive Plan projects a future population of 38, 352 by 2025 and 54,097 by 2040. There is a projected shortfall by 2025 of 130 acres of LDR land. There is no current shortage of MDR land, but it is necessary to include MDR to allow the density on site to step up near the commercial area, as a buffer for the rest of the residential area. Inclusion of these properties into the UGB will help offset the City's projected shortfall of land for residential development.

Future Land Needs and Supply, Newberg Urban Area
Updated as of November 16, 2006

Plan Designation	Buildable Acres Needed 2005-2025	Built Land 2004-2006	Buildable Acres Needed 2006-2025	Buildable Acres in UGB (2006)	Surplus (Deficit) for 2006-2025	Buildable Acres Needed 2026-2040	Buildable Acres In URA 1 (2006)	Surplus (Deficit) 2026-2040
LDR	612	57	555	425	(130)	735		
MDR	173	26	147	189	42	191		
HDR	89	0	89	29	(60)	83		
COM	111	26	85	65	(20)	109		
IND	50	12	38	70	32	37		
IND (Large Site)	100	0	100	40	(60)	120		
P	85	0	85	9	(76)	115		
I, PQ, or other Inst.	164	5	159	38	(121)	233		
Total	1,384	125	1259	865	(394)	1623	248	(1375)

[1] Land within the Urban Reserve Area is not currently assigned to specific comprehensive plan districts.

Definitions		Corresponding Zone(s)
LDR	Low Density Residential	R-1
MDR	Medium Density Residential	R-2
HDR	High Density Residential	R-3
COM	Commercial	C-1, C-2, C-3, C-4
IND	Industrial	M-1, M-2, M-3
P	Parks	CF or others
PQ	Public/Quasi-Public	I or others

Source: Newberg Planning and Building Department
Data subject to change

Goal 11. Public Facilities and Services.
Finding: This goal aims for efficient planning of public services such as sewers, water, law enforcement and fire protection. It encourages planning of public services to meet the community's needs and capacities rather than responding to development as it occurs. Newberg's comprehensive plan includes the goal to plan and develop a timely, orderly, and efficient arrangement of public facilities and services to serve as a framework for urban development.
Sewer service is anticipated to be provided by extending an existing sewer main in Klimek Lane to the property. Some upgrades to the Fernwood Road pump station may be needed to serve the property. General sewage treatment capacity for the community is addressed in the City's sewage master plan.
Water service is anticipated to be extended from the new Crestview Drive extension west of the site. General water capacity for the community is addressed in the City's water master plans.
Storm drainage for the property is currently provided by two storm drainage ditches that currently cross the western half of the property and drain to a 24-inch diameter culvert under Highway 99W. This culvert is identified in the Newberg Drainage Master Plan as undersized and needing to be replaced with a 36-inch culvert. Certain improvements to the storm drainage system will be required upon development, which may include some combination of new storm drainage lines and storm water detention. All development on the site shall follow best management practices for stormwater.
Overall, the Public Works Director has determined that public facilities can be provided to the site.

City police and fire services will be provided upon annexation. Separate findings of the availability of these services will be required upon annexation. The property has excellent access to Providence Newberg Hospital.

Goal 12. Transportation
Finding: The primary objective of this goal is to provide a safe, convenient and economic transportation system. The City's comprehensive plan contains several goals and policies designed to guide the planning and provision of a safe, convenient, and economic transportation system in cooperation with state, county, and neighboring communities in the region. The City recently adopted a new Transportation System Plan. This plan evaluated not only the transportation needs of the future development within the Urban Growth Boundary, but also the transportation needs of development of the designated urban reserve areas. The transportation plan used the land use assumption that the subject property would be designated commercial. Therefore, this plan can be relied upon for consideration of this UGB amendment.

Newberg's Transportation System Plan (TSP) includes several planned road improvements in the general vicinity of the site. They include: Northern Arterial Street Connection - Existing Crestview Drive to Oregon 99W. The City's existing TSP recommends that Crestview Drive be completed through the Gueldner property to OR Highway 99W. The City has initiated a proposal to change the arterial designation of this section to a major collector (see next paragraph). The TSP also includes an east-west connection between the Crestview Drive extension and Benjamin Road.

Through extensive public involvement effort, the City has initiated a change to the TSP. This change is based on a report from JRH Transportation Engineers that evaluate potential changes to the designations of Crestview Drive and Springbrook Road. The study supports the

redesignation of Crestview Drive to a major collector from the middle of the Gueldner Property to Springbrook and incorporating traffic calming improvements. The Gueldner property will provide a central traffic circle at the center intersection to provide traffic calming in compliance with the JRH recommendations.

The applicant has proposed an east-west connection between the Crestview Drive extension and the eastern edge of the property, which is in accordance with the TSP. If the bypass is not built or if this project is developed in advance of the bypass then the east-west connector road will need to extend to Benjamin Road to provide adequate connectivity. This connection would need to be made as far north as possible to avoid impacting the Benjamin Road/Highway 99W intersection. If the bypass is built then the east-west connector could connect to the frontage road along the bypass, as shown on the applicant's concept plan.

A Traffic Impact Study was prepared for this project by the Lancaster Engineering, which assumed that the Crestview Drive extension to Highway 99W would be built. The proposed conceptual commercial and residential development on the site is expected to generate a total of 8,306 new daily, and 847 new weekday PM peak hour trips. Much of the traffic for the commercial center would not be new trips, but would be pass-by or internal trips. This shows that this center will be primarily serving the residents of Newberg and will reduce the number of overall vehicle miles traveled for the residents of Newberg. A total of 2,610 weekday daily and 242 weekday PM peak hour passby trips would be generated by the project, and a total of 1,926 weekday internal trips and 192 weekday PM peak internal trips are generated. Details of the study methodology, findings, and recommendations are provided in the traffic impact study report.

The study concludes that if the City of Newberg takes jurisdiction over Highway 99W then the intersections at Highway 99W and Springbrook Road and Highway 99W and Crestview Drive will operate acceptably and no mitigation will be required. This could only happen if the bypass was built and the City agreed to take jurisdiction, however. The study found that if ODOT retains jurisdiction over 99W then both of these intersection would have unacceptable levels of service and mitigation would be required. If the actual development is similar to that projected in the conceptual plan, then the development will need to mitigate these impacts. The report stated that the mitigation could include adding a third westbound travel land on Highway 99W between Crestview and Springbrook, or one northbound and one southbound travel lanes on Springbrook Road. In a similar case of Providence Hospital, the hospital was required to make a payment for a proportional share of improvements to the intersection of Highway 99W and Springbrook Road. A similar requirement could be made for this project to mitigate these impacts. In addition, the study found that the intersection of Crestview Drive and the east-west connector would operate unacceptably in 2025, with or without the addition of site traffic from this proposed development. Mitigation at this intersection could include adding a traffic signal with exclusive left turn lanes, or building a roundabout. The traffic study will need to be refined at the time of development to determine the most appropriate mitigation for these problems.

In general, with the improvements included in the transportation plan and traffic mitigation measures, and including the recommendations of the JRH study and Lancaster Engineering study, adequate transportation facilities will be available to serve the proposed use.

Goal 13. Energy Conservation

Finding: This goal states that land and uses developed on the land shall be managed and controlled so as to maximize the conservation of all forms of energy, based upon sound economic principles. This particular amendment will aid the conservation of energy largely by providing opportunities for shorter automobile trips. Currently, many shoppers in Newberg travel outside the community for various goods and services. Development of a community shopping center on this site will provide the opportunity for these Newberg shoppers to meet their needs in Newberg without traveling to shopping areas outside the area.

Goal 14. Urbanization

This goal is to provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities. The goal requires that cities and counties establish urban growth boundaries to meet future land needs. The goal establishes land need factors and boundary location factors that must be addressed for any change to the urban growth boundary. The following addresses these factors.

Land Need

Establishment and change of urban growth boundaries shall be based on the following:

(1) Demonstrated need to accommodate long range urban population, consistent with a 20-year population forecast coordinated with affected local governments; and

(2) Demonstrated need for housing, employment opportunities, livability or uses such as public facilities, streets and roads, schools, parks or open space, or any combination of the need categories in this subsection (2).

Finding: The City of Newberg has acknowledged population projections for the Newberg UGB. These projections are shown in Table III-2 in the Comprehensive Plan, and are as follows:

Table III-2. Future Population Forecast – Newberg Urban Area

Year	Population Forecast
2000	18,438
2005	21,132
2010	24,497
2015	28,559
2020	33,683
2025	38,352
2030	42,870
2035	48,316
2040	54,097

The City has received a population coordination letter from the County, agreeing with the population forecast in Table III-2 above.

The Newberg Comprehensive identifies a shortfall of 20 acres of commercial land for the period 2005-2025. It also identifies a need for 2-3 community commercial centers of 10-15 acres each. This amendment would partly meet Newberg's future commercial needs by providing a

site for a community commercial center. There is a projected shortfall by 2025 of 130 acres of LDR land. These projections are shown in the Land Needs table included under Goal 10: Housing (above). Inclusion of these properties into the UGB will help offset the City's projected shortfall of land for residential and commercial development. There is no current shortage of MDR land, but its inclusion is necessary as a buffer between the LDR and commercial area.

In determining need, local government may specify characteristics, such as parcel size, topography or proximity, necessary for land to be suitable for an identified need. Prior to expanding an urban growth boundary, local governments shall demonstrate that needs cannot reasonably be accommodated on land already inside the urban growth boundary.

Finding: The *Ad Hoc Committee on Newberg's Future, Report to Newberg City Council: Recommendations for Newberg's Future* (July 21, 2005) addresses the above factors. This report is incorporated into these findings by reference. The report examined various site characteristics that would make land suitable for commercial needs. The report identifies the subject property as particularly suitable for commercial needs based on its size, topography, ownership patterns, level of development, natural features, access, shape, services, and compatibility. That report also examined a number of potential sites that potentially could meet the need for community commercial uses. These include the Mountainview/Zimri site and the Riverfront site. While both of these areas are suitable for commercial uses, both are already designated commercial, and contribute to meeting the overall commercial land needs. With these, there is still a deficit of commercial land. Therefore, that report concluded that there were inadequate sites within the urban growth boundary to accommodate the need, and therefore sites outside the UGB should be included to meet the future land needs.

Boundary Location *The location of the urban growth boundary and changes to the boundary shall be determined by evaluating alternative boundary locations consistent with ORS 197.298 and with consideration of the following factors:*
(1) Efficient accommodation of identified land needs;
(2) Orderly and economic provision of public facilities and services;
(3) Comparative environmental, energy, economic and social consequences; and
(4) Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.

Finding: The subject site is locating within the Newberg Urban Reserve Area. As such, it is the highest priority for inclusion in the UGB under ORS 107.298. All alternative boundary locations outside the Urban Reserve Area would not be as high priority, thus can be dismissed for consideration of this amendment. The Ad Hoc Committee's report examines a number of potential sites for community commercial centers within the existing Urban Reserve.

The study identified several parcels large enough to accommodate commercial development in the urban reserve areas south of Bell Road and North Valley Road. These sites do not have adequate access to arterial streets however, and could not efficiently provide for commercial needs. In addition, they cannot orderly and economically be provided with public facilities due to their elevation above the existing water service level. There would be severe negative environmental, energy, economic,

and social (EEES) consequences, including incompatibility with proposed residential uses in this area, significant grading necessary to accommodate commercial uses, and energy consequences caused by commercial traffic traveling to the this area.

There are several parcels along Wynooski Street that have the needed site characteristics for a community commercial center. These parcels, however are intermixed in an existing industrial area, and are anticipated to be designated industrial upon inclusion in the UGB. Designating these as commercial would have severe negative EEES consequences, including loss of job opportunities in the community, and increase need for residents of Newberg to commute to other communities for employment. It would have negative consequences to the functioning of the proposed Highway 219/Bypass interchange. Commercial use also may not be compatible with adjacent industrial uses. Some of the industrial uses are heavy industry, and generate noise and dust that may not be compatible with retail uses. The industrial uses also generate substantial truck traffic, which could conflict with the customer car traffic generated by a commercial use.

The result of that analysis was a recommendation that only the Northeast Urban Reserve (of which the subject property is a part) would be suitable for community commercial uses. The findings of this report are incorporated herein by reference.

The property can efficiently accommodate the proposed commercial land needs. The property has the site characteristics needed for commercial development. In particular, its good access to 99W and its proximity to other commercial services make the property efficient for meeting future commercial land needs. Public facilities and services can be provided orderly and economically to this site, as addressed in the findings under Goal 11: Public Facilities and Services. It would have positive environmental and energy consequences of providing for shorter auto travel trips, as addressed under Goal 12: Transportation. It would provide positive economic and social consequences of providing areas for shopping, commercial services, and employment within Newberg, as addressed under Goal 9: Economic Development.

The property abuts a future urban property to the west (pending UGB amendment for commercial/residential development), and Providence Hospital to the south. These are compatible land uses. On the north side, however, the property is zoned rural residential and contains a rural residential subdivision. The applicant has proposed leaving a strip of low density residential development between the medium density residential/commercial development and that subdivision. The LDR strip would provide a buffer for compatibility between the uses. A thirty foot setback from the northern property line would provide an additional buffer for the subdivision to the north. The property to the east contains a historic farm, and needs additional buffering to protect the historic resource from the impacts of the commercial development. A 20 foot wide dense buffer along the Benjamin Road commercial frontage to block light, noise and sight could include vegetative elements, a wall and a berm, and would provide adequate buffering for the historic farm.

***Newberg Urban Area Management Agreement -Urban Growth Boundary Amendment Criteria**: Amendment of the Urban Growth Boundary shall be treated as a map amendment to*

both City and County Comprehensive Plan maps. Change of the boundary shall be based upon consideration of the following factors:

(a) Demonstrated need to accommodate long-range urban population growth requirements consistent with LCDC goals;

(b) Need for housing, employment opportunities, and livability;

(c) Orderly and economic provision for public facilities and services;

(d) Maximum efficiency of land uses within and on the fringe of the existing urban area;

(e) Environmental, energy, economic and social consequences;

(f) Retention of agricultural land as defined, with Class I being the highest priority for retention and Class VI the lowest priority; and

(g) Compatibility of the proposed urban uses with other adjacent uses.

Finding: These criteria are all addressed under previous findings.

Newberg Comprehensive Plan Amendment - Newberg Development Code, Section § 151.122:

The applicant must demonstrate compliance with the following criteria:

(a) The proposed change is consistent with and promotes the goals and policies of the Newberg Comprehensive Plan and this Code;

The following addresses particular comprehensive plan policies.

A. Citizen Involvement.

Goal: To maintain a Citizen Involvement Program that offers citizens the opportunity for involvement in all phases of the planning process.

Finding: A citizen involvement program was a part of the 1997 Urban Reserve Project. In recent months, members of the public have been invited to and involved in community meetings with the Ad Hoc Committee and Newberg Urban Area Management Committee to discuss UGB expansion opportunities in Newberg. Additionally, with respect to this project, public notices have been provided to property owners within 500 feet of the property.

B. Land Use Planning.

Goal: To maintain an on-going land use planning program to implement statewide and local goals. The program shall be consistent with natural and cultural resources and needs.

Finding: Inclusion of this property into the UGB aligns with the city's and state's goal of providing enough land for growth. As land designated Urban Reserve and abutting the edge of the City's current limit, this property is appropriate in which to efficiently expand the City's boundary.

C. Agricultural Lands.

Goal: To provide for the orderly and efficient transition from rural to urban lands.

Policy (1): The conversion of land from agricultural to urban land uses shall be orderly and efficient.

Finding: In 1992 and 1993 an urban reserve area project was completed. The Urban Reserve Area land supply was intended to provide adequate land for the City's needs to 2020. Expanding the UGB to include this property would be a natural progression of the City's expansion. The property abuts the current city boundary and would be an appropriate place for the UGB to expand. It would be adjacent, or in very close proximity, to an anticipated interchange built on Highway 99W. The land will provide an opportunity to

develop a gateway to the city and local neighborhoods and serve as a buffer between the planned Highway 99W interchange and existing residential development.

Policy (2): Inclusion of lands in agricultural use within the Urban Growth Boundary is recognition of a commitment of future urbanization, as such lands are necessary to meet long-range population and economic needs, based on criteria outlined in the statewide Urbanization Goal.

Finding: Expanding the UGB to include the property within its boundary would contribute to alleviating the projected shortfall for commercial and residential development.

D. Wooded Areas

Goal: To retain and protect wooded areas.

Policy (1): Existing wooded areas shall be encouraged to remain as open areas for wildlife habitat and limited recreational uses.

Policy (2): Development in drainageways shall be limited in order to prevent erosion and protect water quality. Trees provide needed protection from erosion and should be maintained.

Finding: There is an extensive wooded area on taxlot 1100, and some wooded areas on taxlots 1000 and 900. It will be necessary to remove most of these woods upon development in order to develop the site near the planned density. Any woods within the stream corridor on the NE corner of the site will be retained. The applicant will obtain a wetland determination for the drainageways on the site and comply with all State and Federal requirements.

E. Air, Water, and Land Resource Quality.

Goal: To maintain, and where feasible, enhance air water and land resource qualities within the community.

Policy(3): As public sanitary sewer becomes available all development shall connect to the public system.

Policy (4): The Newberg airshed shall be protected from excessive pollution levels resulting from urbanization.

Finding: The completed Fernwood Road pump station can serve future development within the project area and adjoining properties currently inside the City limits, possibly with some upgrades, thereby reducing the overall number of pump stations that might be needed to serve these areas as development occurs. The proposed sanitary sewer line will extend north along the Klimek right-of-way across Highway 99W. The airshed shall be protected by the reduction of vehicle miles traveled by the residents of Newberg, as noted under Goal 12: Transportation.

K. Transportation

Goal 4, Policies m and q

m. ***To enable the City and ODOT to adequately plan land uses and local circulation for the interchange areas, the City of Newberg will retain existing base zoning within the Interchange Overlay District in the interim period before IAMPs are prepared and adopted, except as follows. Annexations will be allowed if the associated zone change is consistent with the acknowledged Newberg Comprehensive Plan designation for the property in effect at the date of adoption of the Interchange Overlay. Consistent with the exception under policy q. below for the East Newberg interchange, for the land***

north of Highway 99W within the Urban Reserve Area C, the City may adopt a comprehensive plan designation and implement that comprehensive plan map designation with a zoning map amendment consistent with its annexation requirements. Permitted and conditional uses that are authorized under existing base city zones will generally be allowed within the Interchange Overlay, with certain limitations on commercial uses in the industrial zones.

q. The City agrees not to approve expansion of the Newberg UGB or Urban Reserve Areas around the East Newberg or Oregon 219 interchanges until IAMPs for the two interchanges are prepared and adopted by ODOT, Yamhill County and the City of Newberg. An exception to this policy will be allowed for a limited expansion of the Newberg UGB into the westerly portion of Urban Reserve Area C to accommodate construction of the Northern Arterial in the general location shown on the City of Newberg acknowledged Transportation System Plan, including that land north of Highway 99W within Urban Reserve Area C.

Finding: The property is within Urban Reserve Area C, north of Highway 99W, and thus falls within the exception above. The property was also shown on the map of the exception area, modified by Ordinance 2006-2648. Note that completion and adoption of the IAMP may involve additional conditions or mitigation measures.

Goal 9: Create effective circulation and access for the local transportation system.

Finding: Effective circulation on the site will be provide by the east-west connector between Crestview Drive and either the bypass frontage road or Benjamin Road. The scope of these improvements and the impact on operations will be coordinated with ODOT and the City.

L. Public Facilities and Services.

Policy l(a): The provision of public facilities and services shall be used as tools to implement the land use plan and encourage an orderly and efficient development pattern.

Policy2(c): Developments with urban densities should be encouraged to locate within the area which can be served by Newberg's present sanitary sewer system.

Finding: New public utilities-including a pump station in Fernwood Road-have been completed in the near vicinity which will serve this site, possibly with some upgrades, and the balance of the Springbrook Oaks development. A 10-inch waterline fronts the property to the west, and will be extended north in Crestview Drive. Storm drainage ditches traverse the western half of the property and connect to a culvert under Highway 99W. This site can be efficiently served by public facilities and services.

N. Urbanization. Goal 1: To provide for the orderly and efficient transition from rural to urban land uses.

Finding: The land is within Newberg's urban reserve area. The urban reserve is intended to maintain an adequate of supply land for the City's needs by 2020. Lands designated "Urban Reserve" are the most appropriate to include within a UGB expansion. Conversion of this property from rural to urban uses would qualify as orderly and efficient transition. Projected road improvements will be linked to adjacent urbanized area within the City of Newberg.

Policy l(f): In expanding or otherwise altering the Urban Growth Boundary, the Boundary shall follow road rights-of-way, lot lines, or natural features.

Finding: The proposed UGB expansion would modify the existing boundary to extend to the east edge boundary of the property. Overall, the UGB expansion will follow the property's lot line.

Policy l(h): The designated Urban Reserve Area identifies the priority lands to include within the Newberg Urban Growth Boundary to meet projected growth needs to provide a thirty (30) to fifty (50) year land supply. Designated Urban Reserve Area lands will be included within the Urban Growth Boundary on a phased basis at periodic review. Property owners will also have the opportunity to request that land within the designated Urban Reserve Area be included within the Newberg Urban Growth Boundary based on the criteria outlined in the LCDC Goal 14 and the Urban Growth Management [Agreement].

Finding: The Urban Reserve Areas were evaluated and prioritized for inclusion in the UGB approximately eight to ten years ago. Since that time, few URAs have been incorporated into the City's UGB. These amendments have been small and have not provided adequate lands to meet the growth needs of the City. The City initiated the NW UGB expansion for approximately 200 acres in NW Newberg, which is pending approval by the County and DLCD. This UGB expansion will still not meet the growth needs of the City, however. This application demonstrates compliance with criteria specified in Statewide Goal 14, Urbanization. Responses to Goal 14 criteria are found at the beginning of this report.

(b) Public facilities and services are or can be reasonably made available to support the uses allowed by the proposed change.

Finding: See the findings under Goal 11: Public Facilities and Services.

(c) Compliance with the State Transportation Planning Rule (OAR 660-012-0060) for proposals that significantly affect transportation facilities.

Finding: See the findings under Goal 12: Transportation

Yamhill Comprehensive Plan Policies

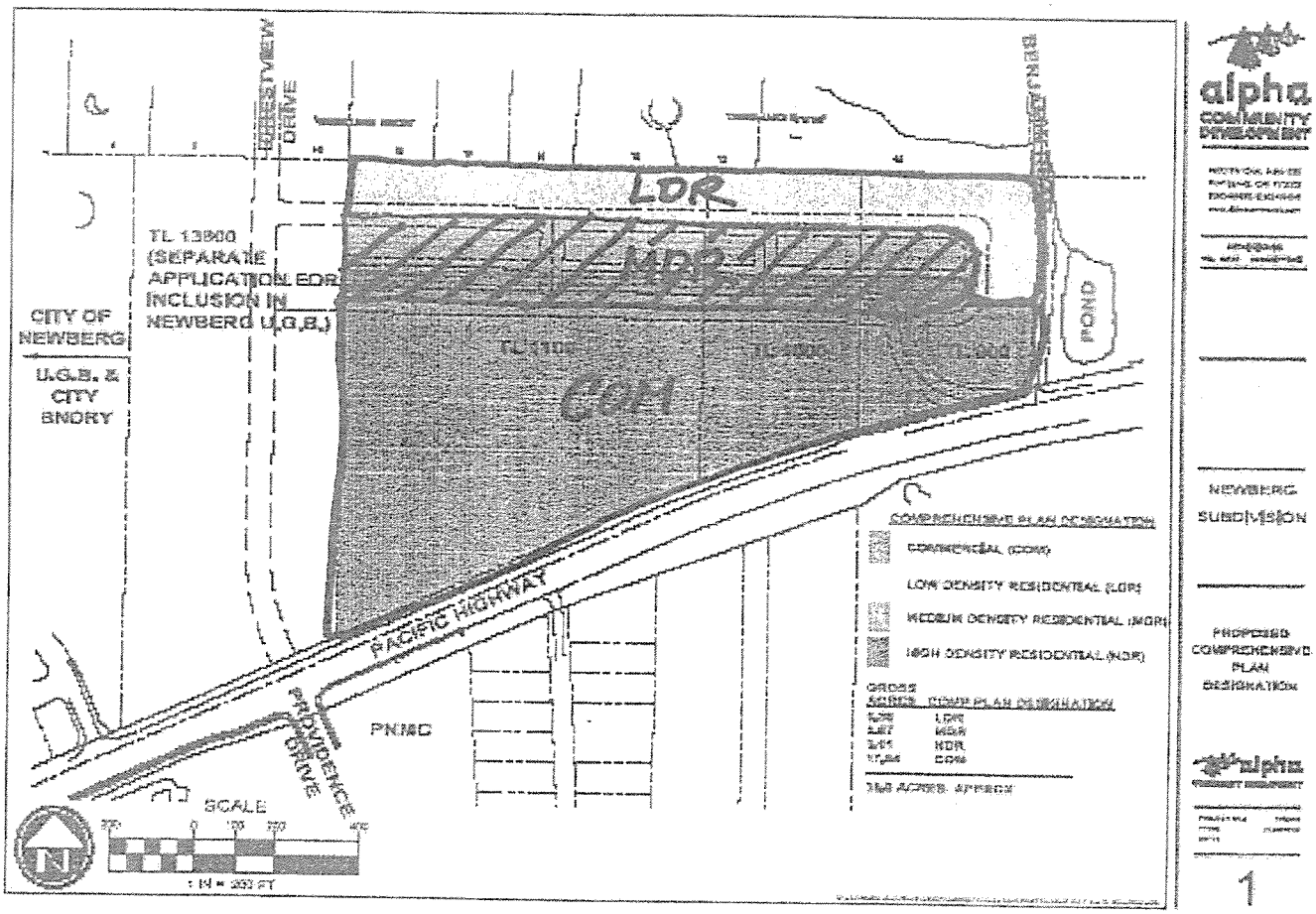
Yamhill County comprehensive plan policies are addressed in the Yamhill County staff report and in the application.

CONCLUSION:

Based on all of the above mentioned findings, and with the conditions noted, the application meets the criteria for an Urban Growth Boundary amendment.

EXHIBIT C: COMPREHENSIVE PLAN MAP

FIGURE 11
PROPOSED DEVELOPMENT PLAN



City Manager
(503) 538-9421

City Attorney
(503) 537-1206

City of Newberg

414 East First Street
PO Box 970
Newberg, Oregon 97132

January 30, 2006

Yamhill County Board of Commissioners
Leslie Lewis, Chair
535 NE 5th Street
McMinnville, OR 97128

Dear Chair Lewis:

The concept of a northern arterial road to relieve traffic congestion on Highway 99W and provide greater access to the northern part of Newberg has been an element of the City's comprehensive plan for more than twenty-five years. It is only within the last few years, however, that development within Newberg has allowed this project to make significant progress toward completion.

We find ourselves now with the opportunity to complete another section of this important road which will be an integral part of the future development of the master plan for the Austin property in Newberg. This opportunity, however, relies heavily upon the funding from ODOT rail for the closing of the railroad crossings at Crestview Road and Springbrook Road and the creation of a new railroad crossing on Mountainview Road.

This is a fragile process that is very time sensitive. The City needs to be able to assume road jurisdiction for those County roads that are a part of the Mountainview Road s-curve to preserve the rail funding and complete the project during the next construction season. We realize that the impact of this road and, in a greater context, the development of the Austin property is of great concern to the residents of Oxberg Lake Estates and to Yamhill County.

To that end, the City of Newberg has undertaken an alternatives analysis of the northern arterial road particularly as it affects Oxberg Lake Estates and the surrounding area. We are pleased that this initiative by the city has been endorsed by Yamhill County, the residents of Oxberg Lake Estates, the Austins and other affected stakeholders and we are anxious to get started on this work.

Another area of concern for the residents of Oxberg Lake Estates has been the protection of their commercial water system and aquifer. This issue is a significant concern to the City of Newberg as well. We are confident that the construction of this next section of the northern arterial road, referred to herein as the Mountainview Road s-curve, will not have any impact on the commercial water system or aquifer that serves Oxberg Lake Estates.

The City of Newberg requires the use of best practices for storm water management for not only its own public works projects, but for all new construction and development within the City of Newberg. These best practices will be used for the construction of the Mountainview Road s-curve and for all future development within and adjacent to that area, including the master plan for the Austin property. The City will also comply with all State regulations and administrative rules that govern the protection of aquifers with respect to the aforementioned construction and development.

It is our hope that both these assurances will demonstrate the commitment of the City of Newberg to protect the interests of all affected stakeholders in the northern arterial project and allow the requested transfer of road jurisdiction to be completed.

Sincerely,

James H. Bennett
City Manager
City of Newberg

G:\Transportation\S-Curve Assurances Letter 2006-01.doc

ORDINANCE NO. 2007-2664

AN ORDINANCE DECLARING PROPERTY LOCATED NORTH OF HWY 99W ACROSS FROM PROVIDENCE HOSPITAL, YAMHILL COUNTY TAX LOT 3216AC-13800, BE ANNEXED INTO THE CITY OF NEWBERG AND WITHDRAWN FROM THE NEWBERG RURAL FIRE PROTECTION DISTRICT SUBJECT TO A PUBLIC VOTE, AND AUTHORIZING AND DIRECTING THE CITY ELECTIONS OFFICER TO CERTIFY TO THE YAMHILL COUNTY CLERK A BALLOT TITLE FOR THE MEASURE TO BE SUBMITTED TO THE ELECTORATE OF THE CITY OF NEWBERG FOR THEIR APPROVAL OF AN ANNEXATION FOR THIS SAME PROPERTY

RECITALS:

1. Jeffrey D. Smith submitted an application for annexation and consent to annex on October 5, 2006, for property located north of Hwy 99W across from Providence Hospital, Yamhill County tax lot 3216AC-13800.

2. After proper notice, on January 16, 2007 at the hour of 7:00 PM in the Newberg Public Safety Building, 401 E Third, the City Council held a public hearing on the item: accurately stated objections to jurisdiction, bias, and ex-parte contact; considered public testimony; examined the record; heard the presentation from staff and the applicant; examined and discussed the appropriate criteria to judge the project (as listed in the staff report); considered all relevant information regarding the item; and deliberated.

3. On January 16, 2007, the City Council adopted Order 2007-0002 which affirmed that the annexation met the applicable Newberg Development Code criteria.

4. The City of Newberg Charter requires that territory may be annexed into the City of Newberg only upon approval by a majority vote among the electorate of the City.

5. The applicant has requested that this matter be placed before the voters at the May 15, 2007 special election.

THE CITY OF NEWBERG ORDAINS AS FOLLOWS:

1. The question of annexing the property shown in Exhibit "A" and described in Exhibit "B" shall be submitted to the electorate of the city at the May 15, 2007 general election.

2. The City Council directs that all costs associated with placing the item on the ballot be paid for by the applicant/owners. This includes but is not limited to noticing, signage, advertising, and costs assessed by the Yamhill County Clerk to place the item on the ballot. Owners may be required to place monies in escrow to cover the costs of election(s).

3. The City Elections Officer is hereby authorized and directed to certify to the Yamhill County Clerk the ballot title for the annexation measure to be placed before the voters. Further, the City Elections Officer is directed to give all necessary notices of the ballot title and do all other necessary acts and deeds which may be required to place the matter before the voters of the City of Newberg at said election.

4. The City Attorney is directed to have prepared and review the explanatory statement which shall be submitted to the Yamhill County Clerk with the ballot title. Such explanatory statement shall be filed with the City Elections Officer and the City Elections Officer is further directed to certify this explanatory statement to the Yamhill County Clerk.

5. The City Elections Officer is authorized to do all other necessary acts and deeds which may be required to conduct the election concerning this measure.

6. Should this annexation request be approved by a majority of the electorate of the City of Newberg at the identified election date, the property shown in Exhibit "A" and described in Exhibit "B", shall be annexed and withdrawn from the Newberg Rural Fire Protection District, and the following events will occur:

   A. The City of Newberg land use inventory data and GIS data will be updated to reflect the new addition.

   B. The Recorder of the City of Newberg is hereby authorized and directed to make and submit to the Secretary of State, the Department of Revenue, the Yamhill County Elections Officer, and the Assessor of Yamhill County, a certified copy of this ordinance.

- **EFFECTIVE DATE** of this ordinance is 30 days after the adoption date, which is: February 15, 2007.

ADOPTED by the City Council of the City of Newberg, Oregon, this 16th day of January, 2007, by the following votes:

AYE: 6 **NAY: 0** **ABSENT: 1** **ABSTAIN: 0**

James H. Bennett, City Recorder

ATTEST by the Mayor this 18th day of January, 2007.

Bob Andrews, Mayor

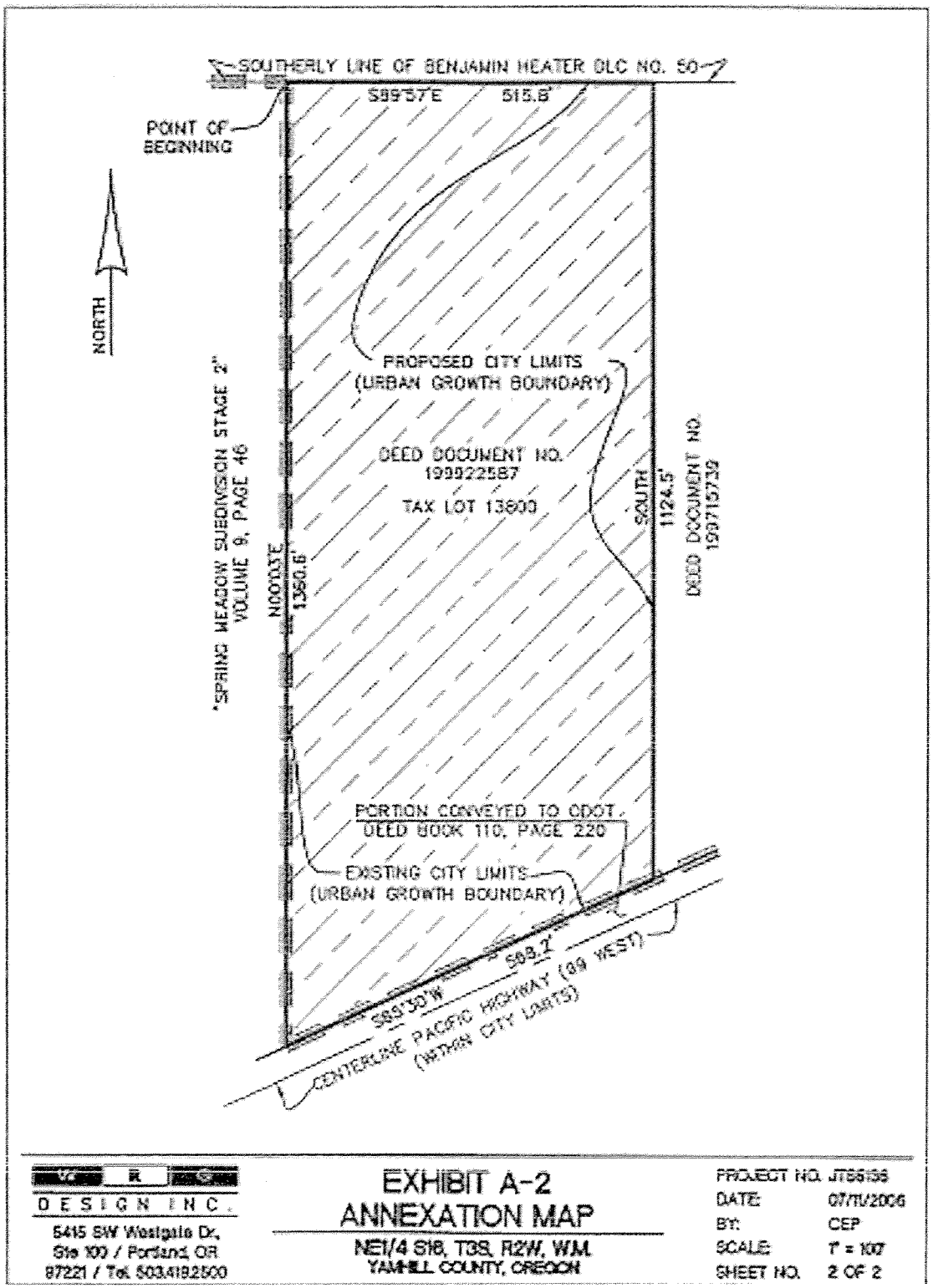
LEGISLATIVE HISTORY

By and through Planning Commission Committee at the 12/14/2006 meeting.

Exhibits:

Exhibit "A": Annexation Map
Exhibit "B": Legal Description

EXHIBIT "B": ANNEXATION MAP
ANX-06-009



V R G DESIGN INC. 5415 SW Westgate Dr, Ste 100 / Portland, OR 97221 / Tel: 5034192500	EXHIBIT A-2 ANNEXATION MAP NE1/4 S16, T3S, R2W, W.M. YAMHILL COUNTY, OREGON	PROJECT NO. JT56136 DATE: 07/11/2006 BY: CEP SCALE: 1" = 100' SHEET NO. 2 OF 2

LEGAL DESCRIPTION:
JULY 11, 2006
PAGE 1 OF 2

A TRACT OF LAND SITUATED IN THE NORTHEAST ONE-QUARTER OF SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 WEST, WILLAMETTE MERIDIAN, YAMHILL COUNTY, OREGON, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEASTERLY CORNER OF THE PLAT OF "SPRING MEADOW SUBDIVISION STAGE 2" RECORDED IN VOLUME 9, PAGE 46, YAMHILL COUNTY SURVEY RECORDS BEING AN ANGLE POINT OF THE NEWBERG CITY LIMIT BOUNDARY ON THE SOUTHERLY LINE OF THE BENJAMIN HEATER DONATION LAND CLAIM NUMBER 50; THENCE ALONG SAID DONATION LAND CLAIM LINE SOUTH 89° 57' EAST, 515.8 FEET TO THE NORTHWEST CORNER OF THAT CERTAIN TRACT DESCRIBED IN DEED RECORDED IN DOCUMENT NUMBER 199715739; THENCE ALONG THE WESTERLY LINE OF SAID TRACT SOUTH, 1124.5 FEET TO THE NORTHERLY RIGHT-OF-WAY OF PACIFIC HIGHWAY (HIGHWAY 99 WEST) AS DESCRIBED IN DEED BOOK 110, PAGE 220; THENCE ALONG SAID RIGHT-OF-WAY LINE SOUTH 65° 30' WEST, 568.2 FEET TO A POINT BEING THE SOUTHEASTERLY CORNER OF SAID PLAT OF "SPRING MEADOW SUBDIVISION STAGE 2"; THENCE LEAVING SAID RIGHT-OF-WAY LINE ALONG THE EASTERLY BOUNDARY OF SAID PLAT (BEING COINCIDENT WITH AN EASTERLY NEWBERG CITY LIMIT LINE) NORTH 00°03' EAST, 1360.6 FEET TO SAID **POINT OF BEGINNING.**

CONTAINS 14.729 ACRES, MORE OR LESS.

THE ATTACHED EXHIBIT ENTITLED "EXHIBIT A-2 ANNEXATION MAP" IS MADE APART HEREOF.

THIS DESCRIPTION IS MEANT FOR ANNEXATION PURPOSES ONLY. IT IS NOT INTENDED TO BE USED IN THE TRANSFER OF REAL PROPERTY.

7/11/06
REGISTERED
PROFESSIONAL
LAND SURVEYOR
OREGON
JANUARY 10, 2006
PAUL D. GALLI
76970
EXPIRATION DATE 6/30/07

ORDER NO. 2007-0002

AN ORDER FINDING THAT PROPERTY LOCATED NORTH OF HWY 99W ACROSS FROM PROVIDENCE HOSPITAL, YAMHILL COUNTY TAX LOT 3216AC-13800, MEETS THE APPLICABLE NEWBERG DEVELOPMENT CODE CRITERIA TO BE ANNEXED INTO THE CITY, AND MEETS THE APPLICABLE CODE CRITERIA TO CHANGE THE ZONING FROM COUNTY AF-10 TO CITY R-1, R-2, AND C-2.

RECITALS:

1. On June 7, 2006, Jeffrey D. Smith submitted concurrent applications for an urban growth boundary amendment, comprehensive plan amendment to COM (commercial), annexation, and zoning amendment to C-2 (community commercial) for property located north of Hwy 99W across from Providence Hospital, Yamhill County tax lot 3216AC-13800.

2. Due to testimony and deliberations at the NUAMC (Newberg Urban Area Management Commission) meeting on September 21, 2006, the applicant revised his request to consist of a comprehensive plan amendment to include portions of LDR (low density residential), MDR (medium density residential) and COM (commercial), and a zoning amendment to include corresponding portions of R-1 (low density residential), R-2 (medium density residential) and C-2 (community commercial).

3. The urban growth boundary amendment and revised comprehensive plan amendment were heard and approved by Newberg City Council on October 16, 2006.

4. The Newberg Planning Commission heard the annexation and zoning amendment on December 14, 2006, and recommended approval per Resolution No. 2006-227.

5. After proper notice, on January 16, 2007, the Newberg City Council held a hearing to consider the annexation and zoning amendment requests.

6. The City Council finds that the applicable criteria have been met, and that approval of the application is in the best interests of the community.

THE CITY OF NEWBERG ORDERS AS FOLLOWS:

1. The City Council finds that the annexation and zoning amendment meet the Newberg Development Code criteria and adopts the findings, which are attached hereto as Exhibit "A" and incorporated herein by reference.

2. Annexation requires the City Council to adopt an ordinance annexing the property, and requires

approval at a public vote. If the annexation is approved through these procedures, then the City orders the following:

A. The zoning of the property described in Exhibit "C" is changed to portions of R-1 (low density residential), R-2 (medium density residential) and C-2 (community commercial) as shown on the map in Exhibit "D."

3. This order is subject to the following:

A. Annexation of this property is contingent upon final official adoption of the urban growth boundary amendment. The effective date of the UGB amendment is contingent upon the final approval and adoption of amendments to the acknowledged Newberg Transportation System Plan as initiated by Resolution 2006-2661 and as shown in the agreement by the parties but subject to any amendment to the agreement as the parties may approve.

B. Upon future development of this property, the development shall contribute its share, based on traffic volume, of the future cost of capacity improvements to the Springbrook Rd/Hwy 99W intersection.

C. A 30 ft building setback along the north property line will be required upon development of the site.

D. A wetland determination is required prior to any development on the site.

E. Future development of the property shall follow best management practices for storm drainage as outlined in the letter from James Bennett to the Yamhill County Board of Commissioners dated 1/30/06.

- **EFFECTIVE DATE** of this order is the day after the adoption date, which is: January 17, 2007.

ADOPTED by the City Council of the City of Newberg, Oregon, this 16th day of January, 2007.

James H. Bennett, City Recorder

ATTEST by the Mayor this 18th day of January, 2007.

Bob Andrews, Mayor

QUASI-JUDICIAL HISTORY

By and through the Planning Commission Committee at their 12/14/2006 meeting.

Exhibits:

Exhibit "A": Findings and Conditions of Approval
Exhibit "B": Annexation Map
Exhibit "C": Legal Description
Exhibit "D": Zoning Map

EXHIBIT "A": FINDINGS & CONDITIONS
ANX-06-009
Annexation of 14.74 acres for property located north of Hwy 99W, across from Providence Hospital (4020 Portland Rd)

I. APPLICABLE ANNEXATION REGULATIONS – NEWBERG DEVELOPMENT CODE § 151.261 CONDITIONS FOR ANNEXATION

(A) The subject site must be located within the Newberg Urban Growth Boundary or Newberg Urban Reserve Areas.

FINDING: On October 19, 2006, the City Council adopted Ordinance 2006-2660, including the property in the Urban Growth Boundary subject to adoption of certain amendments to the Newberg Transportation System Plan. Thus, annexation is contingent on the amendments first being adopted.

(B) The subject site must be contiguous to the existing city limits.

FINDING: The subject site is adjacent to Newberg city limits on both its southern and western property lines.

II. APPLICABLE ANNEXATION REGULATIONS – NEWBERG DEVELOPMENT CODE § 151.262 QUASI-JUDICIAL ANNEXATION CRITERIA

(A) The proposed use for the site complies with the Newberg comprehensive plan and with the designation on the Newberg comprehensive plan map. If a redesignation of the plan map is requested concurrent with annexation, the uses allowed under the proposed designation must comply with the Newberg comprehensive plan.

FINDING: The comprehensive plan designation of the site was changed concurrently with the urban growth amendment application that was filed May 17, 2006 and approved by Ordinance 2006-2660 on October 19, 2006. The new comprehensive plan designation includes portions of LDR (low density residential), MDR (medium density residential), and COM (commercial). The applicant has proposed zoning of R-1 (low density residential) for the northernmost 170 ft of the site, R-2 (medium density residential) for the next northernmost 220 ft, and C-2 (community commercial) for the remainder of the property. These zoning designations would correspond with the redesignated comprehensive plan map areas. Crestview Dr will be extended south through the property in accordance with the comprehensive plan map and the Newberg Transportation System Plan.

(B) An adequate level of urban services must be available, or made available, within three years time of annexation, except as noted in division (E) below. An adequate level of urban services shall be defined as:

(1) Municipal sanitary sewer and water service meeting the requirements enumerated in the Newberg comprehensive plan for provision of these services.

(2) Roads with an adequate design capacity for the proposed use and projected future uses. Where construction of the road is not deemed necessary within the three-year time period, the city shall note requirements such as dedication of right-of-way, waiver of remonstrance

against assessment for road improvement costs, or participation in other traffic improvement costs, for application at the appropriate level of the planning process. The city shall also consider public costs for improvement and the ability of the city to provide for those costs.

FINDING: As explained below, public facilities will have adequate capacity to accommodate the demands of the site.

Water: The property will connect to an existing 10-inch mainline that runs along Hwy 99W at the property's southern border.

Storm water: Storm water drainage is currently provided by two storm drainage ditches that cross the property and outfall to the property to the east. These ditches eventually drain to a 24-inch diameter culvert under Hwy 99W. The Newberg Drainage Master Plan identifies this culvert as being undersized and needing to be replaced with a 36-inch culvert. Certain improvements to the storm water drainage system will be required upon development to mitigate the additional demand on the system.

Sewer: Sewer service will be provided by extending the line that currently runs along Klimek Lane along the Klimek Lane right-of-way across Hwy 99W following the general alignment of the drainage ditch o the Gueldner property.

Roads: The subject property is adjacent to Hwy 99W on its southern side. Upon development, Hwy 99W shall be improved with curbs, gutters, and sidewalks. In addition, the Newberg Transportation System Plan designates a planned road improvement for the area. The improvement will consist of Crestview Dr being extended south through the property and connecting with Hwy 99W across from the Providence Dr connection. It also includes an east-west connection between the Crestview Dr extension and Benjamin Rd.

The Transpo Group prepared a traffic impact study for this site using the assumption that Crestview Dr will be extended through the site. The proposed site development is expected to generate a total of 3,488 new daily, and 349 new weekday PM peak hour trips. Due to the new trip generation and the expected burden the new trips will place on the intersection of Springbrook Rd & Hwy 99W, future development of the site will be required to pay a share of the future cost of capacity improvements to the intersection.

The Transpo study also calculated that much of the commercial center traffic will be pass-by or internal trips versus primary, or new, trips. A total of 2,292 weekday daily and 223 weekday PM peak hour passby trips would be generated by the project, and a total of 4,146 weekday internal trips and 254 weekday PM peak hour internal trips would be generated. This would suggest that the commercial center could reduce the number of overall vehicle miles traveled for the residents of Newberg because they will be able to satisfy many of their shopping needs in one central place instead of making individual, or new, trips to many different places. Details of the study methodology, findings, and recommendations are provided in the traffic impact study report.

(C) Findings documenting the availability of police, fire, parks, and school facilities and services shall be made to allow for conclusionary findings either for or against the proposed annexation. The adequacy of these services shall be considered in relation to annexation proposals.

FINDING: Police services are currently provided to the area by Yamhill County Sheriff's Office. Fire service

is provided by Newberg Rural Fire District. The proposed annexation will shift police and fire services to the city. Because the annexed property will be primarily commercial as opposed to residential, it will provide more revenue for these services than it will be a burden on the services. The new residential development portion of the property may increase the demand for parks and school facilities, which should be offset by the system development charges for parks and the per-pupil State funding for schools. Overall, the development of the site will not have adverse affects on the availability of police, fire, parks, and school facilities and services for the community as a whole.

(D) The burden for providing the findings for divisions (A), (B) and (C) of this section is placed upon the applicant.

FINDING: The applicant has provided written findings for this section.

(E) The City Council may annex properties where urban services are not and cannot practically be made available within the three year time frame noted in division (B) above, but where annexation is needed to address a health hazard, to annex an island, to address sewer or water connection issues for existing development, to address specific legal or contract issues, to annex property where the timing and provision of adequate services in relation to development is or will be addressed through legislatively adopted specific area plans or similar plans, or to address similar situations. In these cases, absent a specific legal or contractual constraint, the Council shall apply an interim zone, such as a limited-use overlay, that would limit development of the property until such time as the services become available.

FINDING: This criterion is not applicable to this property.

III. APPLICABLE ZONING MAP AMENDMENT REGULATIONS – NEWBERG DEVELOPMENT CODE § 151.122(3) AMENDMENT CRITERIA

(a) The proposed change is consistent with and promotes the goals and policies of the Newberg comprehensive plan and this code;

FINDING: The proposed zone change from County AF-10 to City R-1 (low density residential), R-2 (medium density residential), and C-2 (community commercial) is consistent with the comprehensive plan designation of the site. See the finding for § 151.262(A) above for a more in depth discussion of compliance with the Newberg comprehensive plan.

(b) Public facilities and services are or can be reasonably made available to support the uses allowed by the proposed change.

FINDING: Adequate water, sewer, storm water, and transportation infrastructure is, or will be, available to support the proposed new uses of the site. See the finding for § 151.262(B) above that further discusses the availability of public facilities and services to this site.

(c) Compliance with the State Transportation Rule (OAR 660-012-0060) for proposals that significantly affect transportation facilities.

FINDING: The zone change in itself is in compliance with the State Transportation Rule and does not significantly affect transportation facilities. Transportation impacts are addressed above in the finding for § 151.262(B), and in the urban growth boundary and comprehensive plan amendment staff report, file no. UGB-06-001.

CONDITIONS OF APPROVAL
ANX-06-009

The following conditions of approval apply to the annexation of the property located north of Hwy 99W, across from Providence Hospital (4020 Portland Rd), Yamhill County tax lot 3216AC-13800.

- Annexation of this property cannot go to a public vote until official adoption of the urban growth boundary (UGB) amendment is complete. The effective date of the UGB amendment is contingent upon the final approval and adoption of amendments to the acknowledged Newberg Transportation System Plan as initiated by Resolution 2006-2661 and as shown in the agreement by the parties but subject to any amendment to the agreement as the parties may approve.

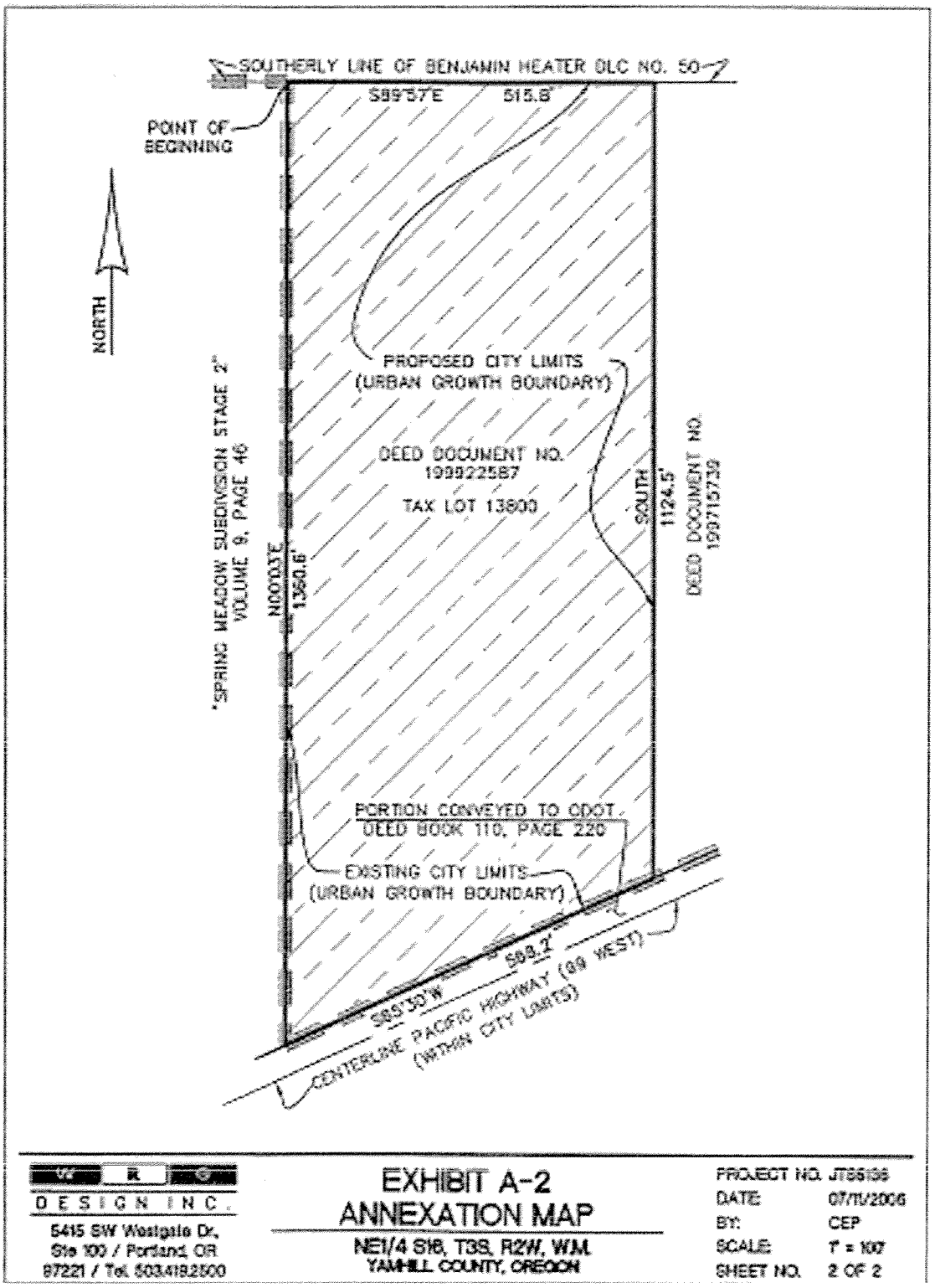
- Upon future development of the property, the development shall contribute its share, based on traffic volume, of the future cost of capacity improvements to the Springbrook Rd/Hwy 99W intersection.

- A 30 ft building setback along the north property line will be required upon development of the site.

- A wetland determination is required prior to any development on the site.

- Future development of the property shall follow best management practices for storm drainage as outlined in the letter from James Bennett to the Yamhill County Board of Commissioners dated 1/30/06.

EXHIBIT "B": ANNEXATION MAP
ANX-06-009



DESIGN INC.
5415 SW Westgate Dr.,
Ste 100 / Portland, OR
97221 / Tel. 503.419.2500

EXHIBIT A-2
ANNEXATION MAP
NE1/4 S16, T3S, R2W, W.M.
YAMHILL COUNTY, OREGON

PROJECT NO.	JT06136
DATE:	07/11/2006
BY:	CEP
SCALE:	1" = 100'
SHEET NO.	2 OF 2

EXHIBIT "C": LEGAL DESCRIPTION
ANX-06-009

LEGAL DESCRIPTION:
JULY 11, 2006
PAGE 1 OF 2

A TRACT OF LAND SITUATED IN THE NORTHEAST ONE-QUARTER OF SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 WEST, WILLAMETTE MERIDIAN, YAMHILL COUNTY, OREGON, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEASTERLY CORNER OF THE PLAT OF "SPRING MEADOW SUBDIVISION STAGE 2" RECORDED IN VOLUME 9, PAGE 46, YAMHILL COUNTY SURVEY RECORDS BEING AN ANGLE POINT OF THE NEWBERG CITY LIMIT BOUNDARY ON THE SOUTHERLY LINE OF THE BENJAMIN HEATER DONATION LAND CLAIM NUMBER 50; THENCE ALONG SAID DONATION LAND CLAIM LINE SOUTH 89° 57' EAST, 515.8 FEET TO THE NORTHWEST CORNER OF THAT CERTAIN TRACT DESCRIBED IN DEED RECORDED IN DOCUMENT NUMBER 199715739; THENCE ALONG THE WESTERLY LINE OF SAID TRACT SOUTH, 1124.5 FEET TO THE NORTHERLY RIGHT-OF-WAY OF PACIFIC HIGHWAY (HIGHWAY 99 WEST) AS DESCRIBED IN DEED BOOK 110, PAGE 220; THENCE ALONG SAID RIGHT-OF-WAY LINE SOUTH 65° 30' WEST, 568.2 FEET TO A POINT BEING THE SOUTHEASTERLY CORNER OF SAID PLAT OF "SPRING MEADOW SUBDIVISION STAGE 2"; THENCE LEAVING SAID RIGHT-OF-WAY LINE ALONG THE EASTERLY BOUNDARY OF SAID PLAT (BEING COINCIDENT WITH AN EASTERLY NEWBERG CITY LIMIT LINE) NORTH 00°03' EAST, 1360.6 FEET TO SAID **POINT OF BEGINNING.**

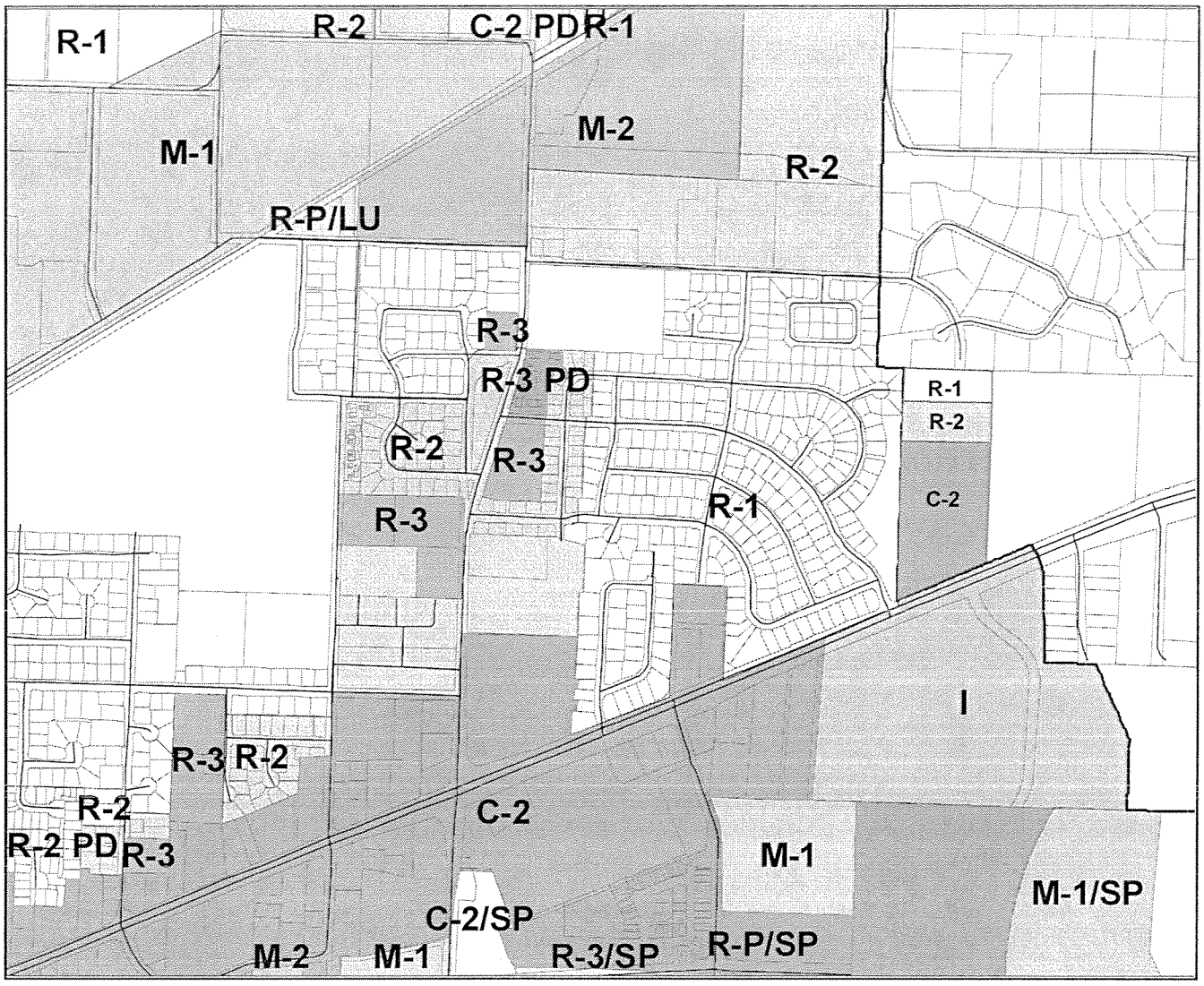
CONTAINS 14.729 ACRES, MORE OR LESS.

THE ATTACHED EXHIBIT ENTITLED "EXHIBIT A-2 ANNEXATION MAP" IS MADE APART HEREOF.

THIS DESCRIPTION IS MEANT FOR ANNEXATION PURPOSES ONLY. IT IS NOT INTENDED TO BE USED IN THE TRANSFER OF REAL PROPERTY.

7/11/06
REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
JANUARY 10, 2006
PAUL D GALLI
76970
EXPIRATION DATE 6/30/07

EXHIBIT "D": ZONING MAP
ANX-06-009



ORDINANCE NO. 2008-2700

AN ORDINANCE DECLARING PROPERTY LOCATED AT 4505 E. PORTLAND ROAD, YAMHILL COUNTY TAX LOT 3216-1100, BE ANNEXED INTO THE CITY OF NEWBERG AND WITHDRAWN FROM THE NEWBERG RURAL FIRE PROTECTION DISTRICT SUBJECT TO A PUBLIC VOTE, AND AUTHORIZING AND DIRECTING THE CITY ELECTIONS OFFICER TO CERTIFY TO THE YAMHILL COUNTY CLERK A BALLOT TITLE FOR THE MEASURE TO BE SUBMITTED TO THE ELECTORATE OF THE CITY OF NEWBERG FOR THEIR APPROVAL OF AN ANNEXATION FOR THIS SAME PROPERTY

RECITALS:

1. Coyote Homes Inc. submitted an application for annexation and consent to annex on April 1, 2008 for property located at 4505 E. Portland Road, Yamhill County tax lot 3216-1100. On July 16, 2008 Coyote Homes Inc. withdrew as the applicant and the owner, Forrest R. Gish, Trustee for Forrest R. Gish Living Trust dated September 15, 1997, notified the City that he was now the applicant.

2. After proper notice, on August 4, 2008, the City Council held a public hearing on the item: accurately stated objections to jurisdiction, bias, and ex-parte contact; considered public testimony; examined the record; heard the presentation from staff and the applicant; examined and discussed the appropriate criteria to judge the project (as listed in the staff report); considered all relevant information regarding the item; and deliberated.

3. On August 4, 2008, the City Council adopted Order 2008-0013 which affirmed that the annexation met the applicable Newberg Development Code criteria.

4. The City of Newberg Charter requires that territory may be annexed into the City of Newberg only upon approval by a majority vote among the electorate of the City.

5. The applicant has requested, and the Planning Commission has recommended, that this matter be placed before the voters at the November 4, 2008 general election.

THE CITY OF NEWBERG ORDAINS AS FOLLOWS:

1. The question of annexing the property shown in Exhibit "A" and described in Exhibit "B" shall be submitted to the electorate of the city at the November 4, 2008 special election. Exhibits "A" and "B" are hereby adopted and by this reference incorporated.

2. The City Council directs that all costs associated with placing the item on the ballot be paid

for by the applicant/owners. This includes but is not limited to noticing, signage, advertising, and costs assessed by the Yamhill County Clerk to place the item on the ballot. Owners may be required to place monies in escrow to cover the costs of election(s).

3. The City Elections Officer is hereby authorized and directed to certify to the Yamhill County Clerk the ballot title for the annexation measure to be placed before the voters. Further, the City Elections Officer is directed to give all necessary notices of the ballot title and do all other necessary acts and deeds which may be required to place the matter before the voters of the City of Newberg at said election.

4. The City Attorney is directed to have prepared and review the explanatory statement which shall be submitted to the Yamhill County Clerk with the ballot title. Such explanatory statement shall be filed with the City Elections Officer and the City Elections Officer is further directed to certify this explanatory statement to the Yamhill County Clerk.

5. The City Elections Officer is authorized to do all other necessary acts and deeds which may be required to conduct the election concerning this measure.

6. Should this annexation request be approved by a majority of the electorate of the City of Newberg at the identified election date, the property shown in Exhibit "A" and described in Exhibit "B", shall be annexed and withdrawn from the Newberg Rural Fire Protection District, and the following events will occur:

   A. The City of Newberg land use inventory data and GIS data, including the comprehensive plan map and zoning map, will be updated to reflect the new addition.

   B. The Recorder of the City of Newberg is hereby authorized and directed to make and submit to the Secretary of State, the Department of Revenue, the Yamhill County Elections Officer, and the Assessor of Yamhill County, a certified copy of this ordinance.

➢ **EFFECTIVE DATE** of this ordinance is 30 days after the adoption date, which is: September 4, 2008.

ADOPTED by the City Council of the City of Newberg, Oregon, this 4th day of August, 2008, by the following votes: **AYE:** 5 **NAY:** 1 (Currier) **ABSENT:** 1 (Shelton) **ABSTAIN:** Ø

Norma I. Alley

Norma I. Alley, City Recorder

ATTEST by the Mayor this 7th day of August, 2008.

Bob Andrews, Mayor

LEGISLATIVE HISTORY

By and through Planning Commission (committee name) Committee at 6/12/2008 & 7/10/2008 (date) meetings.

Exhibits:

Exhibit "A": Annexation Map
Exhibit "B": Legal Description

EXHIBIT "A": ANNEXATION MAP

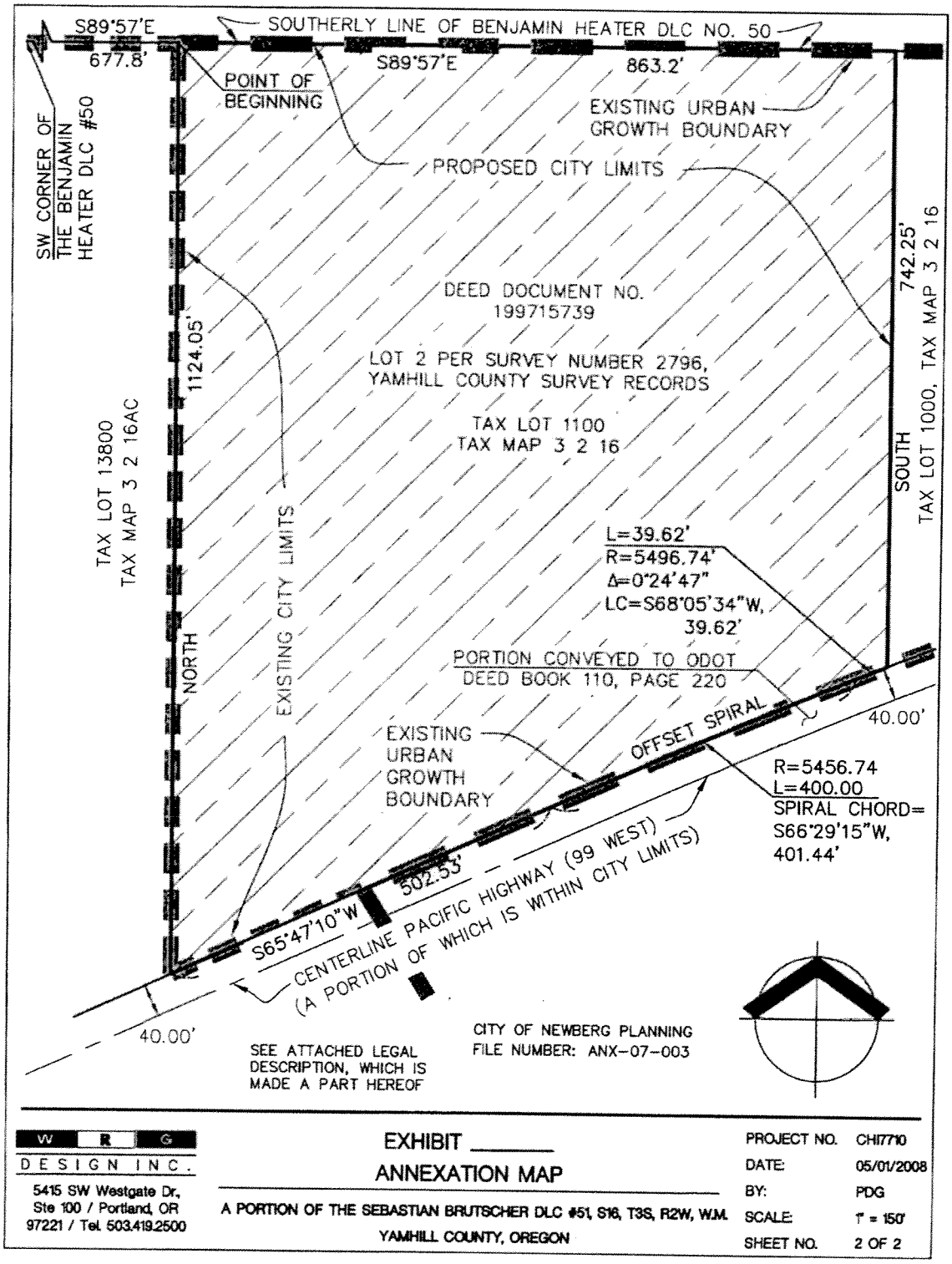


EXHIBIT "B": LEGAL DESCRIPTION

LEGAL DESCRIPTION
CITY OF NEWBERG ANNEXATION
PLANNING FILE NUMBER: ANX-07-003
MAY 1, 2008
PAGE 1 OF 2

ALL OF THAT CERTAIN TRACT OF LAND DESCRIBED IN DEED DOCUMENT NUMBER 199715739; SAID PROPERTY IS SITUATED IN THE SEBASTIAN BRUTSCHER DONATION LAND CLAIM, NOTIFICATION #1470, CLAIM #51, IN TOWNSHIP 3 SOUTH, RANGE 2 WEST OF THE WILLAMETTE MERIDIAN, YAMHILL COUNTY, OREGON, AND IS DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF LOT NUMBER 1 PER COUNTY SURVEY #2795 BEING ON THE NORTH LINE OF SAID BRUTSCHER CLAIM (SAID POINT BEARS SOUTH 89°57' EAST, 677.8 FEET, MORE OR LESS FROM THE SOUTHWEST CORNER OF THE BENJAMIN HEATER DONATION LAND CLAIM); THENCE SOUTH 89°57' EAST ALONG SAID BRUTSCHER CLAIM LINE, 863.2 FEET, MORE OR LESS, TO THE NORTHEAST CORNER OF LOT NO 2 OF SAID SURVEY #2795, SAID POINT ALSO BEING AT THE NORTHWEST CORNER OF LOT 4A, OF SAID COUNTY SURVEY #2795; THENCE ALONG THE EAST LINE OF SAID LOT 2 SOUTH, 742.25 FEET, MORE OR LESS, TO A POINT OF 5496.74 FOOT RADIUS CURVE TO THE LEFT ON THE NORTH RIGHT OF WAY LINE OF THE WEST SIDE PACIFIC HIGHWAY (BEING 40 FEET TO THE CENTERLINE THEREOF, MEASURED PERPENDICULAR THERETO); THENCE ALONG SAID NORTH RIGHT OF WAY LINE, THE FOLLOWING THREE (3) COURSES, MORE OR LESS:
1) ALONG SAID 5496.74 FOOT RADIUS CURVE TO THE LEFT (THE CENTER OF WHICH BEARS SOUTH 21° 42' 03" EAST, 5496.74 FEET) THROUGH A CENTRAL ANGLE OF 00° 24' 47" AN ARC DISTANCE OF 39.62 FEET (THE CHORD OF WHICH BEARS SOUTH 68° 05' 34" WEST, 39.62 FEET) TO THE BEGINNING OF AN OFFSET SPIRAL (THE CENTERLINE SPIRAL IS A 400 FOOT SPIRAL, WITH A NORMAL CURVE RADIUS OF 5456.74 FEET); 2) ALONG SAID OFFSET SPIRAL (THE CHORD OF WHICH BEARS SOUTH 66° 29' 15" WEST, 401.44 FEET); THENCE SOUTH 65° 47' 10" WEST, 502.53 FEET TO A POINT ON THE WEST LINE OF SAID LOT 2, SAID LINE BEING ON THE CURRENT CITY OF NEWBERG LIMITS; THENCE ALONG SAID WEST LINE, ALONG SAID CURRENT CITY OF NEWBERG LIMITS NORTH, 1124.05 FEET, MORE OR LESS, TO SAID **POINT OF BEGINNING.**

CONTAINS 18.437 ACRES, MORE OR LESS.

THE ATTACHED EXHIBIT ENTITLED "ANNEXATION MAP" IS MADE A PART HEREOF.

THIS DESCRIPTION HAS BEEN COMPILED FROM RECORD INFORMATION AND IS MEANT FOR ANNEXATION PURPOSES ONLY. IT IS NOT INTENDED TO BE USED IN THE TRANSFER OF REAL PROPERTY.

5/1/2008
REGISTERED PROFESSIONAL LAND SURVEYOR
Paul D. Galli
OREGON
JANUARY 10, 2006
PAUL D. GALLI
76970
EXPIRATION DATE 6/30/09

ORDER NO. 2008-0013

AN ORDER FINDING THAT PROPERTY LOCATED AT 4505 E. PORTLAND ROAD, YAMHILL COUNTY TAX LOT 3216-1100, MEETS THE APPLICABLE NEWBERG DEVELOPMENT CODE CRITERIA TO BE ANNEXED INTO THE CITY, AND MEETS THE APPLICABLE CODE CRITERIA TO CHANGE THE ZONING FROM COUNTY AF-10 TO CITY R-1, R-2 AND C-2

RECITALS:

1. On April 1, 2008 Coyote Homes Inc. submitted an application to annex one parcel (approximately 18.5 acres) into the City of Newberg with a concurrent zone change to R-1 (Low Density Residential), R-2 (Medium Density Residential) and C-2 (Community Commercial) for property located at 4505 E. Portland Road, Yamhill County tax lot 3216-1100.

2. The Newberg Planning Commission heard the annexation and zoning amendment on June 12, 2008, took public testimony, and continued the hearing to July 10, 2008 to allow ODOT time to review the supplemental traffic study and revised findings. The Planning Commission continued the hearing on July 10, 2008, reviewed the supplemental traffic study and revised findings, reviewed ODOT's comment that they had no further objections to the annexation request, and recommended approval of the annexation as conditioned and placement on the November 4, 2008 ballot per Resolution 2008-252.

3. Change of applicant: On July 16, 2008 Coyote Homes, Inc. withdrew as the applicant and the owner, Forrest R. Gish, Trustee for Forrest R. Gish Living Trust dated September 15, 1997, notified the City that he was now the applicant.

4. After proper notice, on August 4, 2008, the Newberg City Council held a hearing to consider the annexation and zoning amendment request.

5. The City Council finds that the applicable criteria have been met, and that approval of the application is in the best interests of the community.

THE CITY OF NEWBERG ORDERS AS FOLLOWS:

1. The City Council finds that the annexation and zoning amendment meet the Newberg Development Code criteria and adopts the findings, which are attached hereto as Exhibit "A". Exhibit "A" is hereby adopted and by this reference incorporated.

2. Annexation requires the City Council to adopt an ordinance annexing the property, and requires approval at a public vote. If the annexation is approved through these procedures, then the City orders the following:
   A. The zoning of the property described in Exhibit "C" is changed to portions of R-1 (Low Density Residential), R-2 (Medium Density Residential), and C-2 (Community Commercial) as shown on the map in Exhibit "E". Exhibits "C" and "E" are hereby adopted and by this

reference incorporated.

3. This order is subject to the following:

   A. A refined traffic study out to year 2025 will be required showing the actual development proposed at that time. No direct access to Highway 99W will be allowed. The traffic study should refine the existing study based on the actual development proposal and determine the number of trips that this development would add to the Springbrook/Hwy 99W intersection.

   B. Upon future development of the property, the development shall contribute its share, based on traffic volume, of the future cost of capacity improvements to the Springbrook Rd/Hwy 99W intersection.

   C. A 30 ft building setback along the north property line will be required upon development of the site.

   D. A wetland determination and delineation report shows wetlands on the site. Development shall comply with applicable state and federal wetland standards.

   E. Development follow best management practices for storm drainage as outlined in the letter from James Bennett to the Yamhill County Board of Commissioners dated 1/30/06.

   F. Upon development, verify the capacity of the Fernwood Road sanitary sewer pump station and upsize if necessary. All public sewer lines must be gravity flow. Coordinate with DSL and the US Army Corps of Engineers regarding changes to the existing on-site stormwater drainage ways. Complete street frontage improvements along Hwy 99W. The Crestview Drive extension from Oxberg Lakes to 99W, and the eastward extension of Gueldner Drive, must be in place at the time of development

   G. Existing homes to connect to sewer and water or be removed within two years of annexation.

   H. Upon development of the property, construct a sound wall along the northern property line to be of similar design and coordinated with the sound wall on the adjacent Gueldner property to the west.

➢ **EFFECTIVE DATE** of this order is the day after the adoption date, which is: August 5, 2008.

ADOPTED by the City Council of the City of Newberg, Oregon, this 4th day of August, 2008.

Norma I. Alley

Norma I. Alley, City Recorder

ATTEST by the Mayor this 7th day of August, 2008.

Bob Andrews, Mayor

QUASI-JUDICIAL HISTORY

By and through Planning Commission Committee at 6/12/2008 & 7/10/2008 meeting.
(committee name) (date)

EXHIBIT "A": FINDINGS

ANX-07-003

Annexation of 18.5 acres for property located at 4505 E. Portland Road

I. APPLICABLE ANNEXATION REGULATIONS – NEWBERG DEVELOPMENT CODE § 151.261 CONDITIONS FOR ANNEXATION

(A) The subject site must be located within the Newberg Urban Growth Boundary or Newberg Urban Reserve Areas.

FINDING: The site was included into the Newberg Urban Growth Boundary by Order 2007-0001 on January 2, 2007. Certain conditions were placed on the property by Order 2007-0001 and have been included within the recommended annexation conditions of approval.

(B) The subject site must be contiguous to the existing city limits.

FINDING: The subject site is adjacent to Newberg city limits on its western and southern property lines.

II. APPLICABLE ANNEXATION REGULATIONS – NEWBERG DEVELOPMENT CODE § 151.262 QUASI-JUDICIAL ANNEXATION CRITERIA

(A) The proposed use for the site complies with the Newberg comprehensive plan and with the designation on the Newberg comprehensive plan map. If a redesignation of the plan map is requested concurrent with annexation, the uses allowed under the proposed designation must comply with the Newberg comprehensive plan.

FINDING: The comprehensive plan designation of the site was changed concurrently with the urban growth boundary amendment application that was approved by Order 2007-0001 on January 2, 2007. The current comprehensive plan designation includes portions of LDR (low density residential), MDR (medium density residential), and COM (commercial). The applicant has proposed zoning of R-1 (low density residential), R-2 (medium density residential), and C-2 (community commercial) that exactly matches the comprehensive plan designations.

The east-west connector road (Gueldner Drive) will be extended through the site from the Crestview Dr extension towards Benjamin Road in accordance with the comprehensive plan map and the Newberg Transportation System Plan.

A wetland delineation map shows several wetland areas on this site. Most of the wetlands are along two existing drainage ditches on the site that carry stormwater runoff from a subdivision to the west that was built in the 1970s. DLCD has commented that a freshwater wetland assessment needs to be completed to verify that this annexation is in compliance with state Goal 5.

Oregon Administrative Rule 660-023-0100
Wetlands
(1) For purposes of this rule, a "wetland" is an area that is inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

(2) Local governments shall amend acknowledged plans and land use regulations prior to or at periodic review to address the requirements of this division, as set out in OAR 660-023-0250(5) through (7). The standard inventory process requirements in OAR 660-023-0030 do not apply to wetlands. Instead, local governments shall follow the requirements of section (3) of this rule in order to inventory and determine significant wetlands.

(3) For areas inside urban growth boundaries (UGBs) and urban unincorporated communities (UUCs), local governments shall:

(a) Conduct a local wetlands inventory (LWI) using the standards and procedures of OAR 141-086-0110 through 141-086-0240 and adopt the LWI as part of the comprehensive plan or as a land use regulation; and

(b) Determine which wetlands on the LWI are "significant wetlands" using the criteria adopted by the Division of State Lands (DSL) pursuant to ORS 197.279(3)(b) and adopt the list of significant wetlands as part of the comprehensive plan or as a land use regulation.

(4) For significant wetlands inside UGBs and UUCs, a local government shall:

(a) Complete the Goal 5 process and adopt a program to achieve the goal following the requirements of OAR 660-023-0040 and 660-023-0050; or

(b) Adopt a safe harbor ordinance to protect significant wetlands consistent with this subsection, as follows:

(A) The protection ordinance shall place restrictions on grading, excavation, placement of fill, and vegetation removal other than perimeter mowing and other cutting necessary for hazard prevention; and

(B) The ordinance shall include a variance procedure to consider hardship variances, claims of map error verified by DSL, and reduction or removal of the restrictions under paragraph (A) of this subsection for any lands demonstrated to have been rendered not buildable by application of the ordinance.

(5) For areas outside UGBs and UUCs, local governments shall either adopt the statewide wetland inventory (SWI; see ORS 196.674) as part of the local comprehensive plan or as a land use regulation, or shall use a current version for the purpose of section (7) of this rule.

(6) For areas outside UGBs and UUCs, local governments are not required to amend acknowledged plans and land use regulations in order to determine significant wetlands and complete the Goal 5 process. Local governments that choose to amend acknowledged plans for areas outside UGBs and UUCs in order to inventory and protect significant wetlands shall follow the requirements of sections (3) and (4) of this rule.

(7) All local governments shall adopt land use regulations that require notification of DSL concerning applications for development permits or other land use decisions affecting wetlands on the inventory, as per ORS 227 .350 and 215.418, or on the SWI as provided in section (5) of this rule.

(8) All jurisdictions may inventory and protect wetlands under the procedures and requirements for wetland conservation plans adopted pursuant to ORS 196.668 et seq. A wetlands conservation plan approved by the director of DSL shall be deemed to comply with Goal 5 (ORS 197.279(1)).

Stat. Auth.: ORS 183 & ORS 197

Stats. Implemented: ORS 197.040 & ORS 197.225 - ORS 197.245

Hist.: LCDC 2-1996, f. 8-30-96, cert. ef. 9-1-96

Finding: The applicant hired a local wetland specialist, Schott and Associates, to review the wetlands on the site and determine whether or not they are significant wetlands. Schott and Associates assessed the wetlands using the Oregon freshwater wetland assessment method required by Goal 5 and concluded that none of the wetlands on the site are significant. The report is included with the application. The wetlands were determined to provide habitat for some wildlife species, but the fish habitat was determined to be either "impacted or degraded" or not present at all on the wetlands. The water quality and hydrologic

control functions were determined to be "impacted or degraded" for all on site wetlands. All of these wetland functions were below the standards that would deem the wetlands to be locally significant. The wetlands also did not meet the other criteria regarding water quality limited bodies or endangered or listed species that would require the wetlands to be considered significant. The wetlands are therefore found to not be significant and no local controls need to be placed over the wetlands upon annexation. The wetlands are under the jurisdiction of the Department of State Lands and the U.S. Army Corps of Engineers. The applicant will need to comply with all State and Federal requirements prior to making any changes to these wetland areas. At this point the applicant plans to retain some of the wetland areas when they develop the site.

(B) An adequate level of urban services must be available, or made available, within three years time of annexation, except as noted in division (E) below. An adequate level of urban services shall be defined as:

(1) Municipal sanitary sewer and water service meeting the requirements enumerated in the Newberg comprehensive plan for provision of these services.

(2) Roads with an adequate design capacity for the proposed use and projected future uses. Where construction of the road is not deemed necessary within the three-year time period, the city shall note requirements such as dedication of right-of-way, waiver of remonstrance against assessment for road improvement costs, or participation in other traffic improvement costs, for application at the appropriate level of the planning process. The city shall also consider public costs for improvement and the ability of the city to provide for those costs.

FINDING: As explained below, public facilities will have adequate capacity to accommodate the demands of the site.

Water: The property can connect to an existing 10-inch mainline that runs along Hwy 99W at the property's southern border, and to the line within the extension of Gueldner Drive west of the site.

Storm water: Storm water drainage is currently provided by two storm drainage ditches that cross the property and outfall to a 24-inch diameter culvert under Hwy 99W near the center of the property. The Newberg Drainage Master Plan identifies this culvert as being undersized and needing to be replaced with a 36-inch culvert. If this work is completed by the developer of the Crestview Crossing site to the west then the applicant may need to pay for their share of the work as part of an advanced financing agreement. Certain improvements to the storm water drainage system will be required upon development to mitigate the additional demand on the system. The existing drainage ditches are low-quality wetlands. Coordination with the Oregon Division of State Lands and the US Army Corps of Engineers will be required regarding any changes to the existing on-site drainage ways.

Sewer: Sewer service will be provided by connecting to the new line extended north by the Crestview Crossing project. Sewer service will be extended east within Gueldner Drive. At time of development, the developer will need to verify the capacity of the Fernwood pump station. Improvements may be necessary. All public sewer lines must be gravity flow.

Roads: The subject property is adjacent to Hwy 99W on its southern side. Upon development, Hwy 99W shall be improved with curbs, gutters, and sidewalks.

The Crestview Drive extension and the Gueldner Drive extension on the property to the west must be in place prior to development on this site. The applicant has proposed extending Gueldner Drive to the east, which is in accordance with the TSP. The TSP shows Gueldner Drive connecting ultimately to Benjamin Road. This connection would need to be made as far north as possible to avoid impacting the Benjamin Road/Highway 99W intersection. The applicant's concept plan shows an additional road north of and parallel to Gueldner Drive, which provides access for the residential lots.

A Traffic Impact Study was prepared for this project by Dunn Traffic Engineering. Dunn has been involved in the design of the Crestview Drive extension to Highway 99W on the Gueldner property, and has stated that the Crestview Drive/99W intersection will be oversized to accommodate year 2025 traffic volumes, including the expected development of the Gish, Kimball and Thomas sites. The proposed conceptual commercial and residential development on the site is expected to generate around 490 new primary vehicle trips during the weekday p.m. peak hour, plus around 178 pass-by trips during the weekday p.m. peak hour. Much of the traffic for the commercial center would not be new trips, but would be pass-by or internal trips. This shows that this center will be primarily serving the residents of Newberg and will reduce the number of overall vehicle miles traveled for the residents of Newberg. Details of the study methodology, findings, and recommendations are provided in the traffic impact study report.

One important point from the traffic study that has not been sufficiently emphasized to date is that commercial development on this site will reduce the number of shopping trips that Newberg residents currently need to make to Sherwood, McMinnville, Wilsonville, and other communities. One of the primary goals of the State Transportation Planning Rule is to reduce vehicle miles traveled, and the annexation and development of the commercial portion of this site would help meet this goal for the residents of Newberg.

The study concludes that if the Crestview Drive extension is built as planned and if the Newberg-Dundee Bypass is built (which would shift traffic from Highway 99W and allow ODOT to downgrade Highway 99W from a Statewide Highway to a District Highway) then the development of this site is expected to have no significant effect upon any existing or planned transportation facilities, and no mitigation would be required.

ODOT has commented that the proposed zones do match the City's comprehensive plan and that the Bypass is included within the City's TSP. The Bypass is not considered a planned improvement by ODOT, however, because there is no funding plan in place. They comment that the TIS is therefore flawed because its recommendations depend on the construction of the bypass by 2025 and the downgrading of Hwy 99W to a District level highway. They also mentioned that the TIS assumes the wrong mobility standard for the Crestview/Providence intersection with 99W. ODOT requested that action be deferred on the annexation until the TIS can be corrected so that its recommendations can be used to support findings that the annexation is consistent with the Transportation Planning Rule. DLCD has also commented that the TIS analysis cannot depend on the construction of the Bypass, since ODOT has stated that the construction of the bypass is not reasonably likely by 2025.

ODOT's supplemental comments on June 12, 2008 referenced a 2005 LUBA decision (Just v. City of Lebanon) that found that the Transportation Planning Rule does apply to zone changes that occur as part of annexations, even though the zone changes correspond to the existing comprehensive plan designations. ODOT's interpretation appears to be correct, so the Transportation Planning Rule applies if it is determined that the proposed annexation will have a significant effect on transportation facilities. ODOT reiterated their request that the transportation studies be revised to not depend on the bypass, as they do not consider it a planned facility because it is unfunded.

The TIS is intended to evaluate the annexation's compatibility with the adopted Newberg TSP and the State highway plan. Both of these plans include the Newberg-Dundee bypass, however, so the applicant must include the potential impact of the bypass in their TIS analysis or the City would find that the analysis is incomplete. The TIS must also consider the project's impact on transportation facilities if the bypass is not built, however. While the bypass is a planned facility in the State Highway Plan, by TPR definitions it is not a "planned facility" and therefore cannot be relied on to mitigate the impacts of development. Dunn Traffic Engineering submitted a supplemental traffic impact analysis on June 12, 2008 to the City of Newberg and to ODOT that addresses ODOT's concerns. The supplemental analysis does not rely on the bypass to mitigate transportation impacts.

The supplemental traffic impact analysis examined the year 2025 peak hour operations of the key intersections under two scenarios: the site retains County zoning, or the site is annexed and developed with the proposed City zoning. The Brutscher/Hwy 99W intersection will remain below ODOT's 0.75 v/c ratio in 2025 peak hour operations under either development scenario. The Springbrook/99W intersection will exceed the 0.75 v/c ratio in 2025 under either scenario, and the Crestview/99W intersection will exceed the 0.70 v/c ratio in 2025 under either scenario. If no intersection improvements are made at the Springbrook/99W intersection and the site is annexed then the v/c ratio in 2025 will be 4.2% higher than if the site retains County zoning. If improvements are made to Springbrook Road, such as adding northbound and southbound travel lanes, then the increase in the v/c ratio from the annexation would fall to an insignificant 2.4%. The report points out that the City has been collecting funds from nearby developments for future improvements to the Springbrook intersection. The annexation would increase the Crestview/99W v/c ratio in 2025 by 7% (from 0.85 to 0.91). The report points out that there are no additional improvements that could be done to the Crestview extension to increase its capacity, and that adding lanes on 99W has been found in the adopted TSP to be impractical and operationally infeasible. The supplemental report concludes that annexing this property and rezoning to the proposed City zoning is not expected to have a significant effect upon any existing or planned transportation improvements, thus complying with the State's TPR. The Crestview improvements go beyond the improvements called for in the City's TSP, and the proportionate share costs that will be contributed by development towards future capacity enhancements at Springbrook/99W will mitigate the traffic impacts generated by development on the annexation site. ODOT's supplemental comments dated July 3, 2008 acknowledged receipt of the supplemental traffic analysis and, with the exception of minor technical comments, found that the report had been prepared using methodologies that are acceptable to ODOT. ODOT also commented that they looked forward to reviewing the findings regarding the Transportation Planning Rule issues, and pledged to continue to work with the City of Newberg to address congestion issues on OR 99W that result from existing and future proposed development.

The TIS shows that the Springbrook/99W intersection does not currently meet ODOT's v/c ratio standards. Development of the Gish property will add some trips to this intersection and would worsen the performance of the intersection if no mitigation was done. The City of Newberg has already identified this intersection as one that needs improvement, however, and has charged recent developments in the area with impact fees based on the number of trips they added to the intersection. The fees could be used for street improvements that would improve the performance of the intersection, whether those improvements were directly at the intersection or were for a nearby street (such as the future completion of Hayes Street) that would reduce the number of trips at the Springbrook/99W intersection. The new Providence Hospital paid towards the future Springbrook/99W intersection performance improvement based on their trip generation estimates, and the Crestview Crossing development will also be required to pay towards this performance improvement based on their trip generation estimates. The City will therefore require that, upon development of the Gish site, the developer pays an impact fee based on trip generation towards the performance improvement of the Springbrook/99W intersection. A refined traffic study will be required at the time of development to estimate trip generation based on the actual proposed development (instead of on the conceptual development shown in the annexation application). This will ensure that the impact of the development of the Gish site on the Springbrook/99W intersection will be mitigated by future improvements at or near the intersection.

State Transportation Planning Rule:

660-012-0060

Plan and Land Use Regulation Amendments

(1) Where an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation would significantly affect an existing or planned transportation facility, the local government shall put in place measures as provided in section (2) of this rule to assure that allowed land uses are consistent with the identified function, capacity, and performance standards (e.g. level of service, volume to capacity ratio, etc.) of the facility. A plan or land use regulation amendment significantly affects a transportation facility if it would:

(a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);

(b) Change standards implementing a functional classification system; or

(c) As measured at the end of the planning period identified in the adopted transportation system plan:

(A) Allow land uses or levels of development that would result in types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;

(B) Reduce the performance of an existing or planned transportation facility below the minimum acceptable performance standard identified in the TSP or comprehensive plan; or

(C) Worsen the performance of an existing or planned transportation facility that is otherwise projected to perform below the minimum acceptable performance standard identified in the TSP or comprehensive plan.

Finding: The zone change that will automatically occur upon annexation into the city is not a comprehensive plan amendment. A relatively recent LUBA ruling (*Just v. City of Lebanon*), however, found that the zone change upon annexation could be considered a land use regulation amendment. The Transportation Planning Rule would therefore apply to the project if it is determined that the proposed annexation will have a significant effect on transportation facilities.

The question then becomes whether or not the annexation would significantly affect an existing or planned transportation facility. The annexation would not change the functional classification of a

facility or change standards implementing a functional classification system. If there was no mitigation then the annexation would worsen the performance of the existing Springbrook/99W intersection, which already performs below ODOT's standards. The City has already established a precedent for mitigation of traffic impacts at the Springbrook/99W intersection, however, and this site was conditioned to mitigate the traffic impact as part of the UGB amendment process. The Providence Hospital project has paid an impact fee and the Crestview Crossing project will pay an impact fee for transportation improvements based on the number of trips that the project adds to the Springbrook/99W intersection. The developer of the Gish property will pay a similar impact fee based upon the number of trips that the Gish development would add to the Springbrook/99W intersection. The impact fee will be used for improvements at the intersection or for improvements to nearby roads that would reduce the number of trips at the Springbrook/99W intersection. The completion of the Hayes Street/Providence Drive connection is an example of the type of improvement that would reduce the amount of traffic at the Springbrook/99W intersection. The supplemental traffic analysis, which excluded the impact of the proposed bypass, found that with the proposed impact fee and mitigation at the Springbrook/99W intersection then the annexation of the Gish property would not have a significant effect on an existing or planned transportation improvement, thus complying with the TPR.

(2) Where a local government determines that there would be a significant effect, compliance with section (1) shall be accomplished through one or a combination of the following:

(a) Adopting measures that demonstrate allowed land uses are consistent with the planned function, capacity, and performance standards of the transportation facility.

(b) Amending the TSP or comprehensive plan to provide transportation facilities, improvements or services adequate to support the proposed land uses consistent with the requirements of this division; such amendments shall include a funding plan or mechanism consistent with section (4) or include an amendment to the transportation finance plan so that the facility, improvement, or service will be provided by the end of the planning period.

(c) Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes.

(d) Amending the TSP to modify the planned function, capacity or performance standards of the transportation facility.

(e) Providing other measures as a condition of development or through a development agreement or similar funding method, including transportation system management measures, demand management or minor transportation improvements. Local governments shall as part of the amendment specify when measures or improvements provided pursuant to this subsection will be provided.

(3) Notwithstanding sections (1) and (2) of this rule, a local government may approve an amendment that would significantly affect an existing transportation facility without assuring that the allowed land uses are consistent with the function, capacity and performance standards of the facility where:

(a) The facility is already performing below the minimum acceptable performance standard identified in the TSP or comprehensive plan on the date the amendment application is submitted;

(b) In the absence of the amendment, planned transportation facilities, improvements and services as set forth in section (4) of this rule would not be adequate to achieve consistency with the identified function, capacity or performance standard for that facility by the end of the planning period identified in the adopted TSP;

(c) Development resulting from the amendment will, at a minimum, mitigate the impacts of the amendment in a manner that avoids further degradation to the performance of the facility by the time of the development through one or a combination of transportation improvements or measures;

(d) The amendment does not involve property located in an interchange area as defined in paragraph (4)(d)(C); and

(e) For affected state highways, ODOT provides a written statement that the proposed funding and timing for the identified mitigation improvements or measures are, at a minimum, sufficient to avoid further degradation to the performance of the affected state highway. However, if a local government provides the appropriate ODOT regional office with written notice of a proposed amendment in a manner that provides ODOT reasonable opportunity to submit a written statement into the record of the local government proceeding, and ODOT does not provide a written statement, then the local government may proceed with applying subsections (a) through (d) of this section.

(4) Determinations under sections (1)-(3) of this rule shall be coordinated with affected transportation facility and service providers and other affected local governments.

(a) In determining whether an amendment has a significant effect on an existing or planned transportation facility under subsection (1)(c) of this rule, local governments shall rely on existing transportation facilities and services and on the planned transportation facilities, improvements and services set forth in subsections (b) and (c) below.

(b) Outside of interstate interchange areas, the following are considered planned facilities, improvements and services:

(A) Transportation facilities, improvements or services that are funded for construction or implementation in the Statewide Transportation Improvement Program or a locally or regionally adopted transportation improvement program or capital improvement plan or program of a transportation service provider.

(B) Transportation facilities, improvements or services that are authorized in a local transportation system plan and for which a funding plan or mechanism is in place or approved. These include, but are not limited to, transportation facilities, improvements or services for which: transportation systems development charge revenues are being collected; a local improvement district or reimbursement district has been established or will be established prior to development; a development agreement has been adopted; or conditions of approval to fund the improvement have been adopted.

(C) Transportation facilities, improvements or services in a metropolitan planning organization (MPO) area that are part of the area's federally-approved, financially constrained regional transportation system plan.

(D) Improvements to state highways that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when ODOT provides a written statement that the improvements are reasonably likely to be provided by the end of the planning period.

(E) Improvements to regional and local roads, streets or other transportation facilities or services that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when the local government(s) or transportation service provider(s) responsible for the facility, improvement or service provides a written statement that the facility, improvement or service is reasonably likely to be provided by the end of the planning period.

(c) Within interstate interchange areas, the improvements included in (b)(A)-(C) are considered planned facilities, improvements and services, except where:

(A) ODOT provides a written statement that the proposed funding and timing of mitigation measures are sufficient to avoid a significant adverse impact on the Interstate Highway system, then local governments may also rely on the improvements identified in paragraphs (b)(D) and (E) of this section; or

(B) There is an adopted interchange area management plan, then local governments may also rely on the improvements identified in that plan and which are also identified in paragraphs (b)(D) and (E) of this section.

(d) As used in this section and section (3):

(A) Planned interchange means new interchanges and relocation of existing interchanges that are authorized in an adopted transportation system plan or comprehensive plan;

(B) Interstate highway means Interstates 5, 82, 84, 105, 205 and 405; and

(C) Interstate interchange area means:

(i) Property within one-half mile of an existing or planned interchange on an Interstate Highway as measured from the center point of the interchange; or

(ii) The interchange area as defined in the Interchange Area Management Plan adopted as an amendment to the Oregon Highway Plan.

(e) For purposes of this section, a written statement provided pursuant to paragraphs (b)(D), (b)(E) or (c)(A) provided by ODOT, a local government or transportation facility provider, as appropriate, shall be conclusive in determining whether a transportation facility, improvement or service is a planned transportation facility, improvement or service. In the absence of a written statement, a local government can only rely upon planned transportation facilities, improvements and services identified in paragraphs (b)(A)-(C) to determine whether there is a significant effect that requires application of the remedies in section (2).

Finding: Sections 2-4 are not applicable because, as determined above, the annexation will not have a significant effect on an existing or planned transportation facility.

In general, with the improvements included in the transportation plan and traffic mitigation measures, adequate transportation facilities will be available to serve the proposed use.

(C) Findings documenting the availability of police, fire, parks, and school facilities and services shall be made to allow for conclusionary findings either for or against the proposed annexation. The adequacy of these services shall be considered in relation to annexation proposals.

Finding: Police services are currently provided to the area by Yamhill County Sheriff's Office. Fire service is provided by Newberg Rural Fire District. The proposed annexation will shift police and fire services to the city. The annexation and development of the property will generate additional needs for police and fire services. The annexation and development also will generate additional revenues to pay for those services, including property tax revenues, franchise fee revenues, and cigarette and liquor tax revenues. Recent growth in these revenues has increased to the point that four additional police officers are proposed in the General Fund budget for FY08-09. However, property tax limitations have capped the growth in assessed value on existing and new properties within the city. Because of this, property tax revenues have not increased sufficiently to cover existing and new needs for public safety personnel. The Budget Committee's proposed budget for FY08-09 would fund an additional three officers with a public safety fee yet to be established. If this fee is established, then this annexed property also would pay. With this fee, annexation and development of this property should generate sufficient revenue to cover increased public safety service needs. The residential development of the property may also increase the demand for parks and school facilities, which will be partially offset by the system development charges for parks and the school construction excise tax.

(D) The burden for providing the findings for divisions (A), (B) and (C) of this section is placed upon the applicant.

FINDING: The applicant has provided written findings for this section.

(E) The City Council may annex properties where urban services are not and cannot practically be made available within the three year time frame noted in division (B) above, but where annexation is needed to address a health hazard, to annex an island, to address sewer or water

connection issues for existing development, to address specific legal or contract issues, to annex property where the timing and provision of adequate services in relation to development is or will be addressed through legislatively adopted specific area plans or similar plans, or to address similar situations. In these cases, absent a specific legal or contractual constraint, the Council shall apply an interim zone, such as a limited-use overlay, that would limit development of the property until such time as the services become available.

FINDING: This criterion is not applicable to this property.

NDC § 151.267 Comprehensive Plan and Zoning Designations

(A) The comprehensive plan map designation of the property at the time of annexation shall be used as a criterion to determine whether or not the proposed request complies with the Newberg comprehensive plan. A redesignation of the comprehensive plan map may be requested concurrent with annexation. The proposed redesignation shall then be used to determine compliance with the Newberg comprehensive plan.

(B) Upon annexation, the area annexed shall be automatically zoned to the corresponding land use zoning classification which implements the Newberg comprehensive plan map designation. The corresponding designations are shown in the table below. The procedures and criteria of § 151.122 shall not be required.

Comprehensive Plan Classification	***Appropriate Zoning Classification***
OS	*Any zoning classification*
LDR	*R-1*
MDR	*R-2*
HDR	*R-3*
COM	*C-1, C-2, or C-3 as determined by the Director*
MIX	*C-2, M-1, or M-2 as determined by the Director*
IND	*M-1, M-2, or M-3*
PQ	*Any zoning classification*
P/PP	*Any zoning classification*

(C) If a zoning classification is requested by the applicant for other than that described in division (B) of this section, the criteria of § 151.122 shall apply. This application shall be submitted concurrently with the annexation application.

(D) In the event that the annexation request is denied, the zone change request shall also be denied. (Ord. 96-2451, passed 12-2-96)

Finding: The applicant has requested zoning designations of R-1, R-2 and C-2 that exactly match the comprehensive plan designations on the site. They are therefore not required by the Newberg

Development Code to address the criteria under § 151.122, which are the criteria for a comprehensive plan map amendment or zoning map amendment. The zone change from County to City zoning is an automatic change and is not a zoning map amendment because the zones match the comprehensive plan designations. This is significant because the criteria for § 151.122 (below) call for the applicant to make findings addressing the State Transportation Planning Rule. Newberg's development code does not require the applicant to make findings addressing the State Transportation Planning Rule if the requested zones match the comprehensive plan designations.

> ***NDC § 151.122(3) Procedures for Comprehensive Plan Map and Zoning Map Amendments – Amendment Criteria***
>
> *(a) The proposed change is consistent with and promotes the goals and policies of the Newberg comprehensive plan and this code;*
>
> *(b) Public facilities and services are or can be reasonable made available to support the uses allowed by the proposed change.*
>
> *(c) Compliance with the State Transportation Rule (OAR 660-012-0060) for proposals that significantly affect transportation facilities.*

Timing Consideration:

NDC § 151.263 Annexation Procedures

All annexation requests approved by the City Council shall be referred to the voters in accordance with the requirements of this code and O.R.S. 222.

(A) Annexation elections are normally scheduled for the biennial primary or general elections which are held in May and November of even numbered years. Applications for annexation shall be filed with the Planning Division before 5:00 p.m. on October 1 for a primary ballot election in May and before 5:00 p.m. on April 1 for a general ballot election in November. An applicant may request that the Council schedule an annexation ballot measure for a special election date. Applications proposed for review at a special election must be filed with the city eight months prior to the proposed special election date. Filing of an annexation application and having the application deemed complete does not obligate the city to place the annexation question before the voters at any particular election. This division does not obligate the city to process an annexation application within any time frame not required by ordinance or state statute.

(B) The application shall be processed in accordance with the Type III processing procedures outlined in this code. Once the Director receives a completed application for annexation, he/she shall schedule a recommendation hearing before the Planning Commission. The Planning Commission shall make a recommendation to the City Council as to whether or not the application meets the criteria contained in § 151.262. This decision shall be a quasi-judicial determination and not a legislative determination. The Planning Commission may also recommend denial of an application based upon a legislative perception of the request even though the findings support and would allow annexation. A decision to recommend denial of an annexation, even though the findings support the request, shall be specifically stated in the record and noted as a legislative recommendation separate and apart from the quasi-judicial recommendation.

(C) Following the Planning Commission hearing, the Director shall schedule a City Council hearing to consider the request. The City Council shall conduct a quasi-judicial hearing and determine whether or not the application meets the criteria contained in § 151.262. The hearing at the City Council shall be considered a new hearing. If additional testimony is submitted, the Council

may, at its own discretion, return the application to the Planning Commission for further review and recommendation. The City Council may also deny an application based upon a legislative perception of the request even though the findings support and would allow annexation. A decision to deny an annexation, even though the findings support the request, shall be specifically stated in the record and noted as a legislative recommendation separate and apart from the quasi-judicial recommendation.

(D) If the City Council approves the annexation request, the proposal may, at the City Council's sole discretion, be placed before the voters of the city as follows:

(1) The biennial primary or general elections which are held in May and November of even numbered years, or

(2) An available special election.

Recommendation: The applicant has requested that this annexation application be approved by the City Council and placed before the voters at the November 4, 2008 election. If the Council approves the annexation they are not bound to place the annexation on the next available ballot. The decision on when to send an approved annexation to the ballot is at the City Council's sole discretion. The Planning Commission recommends that the City Council place this item on the November 4, 2008 ballot.

CONDITIONS OF APPROVAL
ANX-07-003

The following conditions of approval apply to the annexation of the property located at 4505 E. Portland Road, Yamhill County Tax Lot 3216-1100.

- A refined traffic study out to year 2025 will be required showing the actual development proposed at that time. No direct access to Highway 99W will be allowed. The traffic study should refine the existing study based on the actual development proposal and determine the number of trips that this development would add to the Springbrook/Hwy 99W intersection.

- Upon future development of the property, the development shall contribute its share, based on traffic volume, of the future cost of capacity improvements to the Springbrook Rd/Hwy 99W intersection.

- A 30 ft building setback along the north property line will be required upon development of the site.

- A wetland determination and delineation report shows wetlands on the site. Development shall comply with applicable state and federal wetland standards.

- Development follow best management practices for storm drainage as outlined in the letter from James Bennett to the Yamhill County Board of Commissioners dated 1/30/06.

- Upon development, verify the capacity of the Fernwood Road sanitary sewer pump station and upsize if necessary. All public sewer lines must be gravity flow. Coordinate with DSL and the US Army Corps of Engineers regarding changes to the existing on-site stormwater drainage ways. Complete street frontage improvements along Hwy 99W. The Crestview Drive extension from Oxberg Lakes to 99W, and the eastward extension of Gueldner Drive, must be in place at the time of development

- Existing homes to connect to sewer and water or be removed within two years of annexation.

EXHIBIT "B": ANNEXATION MAP

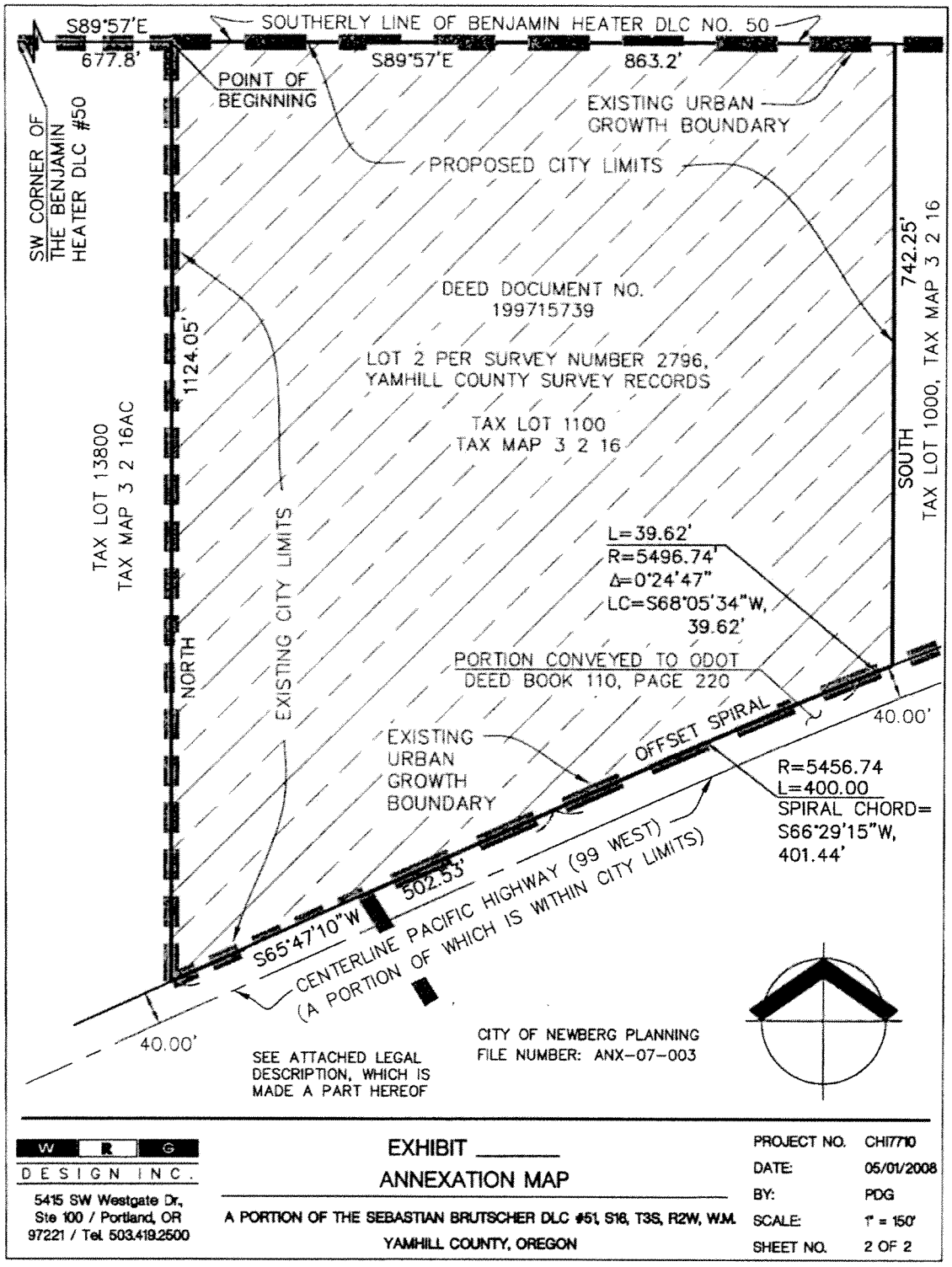


EXHIBIT "C": LEGAL DESCRIPTION

LEGAL DESCRIPTION
CITY OF NEWBERG ANNEXATION
PLANNING FILE NUMBER: ANX-07-003
MAY 1, 2008
PAGE 1 OF 2

ALL OF THAT CERTAIN TRACT OF LAND DESCRIBED IN DEED DOCUMENT NUMBER 199715739; SAID PROPERTY IS SITUATED IN THE SEBASTIAN BRUTSCHER DONATION LAND CLAIM, NOTIFICATION #1470, CLAIM #51, IN TOWNSHIP 3 SOUTH, RANGE 2 WEST OF THE WILLAMETTE MERIDIAN, YAMHILL COUNTY, OREGON, AND IS DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF LOT NUMBER 1 PER COUNTY SURVEY #2795 BEING ON THE NORTH LINE OF SAID BRUTSCHER CLAIM (SAID POINT BEARS SOUTH 89°57' EAST, 677.8 FEET, MORE OR LESS FROM THE SOUTHWEST CORNER OF THE BENJAMIN HEATER DONATION LAND CLAIM); THENCE SOUTH 89°57' EAST ALONG SAID BRUTSCHER CLAIM LINE, 863.2 FEET, MORE OR LESS, TO THE NORTHEAST CORNER OF LOT NO 2 OF SAID SURVEY #2795, SAID POINT ALSO BEING AT THE NORTHWEST CORNER OF LOT 4A, OF SAID COUNTY SURVEY #2795; THENCE ALONG THE EAST LINE OF SAID LOT 2 SOUTH, 742.25 FEET, MORE OR LESS, TO A POINT OF 5496.74 FOOT RADIUS CURVE TO THE LEFT ON THE NORTH RIGHT OF WAY LINE OF THE WEST SIDE PACIFIC HIGHWAY (BEING 40 FEET TO THE CENTERLINE THEREOF, MEASURED PERPENDICULAR THERETO); THENCE ALONG SAID NORTH RIGHT OF WAY LINE, THE FOLLOWING THREE (3) COURSES, MORE OR LESS:
1) ALONG SAID 5496.74 FOOT RADIUS CURVE TO THE LEFT (THE CENTER OF WHICH BEARS SOUTH 21° 42' 03" EAST, 5496.74 FEET) THROUGH A CENTRAL ANGLE OF 00° 24' 47" AN ARC DISTANCE OF 39.62 FEET (THE CHORD OF WHICH BEARS SOUTH 68° 05' 34" WEST, 39.62 FEET) TO THE BEGINNING OF AN OFFSET SPIRAL (THE CENTERLINE SPIRAL IS A 400 FOOT SPIRAL, WITH A NORMAL CURVE RADIUS OF 5456.74 FEET); 2) ALONG SAID OFFSET SPIRAL (THE CHORD OF WHICH BEARS SOUTH 66° 29' 15" WEST, 401.44 FEET); THENCE SOUTH 65° 47' 10" WEST, 502.53 FEET TO A POINT ON THE WEST LINE OF SAID LOT 2, SAID LINE BEING ON THE CURRENT CITY OF NEWBERG LIMITS; THENCE ALONG SAID WEST LINE, ALONG SAID CURRENT CITY OF NEWBERG LIMITS NORTH, 1124.05 FEET, MORE OR LESS, TO SAID **POINT OF BEGINNING.**

CONTAINS 18.437 ACRES, MORE OR LESS.

THE ATTACHED EXHIBIT ENTITLED "ANNEXATION MAP" IS MADE A PART HEREOF.

THIS DESCRIPTION HAS BEEN COMPILED FROM RECORD INFORMATION AND IS MEANT FOR ANNEXATION PURPOSES ONLY. IT IS NOT INTENDED TO BE USED IN THE TRANSFER OF REAL PROPERTY.

5/1/2008
REGISTERED PROFESSIONAL LAND SURVEYOR
Paul D. Galli
OREGON
JANUARY 10, 2006
PAUL D. GALLI
76970
EXPIRATION DATE 6/30/09

EXHIBIT "D": COMPREHENSIVE PLAN MAP

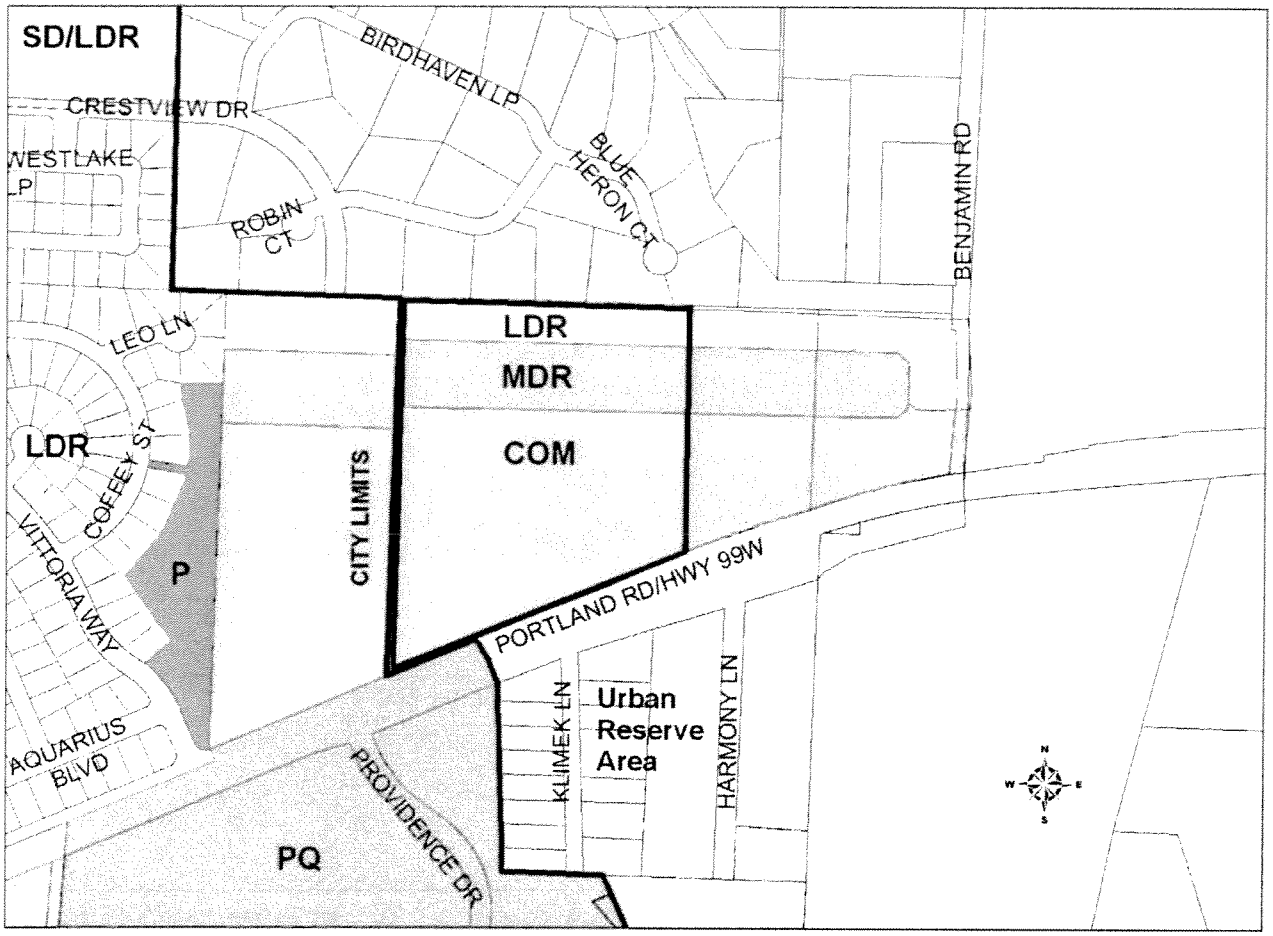
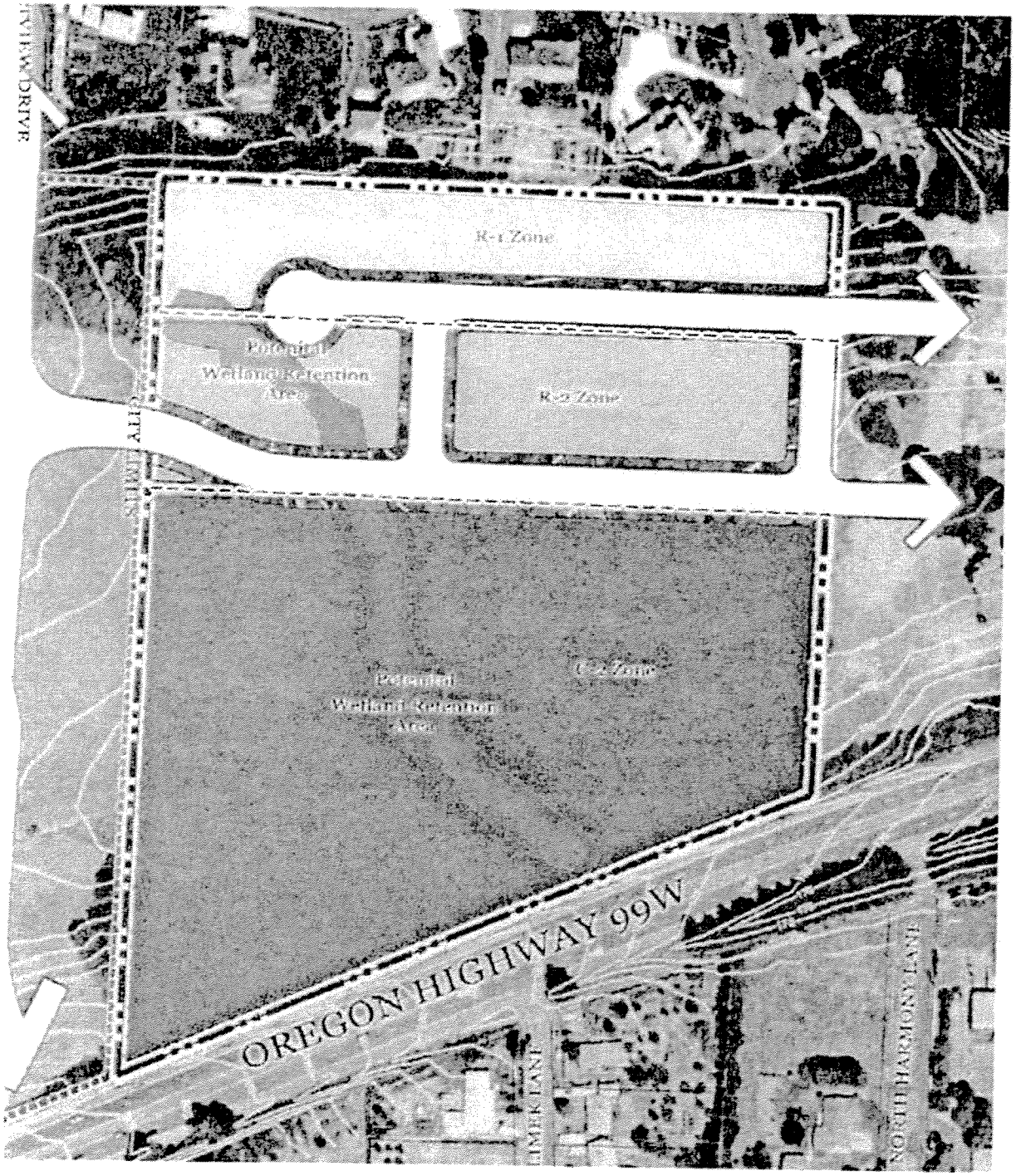


EXHIBIT "E": PROPOSED ZONING MAP



ORDER NO. 2007-0002

AN ORDER FINDING THAT PROPERTY LOCATED NORTH OF HWY 99W ACROSS FROM PROVIDENCE HOSPITAL, YAMHILL COUNTY TAX LOT 3216AC-13800, MEETS THE APPLICABLE NEWBERG DEVELOPMENT CODE CRITERIA TO BE ANNEXED INTO THE CITY, AND MEETS THE APPLICABLE CODE CRITERIA TO CHANGE THE ZONING FROM COUNTY AF-10 TO CITY R-1, R-2, AND C-2.

RECITALS:

1. On June 7, 2006, Jeffrey D. Smith submitted concurrent applications for an urban growth boundary amendment, comprehensive plan amendment to COM (commercial), annexation, and zoning amendment to C-2 (community commercial) for property located north of Hwy 99W across from Providence Hospital, Yamhill County tax lot 3216AC-13800.

2. Due to testimony and deliberations at the NUAMC (Newberg Urban Area Management Commission) meeting on September 21, 2006, the applicant revised his request to consist of a comprehensive plan amendment to include portions of LDR (low density residential), MDR (medium density residential) and COM (commercial), and a zoning amendment to include corresponding portions of R-1 (low density residential), R-2 (medium density residential) and C-2 (community commercial).

3. The urban growth boundary amendment and revised comprehensive plan amendment were heard and approved by Newberg City Council on October 16, 2006.

4. The Newberg Planning Commission heard the annexation and zoning amendment on December 14, 2006, and recommended approval per Resolution No. 2006-227.

5. After proper notice, on January 16, 2007, the Newberg City Council held a hearing to consider the annexation and zoning amendment requests.

6. The City Council finds that the applicable criteria have been met, and that approval of the application is in the best interests of the community.

THE CITY OF NEWBERG ORDERS AS FOLLOWS:

1. The City Council finds that the annexation and zoning amendment meet the Newberg Development Code criteria and adopts the findings, which are attached hereto as Exhibit "A" and incorporated herein by reference.

2. Annexation requires the City Council to adopt an ordinance annexing the property, and requires

approval at a public vote. If the annexation is approved through these procedures, then the City orders the following:

A. The zoning of the property described in Exhibit "C" is changed to portions of R-1 (low density residential), R-2 (medium density residential) and C-2 (community commercial) as shown on the map in Exhibit "D."

3. This order is subject to the following:

A. Annexation of this property is contingent upon final official adoption of the urban growth boundary amendment. The effective date of the UGB amendment is contingent upon the final approval and adoption of amendments to the acknowledged Newberg Transportation System Plan as initiated by Resolution 2006-2661 and as shown in the agreement by the parties but subject to any amendment to the agreement as the parties may approve.

B. Upon future development of this property, the development shall contribute its share, based on traffic volume, of the future cost of capacity improvements to the Springbrook Rd/Hwy 99W intersection.

C. A 30 ft building setback along the north property line will be required upon development of the site.

D. A wetland determination is required prior to any development on the site.

E. Future development of the property shall follow best management practices for storm drainage as outlined in the letter from James Bennett to the Yamhill County Board of Commissioners dated 1/30/06.

➢ **EFFECTIVE DATE** of this order is the day after the adoption date, which is: January 17, 2007.

ADOPTED by the City Council of the City of Newberg, Oregon, this 16th day of January, 2007.

James H. Bennett, City Recorder

ATTEST by the Mayor this 18th day of January, 2007.

Bob Andrews, Mayor

QUASI-JUDICIAL HISTORY

By and through the Planning Commission Committee at their 12/14/2006 meeting.

Exhibits:

Exhibit "A": Findings and Conditions of Approval
Exhibit "B": Annexation Map
Exhibit "C": Legal Description
Exhibit "D": Zoning Map

EXHIBIT "A": FINDINGS & CONDITIONS
ANX-06-009
Annexation of 14.74 acres for property located north of Hwy 99W, across from Providence Hospital (4020 Portland Rd)

I. APPLICABLE ANNEXATION REGULATIONS – NEWBERG DEVELOPMENT CODE § 151.261 CONDITIONS FOR ANNEXATION

(A) The subject site must be located within the Newberg Urban Growth Boundary or Newberg Urban Reserve Areas.

FINDING: On October 19, 2006, the City Council adopted Ordinance 2006-2660, including the property in the Urban Growth Boundary subject to adoption of certain amendments to the Newberg Transportation System Plan. Thus, annexation is contingent on the amendments first being adopted.

(B) The subject site must be contiguous to the existing city limits.

FINDING: The subject site is adjacent to Newberg city limits on both its southern and western property lines.

II. APPLICABLE ANNEXATION REGULATIONS – NEWBERG DEVELOPMENT CODE § 151.262 QUASI-JUDICIAL ANNEXATION CRITERIA

(A) The proposed use for the site complies with the Newberg comprehensive plan and with the designation on the Newberg comprehensive plan map. If a redesignation of the plan map is requested concurrent with annexation, the uses allowed under the proposed designation must comply with the Newberg comprehensive plan.

FINDING: The comprehensive plan designation of the site was changed concurrently with the urban growth amendment application that was filed May 17, 2006 and approved by Ordinance 2006-2660 on October 19, 2006. The new comprehensive plan designation includes portions of LDR (low density residential), MDR (medium density residential), and COM (commercial). The applicant has proposed zoning of R-1 (low density residential) for the northernmost 170 ft of the site, R-2 (medium density residential) for the next northernmost 220 ft, and C-2 (community commercial) for the remainder of the property. These zoning designations would correspond with the redesignated comprehensive plan map areas. Crestview Dr will be extended south through the property in accordance with the comprehensive plan map and the Newberg Transportation System Plan.

(B) An adequate level of urban services must be available, or made available, within three years time of annexation, except as noted in division (E) below. An adequate level of urban services shall be defined as:

(1) Municipal sanitary sewer and water service meeting the requirements enumerated in the Newberg comprehensive plan for provision of these services.

(2) Roads with an adequate design capacity for the proposed use and projected future uses. Where construction of the road is not deemed necessary within the three-year time period, the city shall note requirements such as dedication of right-of-way, waiver of remonstrance

against assessment for road improvement costs, or participation in other traffic improvement costs, for application at the appropriate level of the planning process. The city shall also consider public costs for improvement and the ability of the city to provide for those costs.

FINDING: As explained below, public facilities will have adequate capacity to accommodate the demands of the site.

Water: The property will connect to an existing 10-inch mainline that runs along Hwy 99W at the property's southern border.

Storm water: Storm water drainage is currently provided by two storm drainage ditches that cross the property and outfall to the property to the east. These ditches eventually drain to a 24-inch diameter culvert under Hwy 99W. The Newberg Drainage Master Plan identifies this culvert as being undersized and needing to be replaced with a 36-inch culvert. Certain improvements to the storm water drainage system will be required upon development to mitigate the additional demand on the system.

Sewer: Sewer service will be provided by extending the line that currently runs along Klimek Lane along the Klimek Lane right-of-way across Hwy 99W following the general alignment of the drainage ditch o the Gueldner property.

Roads: The subject property is adjacent to Hwy 99W on its southern side. Upon development, Hwy 99W shall be improved with curbs, gutters, and sidewalks. In addition, the Newberg Transportation System Plan designates a planned road improvement for the area. The improvement will consist of Crestview Dr being extended south through the property and connecting with Hwy 99W across from the Providence Dr connection. It also includes an east-west connection between the Crestview Dr extension and Benjamin Rd.

The Transpo Group prepared a traffic impact study for this site using the assumption that Crestview Dr will be extended through the site. The proposed site development is expected to generate a total of 3,488 new daily, and 349 new weekday PM peak hour trips. Due to the new trip generation and the expected burden the new trips will place on the intersection of Springbrook Rd & Hwy 99W, future development of the site will be required to pay a share of the future cost of capacity improvements to the intersection.

The Transpo study also calculated that much of the commercial center traffic will be pass-by or internal trips versus primary, or new, trips. A total of 2,292 weekday daily and 223 weekday PM peak hour passby trips would be generated by the project, and a total of 4,146 weekday internal trips and 254 weekday PM peak hour internal trips would be generated. This would suggest that the commercial center could reduce the number of overall vehicle miles traveled for the residents of Newberg because they will be able to satisfy many of their shopping needs in one central place instead of making individual, or new, trips to many different places. Details of the study methodology, findings, and recommendations are provided in the traffic impact study report.

(C) Findings documenting the availability of police, fire, parks, and school facilities and services shall be made to allow for conclusionary findings either for or against the proposed annexation. The adequacy of these services shall be considered in relation to annexation proposals.

FINDING: Police services are currently provided to the area by Yamhill County Sheriff's Office. Fire service

is provided by Newberg Rural Fire District. The proposed annexation will shift police and fire services to the city. Because the annexed property will be primarily commercial as opposed to residential, it will provide more revenue for these services than it will be a burden on the services. The new residential development portion of the property may increase the demand for parks and school facilities, which should be offset by the system development charges for parks and the per-pupil State funding for schools. Overall, the development of the site will not have adverse affects on the availability of police, fire, parks, and school facilities and services for the community as a whole.

(D) The burden for providing the findings for divisions (A), (B) and (C) of this section is placed upon the applicant.

FINDING: The applicant has provided written findings for this section.

(E) The City Council may annex properties where urban services are not and cannot practically be made available within the three year time frame noted in division (B) above, but where annexation is needed to address a health hazard, to annex an island, to address sewer or water connection issues for existing development, to address specific legal or contract issues, to annex property where the timing and provision of adequate services in relation to development is or will be addressed through legislatively adopted specific area plans or similar plans, or to address similar situations. In these cases, absent a specific legal or contractual constraint, the Council shall apply an interim zone, such as a limited-use overlay, that would limit development of the property until such time as the services become available.

FINDING: This criterion is not applicable to this property.

III. APPLICABLE ZONING MAP AMENDMENT REGULATIONS – NEWBERG DEVELOPMENT CODE § 151.122(3) AMENDMENT CRITERIA

(a) The proposed change is consistent with and promotes the goals and policies of the Newberg comprehensive plan and this code;

FINDING: The proposed zone change from County AF-10 to City R-1 (low density residential), R-2 (medium density residential), and C-2 (community commercial) is consistent with the comprehensive plan designation of the site. See the finding for § 151.262(A) above for a more in depth discussion of compliance with the Newberg comprehensive plan.

(b) Public facilities and services are or can be reasonably made available to support the uses allowed by the proposed change.

FINDING: Adequate water, sewer, storm water, and transportation infrastructure is, or will be, available to support the proposed new uses of the site. See the finding for § 151.262(B) above that further discusses the availability of public facilities and services to this site.

(c) Compliance with the State Transportation Rule (OAR 660-012-0060) for proposals that significantly affect transportation facilities.

FINDING: The zone change in itself is in compliance with the State Transportation Rule and does not significantly affect transportation facilities. Transportation impacts are addressed above in the finding for § 151.262(B), and in the urban growth boundary and comprehensive plan amendment staff report, file no. UGB-06-001.

CONDITIONS OF APPROVAL
ANX-06-009

The following conditions of approval apply to the annexation of the property located north of Hwy 99W, across from Providence Hospital (4020 Portland Rd), Yamhill County tax lot 3216AC-13800.

- Annexation of this property cannot go to a public vote until official adoption of the urban growth boundary (UGB) amendment is complete. The effective date of the UGB amendment is contingent upon the final approval and adoption of amendments to the acknowledged Newberg Transportation System Plan as initiated by Resolution 2006-2661 and as shown in the agreement by the parties but subject to any amendment to the agreement as the parties may approve.

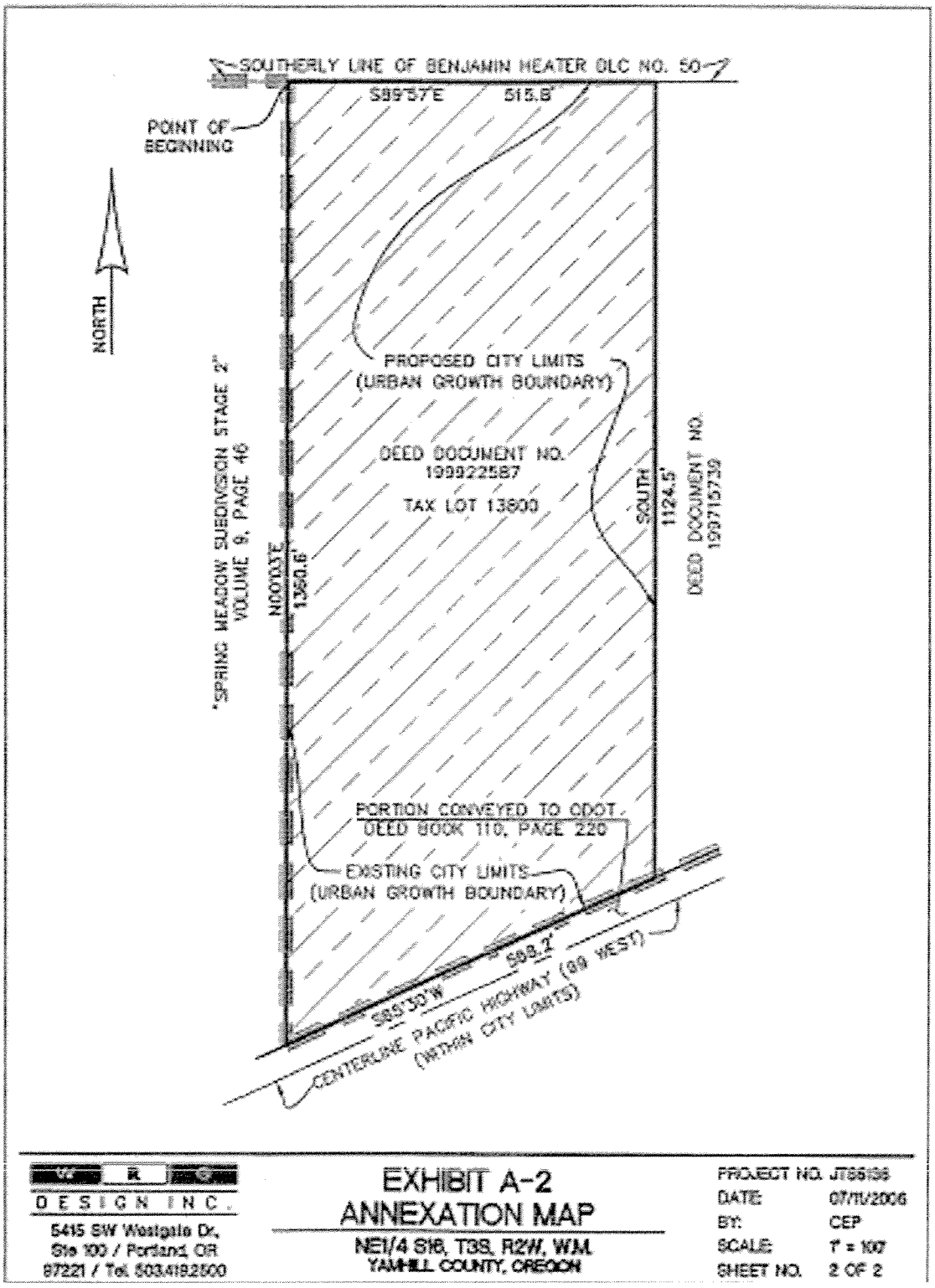
- Upon future development of the property, the development shall contribute its share, based on traffic volume, of the future cost of capacity improvements to the Springbrook Rd/Hwy 99W intersection.

- A 30 ft building setback along the north property line will be required upon development of the site.

- A wetland determination is required prior to any development on the site.

- Future development of the property shall follow best management practices for storm drainage as outlined in the letter from James Bennett to the Yamhill County Board of Commissioners dated 1/30/06.

EXHIBIT "B": ANNEXATION MAP
ANX-06-009



DESIGN INC.
5415 SW Westgate Dr, Ste 100 / Portland, OR 97221 / Tel: 503.419.2500

EXHIBIT A-2
ANNEXATION MAP
NE1/4 S16, T3S, R2W, W.M.
YAMHILL COUNTY, OREGON

PROJECT NO.	JT99196
DATE:	07/11/2006
BY:	CEP
SCALE:	1" = 100'
SHEET NO.	2 OF 2

EXHIBIT "C": LEGAL DESCRIPTION
ANX-06-009

LEGAL DESCRIPTION:
JULY 11, 2006
PAGE 1 OF 2

A TRACT OF LAND SITUATED IN THE NORTHEAST ONE-QUARTER OF SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 WEST, WILLAMETTE MERIDIAN, YAMHILL COUNTY, OREGON, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEASTERLY CORNER OF THE PLAT OF "SPRING MEADOW SUBDIVISION STAGE 2" RECORDED IN VOLUME 9, PAGE 46, YAMHILL COUNTY SURVEY RECORDS BEING AN ANGLE POINT OF THE NEWBERG CITY LIMIT BOUNDARY ON THE SOUTHERLY LINE OF THE BENJAMIN HEATER DONATION LAND CLAIM NUMBER 50; THENCE ALONG SAID DONATION LAND CLAIM LINE SOUTH 89° 57' EAST, 515.8 FEET TO THE NORTHWEST CORNER OF THAT CERTAIN TRACT DESCRIBED IN DEED RECORDED IN DOCUMENT NUMBER 199715739; THENCE ALONG THE WESTERLY LINE OF SAID TRACT SOUTH, 1124.5 FEET TO THE NORTHERLY RIGHT-OF-WAY OF PACIFIC HIGHWAY (HIGHWAY 99 WEST) AS DESCRIBED IN DEED BOOK 110, PAGE 220; THENCE ALONG SAID RIGHT-OF-WAY LINE SOUTH 65° 30' WEST, 568.2 FEET TO A POINT BEING THE SOUTHEASTERLY CORNER OF SAID PLAT OF "SPRING MEADOW SUBDIVISION STAGE 2"; THENCE LEAVING SAID RIGHT-OF-WAY LINE ALONG THE EASTERLY BOUNDARY OF SAID PLAT (BEING COINCIDENT WITH AN EASTERLY NEWBERG CITY LIMIT LINE) NORTH 00°03' EAST, 1360.6 FEET TO SAID **POINT OF BEGINNING.**

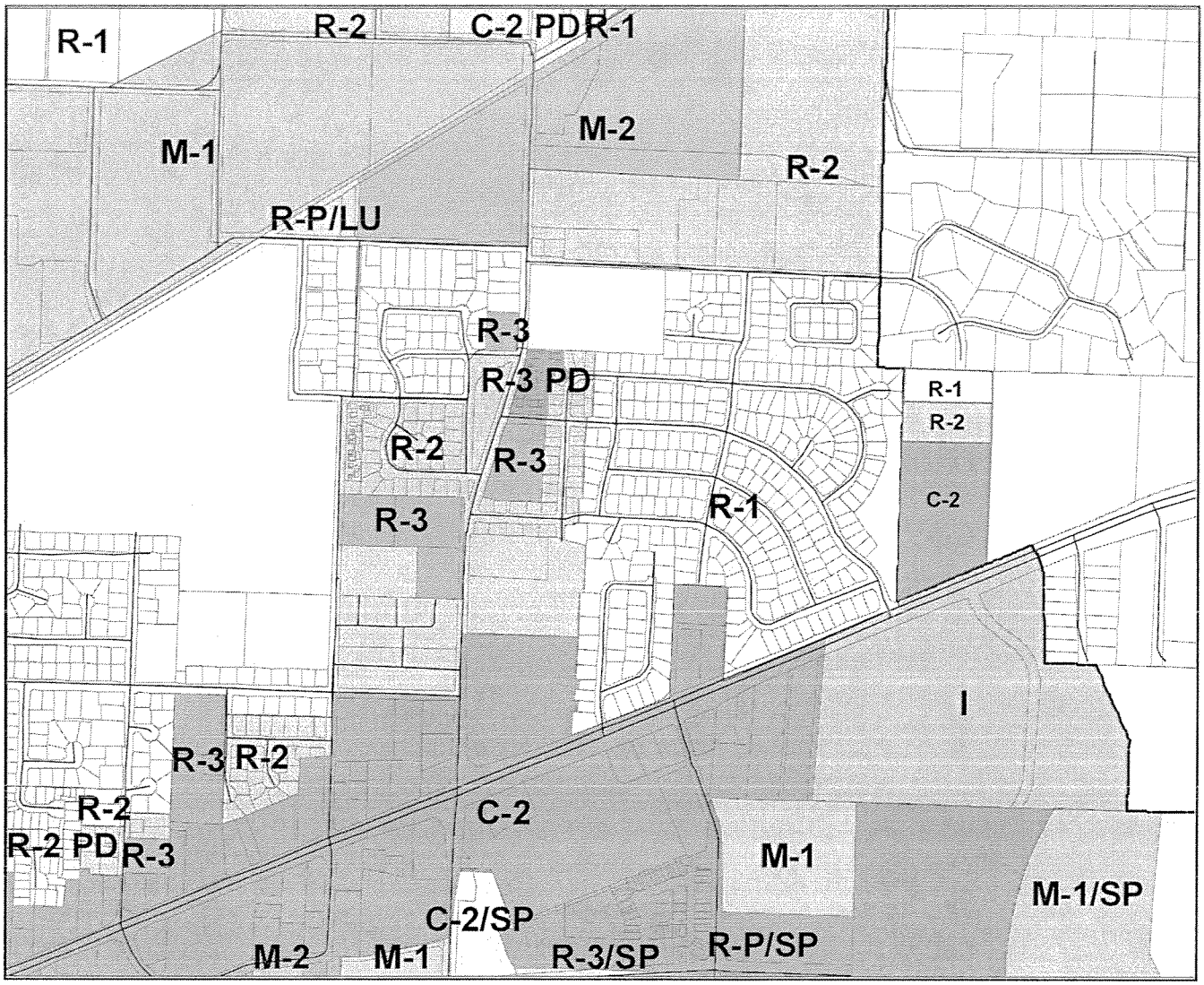
CONTAINS 14.729 ACRES, MORE OR LESS.

THE ATTACHED EXHIBIT ENTITLED "EXHIBIT A-2 ANNEXATION MAP" IS MADE APART HEREOF.

THIS DESCRIPTION IS MEANT FOR ANNEXATION PURPOSES ONLY. IT IS NOT INTENDED TO BE USED IN THE TRANSFER OF REAL PROPERTY.

7/11/06
REGISTERED
PROFESSIONAL
LAND SURVEYOR
OREGON
JANUARY 10, 2006
PAUL D GALLI
76970
EXPIRATION DATE 6/30/07

EXHIBIT "D": ZONING MAP
ANX-06-009



ORDINANCE NO. 2007-2664

AN ORDINANCE DECLARING PROPERTY LOCATED NORTH OF HWY 99W ACROSS FROM PROVIDENCE HOSPITAL, YAMHILL COUNTY TAX LOT 3216AC-13800, BE ANNEXED INTO THE CITY OF NEWBERG AND WITHDRAWN FROM THE NEWBERG RURAL FIRE PROTECTION DISTRICT SUBJECT TO A PUBLIC VOTE, AND AUTHORIZING AND DIRECTING THE CITY ELECTIONS OFFICER TO CERTIFY TO THE YAMHILL COUNTY CLERK A BALLOT TITLE FOR THE MEASURE TO BE SUBMITTED TO THE ELECTORATE OF THE CITY OF NEWBERG FOR THEIR APPROVAL OF AN ANNEXATION FOR THIS SAME PROPERTY

RECITALS:

1. Jeffrey D. Smith submitted an application for annexation and consent to annex on October 5, 2006, for property located north of Hwy 99W across from Providence Hospital, Yamhill County tax lot 3216AC-13800.

2. After proper notice, on January 16, 2007 at the hour of 7:00 PM in the Newberg Public Safety Building, 401 E Third, the City Council held a public hearing on the item: accurately stated objections to jurisdiction, bias, and ex-parte contact; considered public testimony; examined the record; heard the presentation from staff and the applicant; examined and discussed the appropriate criteria to judge the project (as listed in the staff report); considered all relevant information regarding the item; and deliberated.

3. On January 16, 2007, the City Council adopted Order 2007-0002 which affirmed that the annexation met the applicable Newberg Development Code criteria.

4. The City of Newberg Charter requires that territory may be annexed into the City of Newberg only upon approval by a majority vote among the electorate of the City.

5. The applicant has requested that this matter be placed before the voters at the May 15, 2007 special election.

THE CITY OF NEWBERG ORDAINS AS FOLLOWS:

1. The question of annexing the property shown in Exhibit "A" and described in Exhibit "B" shall be submitted to the electorate of the city at the May 15, 2007 general election.

2. The City Council directs that all costs associated with placing the item on the ballot be paid for by the applicant/owners. This includes but is not limited to noticing, signage, advertising, and costs assessed by the Yamhill County Clerk to place the item on the ballot. Owners may be required to place monies in escrow to cover the costs of election(s).

3. The City Elections Officer is hereby authorized and directed to certify to the Yamhill County Clerk the ballot title for the annexation measure to be placed before the voters. Further, the City Elections Officer is directed to give all necessary notices of the ballot title and do all other necessary acts and deeds which may be required to place the matter before the voters of the City of Newberg at said election.

4. The City Attorney is directed to have prepared and review the explanatory statement which shall be submitted to the Yamhill County Clerk with the ballot title. Such explanatory statement shall be filed with the City Elections Officer and the City Elections Officer is further directed to certify this explanatory statement to the Yamhill County Clerk.

5. The City Elections Officer is authorized to do all other necessary acts and deeds which may be required to conduct the election concerning this measure.

6. Should this annexation request be approved by a majority of the electorate of the City of Newberg at the identified election date, the property shown in Exhibit "A" and described in Exhibit "B", shall be annexed and withdrawn from the Newberg Rural Fire Protection District, and the following events will occur:

   A. The City of Newberg land use inventory data and GIS data will be updated to reflect the new addition.

   B. The Recorder of the City of Newberg is hereby authorized and directed to make and submit to the Secretary of State, the Department of Revenue, the Yamhill County Elections Officer, and the Assessor of Yamhill County, a certified copy of this ordinance.

- **EFFECTIVE DATE** of this ordinance is 30 days after the adoption date, which is: February 15, 2007.

ADOPTED by the City Council of the City of Newberg, Oregon, this 16th day of January, 2007, by the following votes:

AYE: 6 **NAY: 0** **ABSENT: 1** **ABSTAIN: 0**

James H. Bennett, City Recorder

ATTEST by the Mayor this 18th day of January, 2007.

Bob Andrews, Mayor

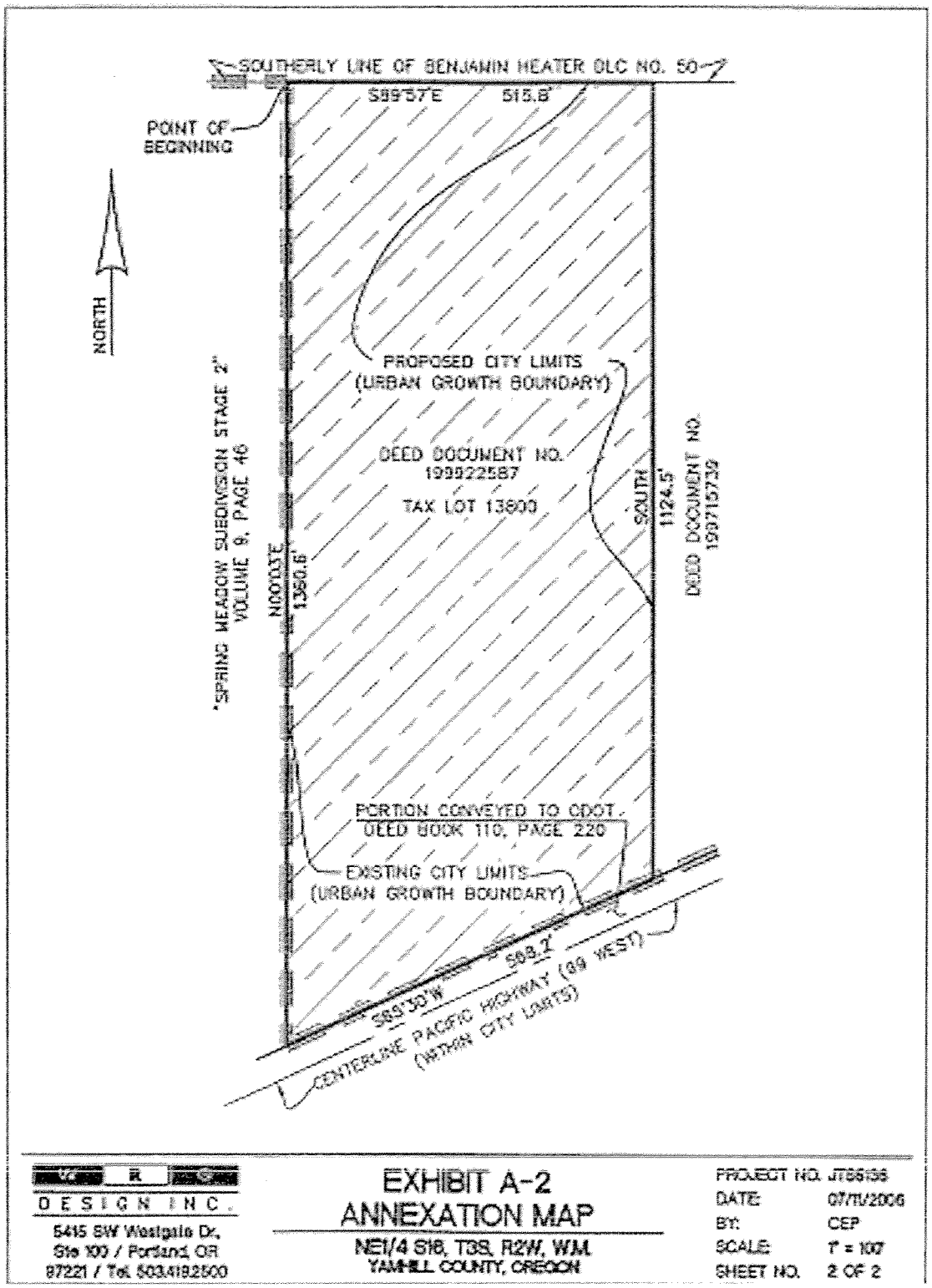
LEGISLATIVE HISTORY

By and through Planning Commission Committee at the 12/14/2006 meeting.

Exhibits:

Exhibit "A": Annexation Map
Exhibit "B": Legal Description

EXHIBIT "B": ANNEXATION MAP
ANX-06-009



DESIGN INC.	EXHIBIT A-2 ANNEXATION MAP	PROJECT NO. JT06136
5415 SW Westgate Dr, Ste 100 / Portland, OR 97221 / Tel: 5034192500	NE1/4 S18, T3S, R2W, W.M. YAMHILL COUNTY, OREGON	DATE: 07/11/2006
		BY: CEP
		SCALE: 1" = 100'
		SHEET NO. 2 OF 2

LEGAL DESCRIPTION:
JULY 11, 2006
PAGE 1 OF 2

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7/11/06
REGISTERED
PROFESSIONAL
LAND SURVEYOR
OREGON
JANUARY 10, 2006
PAUL D. GALLI
76970
EXPIRATION DATE 6/30/07

ORDER NO. 2008-0013

AN ORDER FINDING THAT PROPERTY LOCATED AT 4505 E. PORTLAND ROAD, YAMHILL COUNTY TAX LOT 3216-1100, MEETS THE APPLICABLE NEWBERG DEVELOPMENT CODE CRITERIA TO BE ANNEXED INTO THE CITY, AND MEETS THE APPLICABLE CODE CRITERIA TO CHANGE THE ZONING FROM COUNTY AF-10 TO CITY R-1, R-2 AND C-2

RECITALS:

1. On April 1, 2008 Coyote Homes Inc. submitted an application to annex one parcel (approximately 18.5 acres) into the City of Newberg with a concurrent zone change to R-1 (Low Density Residential), R-2 (Medium Density Residential) and C-2 (Community Commercial) for property located at 4505 E. Portland Road, Yamhill County tax lot 3216-1100.

2. The Newberg Planning Commission heard the annexation and zoning amendment on June 12, 2008, took public testimony, and continued the hearing to July 10, 2008 to allow ODOT time to review the supplemental traffic study and revised findings. The Planning Commission continued the hearing on July 10, 2008, reviewed the supplemental traffic study and revised findings, reviewed ODOT's comment that they had no further objections to the annexation request, and recommended approval of the annexation as conditioned and placement on the November 4, 2008 ballot per Resolution 2008-252.

3. Change of applicant: On July 16, 2008 Coyote Homes, Inc. withdrew as the applicant and the owner, Forrest R. Gish, Trustee for Forrest R. Gish Living Trust dated September 15, 1997, notified the City that he was now the applicant.

4. After proper notice, on August 4, 2008, the Newberg City Council held a hearing to consider the annexation and zoning amendment request.

5. The City Council finds that the applicable criteria have been met, and that approval of the application is in the best interests of the community.

THE CITY OF NEWBERG ORDERS AS FOLLOWS:

1. The City Council finds that the annexation and zoning amendment meet the Newberg Development Code criteria and adopts the findings, which are attached hereto as Exhibit "A". Exhibit "A" is hereby adopted and by this reference incorporated.

2. Annexation requires the City Council to adopt an ordinance annexing the property, and requires approval at a public vote. If the annexation is approved through these procedures, then the City orders the following:
   A. The zoning of the property described in Exhibit "C" is changed to portions of R-1 (Low Density Residential), R-2 (Medium Density Residential), and C-2 (Community Commercial) as shown on the map in Exhibit "E". Exhibits "C" and "E" are hereby adopted and by this

reference incorporated.

3. This order is subject to the following:

   A. A refined traffic study out to year 2025 will be required showing the actual development proposed at that time. No direct access to Highway 99W will be allowed. The traffic study should refine the existing study based on the actual development proposal and determine the number of trips that this development would add to the Springbrook/Hwy 99W intersection.

   B. Upon future development of the property, the development shall contribute its share, based on traffic volume, of the future cost of capacity improvements to the Springbrook Rd/Hwy 99W intersection.

   C. A 30 ft building setback along the north property line will be required upon development of the site.

   D. A wetland determination and delineation report shows wetlands on the site. Development shall comply with applicable state and federal wetland standards.

   E. Development follow best management practices for storm drainage as outlined in the letter from James Bennett to the Yamhill County Board of Commissioners dated 1/30/06.

   F. Upon development, verify the capacity of the Fernwood Road sanitary sewer pump station and upsize if necessary. All public sewer lines must be gravity flow. Coordinate with DSL and the US Army Corps of Engineers regarding changes to the existing on-site stormwater drainage ways. Complete street frontage improvements along Hwy 99W. The Crestview Drive extension from Oxberg Lakes to 99W, and the eastward extension of Gueldner Drive, must be in place at the time of development

   G. Existing homes to connect to sewer and water or be removed within two years of annexation.

   H. Upon development of the property, construct a sound wall along the northern property line to be of similar design and coordinated with the sound wall on the adjacent Gueldner property to the west.

➢ **EFFECTIVE DATE** of this order is the day after the adoption date, which is: August 5, 2008.

ADOPTED by the City Council of the City of Newberg, Oregon, this 4th day of August, 2008.

Norma I. Alley

Norma I. Alley, City Recorder

ATTEST by the Mayor this 7th day of August, 2008.

Bob Andrews, Mayor

QUASI-JUDICIAL HISTORY

By and through Planning Commission Committee at 6/12/2008 & 7/10/2008 meeting.
(committee name) (date)

EXHIBIT "A": FINDINGS

ANX-07-003

Annexation of 18.5 acres for property located at 4505 E. Portland Road

I. APPLICABLE ANNEXATION REGULATIONS – NEWBERG DEVELOPMENT CODE § 151.261 CONDITIONS FOR ANNEXATION

(A) The subject site must be located within the Newberg Urban Growth Boundary or Newberg Urban Reserve Areas.

FINDING: The site was included into the Newberg Urban Growth Boundary by Order 2007-0001 on January 2, 2007. Certain conditions were placed on the property by Order 2007-0001 and have been included within the recommended annexation conditions of approval.

(B) The subject site must be contiguous to the existing city limits.

FINDING: The subject site is adjacent to Newberg city limits on its western and southern property lines.

II. APPLICABLE ANNEXATION REGULATIONS – NEWBERG DEVELOPMENT CODE § 151.262 QUASI-JUDICIAL ANNEXATION CRITERIA

(A) The proposed use for the site complies with the Newberg comprehensive plan and with the designation on the Newberg comprehensive plan map. If a redesignation of the plan map is requested concurrent with annexation, the uses allowed under the proposed designation must comply with the Newberg comprehensive plan.

FINDING: The comprehensive plan designation of the site was changed concurrently with the urban growth boundary amendment application that was approved by Order 2007-0001 on January 2, 2007. The current comprehensive plan designation includes portions of LDR (low density residential), MDR (medium density residential), and COM (commercial). The applicant has proposed zoning of R-1 (low density residential), R-2 (medium density residential), and C-2 (community commercial) that exactly matches the comprehensive plan designations.

The east-west connector road (Gueldner Drive) will be extended through the site from the Crestview Dr extension towards Benjamin Road in accordance with the comprehensive plan map and the Newberg Transportation System Plan.

A wetland delineation map shows several wetland areas on this site. Most of the wetlands are along two existing drainage ditches on the site that carry stormwater runoff from a subdivision to the west that was built in the 1970s. DLCD has commented that a freshwater wetland assessment needs to be completed to verify that this annexation is in compliance with state Goal 5.

Oregon Administrative Rule 660-023-0100
Wetlands
(1) For purposes of this rule, a "wetland" is an area that is inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

(2) Local governments shall amend acknowledged plans and land use regulations prior to or at periodic review to address the requirements of this division, as set out in OAR 660-023-0250(5) through (7). The standard inventory process requirements in OAR 660-023-0030 do not apply to wetlands. Instead, local governments shall follow the requirements of section (3) of this rule in order to inventory and determine significant wetlands.

(3) For areas inside urban growth boundaries (UGBs) and urban unincorporated communities (UUCs), local governments shall:

(a) Conduct a local wetlands inventory (LWI) using the standards and procedures of OAR 141-086-0110 through 141-086-0240 and adopt the LWI as part of the comprehensive plan or as a land use regulation; and

(b) Determine which wetlands on the LWI are "significant wetlands" using the criteria adopted by the Division of State Lands (DSL) pursuant to ORS 197.279(3)(b) and adopt the list of significant wetlands as part of the comprehensive plan or as a land use regulation.

(4) For significant wetlands inside UGBs and UUCs, a local government shall:

(a) Complete the Goal 5 process and adopt a program to achieve the goal following the requirements of OAR 660-023-0040 and 660-023-0050; or

(b) Adopt a safe harbor ordinance to protect significant wetlands consistent with this subsection, as follows:

(A) The protection ordinance shall place restrictions on grading, excavation, placement of fill, and vegetation removal other than perimeter mowing and other cutting necessary for hazard prevention; and

(B) The ordinance shall include a variance procedure to consider hardship variances, claims of map error verified by DSL, and reduction or removal of the restrictions under paragraph (A) of this subsection for any lands demonstrated to have been rendered not buildable by application of the ordinance.

(5) For areas outside UGBs and UUCs, local governments shall either adopt the statewide wetland inventory (SWI; see ORS 196.674) as part of the local comprehensive plan or as a land use regulation, or shall use a current version for the purpose of section (7) of this rule.

(6) For areas outside UGBs and UUCs, local governments are not required to amend acknowledged plans and land use regulations in order to determine significant wetlands and complete the Goal 5 process. Local governments that choose to amend acknowledged plans for areas outside UGBs and UUCs in order to inventory and protect significant wetlands shall follow the requirements of sections (3) and (4) of this rule.

(7) All local governments shall adopt land use regulations that require notification of DSL concerning applications for development permits or other land use decisions affecting wetlands on the inventory, as per ORS 227 .350 and 215.418, or on the SWI as provided in section (5) of this rule.

(8) All jurisdictions may inventory and protect wetlands under the procedures and requirements for wetland conservation plans adopted pursuant to ORS 196.668 et seq. A wetlands conservation plan approved by the director of DSL shall be deemed to comply with Goal 5 (ORS 197.279(1)).

Stat. Auth.: ORS 183 & ORS 197

Stats. Implemented: ORS 197.040 & ORS 197.225 - ORS 197.245

Hist.: LCDC 2-1996, f. 8-30-96, cert. ef. 9-1-96

Finding: The applicant hired a local wetland specialist, Schott and Associates, to review the wetlands on the site and determine whether or not they are significant wetlands. Schott and Associates assessed the wetlands using the Oregon freshwater wetland assessment method required by Goal 5 and concluded that none of the wetlands on the site are significant. The report is included with the application. The wetlands were determined to provide habitat for some wildlife species, but the fish habitat was determined to be either "impacted or degraded" or not present at all on the wetlands. The water quality and hydrologic

control functions were determined to be "impacted or degraded" for all on site wetlands. All of these wetland functions were below the standards that would deem the wetlands to be locally significant. The wetlands also did not meet the other criteria regarding water quality limited bodies or endangered or listed species that would require the wetlands to be considered significant. The wetlands are therefore found to not be significant and no local controls need to be placed over the wetlands upon annexation. The wetlands are under the jurisdiction of the Department of State Lands and the U.S. Army Corps of Engineers. The applicant will need to comply with all State and Federal requirements prior to making any changes to these wetland areas. At this point the applicant plans to retain some of the wetland areas when they develop the site.

(B) An adequate level of urban services must be available, or made available, within three years time of annexation, except as noted in division (E) below. An adequate level of urban services shall be defined as:

(1) Municipal sanitary sewer and water service meeting the requirements enumerated in the Newberg comprehensive plan for provision of these services.

(2) Roads with an adequate design capacity for the proposed use and projected future uses. Where construction of the road is not deemed necessary within the three-year time period, the city shall note requirements such as dedication of right-of-way, waiver of remonstrance against assessment for road improvement costs, or participation in other traffic improvement costs, for application at the appropriate level of the planning process. The city shall also consider public costs for improvement and the ability of the city to provide for those costs.

FINDING: As explained below, public facilities will have adequate capacity to accommodate the demands of the site.

Water: The property can connect to an existing 10-inch mainline that runs along Hwy 99W at the property's southern border, and to the line within the extension of Gueldner Drive west of the site.

Storm water: Storm water drainage is currently provided by two storm drainage ditches that cross the property and outfall to a 24-inch diameter culvert under Hwy 99W near the center of the property. The Newberg Drainage Master Plan identifies this culvert as being undersized and needing to be replaced with a 36-inch culvert. If this work is completed by the developer of the Crestview Crossing site to the west then the applicant may need to pay for their share of the work as part of an advanced financing agreement. Certain improvements to the storm water drainage system will be required upon development to mitigate the additional demand on the system. The existing drainage ditches are low-quality wetlands. Coordination with the Oregon Division of State Lands and the US Army Corps of Engineers will be required regarding any changes to the existing on-site drainage ways.

Sewer: Sewer service will be provided by connecting to the new line extended north by the Crestview Crossing project. Sewer service will be extended east within Gueldner Drive. At time of development, the developer will need to verify the capacity of the Fernwood pump station. Improvements may be necessary. All public sewer lines must be gravity flow.

Roads: The subject property is adjacent to Hwy 99W on its southern side. Upon development, Hwy 99W shall be improved with curbs, gutters, and sidewalks.

The Crestview Drive extension and the Gueldner Drive extension on the property to the west must be in place prior to development on this site. The applicant has proposed extending Gueldner Drive to the east, which is in accordance with the TSP. The TSP shows Gueldner Drive connecting ultimately to Benjamin Road. This connection would need to be made as far north as possible to avoid impacting the Benjamin Road/Highway 99W intersection. The applicant's concept plan shows an additional road north of and parallel to Gueldner Drive, which provides access for the residential lots.

A Traffic Impact Study was prepared for this project by Dunn Traffic Engineering. Dunn has been involved in the design of the Crestview Drive extension to Highway 99W on the Gueldner property, and has stated that the Crestview Drive/99W intersection will be oversized to accommodate year 2025 traffic volumes, including the expected development of the Gish, Kimball and Thomas sites. The proposed conceptual commercial and residential development on the site is expected to generate around 490 new primary vehicle trips during the weekday p.m. peak hour, plus around 178 pass-by trips during the weekday p.m. peak hour. Much of the traffic for the commercial center would not be new trips, but would be pass-by or internal trips. This shows that this center will be primarily serving the residents of Newberg and will reduce the number of overall vehicle miles traveled for the residents of Newberg. Details of the study methodology, findings, and recommendations are provided in the traffic impact study report.

One important point from the traffic study that has not been sufficiently emphasized to date is that commercial development on this site will reduce the number of shopping trips that Newberg residents currently need to make to Sherwood, McMinnville, Wilsonville, and other communities. One of the primary goals of the State Transportation Planning Rule is to reduce vehicle miles traveled, and the annexation and development of the commercial portion of this site would help meet this goal for the residents of Newberg.

The study concludes that if the Crestview Drive extension is built as planned and if the Newberg-Dundee Bypass is built (which would shift traffic from Highway 99W and allow ODOT to downgrade Highway 99W from a Statewide Highway to a District Highway) then the development of this site is expected to have no significant effect upon any existing or planned transportation facilities, and no mitigation would be required.

ODOT has commented that the proposed zones do match the City's comprehensive plan and that the Bypass is included within the City's TSP. The Bypass is not considered a planned improvement by ODOT, however, because there is no funding plan in place. They comment that the TIS is therefore flawed because its recommendations depend on the construction of the bypass by 2025 and the downgrading of Hwy 99W to a District level highway. They also mentioned that the TIS assumes the wrong mobility standard for the Crestview/Providence intersection with 99W. ODOT requested that action be deferred on the annexation until the TIS can be corrected so that its recommendations can be used to support findings that the annexation is consistent with the Transportation Planning Rule. DLCD has also commented that the TIS analysis cannot depend on the construction of the Bypass, since ODOT has stated that the construction of the bypass is not reasonably likely by 2025.

ODOT's supplemental comments on June 12, 2008 referenced a 2005 LUBA decision (Just v. City of Lebanon) that found that the Transportation Planning Rule does apply to zone changes that occur as part of annexations, even though the zone changes correspond to the existing comprehensive plan designations. ODOT's interpretation appears to be correct, so the Transportation Planning Rule applies if it is determined that the proposed annexation will have a significant effect on transportation facilities. ODOT reiterated their request that the transportation studies be revised to not depend on the bypass, as they do not consider it a planned facility because it is unfunded.

The TIS is intended to evaluate the annexation's compatibility with the adopted Newberg TSP and the State highway plan. Both of these plans include the Newberg-Dundee bypass, however, so the applicant must include the potential impact of the bypass in their TIS analysis or the City would find that the analysis is incomplete. The TIS must also consider the project's impact on transportation facilities if the bypass is not built, however. While the bypass is a planned facility in the State Highway Plan, by TPR definitions it is not a "planned facility" and therefore cannot be relied on to mitigate the impacts of development. Dunn Traffic Engineering submitted a supplemental traffic impact analysis on June 12, 2008 to the City of Newberg and to ODOT that addresses ODOT's concerns. The supplemental analysis does not rely on the bypass to mitigate transportation impacts.

The supplemental traffic impact analysis examined the year 2025 peak hour operations of the key intersections under two scenarios: the site retains County zoning, or the site is annexed and developed with the proposed City zoning. The Brutscher/Hwy 99W intersection will remain below ODOT's 0.75 v/c ratio in 2025 peak hour operations under either development scenario. The Springbrook/99W intersection will exceed the 0.75 v/c ratio in 2025 under either scenario, and the Crestview/99W intersection will exceed the 0.70 v/c ratio in 2025 under either scenario. If no intersection improvements are made at the Springbrook/99W intersection and the site is annexed then the v/c ratio in 2025 will be 4.2% higher than if the site retains County zoning. If improvements are made to Springbrook Road, such as adding northbound and southbound travel lanes, then the increase in the v/c ratio from the annexation would fall to an insignificant 2.4%. The report points out that the City has been collecting funds from nearby developments for future improvements to the Springbrook intersection. The annexation would increase the Crestview/99W v/c ratio in 2025 by 7% (from 0.85 to 0.91). The report points out that there are no additional improvements that could be done to the Crestview extension to increase its capacity, and that adding lanes on 99W has been found in the adopted TSP to be impractical and operationally infeasible. The supplemental report concludes that annexing this property and rezoning to the proposed City zoning is not expected to have a significant effect upon any existing or planned transportation improvements, thus complying with the State's TPR. The Crestview improvements go beyond the improvements called for in the City's TSP, and the proportionate share costs that will be contributed by development towards future capacity enhancements at Springbrook/99W will mitigate the traffic impacts generated by development on the annexation site. ODOT's supplemental comments dated July 3, 2008 acknowledged receipt of the supplemental traffic analysis and, with the exception of minor technical comments, found that the report had been prepared using methodologies that are acceptable to ODOT. ODOT also commented that they looked forward to reviewing the findings regarding the Transportation Planning Rule issues, and pledged to continue to work with the City of Newberg to address congestion issues on OR 99W that result from existing and future proposed development.

The TIS shows that the Springbrook/99W intersection does not currently meet ODOT's v/c ratio standards. Development of the Gish property will add some trips to this intersection and would worsen the performance of the intersection if no mitigation was done. The City of Newberg has already identified this intersection as one that needs improvement, however, and has charged recent developments in the area with impact fees based on the number of trips they added to the intersection. The fees could be used for street improvements that would improve the performance of the intersection, whether those improvements were directly at the intersection or were for a nearby street (such as the future completion of Hayes Street) that would reduce the number of trips at the Springbrook/99W intersection. The new Providence Hospital paid towards the future Springbrook/99W intersection performance improvement based on their trip generation estimates, and the Crestview Crossing development will also be required to pay towards this performance improvement based on their trip generation estimates. The City will therefore require that, upon development of the Gish site, the developer pays an impact fee based on trip generation towards the performance improvement of the Springbrook/99W intersection. A refined traffic study will be required at the time of development to estimate trip generation based on the actual proposed development (instead of on the conceptual development shown in the annexation application). This will ensure that the impact of the development of the Gish site on the Springbrook/99W intersection will be mitigated by future improvements at or near the intersection.

State Transportation Planning Rule:

660-012-0060

Plan and Land Use Regulation Amendments

(1) Where an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation would significantly affect an existing or planned transportation facility, the local government shall put in place measures as provided in section (2) of this rule to assure that allowed land uses are consistent with the identified function, capacity, and performance standards (e.g. level of service, volume to capacity ratio, etc.) of the facility. A plan or land use regulation amendment significantly affects a transportation facility if it would:

(a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);

(b) Change standards implementing a functional classification system; or

(c) As measured at the end of the planning period identified in the adopted transportation system plan:

(A) Allow land uses or levels of development that would result in types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;

(B) Reduce the performance of an existing or planned transportation facility below the minimum acceptable performance standard identified in the TSP or comprehensive plan; or

(C) Worsen the performance of an existing or planned transportation facility that is otherwise projected to perform below the minimum acceptable performance standard identified in the TSP or comprehensive plan.

Finding: The zone change that will automatically occur upon annexation into the city is not a comprehensive plan amendment. A relatively recent LUBA ruling (*Just v. City of Lebanon*), however, found that the zone change upon annexation could be considered a land use regulation amendment. The Transportation Planning Rule would therefore apply to the project if it is determined that the proposed annexation will have a significant effect on transportation facilities.

The question then becomes whether or not the annexation would significantly affect an existing or planned transportation facility. The annexation would not change the functional classification of a

facility or change standards implementing a functional classification system. If there was no mitigation then the annexation would worsen the performance of the existing Springbrook/99W intersection, which already performs below ODOT's standards. The City has already established a precedent for mitigation of traffic impacts at the Springbrook/99W intersection, however, and this site was conditioned to mitigate the traffic impact as part of the UGB amendment process. The Providence Hospital project has paid an impact fee and the Crestview Crossing project will pay an impact fee for transportation improvements based on the number of trips that the project adds to the Springbrook/99W intersection. The developer of the Gish property will pay a similar impact fee based upon the number of trips that the Gish development would add to the Springbrook/99W intersection. The impact fee will be used for improvements at the intersection or for improvements to nearby roads that would reduce the number of trips at the Springbrook/99W intersection. The completion of the Hayes Street/Providence Drive connection is an example of the type of improvement that would reduce the amount of traffic at the Springbrook/99W intersection. The supplemental traffic analysis, which excluded the impact of the proposed bypass, found that with the proposed impact fee and mitigation at the Springbrook/99W intersection then the annexation of the Gish property would not have a significant effect on an existing or planned transportation improvement, thus complying with the TPR.

(2) Where a local government determines that there would be a significant effect, compliance with section (1) shall be accomplished through one or a combination of the following:

(a) Adopting measures that demonstrate allowed land uses are consistent with the planned function, capacity, and performance standards of the transportation facility.

(b) Amending the TSP or comprehensive plan to provide transportation facilities, improvements or services adequate to support the proposed land uses consistent with the requirements of this division; such amendments shall include a funding plan or mechanism consistent with section (4) or include an amendment to the transportation finance plan so that the facility, improvement, or service will be provided by the end of the planning period.

(c) Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes.

(d) Amending the TSP to modify the planned function, capacity or performance standards of the transportation facility.

(e) Providing other measures as a condition of development or through a development agreement or similar funding method, including transportation system management measures, demand management or minor transportation improvements. Local governments shall as part of the amendment specify when measures or improvements provided pursuant to this subsection will be provided.

(3) Notwithstanding sections (1) and (2) of this rule, a local government may approve an amendment that would significantly affect an existing transportation facility without assuring that the allowed land uses are consistent with the function, capacity and performance standards of the facility where:

(a) The facility is already performing below the minimum acceptable performance standard identified in the TSP or comprehensive plan on the date the amendment application is submitted;

(b) In the absence of the amendment, planned transportation facilities, improvements and services as set forth in section (4) of this rule would not be adequate to achieve consistency with the identified function, capacity or performance standard for that facility by the end of the planning period identified in the adopted TSP;

(c) Development resulting from the amendment will, at a minimum, mitigate the impacts of the amendment in a manner that avoids further degradation to the performance of the facility by the time of the development through one or a combination of transportation improvements or measures;

(d) The amendment does not involve property located in an interchange area as defined in paragraph (4)(d)(C); and

(e) For affected state highways, ODOT provides a written statement that the proposed funding and timing for the identified mitigation improvements or measures are, at a minimum, sufficient to avoid further degradation to the performance of the affected state highway. However, if a local government provides the appropriate ODOT regional office with written notice of a proposed amendment in a manner that provides ODOT reasonable opportunity to submit a written statement into the record of the local government proceeding, and ODOT does not provide a written statement, then the local government may proceed with applying subsections (a) through (d) of this section.

(4) Determinations under sections (1)-(3) of this rule shall be coordinated with affected transportation facility and service providers and other affected local governments.

(a) In determining whether an amendment has a significant effect on an existing or planned transportation facility under subsection (1)(c) of this rule, local governments shall rely on existing transportation facilities and services and on the planned transportation facilities, improvements and services set forth in subsections (b) and (c) below.

(b) Outside of interstate interchange areas, the following are considered planned facilities, improvements and services:

(A) Transportation facilities, improvements or services that are funded for construction or implementation in the Statewide Transportation Improvement Program or a locally or regionally adopted transportation improvement program or capital improvement plan or program of a transportation service provider.

(B) Transportation facilities, improvements or services that are authorized in a local transportation system plan and for which a funding plan or mechanism is in place or approved. These include, but are not limited to, transportation facilities, improvements or services for which: transportation systems development charge revenues are being collected; a local improvement district or reimbursement district has been established or will be established prior to development; a development agreement has been adopted; or conditions of approval to fund the improvement have been adopted.

(C) Transportation facilities, improvements or services in a metropolitan planning organization (MPO) area that are part of the area's federally-approved, financially constrained regional transportation system plan.

(D) Improvements to state highways that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when ODOT provides a written statement that the improvements are reasonably likely to be provided by the end of the planning period.

(E) Improvements to regional and local roads, streets or other transportation facilities or services that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when the local government(s) or transportation service provider(s) responsible for the facility, improvement or service provides a written statement that the facility, improvement or service is reasonably likely to be provided by the end of the planning period.

(c) Within interstate interchange areas, the improvements included in (b)(A)-(C) are considered planned facilities, improvements and services, except where:

(A) ODOT provides a written statement that the proposed funding and timing of mitigation measures are sufficient to avoid a significant adverse impact on the Interstate Highway system, then local governments may also rely on the improvements identified in paragraphs (b)(D) and (E) of this section; or

(B) There is an adopted interchange area management plan, then local governments may also rely on the improvements identified in that plan and which are also identified in paragraphs (b)(D) and (E) of this section.

(d) As used in this section and section (3):

(A) Planned interchange means new interchanges and relocation of existing interchanges that are authorized in an adopted transportation system plan or comprehensive plan;

(B) Interstate highway means Interstates 5, 82, 84, 105, 205 and 405; and

(C) Interstate interchange area means:

(i) Property within one-half mile of an existing or planned interchange on an Interstate Highway as measured from the center point of the interchange; or

(ii) The interchange area as defined in the Interchange Area Management Plan adopted as an amendment to the Oregon Highway Plan.

(e) For purposes of this section, a written statement provided pursuant to paragraphs (b)(D), (b)(E) or (c)(A) provided by ODOT, a local government or transportation facility provider, as appropriate, shall be conclusive in determining whether a transportation facility, improvement or service is a planned transportation facility, improvement or service. In the absence of a written statement, a local government can only rely upon planned transportation facilities, improvements and services identified in paragraphs (b)(A)-(C) to determine whether there is a significant effect that requires application of the remedies in section (2).

Finding: Sections 2-4 are not applicable because, as determined above, the annexation will not have a significant effect on an existing or planned transportation facility.

In general, with the improvements included in the transportation plan and traffic mitigation measures, adequate transportation facilities will be available to serve the proposed use.

(C) Findings documenting the availability of police, fire, parks, and school facilities and services shall be made to allow for conclusionary findings either for or against the proposed annexation. The adequacy of these services shall be considered in relation to annexation proposals.

Finding: Police services are currently provided to the area by Yamhill County Sheriff's Office. Fire service is provided by Newberg Rural Fire District. The proposed annexation will shift police and fire services to the city. The annexation and development of the property will generate additional needs for police and fire services. The annexation and development also will generate additional revenues to pay for those services, including property tax revenues, franchise fee revenues, and cigarette and liquor tax revenues. Recent growth in these revenues has increased to the point that four additional police officers are proposed in the General Fund budget for FY08-09. However, property tax limitations have capped the growth in assessed value on existing and new properties within the city. Because of this, property tax revenues have not increased sufficiently to cover existing and new needs for public safety personnel. The Budget Committee's proposed budget for FY08-09 would fund an additional three officers with a public safety fee yet to be established. If this fee is established, then this annexed property also would pay. With this fee, annexation and development of this property should generate sufficient revenue to cover increased public safety service needs. The residential development of the property may also increase the demand for parks and school facilities, which will be partially offset by the system development charges for parks and the school construction excise tax.

(D) The burden for providing the findings for divisions (A), (B) and (C) of this section is placed upon the applicant.

FINDING: The applicant has provided written findings for this section.

(E) The City Council may annex properties where urban services are not and cannot practically be made available within the three year time frame noted in division (B) above, but where annexation is needed to address a health hazard, to annex an island, to address sewer or water

connection issues for existing development, to address specific legal or contract issues, to annex property where the timing and provision of adequate services in relation to development is or will be addressed through legislatively adopted specific area plans or similar plans, or to address similar situations. In these cases, absent a specific legal or contractual constraint, the Council shall apply an interim zone, such as a limited-use overlay, that would limit development of the property until such time as the services become available.

FINDING: This criterion is not applicable to this property.

NDC § 151.267 Comprehensive Plan and Zoning Designations

(A) The comprehensive plan map designation of the property at the time of annexation shall be used as a criterion to determine whether or not the proposed request complies with the Newberg comprehensive plan. A redesignation of the comprehensive plan map may be requested concurrent with annexation. The proposed redesignation shall then be used to determine compliance with the Newberg comprehensive plan.

(B) Upon annexation, the area annexed shall be automatically zoned to the corresponding land use zoning classification which implements the Newberg comprehensive plan map designation. The corresponding designations are shown in the table below. The procedures and criteria of § 151.122 shall not be required.

Comprehensive Plan Classification	***Appropriate Zoning Classification***
OS	*Any zoning classification*
LDR	*R-1*
MDR	*R-2*
HDR	*R-3*
COM	*C-1, C-2, or C-3 as determined by the Director*
MIX	*C-2, M-1, or M-2 as determined by the Director*
IND	*M-1, M-2, or M-3*
PQ	*Any zoning classification*
P/PP	*Any zoning classification*

(C) If a zoning classification is requested by the applicant for other than that described in division (B) of this section, the criteria of § 151.122 shall apply. This application shall be submitted concurrently with the annexation application.

(D) In the event that the annexation request is denied, the zone change request shall also be denied. (Ord. 96-2451, passed 12-2-96)

Finding: The applicant has requested zoning designations of R-1, R-2 and C-2 that exactly match the comprehensive plan designations on the site. They are therefore not required by the Newberg

Development Code to address the criteria under § 151.122, which are the criteria for a comprehensive plan map amendment or zoning map amendment. The zone change from County to City zoning is an automatic change and is not a zoning map amendment because the zones match the comprehensive plan designations. This is significant because the criteria for § 151.122 (below) call for the applicant to make findings addressing the State Transportation Planning Rule. Newberg's development code does not require the applicant to make findings addressing the State Transportation Planning Rule if the requested zones match the comprehensive plan designations.

> ***NDC § 151.122(3) Procedures for Comprehensive Plan Map and Zoning Map Amendments – Amendment Criteria***
>
> *(a) The proposed change is consistent with and promotes the goals and policies of the Newberg comprehensive plan and this code;*
>
> *(b) Public facilities and services are or can be reasonable made available to support the uses allowed by the proposed change.*
>
> *(c) Compliance with the State Transportation Rule (OAR 660-012-0060) for proposals that significantly affect transportation facilities.*

Timing Consideration:

NDC § 151.263 Annexation Procedures

All annexation requests approved by the City Council shall be referred to the voters in accordance with the requirements of this code and O.R.S. 222.

(A) Annexation elections are normally scheduled for the biennial primary or general elections which are held in May and November of even numbered years. Applications for annexation shall be filed with the Planning Division before 5:00 p.m. on October 1 for a primary ballot election in May and before 5:00 p.m. on April 1 for a general ballot election in November. An applicant may request that the Council schedule an annexation ballot measure for a special election date. Applications proposed for review at a special election must be filed with the city eight months prior to the proposed special election date. Filing of an annexation application and having the application deemed complete does not obligate the city to place the annexation question before the voters at any particular election. This division does not obligate the city to process an annexation application within any time frame not required by ordinance or state statute.

(B) The application shall be processed in accordance with the Type III processing procedures outlined in this code. Once the Director receives a completed application for annexation, he/she shall schedule a recommendation hearing before the Planning Commission. The Planning Commission shall make a recommendation to the City Council as to whether or not the application meets the criteria contained in § 151.262. This decision shall be a quasi-judicial determination and not a legislative determination. The Planning Commission may also recommend denial of an application based upon a legislative perception of the request even though the findings support and would allow annexation. A decision to recommend denial of an annexation, even though the findings support the request, shall be specifically stated in the record and noted as a legislative recommendation separate and apart from the quasi-judicial recommendation.

(C) Following the Planning Commission hearing, the Director shall schedule a City Council hearing to consider the request. The City Council shall conduct a quasi-judicial hearing and determine whether or not the application meets the criteria contained in § 151.262. The hearing at the City Council shall be considered a new hearing. If additional testimony is submitted, the Council

may, at its own discretion, return the application to the Planning Commission for further review and recommendation. The City Council may also deny an application based upon a legislative perception of the request even though the findings support and would allow annexation. A decision to deny an annexation, even though the findings support the request, shall be specifically stated in the record and noted as a legislative recommendation separate and apart from the quasi-judicial recommendation.

(D) If the City Council approves the annexation request, the proposal may, at the City Council's sole discretion, be placed before the voters of the city as follows:

(1) The biennial primary or general elections which are held in May and November of even numbered years, or

(2) An available special election.

Recommendation: The applicant has requested that this annexation application be approved by the City Council and placed before the voters at the November 4, 2008 election. If the Council approves the annexation they are not bound to place the annexation on the next available ballot. The decision on when to send an approved annexation to the ballot is at the City Council's sole discretion. The Planning Commission recommends that the City Council place this item on the November 4, 2008 ballot.

CONDITIONS OF APPROVAL
ANX-07-003

The following conditions of approval apply to the annexation of the property located at 4505 E. Portland Road, Yamhill County Tax Lot 3216-1100.

- A refined traffic study out to year 2025 will be required showing the actual development proposed at that time. No direct access to Highway 99W will be allowed. The traffic study should refine the existing study based on the actual development proposal and determine the number of trips that this development would add to the Springbrook/Hwy 99W intersection.

- Upon future development of the property, the development shall contribute its share, based on traffic volume, of the future cost of capacity improvements to the Springbrook Rd/Hwy 99W intersection.

- A 30 ft building setback along the north property line will be required upon development of the site.

- A wetland determination and delineation report shows wetlands on the site. Development shall comply with applicable state and federal wetland standards.

- Development follow best management practices for storm drainage as outlined in the letter from James Bennett to the Yamhill County Board of Commissioners dated 1/30/06.

- Upon development, verify the capacity of the Fernwood Road sanitary sewer pump station and upsize if necessary. All public sewer lines must be gravity flow. Coordinate with DSL and the US Army Corps of Engineers regarding changes to the existing on-site stormwater drainage ways. Complete street frontage improvements along Hwy 99W. The Crestview Drive extension from Oxberg Lakes to 99W, and the eastward extension of Gueldner Drive, must be in place at the time of development

- Existing homes to connect to sewer and water or be removed within two years of annexation.

EXHIBIT "B": ANNEXATION MAP

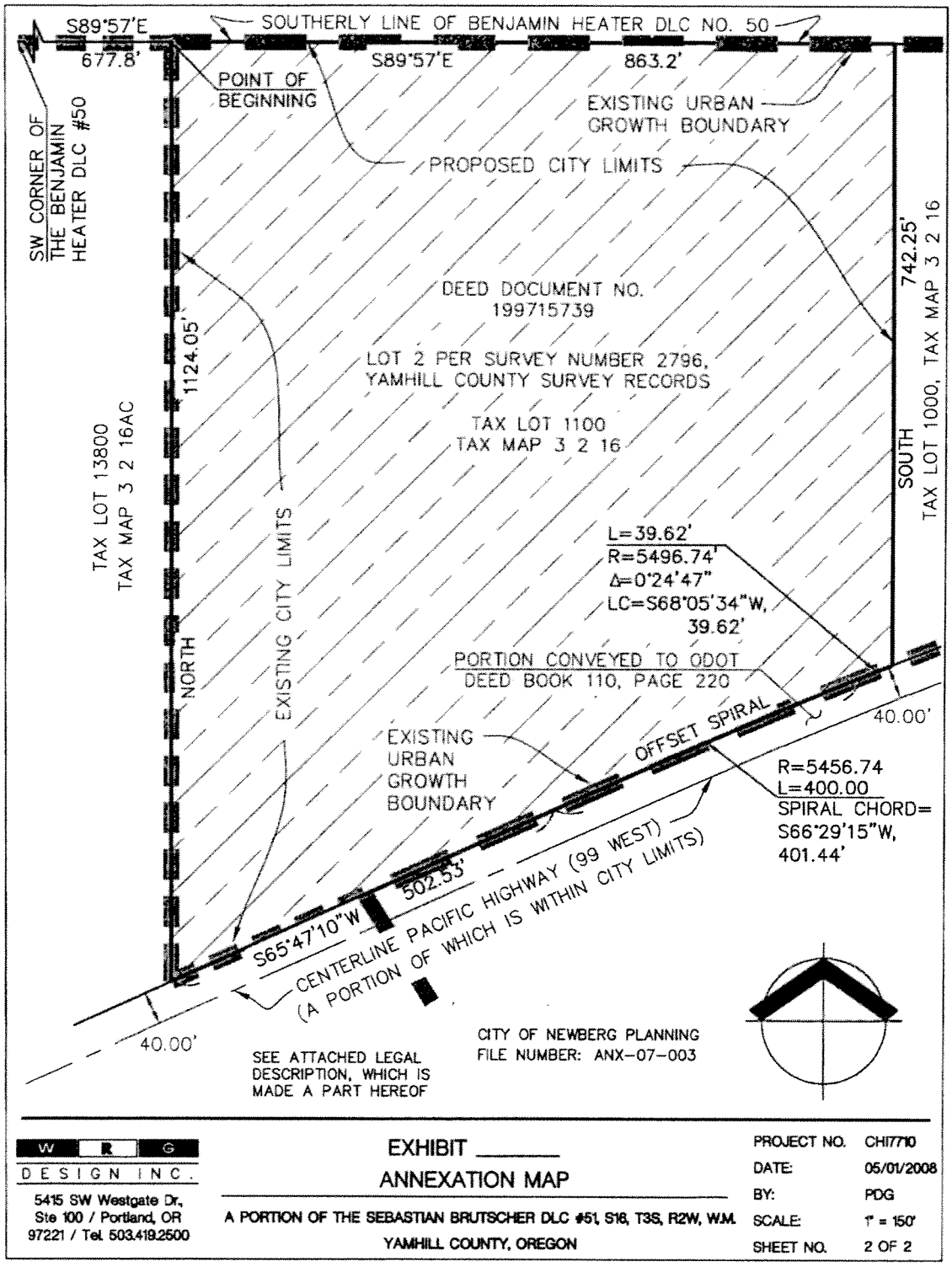


EXHIBIT "C": LEGAL DESCRIPTION

LEGAL DESCRIPTION
CITY OF NEWBERG ANNEXATION
PLANNING FILE NUMBER: ANX-07-003
MAY 1, 2008
PAGE 1 OF 2

ALL OF THAT CERTAIN TRACT OF LAND DESCRIBED IN DEED DOCUMENT NUMBER 199715739; SAID PROPERTY IS SITUATED IN THE SEBASTIAN BRUTSCHER DONATION LAND CLAIM, NOTIFICATION #1470, CLAIM #51, IN TOWNSHIP 3 SOUTH, RANGE 2 WEST OF THE WILLAMETTE MERIDIAN, YAMHILL COUNTY, OREGON, AND IS DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF LOT NUMBER 1 PER COUNTY SURVEY #2795 BEING ON THE NORTH LINE OF SAID BRUTSCHER CLAIM (SAID POINT BEARS SOUTH 89°57' EAST, 677.8 FEET, MORE OR LESS FROM THE SOUTHWEST CORNER OF THE BENJAMIN HEATER DONATION LAND CLAIM); THENCE SOUTH 89°57' EAST ALONG SAID BRUTSCHER CLAIM LINE, 863.2 FEET, MORE OR LESS, TO THE NORTHEAST CORNER OF LOT NO 2 OF SAID SURVEY #2795, SAID POINT ALSO BEING AT THE NORTHWEST CORNER OF LOT 4A, OF SAID COUNTY SURVEY #2795; THENCE ALONG THE EAST LINE OF SAID LOT 2 SOUTH, 742.25 FEET, MORE OR LESS, TO A POINT OF 5496.74 FOOT RADIUS CURVE TO THE LEFT ON THE NORTH RIGHT OF WAY LINE OF THE WEST SIDE PACIFIC HIGHWAY (BEING 40 FEET TO THE CENTERLINE THEREOF, MEASURED PERPENDICULAR THERETO); THENCE ALONG SAID NORTH RIGHT OF WAY LINE, THE FOLLOWING THREE (3) COURSES, MORE OR LESS:
1) ALONG SAID 5496.74 FOOT RADIUS CURVE TO THE LEFT (THE CENTER OF WHICH BEARS SOUTH 21° 42' 03" EAST, 5496.74 FEET) THROUGH A CENTRAL ANGLE OF 00° 24' 47" AN ARC DISTANCE OF 39.62 FEET (THE CHORD OF WHICH BEARS SOUTH 68° 05' 34" WEST, 39.62 FEET) TO THE BEGINNING OF AN OFFSET SPIRAL (THE CENTERLINE SPIRAL IS A 400 FOOT SPIRAL, WITH A NORMAL CURVE RADIUS OF 5456.74 FEET); 2) ALONG SAID OFFSET SPIRAL (THE CHORD OF WHICH BEARS SOUTH 66° 29' 15" WEST, 401.44 FEET); THENCE SOUTH 65° 47' 10" WEST, 502.53 FEET TO A POINT ON THE WEST LINE OF SAID LOT 2, SAID LINE BEING ON THE CURRENT CITY OF NEWBERG LIMITS; THENCE ALONG SAID WEST LINE, ALONG SAID CURRENT CITY OF NEWBERG LIMITS NORTH, 1124.05 FEET, MORE OR LESS, TO SAID **POINT OF BEGINNING.**

CONTAINS 18.437 ACRES, MORE OR LESS.

THE ATTACHED EXHIBIT ENTITLED "ANNEXATION MAP" IS MADE A PART HEREOF.

THIS DESCRIPTION HAS BEEN COMPILED FROM RECORD INFORMATION AND IS MEANT FOR ANNEXATION PURPOSES ONLY. IT IS NOT INTENDED TO BE USED IN THE TRANSFER OF REAL PROPERTY.

5/1/2008
REGISTERED PROFESSIONAL LAND SURVEYOR
Paul D. Galli
OREGON
JANUARY 10, 2006
PAUL D. GALLI
76970
EXPIRATION DATE 6/30/09

EXHIBIT "D": COMPREHENSIVE PLAN MAP

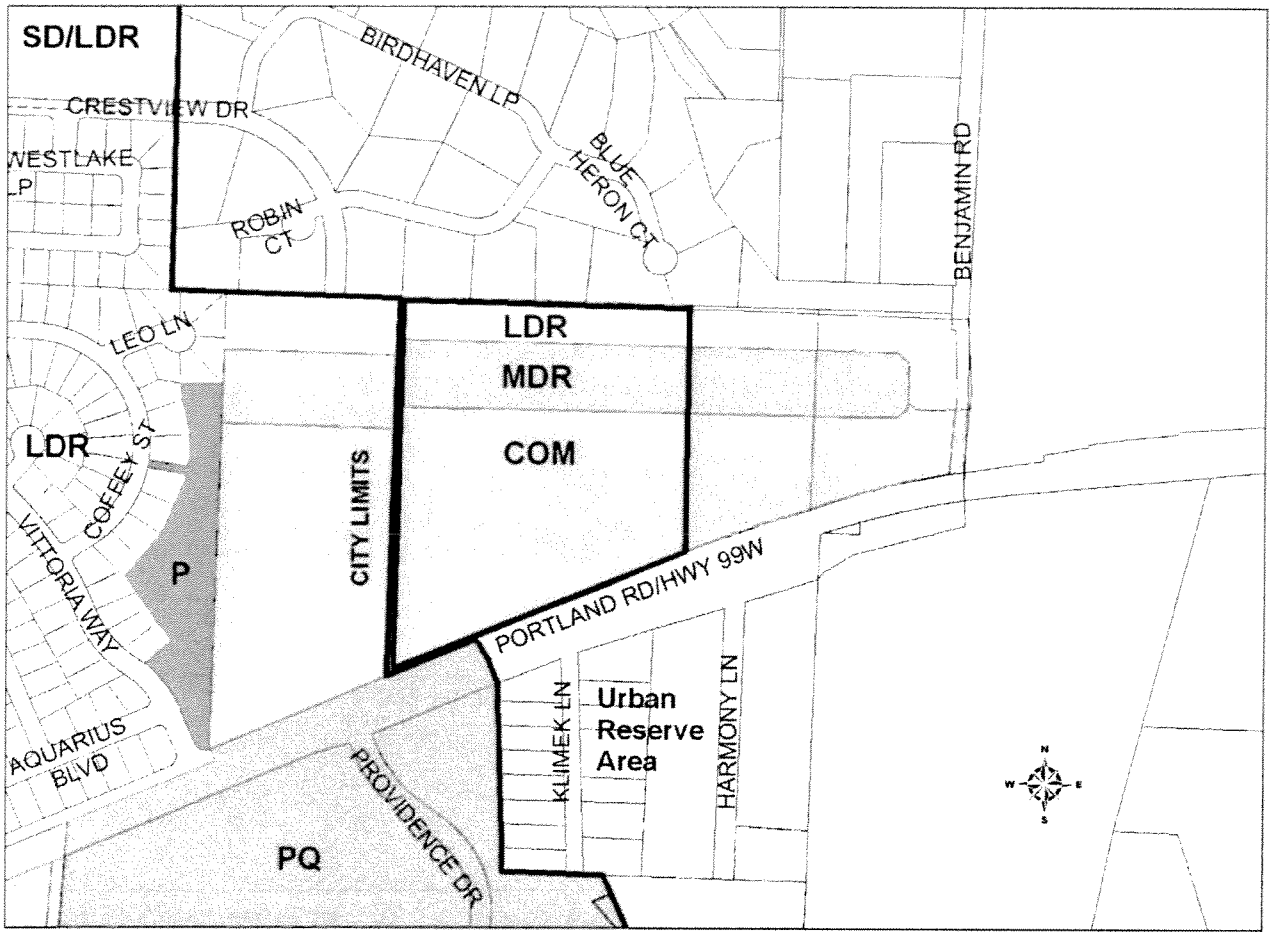
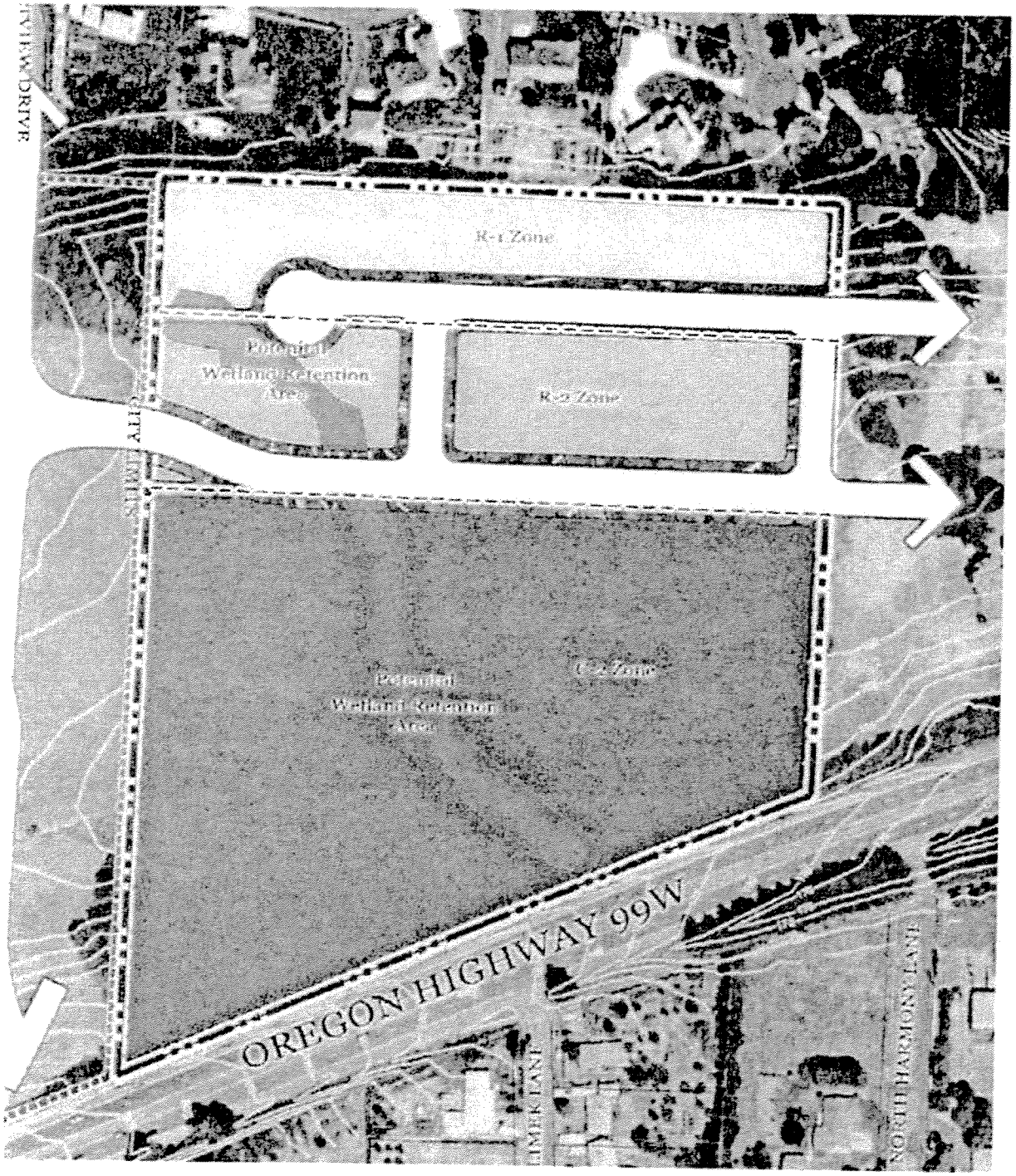


EXHIBIT "E": PROPOSED ZONING MAP



ORDINANCE NO. 2008-2700

AN ORDINANCE DECLARING PROPERTY LOCATED AT 4505 E. PORTLAND ROAD, YAMHILL COUNTY TAX LOT 3216-1100, BE ANNEXED INTO THE CITY OF NEWBERG AND WITHDRAWN FROM THE NEWBERG RURAL FIRE PROTECTION DISTRICT SUBJECT TO A PUBLIC VOTE, AND AUTHORIZING AND DIRECTING THE CITY ELECTIONS OFFICER TO CERTIFY TO THE YAMHILL COUNTY CLERK A BALLOT TITLE FOR THE MEASURE TO BE SUBMITTED TO THE ELECTORATE OF THE CITY OF NEWBERG FOR THEIR APPROVAL OF AN ANNEXATION FOR THIS SAME PROPERTY

RECITALS:

1. Coyote Homes Inc. submitted an application for annexation and consent to annex on April 1, 2008 for property located at 4505 E. Portland Road, Yamhill County tax lot 3216-1100. On July 16, 2008 Coyote Homes Inc. withdrew as the applicant and the owner, Forrest R. Gish, Trustee for Forrest R. Gish Living Trust dated September 15, 1997, notified the City that he was now the applicant.

2. After proper notice, on August 4, 2008, the City Council held a public hearing on the item: accurately stated objections to jurisdiction, bias, and ex-parte contact; considered public testimony; examined the record; heard the presentation from staff and the applicant; examined and discussed the appropriate criteria to judge the project (as listed in the staff report); considered all relevant information regarding the item; and deliberated.

3. On August 4, 2008, the City Council adopted Order 2008-0013 which affirmed that the annexation met the applicable Newberg Development Code criteria.

4. The City of Newberg Charter requires that territory may be annexed into the City of Newberg only upon approval by a majority vote among the electorate of the City.

5. The applicant has requested, and the Planning Commission has recommended, that this matter be placed before the voters at the November 4, 2008 general election.

THE CITY OF NEWBERG ORDAINS AS FOLLOWS:

1. The question of annexing the property shown in Exhibit "A" and described in Exhibit "B" shall be submitted to the electorate of the city at the November 4, 2008 special election. Exhibits "A" and "B" are hereby adopted and by this reference incorporated.

2. The City Council directs that all costs associated with placing the item on the ballot be paid

for by the applicant/owners. This includes but is not limited to noticing, signage, advertising, and costs assessed by the Yamhill County Clerk to place the item on the ballot. Owners may be required to place monies in escrow to cover the costs of election(s).

3. The City Elections Officer is hereby authorized and directed to certify to the Yamhill County Clerk the ballot title for the annexation measure to be placed before the voters. Further, the City Elections Officer is directed to give all necessary notices of the ballot title and do all other necessary acts and deeds which may be required to place the matter before the voters of the City of Newberg at said election.

4. The City Attorney is directed to have prepared and review the explanatory statement which shall be submitted to the Yamhill County Clerk with the ballot title. Such explanatory statement shall be filed with the City Elections Officer and the City Elections Officer is further directed to certify this explanatory statement to the Yamhill County Clerk.

5. The City Elections Officer is authorized to do all other necessary acts and deeds which may be required to conduct the election concerning this measure.

6. Should this annexation request be approved by a majority of the electorate of the City of Newberg at the identified election date, the property shown in Exhibit "A" and described in Exhibit "B", shall be annexed and withdrawn from the Newberg Rural Fire Protection District, and the following events will occur:

   A. The City of Newberg land use inventory data and GIS data, including the comprehensive plan map and zoning map, will be updated to reflect the new addition.

   B. The Recorder of the City of Newberg is hereby authorized and directed to make and submit to the Secretary of State, the Department of Revenue, the Yamhill County Elections Officer, and the Assessor of Yamhill County, a certified copy of this ordinance.

➢ **EFFECTIVE DATE** of this ordinance is 30 days after the adoption date, which is: September 4, 2008.

ADOPTED by the City Council of the City of Newberg, Oregon, this 4th day of August, 2008, by the following votes: **AYE:** 5 **NAY:** 1 (Currier) **ABSENT:** 1 (Shelton) **ABSTAIN:** Ø

Norma I. Alley

Norma I. Alley, City Recorder

ATTEST by the Mayor this 7th day of August, 2008.

Bob Andrews, Mayor

LEGISLATIVE HISTORY

By and through Planning Commission (committee name) Committee at 6/12/2008 & 7/10/2008 (date) meetings.

Exhibits:

Exhibit "A": Annexation Map
Exhibit "B": Legal Description

EXHIBIT "A": ANNEXATION MAP

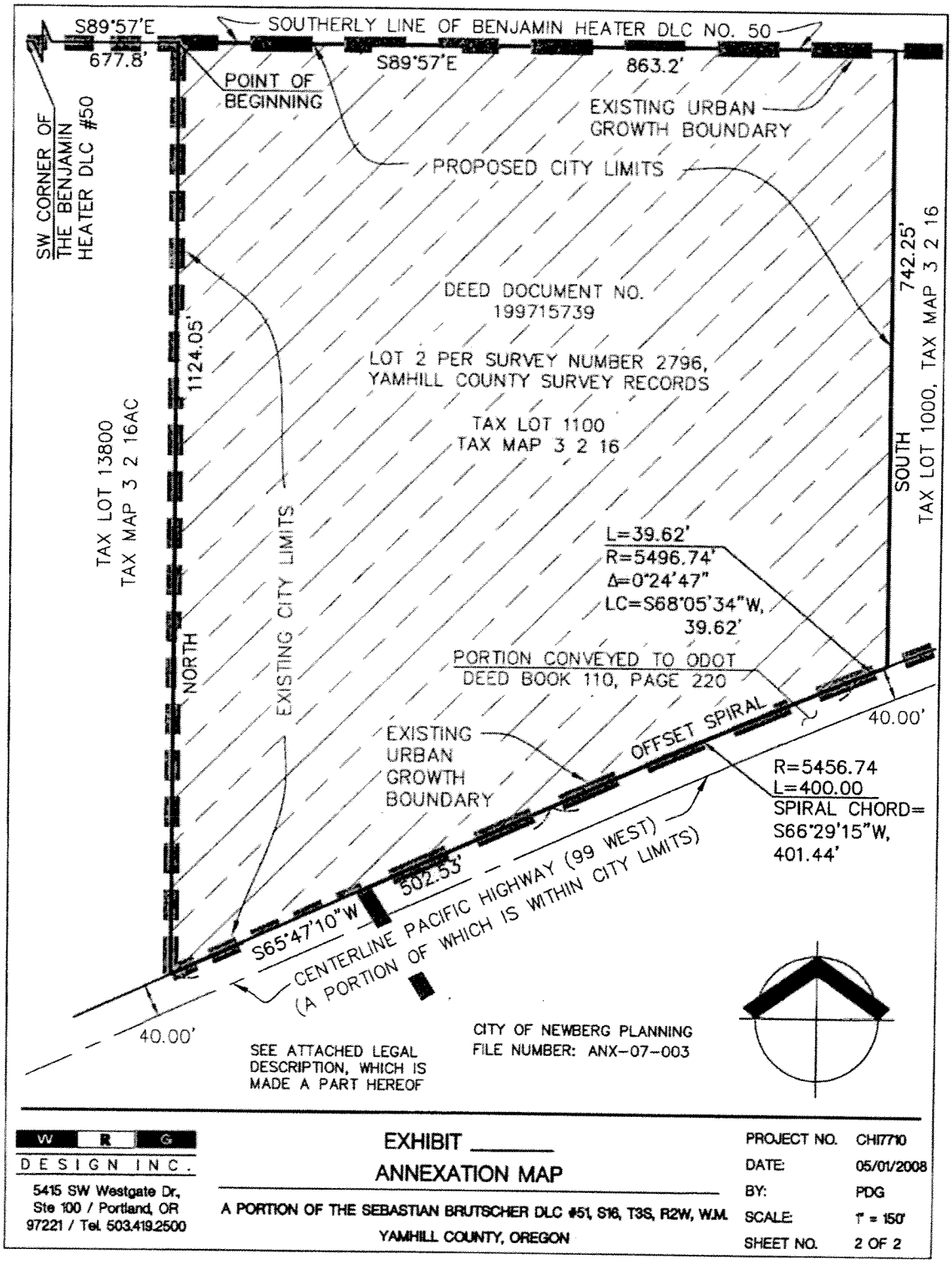


EXHIBIT "B": LEGAL DESCRIPTION

LEGAL DESCRIPTION
CITY OF NEWBERG ANNEXATION
PLANNING FILE NUMBER: ANX-07-003
MAY 1, 2008
PAGE 1 OF 2

ALL OF THAT CERTAIN TRACT OF LAND DESCRIBED IN DEED DOCUMENT NUMBER 199715739; SAID PROPERTY IS SITUATED IN THE SEBASTIAN BRUTSCHER DONATION LAND CLAIM, NOTIFICATION #1470, CLAIM #51, IN TOWNSHIP 3 SOUTH, RANGE 2 WEST OF THE WILLAMETTE MERIDIAN, YAMHILL COUNTY, OREGON, AND IS DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF LOT NUMBER 1 PER COUNTY SURVEY #2795 BEING ON THE NORTH LINE OF SAID BRUTSCHER CLAIM (SAID POINT BEARS SOUTH 89°57' EAST, 677.8 FEET, MORE OR LESS FROM THE SOUTHWEST CORNER OF THE BENJAMIN HEATER DONATION LAND CLAIM); THENCE SOUTH 89°57' EAST ALONG SAID BRUTSCHER CLAIM LINE, 863.2 FEET, MORE OR LESS, TO THE NORTHEAST CORNER OF LOT NO 2 OF SAID SURVEY #2795, SAID POINT ALSO BEING AT THE NORTHWEST CORNER OF LOT 4A, OF SAID COUNTY SURVEY #2795; THENCE ALONG THE EAST LINE OF SAID LOT 2 SOUTH, 742.25 FEET, MORE OR LESS, TO A POINT OF 5496.74 FOOT RADIUS CURVE TO THE LEFT ON THE NORTH RIGHT OF WAY LINE OF THE WEST SIDE PACIFIC HIGHWAY (BEING 40 FEET TO THE CENTERLINE THEREOF, MEASURED PERPENDICULAR THERETO); THENCE ALONG SAID NORTH RIGHT OF WAY LINE, THE FOLLOWING THREE (3) COURSES, MORE OR LESS:
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5/1/2008
REGISTERED PROFESSIONAL LAND SURVEYOR
Paul D. Galli
OREGON
JANUARY 10, 2006
PAUL D. GALLI
76970
EXPIRATION DATE 6/30/09

Attachment 7: Joint Permit Application

Joint Permit Application

This is a joint application, and must be sent to both agencies, who administer separate permit programs. Alternative forms of permit applications may be acceptable; contact the Corps and DSL for more information.

RECEIVED
OCT 06 2017
DEPARTMENT OF STATE LANDS
Date Stamp

U.S. Army Corps of Engineers Portland District	Oregon Department of State Lands
Corps Action ID Number	DSL Number 58464-RF Revised

(1) APPLICANT AND LANDOWNER CONTACT INFORMATION

	Applicant	Property Owner (if different)	Authorized Agent (if applicable) ☑ Consultant ☐ Contractor
Contact Name	Barry Cain	Jeffrey Smith	Juniper Tagliabue
Business Name	Gramor Investments	JT Smith Co.	Schott and Associates
Mailing Address 1	19767 SW 72nd Ave	5285 Meadows Drive	PO Box 589
Mailing Address 2	Suite 100	Suite 171	
City, State, Zip	Tualatin, OR 97062	Lake Oswego, OR 97035	Aurora, OR 97002
Business Phone	503.245.1976		503.678.6007
Cell Phone			
Fax			
Email	ryan@gramor.com		juniper@schottandassociates.com

(2) PROJECT INFORMATION

A. Provide the project location.

Project Name	Tax Lot #	Latitude & Longitude*
Crestview Crossing	1000, 1100	43.3118, -1229362
Project Address / Location	**City (nearest)**	**County**
NE Corner Hwy 99W & Vittoria Ln.	Newberg	Yamhill

Township	Range	Section	Quarter/Quarter
3S	2W	16	AC

Brief Directions to the Site
Highway 99W to Newberg. Site is N of highway, E of Vittoria Lane and across from the hospital.

B. What types of waterbodies or wetlands are present in your project area? (Check all that apply.)

☑ River / Stream ☑ Non-Tidal Wetland ☐ Lake / Reservoir / Pond
☐ Estuary or Tidal Wetland ☐ Other ☐ Pacific Ocean

Waterbody or Wetland Name**	River Mile	6th Field HUC Name	6th Field HUC (12 digits)
Trib to Springbrook Creek	Unk.	Hess Creek- Willamette	17090070307

C. Indicate the project category. (Check all that apply.)

☑ Commercial Development ☐ Industrial Development ☑ Residential Development
☐ Institutional Development ☐ Agricultural ☐ Recreational
☐ Transportation ☐ Restoration ☐ Bank Stabilization
☐ Dredging ☑ Utility lines ☐ Survey or Sampling
☐ In- or Over-Water Structure ☐ Maintenance ☐ Other:

* In decimal format (e.g., 44.9399, -123.0283)

(2) PROJECT INFORMATION

** If there is no official name for the wetland or waterway, create a unique name (such as "Wetland 1" or "Tributary A").

(3) PROJECT PURPOSE AND NEED

Provide a statement of the purpose and need for the overall project.

Introduction

The applicant (Gramor Development, Inc.) is proposing to develop planned and essential street extensions and connections in conjunction with an associated supporting new mixed-use development to service the east Newberg market area on an approximately 33-acre site on the north side of Highway 99W in the City of Newberg, Yamhill County, Oregon. The project will serve the City's identified needs for a community-serving commercial retail services, single-family residences, and a new north-south street connection and related intersections in the east Newberg market area. If the project is not developed, it will force east Newberg residents to travel out-of-direction with increased congestion on existing streets for both general vehicular travel and to obtain basic retail services, will force residential development into less desirable locations, and will threaten the ability to retain significant regional employers, which are dependent upon additional transportation connections to move goods and services and attract clients.

Purpose and Need Statement:

The purpose of this project is to develop a north-south street connection and associated supporting mixed-use development to serve identified needs in the east Newberg market. The identified needs served by the project include the following: (1) a new north-south minor arterial street connection across Highway 99W at an existing intersection and as depicted in City of Newberg adopted plans; (2) community-serving commercial retail services with necessary visibility from and direct accessibility to both Highway 99W and a north-south minor arterial street that crosses Highway 99W; and (3) residential housing opportunities consistent with the City's identified housing needs; all located near the gateway to east Newberg.

North-South Street Connection to East Newberg

The City has identified the extension of Crestview Drive as an essential and planned component of the City's System Transportation System Plan, and construction of this road connection will be achieved as a condition of the private development requiring such new infrastructure. The need for the road has been well-documented and is anticipated to be even greater upon completion of the Bypass project currently under construction. According to the City Engineer, the need for traffic relief in this vicinity will become even more crucial due to the expected failure of the current Springbrook intersection after the Bypass is completed. Additionally, the City has identified the importance of providing adequate roads for movement of goods and access for tourism services and for retention of existing businesses. The location of the road, including its connection points, is dictated by the City's Transportation System Plan as well as the need to connect with Highway 99W at an existing access point. These locations are fixed due to safety and connectivity requirements. Construction of the road is expected to occur in conjunction with private development consistent with the City's acknowledged comprehensive plan.

The requirement to construct the road and to do so in a defined location has two important implications for the site. First, the designated road location cuts through the upslope portion of the largest consolidated wetland from north to south and will create a dam effect, significantly impacting hydrologic connection and likely reducing the size of the remaining wetland areas, which will be fragmented, isolated and surrounded by development, providing minimal wetland function on the site. Any proposed development must include this road along with its significant wetland impact. Second, due to limited availability of public funds, the road must be privately funded and constructed. As a result, the private development on-site must be sufficiently substantial to allow a return on investment and allow funding for this public improvement.

Supporting Associated Development

Commercial Retail Shopping Center

The portion of the subject property fronting on Highway 99W has been identified and zoned by the City for development of a commercial retail shopping center to support the needs of east Newberg. The City

(3) PROJECT PURPOSE AND NEED

annexed the subject property for this specific purpose, and it is the only undeveloped parcel left within the City's Urban Growth Boundary ("UGB") that could support the needed infrastructure. The location serves as the entry to Newberg as well as a gateway to the surrounding 'wine country'. The location along Highway 99W is crucial for both visibility and access for the retail center, and as outlined in the Alternatives Analysis, no other viable location for such a development is available that meets the project purpose. In order to adequately develop such a commercial center, the design must meet numerous criteria that cannot be met without the proposed wetland impacts as demonstrated in the Alternatives Analysis.

Residential
The City has documented its need for residential development. Employment growth is occurring and is further anticipated due to expansion of George Fox University as well as A-dec and other regional employers. The UGB is fixed, defining where residential development can occur. This portion of the subject property area is zoned for residential development. The existing residents to the north are in support of the proposed commercial development but desire the 'buffer' of a residential component between themselves and the commercial development. This is also a requirement of the annexation decision.

Medical Office
Doctors want a medical office with direct and quick access to Providence Newberg Medical Center, which is across Highway 99W from the subject property. Having a medical office within close proximity to a commercial center is also beneficial to both entities. A medical office also has the development advantage of being able to exist on its own, outside of the primary commercial retail center. The access requirements for entering the site require impacts to this portion of the wetland. Avoiding this portion of the wetland and eliminating the medical office from the proposal would reduce the number of uses provided by the development while leaving only a low functioning isolated wetland surrounded by development.
All of the above project elements have a documented need and need each other in order for the project to be practicable. In order to adequately develop each of the project elements of this multi-use development, significant wetland/waterway impacts are unavoidable. Opportunities for minimization have been explored but largely rejected due to the fact that any such avoided areas would be significantly compromised due to fragmentation and functions provided by such small areas surrounded by development would be minimal. Minimization has been provided to the extent possible in the western portion of the site.

(4) DESCRIPTION OF RESOURCES IN PROJECT AREA

A. Describe the existing physical and biological characteristics of each wetland or waterway. Reference the wetland and waters delineation report if one is available. Include the list of items provided in the instructions.

Based on soil, vegetation and hydrology data taken in the field, four wetlands (totaling approximately 6.95 acres) and one perennial drainage were delineated onsite. The drainage was a tributary to Springbrook Creek and contained within Wetland A. A second tributary was less defined and was also contained within Wetland A. The delineation was conducted and concurred with by DSL in 2013 (WD#13-0148). No vernal pools, bogs, fens, mature forested wetland, seasonal mudflats, or native wet prairies were identified in or near the project area. Wetlands were assessed using the Guidebook for Hydrogeomorphic (HGM)-based Assessment of Oregon Wetland and Riparian Sites Willamette Valley Ecoregion. The reference based method was used. Existing wildlife usage is low but present. The western portion of the property consists primarily of a large open meadow area which is regularly mowed. To the east is a managed tree farm. In the center is a perennial stream and riparian area which provides the highest quality habitat. Small mammals and birds certainly use the site while deer and coyote also likely move through. There is no fish access through the culvert under Highway 99W at the southern edge of the site. Downstream of the Hwy 99W culvert there is an existing pond, containing a dam also preventing fish passage.

Wetland A (A1,A2) (288,785sf) was primarily a PEM/slope wetland with areas of PSS and PFO. A 1,447lf perennial drainage was located within and directly adjacent to the wetland with an area of 6,589sf. Combined wetland/water area was 6.7 acres (295,374sf). The western portion of the wetland consisted of a hayed meadow community with dominant grasses of meadow foxtail (Alopecurus pratensis) in the swale

(4) DESCRIPTION OF RESOURCES IN PROJECT AREA

to the south and sweet vernal grass (Anthoxanthum odoratum) in the grassy areas further north. Vegetation in the swale and to the south was dominated by meadow foxtail, sweet vernal grass and bentgrass (Agrostis sp) as well as tall fescue (Festuca arundinacea). Oregon ash (Fraxinus latifolia), willow (Salix sp.) and Douglas hawthorn (Crataegus douglasii) saplings were also present. Soils met the Redox Dark Surface (F6) hydric soil indicator and soils were saturated at or near the surface. Further north and throughout the field, vegetation was similar, with sweet vernal grass more dominant. Sweet vernal grass is now considered a problematic species and vegetation was considered to meet hydrophytic wetland criteria where soils and hydrology criteria were also met. Wetland determination was based on presence of soils and hydrology. The source of hydrology in this area is associated with precipitation, a seasonal high water table and the stormwater outfall at the western property boundary. Despite below average precipitation patterns for the previous one and a half months, the groundwater table was high due to exceptionally high rainfall for the 3 months prior to that. It was also suggested by the property owner that an increase in hydrology onsite may have been due to the construction of the interchange of Springbrook Street and Crestview Drive offsite to the northwest.

The wetland boundary at the eastern edge of TL#13800 was defined by a ditch at the property boundary. Approximately 130 feet east of the property line at its south end a small berm built for vehicle access to the back barn area crosses the drainage and wetland area. The berm has been in place on the property well over fifty years. The drainage crosses the berm via a small culvert and continues to flow east as a ditch with adjacent wetland before flowing into the larger tributary. The plant community east of the berm transitions from meadow into a forested community that joins the riparian community along the main tributary. Where the community transitioned to a forested community vegetation was dominated by Oregon ash in the overstory with buttercup (Ranunculus sp) and sedge (Carex sp) species in the herbaceous layer. Pacific ninebark (Physocarpus capitatus) and Himalayan blackberry (Rubus armeniacus) were also observed. Soils met the F6 indicator and there was saturation to the surface. The upland sloped up with a thick canopy of planted apple species (Malus sp), as well as snowberry (Symphoricarpos albus), sword fern (Polystichum munitum) and Himalayan blackberry. Another community was observed to the north, along the western side of the larger tributary. This community was dominated by slough sedge (Carex obnupta) with soil meeting the F6 indicator and hydrology observed 7" from the surface. To the west was a grove of black locust trees (Robinia pseudoacacia) with blackberry and sword fern in the understory. Soils did not meet any hydric criteria and no hydrology indicators were observed.

Further north, along the tributary to Springbrook Creek, wetland was identified adjacent to the eastern bank with the western boundary defined by the steep top of bank. The wetland was forested with an Oregon ash canopy with creeping buttercup and camas (Camassia quamash) both observed in the understory. Soils met the F6 indicator and at the northern boundary the depleted matrix (F3) indicator was met. One distinct open grassy community was observed adjacent to the tributary. Vegetation consisted of lush grass dominated by bluegrass (Poa sp.) and meadow foxtail. Soils met the F6 indicator and water was observed 8" from the surface. The adjacent upland along the eastern wetland boundary was thick with Himalayan blackberry and Douglas hawthorn as well as Oregon ash, trailing blackberry (Rubus ursinus), hazelnut (Corylus cornuta) and sword fern. Although hydric soil criterion was met, vegetation and hydrology were not. The western top of bank was steep and well defined, with no adjacent wetland. Vegetation was thick Himalayan blackberry. Soil and hydrology criteria were not met. The northern boundary of the wetland was defined by a break in vegetation and soils. Based on the HGM Assessment method used, functions for this entire wetland were highest for sediment stabilization, nitrogen removal, primary production and songbird habitat.

Wetland B, at 189sf (0.004 acre) was a PFO/depressional wetland located in the northwest corner of the site. This area west of the culvert outlet is believed to be a remnant of the historical drainage. The wetland consisted of a mud bottom depressional area. Vegetation was dominated by Oregon ash canopy with some willow, rush (Juncus sp.) and meadow foxtail in the understory. Soils met the F6 hydric soil indicator and surface saturation was observed although it appeared to be perched. The adjacent upland was dominated by Himalayan blackberry, which was encroaching into the wetland, as well as meadow foxtail to the east. No hydrology or hydric soil indicators were observed. The remainder of the upland boundary was defined by topography, non-hydric soils and vegetation that was dominated by upland species such as

(4) DESCRIPTION OF RESOURCES IN PROJECT AREA

Oregon white oak (Quercus garryana), sword fern and common snowberry as well as Himalayan blackberry. Based on the HGM Assessment method used, functions for this entire wetland were highest for nitrogen removal with sediment stabilization and support of characteristic vegetation close behind.

The other two wetlands are isolated and located in the eastern portion of the property which is planted to small trees for a tree farm. These wetlands were delineated in 2007 and although no hydrology was indicated in 2013 their presence was based on vegetation and soils criteria. Wetland C is 13,147sf (0.3 acres) and classified as palustrine emergent slope wetland. The dominant vegetation in the emergent portion is meadow foxtail (Alopecurus pratensis) and bentgrass (Agrostis stolonifera). Wetland D is another isolated wetland (469sf) immediately below the first. It consists of a small depressional area with colonial bentgrass and meadow foxtail as the dominants. Functions for these wetlands were generally low with unsupported moderately high scores for invertebrate habitat support.

The onsite waterway (6,589sf) is a perennial tributary to Springbrook Creek with its onsite source being a culvert in the northwest portion of the property. An additional culvert entering the property from the west provided hydrology to a smaller tributary entirely surrounded by wetland. The waterway was mostly encompassed by Wetland A but defined a portion of the boundary. The narrow channel had vertical banks. Substrate was generally silt. Riparian conditions were a mix of reed canary grass at the upper end with a more intact forest including Oregon ash, buttercup and sedge as well as some fruit trees in the central portion. There used to be a small pond at the lower end of the site. The waterway exits the site through a culvert under Highway 99W. Assessed functions were included within the assessment for Wetland A.

No vernal pools, bogs, fens, mature forested wetlands, seasonal mudflats, or native wet prairies were identified on or near the project area.

B. Describe the existing navigation, fishing and recreational use of the waterway or wetland.

None

(5) PROJECT SPECIFIC CRITERIA AND ALTERNATIVES ANALYSIS

Describe project-specific criteria necessary to achieve the project purpose. Describe alternative sites and project designs that were considered to avoid or minimize impacts to the waterway or wetland.

The specific requirements for the project described above include:

NORTH-SOUTH STREET CONNECTION

o Provide a planned new north-south connection across Highway 99W for east Newberg

o Intersect Highway 99W at an existing, approved intersection

o Accommodates a minor arterial street with a 34-74 foot wide cross-section and projected capacity of 400-1000 vehicles per day

o Must be privately constructed and funded by proceeds from surrounding mixed-use development due to lack of currently available public funding

o Consistent with City's adopted Transportation System Plan including safety requirements

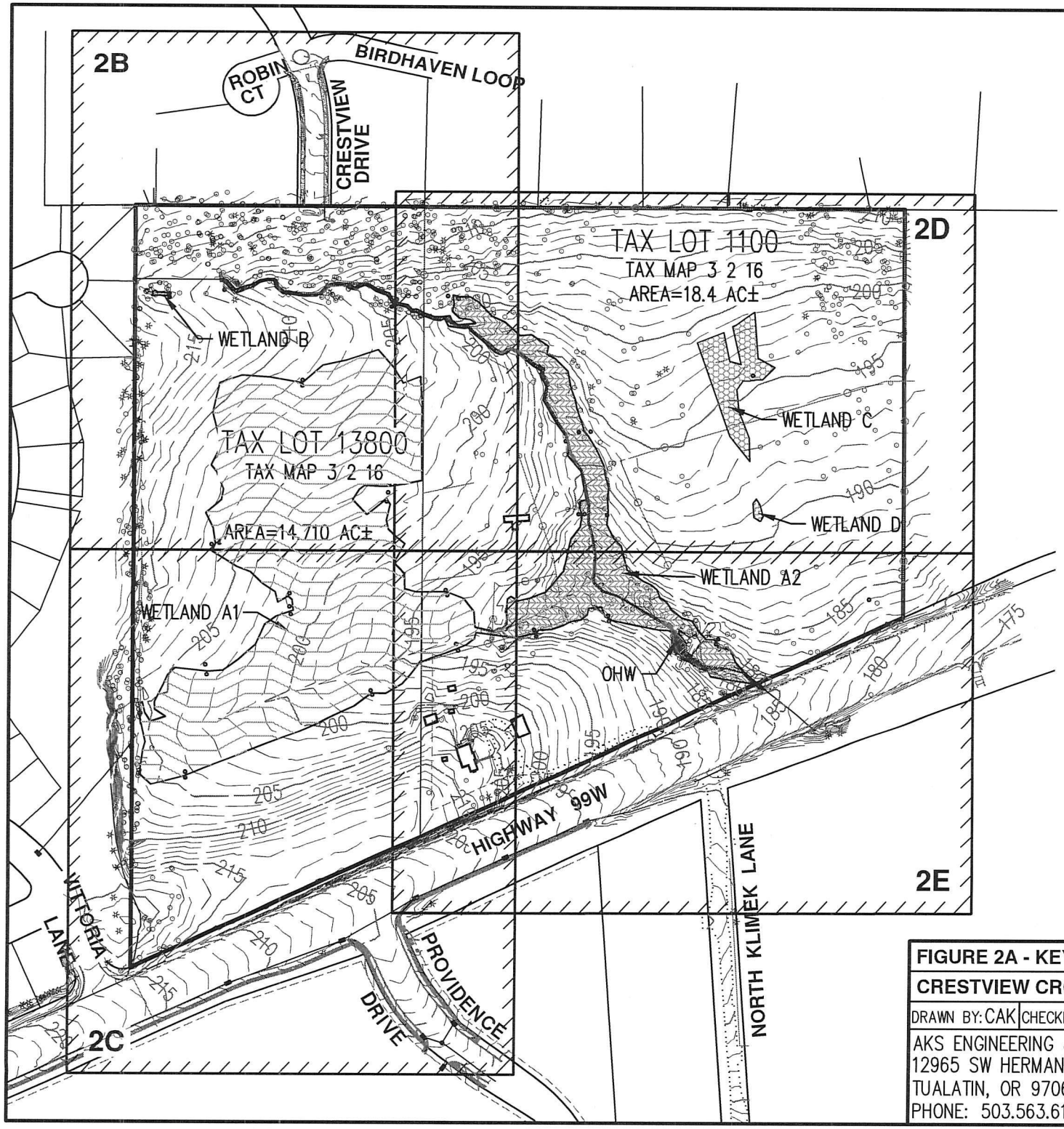
o Creates intersection and access to allow development of adjacent planned commercial land, consistent with the City's commercial land needs inventory and plan map designations

o Provides connectivity in northeast Newberg to serve residents and key business interests, including A-dec and Allison Inn and Spa

COMMERCIAL RETAIL SERVICES

o Highway 99W and intersecting street direct accessibility

o Highway 99W and intersecting street visual retail exposure



WETLAND A1

WETLAND A2

WETLAND B

WETLAND C

WETLAND D

ORDINARY HIGH WATER (OHW)

SCALE 1" = 250 FEET

250 0 100 150 200 250

04/21/2017

FIGURE 2A - KEYMAP - EXISTING CONDITIONS EXHIBIT

CRESTVIEW CROSSING

DRAWN BY: CAK	CHECKED BY: CEG	DWG: 3723 EXCON EXHIBIT	JOB: 3723

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD SUITE 100
TUALATIN, OR 97062 www.aks-eng.com
PHONE: 503.563.6151 FAX: 503.563.6152

Attachment 8: Supplemental Narrative received August 23, 2018

Table of Contents

Attachments

GENERAL INFORMATION

Property Owner and Applicant:	CG Commercial, LLC & VPCF Crestview, LLC 5285 Meadows Road, Suite 171 Lake Oswego, OR 97035 Contact: Jesse Nemec Phone: (503)-730-8620 Email: jnemec@jtsmithco.com
Applicant's Representative:	3J Consulting, Inc. 5075 SW Griffith Drive, Suite 150 Beaverton, OR 97005 Contact: Andrew Tull Phone: (503)-545-1907 Email: andrew.tull@3j-consulting.com
Legal Representative:	Jordan Ramis, PC 2 Centerpointe Drive, Suite 600 Lake Oswego, Oregon 97035 Contact: James Howsley Phone: (503) 598-7070 Email: jamie.howsley@jordanramis.com

SITE INFORMATION

Parcel Number:	3216AC 13800 &1100
Address:	OR 99W and Crestview Drive
Size:	33.13 acres
Zoning Designations:	R-1, R-2, C-2
Existing Use:	Vacant
Street Functional Classification:	OR-99W is classified as a Major Arterial and is an ODOT facility. Crestview Drive is classified as a Minor Arterial and is within the City's jurisdiction.
Surrounding Zoning:	The properties to the west are located within the City of Newberg and are zoned Low Density Residential (R-1). The properties to the south are zoned City Institutional (I) and County VLDR-2.5. The properties to the north are located within Yamhill county and are zoned VLDR-1. The properties to the east are located within Yamhill County and are zoned EF-20.

INTRODUCTION

APPLICANT'S REQUEST

The Applicant seeks approval of an application for a Type III Planned Unit Development (PUD) and Conditional Use Permit (CUP). This narrative has been prepared to describe the proposed development and to document compliance with the relevant sections of Newberg's Development Code.

SITE DESCRIPTION/SURROUNDING LAND USE

The subject site is 33.13 acres in size and is located north of OR-99W, south of Crestview Drive. The property is located within the City and is Zoned C-2, R-2, and R-1. The site has sloping topography which generally slopes towards the southeastern end of the property. The site currently contains numerous wetlands that will be preserved or mitigated, in compliance with Department of State Lands and Army Corps of Engineers standards.

PROPOSAL

The proposed Planned Community will create a mixture of commercial development, single-family homes, cottage style single-family homes, affordable housing and multi-family homes. The proposed development includes 18 single-family homes on large lots, 230 cottage homes, and 51 multi-family homes with modifications to the base zone's dimensions as permitted through the PUD process. The project will include a 4.4-acre parcel which has been created to allow for future commercial development.

The proposed neighborhood will feature active and passive open space areas for use by the residents. The proposed design includes a network of open spaces and wetlands, a thoughtfully linked pedestrian circulation system, and several pedestrian amenities. A neighborhood park is connected to the proposed development through a network of multi-use pathways which provide pedestrian circulation and recreation throughout the site. The development will utilize a network of public and private streets, as well as alleyways which will provide for additional on-street parking. Additional parking for residents has been provided in several off-street parking areas.

The project will include an affordable housing component. While affordable housing is not a required component of a submission for a Planned Unit Development or a Conditional Use Permit, the City does have an Affordable Housing Action Plan which identifies a significant shortage of affordably priced homes within the City and the Applicant said it would include this element. In recognition of the City's needs for affordable housing options, the Applicant proposes to create five percent of the single family detached homes with price reductions and deed restrictions designed to create perpetual affordability.

Affordable Housing is defined within the City's Affordable Housing Action Plan as when a family spends no more than 30% of its income for housing. The twelve single family homes created as part of this program will initially be marketed at rates which make them eligible for families earning less than the median family incomes as described within the Housing Action Plan's definitions of affordable housing. At closing, buyers will be required to sign covenants agreeing to limit the price of any future sale to a rate of appreciation which is tied to either the Area Median Family Income rate or another acceptable index of income. The Applicant plans to work with the Housing Authority of Yamhill County and the City's Affordable Housing

Ad Hoc Committee to refine the covenants which will be recorded with the sale of these units and to eventually find parties which may qualify for the purchase of affordable houses. The proposed affordable homes will require owner occupation and will be constructed at various locations throughout the development.

As proposed, the Applicant has included two alternative plats for the property, one of which shows attached, duplex styled housing on some of the lots. The alternative plat also shows a scenario with exclusively detached products. As the project moves through construction and as sales data is received, the applicant specifically requests flexibility in preparing the final plats for the various phases within the development to allow for the platting of either detached or attached homes. The adjustments necessary to the final plat to process these changes will not require significant modifications to lots and will not result in the addition or deletion of any lots within the plan.

APPLICABLE CRITERIA

The following sections of Newberg's and Development Code have been extracted as they have been deemed to be applicable to the proposal. Following each bold applicable criteria or design standard, the Applicant has provided a series of draft findings. The intent of providing code and detailed responses and findings is to document, with absolute certainty, that the proposed development has satisfied the approval criteria for a Planned Unit Development and a Conditional Use Permit.

TITLE 15 DEVELOPMENT CODE

Division 15.200 Land Use Applications

15.225 Conditional Use Procedures
15.225.010 Description and purpose.
A. It is recognized that certain types of uses require special consideration prior to their being permitted in a particular district. The reasons for requiring such special consideration involves, among other things, the size of the area required for the full development of such uses, the nature of the traffic problems incidental to operation of the use, the effect such uses have on any adjoining land uses and on the growth and development of the community as a whole.

Applicant's Facts and Findings: The proposal includes residential development in a commercial zoning district, requiring a conditional use permit. The applicable conditional use permit standards are addressed below.

This standard is met.

B. All uses permitted conditionally are declared to be possessing such unique and special characteristics as to make impractical their being included as outright uses in any of the various districts herein defined. The authority for the location and operation of the uses shall be subject to review and the issuance of a conditional use permit. The purpose of review shall be to determine that the characteristics of any such use shall be reasonably compatible with the type of uses permitted in surrounding areas, and for the further purpose of stipulating such conditions as may be reasonable so that the basic purposes of this code shall be served. Nothing construed herein shall be deemed to require the hearing body to grant a conditional use permit.

Applicant's Facts and Findings: The development of residential housing in the C-2 (Commercial) zoning district requires a conditional use permit. The Conditional Use Permit is used in this scenario to ensure that density, lot coverage, parking, vehicular access, pedestrian and bicycle connectivity, and other residential characteristics are developed to be compatible with surrounding land uses.

This standard is met.

1**5.225.020 Conditional use permit prerequisite to building.**

No building permit shall be issued when a conditional use permit is required by the terms of this code unless a permit has been granted by the hearing body and then only in accordance with the terms and conditions of the conditional use permit. Conditional use permits may be temporary or permanent for any use or purpose for which such permits are required or permitted by provisions of this code.

Applicant's Facts and Findings: This land use application proposes a permanent conditional use permit for residential development in the C-2 zoning district. Building permits have not been issued for this development.

This standard is met.

15.225.030 Application.

Application for a conditional use permit shall be accompanied by such information including, but not limited to, site and building plans, drawings and elevations, and operational data, as may be required by the director to allow proper evaluation of the proposal. The plan submittal requirements identified in NMC 15.220.030 and 15.445.190 shall be used as a guide. All proposals for conditional use permit shall be accompanied by a detailed project description which includes information such as the use, information relating to utilities, the number of employees, the hours of operation, traffic information, odor impacts, and other information needed to adequately describe the project.

Applicant's Facts and Findings: The proposed Conditional Use Permit includes all information necessary for a complete and thorough review.

This standard is met.

15.225.040 Concurrent design review.

If new buildings or structures are to be included as part of the application, the planning commission shall concurrently review the application for site design review in order to streamline the review process.

Applicant's Facts and Findings: The proposed Conditional Use Permit includes a proposed Planned Unit Development on the site with both single-family detached and multi-family housing. The review of the CUP is proposed concurrent with the PUD.

This standard is met.

15.225.050 Additional information.

In order to fully evaluate the proposal, additional information may be required. This includes but is not limited to traffic studies, noise studies, visual analysis, and other site impact studies as determined by the director or planning commission.

Applicant's Facts and Findings: The proposal includes a traffic study and materials display boards. Noise studies are not necessary based on the residential proposal.

This standard is met.

15.225.060 General conditional use permit criteria – Type III.

A conditional use permit may be granted through a Type III procedure only if the proposal conforms to all the following criteria:

A. The location, size, design and operating characteristics of the proposed development are such that it can be made reasonably compatible with and have minimal impact on the livability or appropriate development of abutting properties and the surrounding neighborhood, with consideration to be given to harmony in scale, bulk, coverage and density; to the availability of public facilities and utilities; to the generation of traffic and the capacity of surrounding streets, and to any other relevant impact of the development.

B. The location, design, and site planning of the proposed development will provide a convenient and functional living, working, shopping or civic environment, and will be as attractive as the nature of the use and its location and setting warrants.

C. The proposed development will be consistent with this code.

Applicant's Facts and Findings:

The proposed residential development on this site will allow a gradual transition from the residentially-developed properties to the north and west toward the 4.4-acre retail commercial designated pad adjacent to Highway 99W. The large-lot single-family detached properties immediately adjacent to the site will be buffered by large-lot single-family detached homes. Higher-density single-family detached housing will be located central to the site and adjacent to the park on the western property boundary. The two proposed multi-family buildings are in the southeast corner of the site, adjacent to Highway 99W and near the proposed retail commercial area to be developed at a later date.

This "stair step" approach to lot size and density will serve to ensure harmony in scale, bulk, coverage and density while the multi-family near commercial will provide a convenient and functional living, working and shopping environment. All homes in the site have access via sidewalk to Spring Meadow Park and further into the City of Newberg, satisfying the requirement that the conditional use permit provide a convenient and functional civic environment.

As shown on the included design and materials boards, the proposed development includes a high level of residential design to reflect the location of the development at the eastern entry to the City of Newberg. Materials such as wood, stone, brick and northwest-style siding are all utilized to blend the site to both the natural and built surrounding areas.

Findings are made regarding all applicable sections of the Newberg Development Code throughout this narrative. As identified the findings of each individual code section, the proposed Planned Unit Development and Conditional Use Permit meet all applicable sections of the Newberg Development Code.

This standard has been met.

15.225.080 Conditions.

The hearing body shall designate conditions in connection with the conditional use permit deemed necessary to secure the purpose of this chapter and the general conditional use permit criteria and require the guarantees and evidence that such conditions will be complied with. Such conditions may include:

A. Regulation of uses.

B. Special yards, spaces

C. Fences and walls.

D. Surfacing of parking areas to city specifications.

E. Street dedications and improvements (or bonds).

F. Regulation of points of vehicular ingress and egress.

G. Regulation of signs.

H. Landscaping and maintenance of landscaping.

I. Maintenance of the grounds.

J. Regulation of noise, vibration, odors or other similar nuisances.

K. Regulation of time for certain activities.

L. Time period within which the proposed use shall be developed.

M. Duration of use.

N. Such other conditions as will make possible the development of the city in an orderly and efficient manner in conformity with the Newberg comprehensive plan and the Newberg development code.

Applicant's Facts and Findings:

The Conditional Use Permit is required for residential development within the C-2 (Commercial) zoned portion of this site. The proposed residential development includes appropriate yards and spaces, parking areas, ingress and egress, landscaping, vehicular, pedestrian and bicycle connectivity and maintenance plans to ensure compliance with this Section of the Code.

The Applicant's proposed landscaping and screening is adequate for most of the surrounding lots with the exception of 1812 Leo Lane, tax lot 12100, located in Spring Meadow subdivision. The property in Spring Meadow subdivision will abut proposed lots 245 through 248. The Applicant has indicated that they intend to provide landscape plantings along the boundary of lots 245 to 248 to provide a vegetative buffer between the lower density Spring Meadows Subdivision and the higher density lots proposed along the project's boundary. The Applicant has indicated a willingness to accept a condition of approval requiring the final landscape plan to incorporate vegetative screening along these properties to buffer any perceived impacts from the construction of the new single-family homes.

Additional conditions are not warranted to secure the purpose of the Conditional Use Permit chapter.

This standard is met.

15.225.090 Development in accord with plans.

Construction, site development, and landscaping shall be carried out in substantial accord with the plans, drawings, conditions, sketches, and other documents approved as part of a final decision on a conditional use permit.

Applicant's Facts and Findings: It is feasible for the Applicant to carry out development of the site in substantial accord with the plans, drawings, sketches and other documents approved as part of this final decision on the Conditional Use Permit.

This standard is met.

15.225.100 Conditional use permit must be exercised to be effective.

A. A conditional use permit granted under this code shall be effective only when the exercise of the right granted thereunder shall be commenced within one year from the effective date of the decision. The director under a Type I procedure may grant an extension for up to six months if the applicant files a request in writing prior to the expiration of the approval and demonstrates compliance with the following:

1. **The land use designation of the property has not been changed since the initial use permit approval; and**
2. **The applicable standards in this code which applied to the project have not changed.**

B. In case such right is not exercised, or extension obtained, the conditional use permit decision shall be void. Any conditional use permit granted pursuant to this code is transferable to subsequent owners or contract purchasers of the property unless otherwise provided at the time of granting such permit.

Applicant's Facts and Findings: The Applicant acknowledges that the Conditional Use Permit approval is valid for one year if an extension is not requested. The Applicant intends to begin construction of the residential development on this site within one year of the approval date. If unforeseen delay is encountered, an extension request will be filed in writing prior to the expiration date.

This standard is met.

15.225.110 Preexisting uses now listed as a conditional use.

Where a use is legally established and continuing, but that use currently would require a conditional use permit, the use shall be considered as having a conditional use permit under the terms of the prior permit approval. Any nonconforming site development shall be subject to the provisions of Chapter 15.205 NMC.

Applicant's Facts and Findings: This proposal does not include a preexisting use now listed as a conditional use and, as such, this standard is not applicable.

15.240 PD Planned Unit Development Regulations

15.240.010 Purpose.

The city's planned unit development regulations are intended to:

A. Encourage comprehensive planning in areas of sufficient size to provide developments at least equal in the quality of their environment to traditional lot-by-lot development and that are reasonably compatible with the surrounding area; and

B. Provide flexibility in architectural design, placement and clustering of buildings, use of open space and outdoor living areas, and provision of circulation facilities, parking, storage and related site and design considerations; and

C. Promote an attractive, safe, efficient and stable environment which incorporates a compatible variety and mix of uses and dwelling types; and

D. Provide for economy of shared services and facilities; and

E. Implement the density requirements of the comprehensive plan and zoning districts through the allocation of the number of permitted dwelling units based on the number of bedrooms provided.

Applicant's Facts and Findings: The Applicant proposes a residential Planned Unit Development (PUD) meeting the stated purposes of the PUD regulations. This site is of sufficient size as to warrant comprehensive planning rather than traditional lot-by-lot development. The Applicant proposes flexibility in placement and clustering of buildings, use of open space, circulation, parking and density to promote a safe, attractive, efficient and stable residential environment adjacent to a highway facility and a future commercial development.

This standard is met.

15.240.020 General provisions.

A. Ownership. Except as provided herein, the area included in a proposed planned unit development must be in single ownership or under the development control of a joint application of owners or option holders of the property involved.

Applicant's Facts and Findings: The area included in the planned unit development is in single ownership.

This standard is met.

B. Processing Steps – Type III. Prior to issuance of a building permit, planned unit development applications must be approved through a Type III procedure and using the following steps:

1. **Step One – Preliminary Plans. Consideration of applications in terms of on-site and off-site factors to assure the flexibility afforded by planned unit development regulations is used to preserve natural amenities; create an attractive, safe, efficient, and stable environment; and assure reasonable compatibility with the surrounding area. Preliminary review necessarily involves consideration of the off-site impact of the proposed design, including building height and location.**

2. **Step Two – Final Plans. Consideration of detailed plans to assure substantial conformance with preliminary plans as approved or conditionally approved. Final plans need not include detailed construction drawings as subsequently required for a building permit.**

Applicant's Facts and Findings: The Applicant acknowledges the two-step process to PUD approval and submits materials in support of Step One- Preliminary Plans.

This standard is met.

C. Phasing. If approved at the time of preliminary plan consideration, final plan applications may be submitted in phases. If preliminary plans encompassing only a portion of a site under single ownership are submitted, they must be accompanied by a statement and be sufficiently detailed to prove that the entire area can be developed and used in accordance with city standards, policies, plans and ordinances.

Applicant's Facts and Findings: The applicant is proposing the following phasing:

Phase 1: This phase will include improvements to the site's frontage along E Portland Road and the installation of underground utility connections necessary to provide service to the site.

Phase 1a: This phase will include the extension of E Crestview Drive through the site and the construction of roadways and lots located east of the E Crestview Drive extension to public road D. This phase will also include the stormwater facility located south of public road B.

Phase 2: This phase will include the installation of the roadways, infrastructure and lots which are to be located west of the E Crestview extension.

Phase 3: This phase will include the lots located east of public road D to the property's eastern property boundary.

Phases B and C will be constructed after the construction of Phases 1 and 1A and may be constructed independently of the subdivision lots and by other entities or assigns.

Due to the size of the plan and the complexity of the various components within the development, the Applicant has requested that the City grant the developer a ten (10) year window for the construction of the infrastructure shown within the plan's phases with opportunities for up to five (5) one (1) year extensions following the approval of the preliminary plat. While the Applicant does not intend to wait for ten (10) years to allow for the construction of the proposed improvements, the flexibility afforded by the ten (10) year schedule with the requested extensions will allow for the project's various components to be sensitive to changing market conditions.

This standard is met.

D. Lapse of Approval. If the applicant fails to submit material required for consideration at the next step in accordance with the schedule approved at the previous step or, in the absence of a specified schedule, within one year of such approval, the application as approved at the previous step expires. If the applicant fails to obtain a building permit for construction in accordance with the schedule as previously approved, or in the absence of a specified schedule, within three years of a preliminary plan approval, preliminary and final plan approvals expire. Prior to expiration of plan approval at any step, the hearing authority responsible for approval may, if requested, extend or modify the schedule, providing it is not detrimental to the public interest or contrary to the findings and provisions specified herein for planned unit developments. Unless the preliminary plan hearing authority provides to the contrary, expiration of final plan approval of any phase automatically renders all phases void that are not yet finally approved or upon which construction has not begun.

Applicant's Facts and Findings: The Applicant acknowledges the process for lapse of PUD approval and intends to follow through with development of the site based on the original approval timeline.

This standard is met.

E. Resubmittal Following Expiration. Upon expiration of preliminary or final plan approval, a new application and fee must be submitted prior to reconsideration. Reconsideration shall be subject to the same procedures as an original application.

Applicant's Facts and Findings: The Applicant acknowledges the process for resubmittal following expiration.

This standard is met.

F. Density. Except as provided in NMC 15.302.040 relating to subdistricts, dwelling unit density provisions for residential planned unit developments shall be as follows:

1. **Maximum Density.**
    a. **Except as provided in adopted refinement plans, the maximum allowable density for any project shall be as follows:**

District	Density Points
R-1	175 density points per gross acre, as calculated in subsection (F)(1)(b) of this section
R-2	310 density points per gross acre, as calculated in subsection (F)(1)(b) of this section
R-3	640 density points per gross acre, as calculated in subsection (F)(1)(b) of this section
RP	310 density points per gross acre, as calculated in subsection (F)(1)(b) of this section

C-1	**As per required findings**
C-2	**As per required findings**
C-3	**As per required findings**

b. Density point calculations in the following table are correlated to dwellings based on the number of bedrooms, which for these purposes is defined as an enclosed room which is commonly used or capable of conversion to use as sleeping quarters. Accordingly, family rooms, dens, libraries, studies, studios, and other similar rooms shall be considered bedrooms if they meet the above definitions, are separated by walls or doors from other areas of the dwelling and are accessible to a bathroom without passing through another bedroom. Density points may be reduced at the applicant's discretion by 25 percent for deed-restricted affordable dwelling units as follows:

Density Point Table

Dwelling Type	Density Points: Standard Dwelling	Density Points: Income-Restricted Affordable Dwelling Units
Studio and Efficiency	**12**	**9**
One-bedroom	**14**	**11**
Two-bedroom	**21**	**16**
Three-bedroom	**28**	**21**
Four or more bedroom	**35**	**26**

The density points in the right-hand column are applicable to income-restricted affordable dwelling units, provided the dwelling units meet the affordability criteria under NMC 15.242.030 regarding affordable housing requirements for developments using the flexible development standards.

2. **Approved Density. The number of dwelling units allowable shall be determined by the hearing authority in accordance with the standards set forth in these regulations. The hearing authority may change density subsequent to preliminary plan approval only if the reduction is necessary to comply with required findings for preliminary plan approval or if conditions of preliminary plan approval cannot otherwise be satisfied.**
3. **Easement Calculations. Density calculations may include areas in easements if the applicant clearly demonstrates that such areas will benefit residents of the proposed planned unit development.**
4. **Dedications. Density calculations may include areas dedicated to the public for recreation or open space.**
5. **Cumulative Density. When approved in phases, cumulative density shall not exceed the overall density per acre established at the time of preliminary plan approval.**

Applicant's Facts and Findings: This narrative includes a Density Matrix, identifying the total number of density points available to this site vs. the total number of density points necessary to develop the site as proposed. The C-2 zoning district is proposed at the same maximum allowable density as the R-3 zoning district, or 640 points per acre. The

total number of density points available to this site, as detailed on the Density Matrix, is 11,859.85. The total number and type of residential dwelling units proposed requires 9,085 density points, which is less than the number of points available to this site.

This standard is met.

G. Buildings and Uses Permitted. Buildings and uses in planned unit developments are permitted as follows:

1. **R-1, R-2, R-3 and RP Zones.**
   a. **Buildings and uses permitted outright or conditionally in the use district in which the proposed planned unit development is located.**
   b. **Accessory buildings and uses.**
   c. **Duplexes.**
   d. **Dwellings, single, manufactured, and multifamily.**
   e. **Convenience commercial services which the applicant proves will be patronized mainly by the residents of the proposed planned unit development.**

Applicant's Facts and Findings: The proposal includes single-family detached and multi-family residential uses within the R-1 and R-2 portions of this site, both of which are permitted by subsection d. above.

This standard is met.

2. **C-1, C-2 and C-3 Zones.**
   a. **When proposed as a combination residential-commercial planned unit development, uses and buildings as listed in subsection (G)(1) of this section and those listed as permitted outright or conditionally in the use district wherein the development will be located.**
   b. **When proposed as a residential or commercial planned unit development, uses and buildings as permitted outright or conditionally in the use district wherein the development will be located.**

Applicant's Facts and Findings: The proposed Planned Community will create a mixture of commercial development, single-family homes, cottage style single-family homes, affordable housing and multi-family homes. All uses proposed are permitted either outright or conditionally for the C-2 portion of this property, in compliance with subsections a. and b. above.

This standard is met.

3. **M-1, M-2 and M-3 Zones. Uses and buildings as permitted outright or conditionally in the use district wherein the development will be located.**

4. **M-4 Zone. Uses and buildings as permitted outright or conditionally in the use district wherein the development will be located. Proposed sites, structures and uses must work together to support a common theme, product or industry. Applicants for an industrial planned development in M-4 must demonstrate conformance with any adopted master plan for the subject area and provide a plan describing how the proposed structures and uses will work together to support a common theme, product or industry. Prior to subdivision, covenants must limit occupancy to the types of industrial and related uses identified in the development plan.**

Applicant's Facts and Findings: No part of this site is located within the M-1, M-2, M-3 or M-4 zoning district and, as such, this standard is not applicable.

H. Professional Coordinator and Design Team. Professional coordinators and design teams shall comply with the following:

1. **Services. A professional coordinator, licensed in the State of Oregon to practice architecture, landscape architecture or engineering, shall ensure that the required plans are prepared. Plans and services provided for the city and between the applicant and the coordinator shall include:**
   a. **Preliminary design;**
   b. **Design development;**
   c. **Construction documents, except for single-family detached dwellings and duplexes in subdivisions; and**
   d. **Administration of the construction contract, including, but not limited to, inspection and verification of compliance with approved plans.**
2. **Address and Attendance. The coordinator or the coordinator's professional representative shall maintain an Oregon address, unless this requirement is waived by the director. The coordinator or other member of the design team shall attend all public meetings at which the proposed planned unit development is discussed.**
3. **Design Team Designation. Except as provided herein, a design team, which includes an architect, a landscape architect, engineer, and land surveyor, shall be designated by the professional coordinator to prepare appropriate plans. Each team member must be licensed to practice the team member's profession in the State of Oregon.**
4. **Design Team Participation and Waiver. Unless waived by the director upon proof by the coordinator that the scope of the proposal does not require the services of all members at one or more steps, the full design team shall participate in the preparation of plans at all three steps.**
5. **Design Team Change. Written notice of any change in design team personnel must be submitted to the director within three working days of the change.**
6. **Plan Certification. Certification of the services of the professionals responsible for particular drawings shall appear on drawings submitted for consideration and shall be signed and stamped with the registration seal issued by the State of Oregon for each professional so involved. To assure comprehensive review by the design team of all plans for compliance**

with these regulations, the dated cover sheet shall contain a statement of review endorsed with the signatures of all designated members of the design team.

Applicant's Facts and Findings: This Planned Unit Development application includes all of the required plans and documents. A professional engineer in the State of Oregon has ensured that all required plans are prepared, certified as necessary and submitted. The Applicant acknowledges the process for a design team change.

This standard is met.

I. Modification of Certain Regulations. Except as otherwise stated in these regulations, fence and wall provisions, general provisions pertaining to height, yards, area, lot width, frontage, depth and coverage, number of off-street parking spaces required, and regulations pertaining to setbacks specified in this code may be modified by the hearing authority, provided the proposed development will be in accordance with the purposes of this code and those regulations. Departures from the hearing authority upon a finding by the engineering director that the departures will not create hazardous conditions for vehicular or pedestrian traffic. Nothing contained in this subsection shall be interpreted as providing flexibility to regulations other than those specifically encompassed in this code.

Applicant's Facts and Findings: This Planned Unit Development proposal seeks to modify the lot size standards of the R-1, R-2 and C-2 zoning districts. The PUD further seeks to modify the minimum lot sizes, minimum lot dimensions, minimum lot frontages, maximum lot and parking area coverage and minimum setback standards. The proposed modifications are shown on the attached preliminary site plan and plat and are intended to allow for the development of smaller residential lots, allowing a lower price-point than homes built in similar zoning districts. The creativity in site design also allows for the provision of parks and open space facilities exceeding those of a typical subdivision. And finally, varying the standards allows for the construction of a street network exceeding that of a typical residential subdivision.

The proposed modifications are in accordance with the purposes of this code as they support the efficient development of land within the City Limits, provide functional, attractive housing for the residents of the City and include safe, convenient, efficient transportation design.

This standard is met.

J. Lot Coverage. Maximum permitted lot and parking area coverage as provided in this code shall not be exceeded unless specifically permitted by the hearing authority in accordance with these regulations.

Applicant's Facts and Findings: The maximum permitted lot coverage shall be maintained within the proposed development. For the R-1 lots along the northern boundary, these lots are approximately 8,165 sf. The driveways on these lots will be approximately 20x20

feet or 400 sf. The homes within these areas will likely be two stories with first floor footprints within the 1,200-1,700 range. The maximum permitted lot coverage within the R-1 zoning district is 30% for two story homes or 40% for single story homes. Building footprints and overall lot coverage can be verified at the time of building permit issuance The anticipated coverage for these lots will be less than the stated maximum.

The Applicant proposes a coverage of up to 70% throughout the R-2 single family portions of the plan area. The smaller lot sizes allow for the provision of a more affordable housing stock and the increased parking ensures an adequate supply for residents and visitors. The lots within the R-2 zoned portions of the plan range in size from 1,474 to 2,010 depending upon product size and lot width. The first floors of most of the plans proposed for the lots will range between 520 sf to 881 sf, depending upon the width of the lot. For a 1,474 sf lot, a 17 foot wide home will likely be provided. These homes will have a first floor area of approximately 595 sf. The parking area for these lots will be approximately 12x20 feet, or 240 sf. The overall lot coverage for these lots, with parking and the anticipated first floor area will be approximately 835 sf or 56.6%.

For a 2,010 sf lot within the R-2 zone, a 25 foot wide house will likely be located on a 30 foot wide lot. The typical anticipated footprint for these lots will be approximately 881 sf. The parking area for these houses will consist of a 20x20 foot wide driveway, or 400 sf. The total anticipated lot coverage and parking total would be approximately 1,281 sf or 63.7%.

For a 1,742 sf lot within the R-2 zone, a 21 foot wide house will likely be located on a 26 foot wide lot. The typical anticipated footprint for these lots will be approximately 748 sf. The parking area for these houses will consist of a 20x20 foot wide driveway, or 400 sf. The total anticipated lot coverage and parking total would be approximately 1,148 sf or 65.9%.

While there may be some variation in the amount of coverage provided per lot, the Applicant's request for a blanket 70% allowance for lot coverage should be sufficient to allow for adequate area for parking and building areas. The lot coverage for each individual lot can be verified at the time of building permit submission. The Applicant requests these exceptions be specifically permitted by the Planning Commission in reviewing the Planned Unit Development and Conditional Use Permit request.

This standard is met.

K. Height. Unless determined by the hearing authority that intrusion of structures into the sun exposure plane will not adversely affect the occupants or potential occupants of adjacent properties, all buildings and structures shall be constructed within the area contained between lines illustrating the sun exposure plane (see Appendix A, Figure 8 and the definition of "sun exposure plane" in NMC 15.05.030). The hearing authority may further modify heights to:

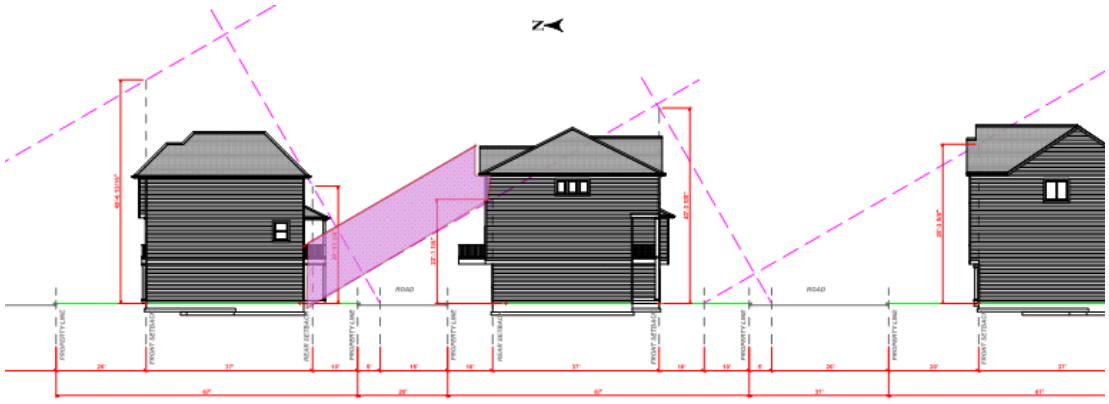
1. **Protect lines of sight and scenic vistas from greater encroachment than would occur as a result of conventional development.**
2. **Protect lines of sight and scenic vistas.**
3. **Enable the project to satisfy required findings for approval.**

Applicant's Facts and Findings:

This proposed residential Planned Unit Development includes three story single-family residential structures with reduced setbacks. This development type allows the developer to provide the housing at an approachable price point, complete the much-needed transportation system for the area and provide parks and open spaces for the residents of this and neighboring developments.

The Applicant has prepared a sun exposure diagram showing that some of the north/south oriented lots may have slight impacts on the first floors of the proposed homes. Impacts due to shade along the north/south oriented lots are anticipated to be slightly experienced on lots 36-66 and on lots 81&82. The east/west oriented lots appear to be exempt from these requirements as the sun should have full access from the south on both these lots front and rear yards.

The slight impacts to the lots identified herein are illustrated within the diagram below however the impacts to the homes is limited to first floors, in areas where garages will be located.



As described elsewhere within this narrative, the benefits of housing configured within this manner provides numerous benefits to the future residents and provides opportunities for the creation of a highly efficient and well-designed community. The Applicant's proposal for closely located buildings offers numerous benefits to the community as a whole and allows the site to meet the City's other code requirements for density, site configuration, parking, and access. Because the impacts of the shade will be limited to only the ground floors of a few properties within the plan and because the Applicant has compensated for these impacts with the provision of a significant amount of open space area, parks, and site amenities, the residents of this community will not experience any adverse effects.

L. Dedication, Improvement and Maintenance of Public Thoroughfares. Public thoroughfares shall be dedicated, improved and maintained as follows:

1. **Streets and Walkways. Including, but not limited to, those necessary for proper development of adjacent properties. Construction standards that minimize maintenance and protect the public health and safety, and setbacks as specified in NMC 15.410.050, pertaining to special setback requirements to planned rights-of-way, shall be required.**
2. **Notwithstanding subsection (L)(1) of this section, a private street may be approved if the following standards are satisfied.**

   a. An application for approval of a PUD with at least 50 dwelling units may include a private street and the request for a private street shall be supported by the evidence required by this section. The planning commission may approve a private street if it finds the applicant has demonstrated that the purpose statements in NMC 15.240.010(A) through (D) are satisfied by the evidence in subsections (L)(2)(a)(i) through (v) of this section.

      i. A plan for managing on-street parking, maintenance and financing of maintenance of the private street, including a draft reserve study showing that the future homeowners association can financially maintain the private street;

      ii. A plan demonstrating that on- and off-street parking shall be sufficient for the expected parking needs and applicable codes;

      iii. Proposed conditions, covenants and restrictions that include a requirement that the homeowners association shall be established in perpetuity and shall continually employ a community management association whose duties shall include assisting the homeowners association with the private street parking management and maintenance, including the enforcement of parking restrictions;

      iv. Evidence that the private street is of sufficient width and construction to satisfy requirements of the fire marshal and cityengineer; and

      v. The PUD shall be a Class I planned community as defined in ORS Chapter 94.

   b. If the PUD is established, the homeowners association shall provide an annual written report on the anniversary date of the final approval of the PUD approval to the community development director that includes the following:

      i. The most recent reserve study.

      ii. The name and contact information for the retained community management association.

      iii. A report on the condition of the private street and any plans for maintenance of the private street.
3. **Easements. As are necessary for the orderly extension of public utilities and bicycle and pedestrian access.**

Applicant's Facts and Findings: This proposed PUD includes a mixture of public and private streets. As identified in subsection L.2 above, private streets may be approved if:

- a PUD proposes at least 50 dwelling units,
- has provided a plan for on-street parking, maintenance and financing of maintenance of the private street,

- demonstrates sufficient parking,
- includes CCRs addressing the private street,
- is constructed to proper standards, and
- the PUD is a Class I planned community as defined in ORS Ch. 94.

The proposal meets all of the criteria for private streets identified above. The purpose statements in NMC 15.240.010(A) through (D) include:

- encourage comprehensive planning in areas of sufficient size…
- provide flexibility in architectural design, placement and clustering of buildings, use of open space and outdoor living areas, and provision of circulation facilities, parking, storage and related site and design considerations
- promote an attractive, safe, efficient and stable environment…and
- provide for economy of shared services and facilities.

The proposed PUD is of a sufficient size to warrant comprehensive planning that is similar to traditional lot-by-lot developments in the same zoning and compatible with the surrounding environment. The inclusion of private streets makes it feasible to preserve more of the natural areas on the site. The housing design and placement, open space and outdoor living areas, circulation, parking and storage on this site are all designed to work together to form a cohesive neighborhood feel. The shared services and facilities within the development include the private streets, parking areas and open spaces. The adjacent commercial development that will be added in the future will allow for shared services as well.

All public streets are designed to City standards and proposed to be dedicated to the City.

The proposal includes all of the necessary materials to approve both the public and private streets.

This standard is met.

M. Underground Utilities. Unless waived by the hearing authority, the developer shall locate all on-site utilities serving the proposed planned unit development underground in accordance with the policies, practices and rules of the serving utilities and the Public Utilities Commission.

Applicant's Facts and Findings: The proposal includes all on-site utilities located underground.

This standard is met.

N. Usable Outdoor Living Area. All dwelling units shall be served by outdoor living areas as defined in this code. Unless waived by the hearing authority, the outdoor living area must equal at least 10 percent of the gross floor area of each unit. So long as outdoor living area is available to each dwelling unit, other outdoor living space may be offered for dedication to the city, in fee or easement, to be incorporated in a city-approved recreational facility. A portion or all of a dedicated area may be included in calculating density if permitted under these regulations.

Applicant's Facts and Findings: All dwelling units are served by outdoor living areas equal to at least 10 percent of the gross floor area of each unit. The single-family units will have outdoor living on individual lots. The multi-family will utilize a combination of balconies and porches as well as common outdoor living areas located throughout the overall planned unit development. All proposed dwelling units will be able to provide at least 10% of the gross floor area in outdoor living space. Outdoor living spaces for each unit can be verified at the time of building permit issuance.

This standard is met.

O. Site Modification. Unless otherwise provided in preliminary plan approval, vegetation, topography and other natural features of parcels proposed for development shall remain substantially unaltered pending final plan approval.

Applicant's Facts and Findings: This site contains several wetlands which will be a combination of preserved on site and mitigated off-site. The permitting for this is occurring separate from the land use review. This is the only substantial change to the natural features of the site.

This standard is met.

P. Completion of Required Landscaping. If required landscaping cannot be completed prior to occupancy, or as otherwise required by a condition of approval, the director may require the applicant to post a performance bond of a sufficient amount and time to assure timely completion.

Applicant's Facts and Findings: The Applicant acknowledges the possibility of a performance bond being required to assure timely completion of any delayed landscaping.

This standard is met.

Q. Design Standards. The proposed development shall meet the design requirements for multifamily residential projects identified in NMC 15.220.060. A minimum of 40 percent of the required points shall be obtained in each of the design categories.

Applicant's Facts and Findings: There are 23 possible site design points and 23 possible building design points, therefore, this project must obtain 9 each site design and building design points (40% of each).

<u>Site Design:</u>
Consolidated green space: 3 points
Parking lot to the back of project when viewed from 99W: 3 points
Good-quality coordinated site landscaping: 2 points
Landscaped Edges of Parking Lots: 2 points
Street trees: 1 point

Entry Accents to mark major entries to multi-family buildings: 1 point
Appropriate Outdoor Lighting: 1 point
Total Site Design Points: 13

Building Design:
Respect scale and patterns of nearby buildings by reflecting architectural styles, building details, materials and scale of existing buildings: 3 points
Break up large buildings into bays/vary planes at least every 50 feet: 3 points
Provide variation in repeated units using color, porches, balconies, windows, railings, building materials and form, alone or in combination: 3 points
Building materials: Wood or wood-like siding applied horizontally or vertically as board and batten at entry ways; shingles, as roofing; wood or wood-like sash windows; and wood or wood-like trim: 4 points
A porch at every main entry: 2 points
Total Building Design Points: 15

This standard is met as described above.

15.240.030 Preliminary plan consideration – Step one.

A. Preapplication Conference. Prior to filing an application for preliminary plan consideration, the applicant or coordinator may request through the director a preapplication conference to discuss the feasibility of the proposed planned unit development and determine the processing requirements.

Applicant's Facts and Findings: The Applicant attended a pre-application conference with the City on March 14, 2018.

This standard is met.

B. Application. An application, with the required fee, for preliminary plan approval shall be made by the owner of the affected property, or the owner's authorized agent, on a form prescribed by and submitted to the director. Applications, accompanied by such additional copies as requested by the director for purposes of referral, shall contain or have attached sufficient information as prescribed by the director to allow processing and review in accordance with these regulations. As part of the application, the property owner requesting the planned development shall file a waiver stating that the owner will not file any demand against the city under Ballot Measure 49, approved November 6, 2007, that amended ORS Chapters 195 and 197 based on the city's decision on the planned development.

Applicant's Facts and Findings: This land use application includes all required fees, forms and documentation for review of the Planned Unit Development and Conditional Use requests.

This standard is met.

C. Type III Review and Decision Criteria. Preliminary plan consideration shall be reviewed through the Type III procedure. Decisions shall include review and recognition of the potential impact of the entire development, and preliminary approval shall include written affirmative findings that:

1. **The proposed development is consistent with standards, plans, policies and ordinances adopted by the city; and**

Applicant's Facts and Findings: As described in this narrative, the proposed development is consistent with standards, plans, policies and ordinances adopted by the City.

This standard is met.

2. **The proposed development's general design and character, including but not limited to anticipated building locations, bulk and height, location and distribution of recreation space, parking, roads, access and other uses, will be reasonably compatible with appropriate development of abutting properties and the surrounding neighborhood; and**

Applicant's Facts and Findings: As discussed previously, the proposed PUD includes larger lot single-family detached homes along the northern property line, separating this development from a single-family detached development. Lot sizes will then decrease as one heads south into the site, with two multi-family residential buildings constructed in the southeast corner of the site. The homes on the site will all be designed and constructed so as to provide a cohesive design and character to the entire development. The distribution of recreation space, parking, roads, access and other uses is reasonably compatible with the appropriate development of abutting properties and the surrounding neighborhood.

This standard is met.

3. **Public services and facilities are available to serve the proposed development. If such public services and facilities are not at present available, an affirmative finding may be made under this criterion if the evidence indicates that the public services and facilities will be available prior to need by reason of:**
   a. **Public facility planning by the appropriate agencies; or**
   b. **A commitment by the applicant to provide private services and facilities adequate to accommodate the projected demands of the project; or**
   c. **Commitment by the applicant to provide for offsetting all added public costs or early commitment of public funds made necessary by the development; and**

Applicant's Facts and Findings: Public services and facilities are either available to serve the proposed development or can be reasonably conditioned to be installed and provided. The public improvement plans included with the land use submittal demonstrate full public facilities will be provided, including water, sanitary sewer, storm sewer,

electricity and natural gas. Public services are currently available to serve this site, including police, fire, garbage/recycling and US Mail.

This standard is met.

4. **The provisions and conditions of this code have been met; and**

Applicant's Facts and Findings: As discussed in detail in this narrative, the provisions and conditions of this code have been met.

This standard is met.

5. **Proposed buildings, roads, and other uses are designed and sited to ensure preservation of features, and other unique or worthwhile natural features and to prevent soil erosion or flood hazard; and**

Applicant's Facts and Findings: The buildings, roads and other site features are located so as to preserve several wetlands and natural features and to prevent soil erosion or flood hazard.

This standard is met.

6. **There will be adequate on-site provisions for utility services, emergency vehicular access, and, where appropriate, public transportation facilities; and**

Applicant's Facts and Findings: The site is well provisioned for utility services, emergency vehicular access and, if the opportunity arises in the future, public transportation facilities. The public roadways are designed to public street standards and the private streets are designed to provide vehicular access. The application includes a letter from Tualatin Valley Fire & Rescue indicating that the private streets are adequate for emergency vehicle access.

This standard is met.

7. **Sufficient usable recreation facilities, outdoor living area, open space, and parking areas will be conveniently and safely accessible for use by residents of the proposed development; and**

Applicant's Facts and Findings: The proposed neighborhood will feature active and passive open space areas for use by the residents. The proposed design includes a civic use park which has been envisioned to provide space for community events as well as a space for featured local vendors. A smaller neighborhood park is connected to the proposed development through a network of multi-use pathways which provide pedestrian circulation and recreation throughout the site. The proposal includes multiple open spaces, most of which include a trail system within. The multi-family housing has common outdoor living areas, as well as balconies and patios for some

individual units. The single-family housing has outdoor living areas adjacent to the homes.

This standard is met.

8. **Proposed buildings, structures, and uses will be arranged, designed, and constructed so as to take into consideration the surrounding area in terms of access, building scale, bulk, design, setbacks, heights, coverage, landscaping and screening, and to assure reasonable privacy for residents of the development and surrounding properties.**

Applicant's Facts and Findings: This site has been designed reflect the surrounding area and to provide a reasonable level of privacy for residents of the development and surrounding properties. Large lot single-family detached dwellings are proposed along the northern property line, separating this development from another large lot residential development, easing the transition from lower density to higher. The site is buffered from the residential developments to the west by the park that is adjacent to the site. The site as a whole is designed to provide safe and convenient access. The building scale, bulk, design, setbacks, heights, coverage, landscaping and screening are designed to provide harmony within the site while respecting and reflecting design patterns utilized in other nearby developments.

This standard is met.

D. Conditions. Applications may be approved subject to conditions necessary to fulfill the purpose and provisions of these regulations.

Applicant's Facts and Findings: The Applicant acknowledges the possibility of conditions imposed to fulfill the purpose and provisions of the PUD regulations. However, based on the findings identified in this narrative, the Applicant finds the proposal in full compliance with the PUD standards.

This standard is met.

15.240.040 Final plan consideration – Step two.

A. Application. An application, with the required fee, for final plan approval shall be submitted in accordance with the provisions of this code, and must be in compliance with all conditions imposed and schedules previously prescribed.

B. Referral. Referral of final plans and supportive material shall be provided to appropriate agencies and departments.

C. Decision Type I Procedure. The final plan consideration shall be reviewed through the Type I procedure. Upon receipt of the application and fee, final plans and required supportive material, the director shall approve, conditionally approve or deny the application for final plan approval. The decision of the director to approve or deny the application shall be based on written findings of

compliance or noncompliance with approved preliminary plans and city standards, plans, policies and ordinances. Minor variations from approved preliminary plans may be permitted if consistent with the general character of the approved preliminary plans.

D. Conditions. Applications may be approved subject to such conditions as are necessary to fulfill the purpose and provisions of this code.

1. **Preparation and Signatures. A duly notarized performance agreement binding the applicant, and the applicant's successors in interest, assuring construction and performance in accordance with the approved final plans shall be prepared by the city and executed by the applicant and city prior to issuance of a building permit.**
2. **Return. Unless an executed copy of the agreement is returned to the director within 60 days of its delivery to the applicant, final plan approval shall expire, necessitating the reapplication for final plan reapproval.**
3. **Filing. The director shall file a memorandum of the performance agreement with the Yamhill County recorder.**
4. **Improvement Petitions and Dedications. Improvement petitions and all documents required with respect to dedications and easements shall be submitted prior to completion of the agreement.**
5. **Project Changes. The director may permit project changes subsequent to execution of the agreement upon finding the changes substantially conform to final approved plans and comply with city standards, plans, policies and ordinances. Other modifications are subject to reapplication at the appropriate step.**
6. **Compliance. Compliance with this section is a prerequisite to the issuance of a building permit.**

Applicant's Facts and Findings: The Applicant acknowledges the process for Step Two of a PUD review.

This standard is met.

Division 15.300 Zoning Districts

15.305 Zoning Use Table

Use	R-1	R-2	C-2
Residential Uses			
Dwelling, single-family detached	P(2)	P	C(4)
Dwelling, multifamily	C	P	C(4)
Parks and Open Spaces			
Open Space	P	P	P
Park	P	P	P

Notes.

(2) Limited to one per lot as a permitted use. More than one per lot allowed only through a conditional use permit or planned unit development, subject to density limits of NMC 15.405.010(B).

(4) The permitted density shall be stated on the conditional use permit.

Applicant's Facts and Findings: The proposed residential development requires a conditional use permit because a part of the site, including the area proposed for multi-family residential, is within the C-2 zoning district. Single-family residential development is permitted in the R-1 and R-2 zones. The Planned Unit Development proposes residential development, both single-family and multi-family, on all areas of the site (zoned R-1, R-2 and C-2).

As this application includes a conditional use permit application, this standard is met.

15.356 Bypass Interchange (BI) Overlay

Applicant's Facts and Findings: The frontage of this site is adjacent to the Bypass Interchange (BI) Overlay. While the provisions of the BI Overlay may apply to this site, the provisions only speak to permitted, conditional and prohibited uses. Residential development is a permitted use in the R-1 and R-2 zoning districts and a conditional use in the C-2 zoning district. Residential development is not prohibited in the BI Overlay.

This standard is met.

Division 15.400 Development Standards

15.405 Lot Requirements

15.405.010 Lot area – Lot areas per dwelling unit.

A. In the following districts, each lot or development site shall have an area as shown below except as otherwise permitted by this code:

1. **In the R-1 district, each lot or development site shall have a minimum area of 5,000 square feet or as may be established by a subdistrict. The average size of lots in a subdivision intended for single-family development shall not exceed 10,000 square feet.**
2. **In the R-2, R-3, and RP districts, each lot or development site shall have a minimum area of 3,000 square feet or as may be established by a subdistrict. In the R-2 and R-P districts, the average size of lots in a subdivision intended for single-family development shall not exceed 5,000 square feet.**
3. **In the AI, AR, C-1, C-2, and C-3 districts, each lot or development site shall have a minimum area of 5,000 square feet or as may be established by a subdistrict.**
4. **In the M-1, M-2 and M-3 districts, each lot or development site shall have a minimum area of 20,000 square feet.**

5. **Institutional districts shall have a minimum size of five contiguous acres in order to create a large enough campus to support institutional uses; however, additions to the district may be made in increments of any size.**
6. **Within the commercial zoning district(s) of the riverfront overlay subdistrict, there is no minimum lot size required, provided the other standards of this code can be met.**

Applicant's Facts and Findings: This application includes a Planned Unit Development (PUD) that proposes reduced lot sizes and an increase in the allowable lot coverage standard for the R-2 zoned portions of the site. The standards for a PUD are discussed previously in this narrative.

This standard is met.

B. Lot or Development Site Area per Dwelling Unit.

1. **In the R-1 district, there shall be a minimum of 5,000 square feet per dwelling unit.**
2. **In the R-2, AR, and R-P districts, there shall be a minimum of 3,000 square feet of lot or development site area per dwelling unit. In the R-2 and R-P districts, lots or development sites in excess of 15,000 square feet used for multiple single-family, duplex or multifamily dwellings shall be developed at a minimum of one dwelling per 5,000 square feet lot area.**
3. **In the R-3 district, there shall be a minimum of 1,500 square feet of lot or development site area per dwelling unit. Lots or development sites in excess of 15,000 square feet used for multiple single-family, duplex or multifamily dwellings shall be developed at a minimum of one dwelling per 2,500 square feet lot area.**

C. In calculating lot area for this section, lot area does not include land within public or private streets. In calculating lot area for maximum lot area/minimum density requirements, lot area does not include land within stream corridors, land reserved for public parks or open spaces, commons buildings, land for preservation of natural, scenic, or historic resources, land on slopes exceeding 15 percent or for avoidance of identified natural hazards, land in shared access easements, public walkways, or entirely used for utilities, land held in reserve in accordance with a future development plan, or land for uses not appurtenant to the residence.

D. Lot size averaging is allowed for any subdivision. Some lots may be under the minimum lot size required in the zone where the subdivision is located, as long as the average size of all lots is at least the minimum lot size.

Applicant's Facts and Findings: This application includes a Planned Unit Development (PUD) that proposes reduced lots (development site areas) and an increase in the amount of lot coverage for the R-2 zoned portions of the plan. The standards for a PUD are discussed previously in this narrative.

This standard is met.

15.405.020 Lot area exceptions.

The following shall be exceptions to the required lot areas:

A. Lots of record with less than the area required by this code.
B. Lots or development sites which, as a process of their creation, were approved in accordance with this code.
C. Planned unit developments, provided they conform to requirements for planned unit development approval.

Applicant's Facts and Findings: This proposal complies with subsection C. of this criterion as a Planned Unit Development is proposed with conformity to all PUD requirements.

This standard is met.

15.405.030 Lot dimensions and frontage.
A. Width. Widths of lots shall conform to the standards of this code.
B. Depth to Width Ratio. Each lot and parcel shall have an average depth between the front and rear lines of not more than two and one-half times the average width between the side lines. Depths of lots shall conform to the standards of this code. Development of lots under 15,000 square feet are exempt from the lot depth to width ratio requirement.
C. Area. Lot sizes shall conform to standards set forth in this code. Lot area calculations shall not include area contained in public or private streets as defined by this code.
D. Frontage.

1. **No lot or development site shall have less than the following lot frontage standards:**
    a. **Each lot or development site shall have either frontage on a public street for a distance of at least 25 feet or have access to a public street through an easement that is at least 25 feet wide. No new private streets, as defined in NMC 15.05.030, shall be created to provide frontage or access.**
    b. **Each lot in an R-2 and R-3 zone shall have a minimum width of 30 feet at the front building line.**
    c. **Each lot in an R-1, AI, or RP zone shall have a minimum width of 50 feet at the front building line.**
    d. **Each lot in an AR zone shall have a minimum width of 45 feet at the front building line.**
2. **The above standards apply with the following exceptions:**
    a. **Legally created lots of record in existence prior to the effective date of the ordinance codified in this code.**
    b. **Lots or development sites which, as a process of their creation, were approved with sub-standard widths in accordance with provisions of this code.**
    c. **Existing private streets may not be used for new dwelling units, except private streets that were created prior to March 1, 1999, including paving to fire access roads standards and installation of necessary utilities, and private streets allowed in the airport residential and airport industrial districts.**

Applicant's Facts and Findings: This application includes a Planned Unit Development (PUD) that proposes reduced lot dimensions, increased lot coverage, and reduced frontage requirements. Private streets are proposed to provide access to many of the lots in this development. Private streets are permitted as discussed previously in this narrative. The standards for a PUD are discussed previously in this narrative.

This standard is met.

15.405.040 Lot coverage and parking coverage requirements.

A. Purpose. The lot coverage and parking coverage requirements below are intended to:

1. **Limit the amount of impervious surface and storm drain runoff on residential lots.**
2. **Provide open space and recreational space on the same lot for occupants of that lot.**
3. **Limit the bulk of residential development to that appropriate in the applicable zone.**

B. Residential uses in residential zones shall meet the following maximum lot coverage and parking coverage standards. See the definitions in NMC 15.05.030 and Appendix A, Figure 4.

1. **Maximum Lot Coverage.**
    a. **R-1: 30 percent, or 40 percent if all structures on the lot are one-story.**
    b. **R-2 and RP: 50 percent.**
    c. **AR and R-3: 50 percent.**
2. **Maximum Parking Coverage. R-1, R-2, R-3, and RP: 30 percent.**
3. **Combined Maximum Lot and Parking Coverage.**
    a. **R-1, R-2 and RP: 60 percent.**
    b. **R-3: 70 percent.**

C. All other districts and uses not listed in subsection (B) of this section shall not be limited as to lot coverage and parking coverage except as otherwise required by this code.

Applicant's Facts and Findings: This application includes a Planned Unit Development (PUD) that proposes an increase to the maximum lot coverage standards to 70% within the R-2 zoned portions of the site to match the R-3 standard of 70%. This increase to the maximum is proposed to provide more housing options at an approachable price point, including some affordable housing. The standards for a PUD are discussed previously in this narrative.

This standard is met.

15.410 Yard Setback Requirements

15.410.010 General yard regulations.

A. No yard or open space provided around any building for the purpose of complying with the provisions of this code shall be considered as providing a yard or open space for any other building.

B. No yard or open space on adjoining property shall be considered as providing required yard or open space for another lot or development site under the provisions of this code.

C. No front yards provided around any building for the purpose of complying with the regulations of this code shall be used for public or private parking areas or garages, or other accessory buildings, except as specifically provided elsewhere in this code.

D. When the common property line separating two or more contiguous lots is covered by a building or a permitted group of buildings with respect to such common property line or lines does not fully conform to the required yard spaces on each side of such common property line or lines, such lots shall constitute a single development site and the yards as required by this code shall then not apply to such common property lines.

E. Dwellings Where Permitted above Nonresidential Buildings. The front and interior yard requirements for residential uses shall not be applicable; provided, that all yard requirements for the district in which such building is located are complied with.

F. In the AI airport industrial district, clear areas, safety areas, object-free areas, taxiways, parking aprons, and runways may be counted as required yards for a building, even if located upon an adjacent parcel.

G. In the AR airport residential district, clear areas, safety areas, object-free areas, taxiways, parking aprons, and runways may be counted as required yards for a building, if located upon an adjacent parcel.

15.410.020 Front yard setback.

A. Residential (see Appendix A, Figure 10).

1. **AR, R-1 and R-2 districts shall have a front yard of not less than 15 feet. Said yard shall be landscaped and maintained.**
2. **R-3 and RP districts shall have a front yard of not less than 12 feet. Said yard shall be landscaped and maintained.**
3. **The entrance to a garage or carport, whether or not attached to a dwelling, shall be set back at least 20 feet from the nearest property line of the street to which access will be provided. However, the foregoing setback requirement shall not apply where the garage or carport will be provided with access to an alley only.**

B. Commercial.

1. **All lots or development sites in the C-1 district shall have a front yard of not less than 10 feet. Said yard shall be landscaped and maintained.**
2. **All lots or development sites in the C-2 district shall have a front yard of not less than 10 feet. No parking shall be allowed in said yard. Said yard shall be landscaped and maintained.**
3. **All lots or development sites in the C-3 district shall have no minimum front yard requirements. The maximum allowable front yard shall be 20 feet. In the case of a through lot with two front yards, at least one front yard must meet the maximum setback requirement. In the case of three or more front yards, at least two front yards must meet the maximum setback requirements. No parking shall be allowed in said yard. Said yard shall be landscaped and maintained.**
4. **All lots or development sites in the C-4 district will comply with the front yard requirements described in NMC 15.352.040(E).**

15.410.030 Interior yard setback.

A. Residential.

1. **All lots or development sites in the AR, R‑1, R-2 and R-3 districts shall have interior yards of not less than five feet, except that where a utility easement is recorded adjacent to a side lot line, there shall be a side yard no less than the width of the easement.**
2. **All lots or development sites in the RP district shall have interior yards of not less than eight feet.**

B. Commercial.

1. **All lots or development sites in the C-1 and C-2 districts have no interior yards required where said lots or development sites abut property lines of commercially or industrially zoned property. When interior lot lines of said districts are common with property zoned residentially, interior yards of not less than 10 feet shall be required opposite the residential districts.**
2. **All lots or development sites in the C-3 district shall have no interior yard requirements.**
3. **All lots or development sites in the C-4 district will comply with the interior yard requirements described in NMC 15.352.040(E).**

Applicant's Facts and Findings: This application includes a Planned Unit Development (PUD) that proposes reduced yard setbacks of 2.5 feet within the R-2 zoned portions of the site plan. The reduced yard setbacks allow innovation in design and density of this site that promotes the purpose of the PUD to provide an approachable price point for housing, including some affordable housing. The standards for a PUD are discussed previously in this narrative.

This standard is met.

15.410.060 Vision clearance setback.

The following vision clearance standards shall apply in all zones (see Appendix A, Figure 9).

A. At the intersection of two streets, including private streets, a triangle formed by the intersection of the curb lines, each leg of the vision clearance triangle shall be a minimum of 50 feet in length.

B. At the intersection of a private drive and a street, a triangle formed by the intersection of the curb lines, each leg of the vision clearance triangle shall be a minimum of 25 feet in length.

C. Vision clearance triangles shall be kept free of all visual obstructions from two and one-half feet to nine feet above the curb line. Where curbs are absent, the edge of the asphalt or future curb location shall be used as a guide, whichever provides the greatest amount of vision clearance.

D. There is no vision clearance requirement within the commercial zoning district(s) located within the riverfront (RF) overlay subdistrict.

Applicant's Facts and Findings: The proposed development maintains all required vision clearance setbacks, as demonstrated on the submitted plans.

This standard is met.

15.410.070 Yard exceptions and permitted intrusions into required yard setbacks.

The following intrusions may project into required yards to the extent and under the conditions and limitations indicated:

A. Depressed Areas. In any district, open work fences, hedges, guard railings or other landscaping or architectural devices for safety protection around depressed ramps, stairs or retaining walls may be located in required yards; provided, that such devices are not more than three and one-half feet in height.

B. Accessory Buildings. In front yards on through lots, where a through lot has a depth of not more than 140 feet, accessory buildings may be located in one of the required front yards; provided, that every portion of such accessory building is not less than 10 feet from the nearest street line.

C. Projecting Building Features. The following building features may project into the required front yard no more than five feet and into the required interior yards no more than two feet; provided, that such projections are no closer than three feet to any interior lot line:

1. **Eaves, cornices, belt courses, sills, awnings, buttresses or other similar features.**
2. **Chimneys and fireplaces, provided they do not exceed eight feet in width.**
3. **Porches, platforms or landings which do not extend above the level of the first floor of the building.**
4. **Mechanical structures (heat pumps, air conditioners, emergency generators and pumps).**

D. Fences and Walls.

1. **In the residential district, a fence or wall shall be permitted to be placed at the property line or within a yard setback as follows:**
    a. **Not to exceed six feet in height. Located or maintained within the required interior yards. For purposes of fencing only, lots that are corner lots or through lots may select one of the street frontages as a front yard and all other yards shall be considered as interior yards, allowing the placement of a six-foot fence on the property line. In no case may a fence extend into the clear vision zone as defined in NMC 15.410.060.**
    b. **Not to exceed four feet in height. Located or maintained within all other front yards.**
2. **In any commercial or industrial district, a fence or wall shall be permitted to be placed at the property line or within a yard setback as follows:**
    a. **Not to exceed eight feet in height. Located or maintained in any interior yard except where the requirements of vision clearance apply. For purposes of fencing only, lots that are corner lots or through lots may select one of the street frontages as a front yard and all other yards shall be considered as interior yards, allowing the placement of an eight-foot fence on the property line.**
    b. **Not to exceed four feet in height. Located or maintained within all other front yards.**
3. **If chain link (wire-woven) fences are used, they are manufactured of corrosion-proof materials of at least 11-1/2 gauge.**
4. **The requirements of vision clearance shall apply to the placement of fences.**

Applicant's Facts and Findings: The Applicant acknowledges permitted intrusions into required yard setbacks. The fences surrounding the single-family residential in the R-1 and R-2 zoning areas will not exceed 6-feet in height. The fencing in the C-2 zoning areas will not exceed 8-feet in height. No fence exceeding 4-feet in height will be placed in a front yard setback.

This standard is met.

E. Parking and Service Drives (Also Refer to NMC 15.440.010 through 15.440.080).

1. **In any district, service drives or accessways providing ingress and egress shall be permitted, together with any appropriate traffic control devices in any required yard.**
2. **In any residential district, public or private parking areas and parking spaces shall not be permitted in any required yard except as provided herein:**
   a. **Required parking spaces shall be permitted on service drives in the required front yard in conjunction with any single-family or two-family dwelling on a single lot.**
   b. **Recreational vehicles, boat trailers, camperettes and all other vehicles not in daily use are restricted to parking in the front yard setback for not more than 48 hours; and recreational vehicles, boat trailers, camperettes and all other vehicles not in daily use are permitted to be located in the required interior yards.**
   c. **Public or private parking areas, parking spaces or any building or portion of any building intended for parking which have been identified as a use permitted in any residential district shall be permitted in any interior yard that abuts an alley, provided said parking areas, structures or spaces shall comply with NMC 15.440.070, Parking tables and diagrams (Diagrams 1 through 3).**
   d. **Public or private parking areas, service drives or parking spaces which have been identified as a use permitted in any residential district shall be permitted in interior yards; provided, that said parking areas, service drives or parking spaces shall comply with other requirements of this code.**
3. **In any commercial or industrial district, except C-1, C-4 and M-1, public or private parking areas or parking spaces shall be permitted in any required yard (see NMC 15.410.030). Parking requirements in the C-4 district are described in NMC 15.352.040(H).**
4. **In the I district, public or private parking areas or parking spaces may be no closer to a front property line than 20 feet, and no closer to an interior property line than five feet.**

F. Public Telephone Booths and Public Transit Shelters. Public telephone booths and public transit shelters shall be permitted; provided, that vision clearance is maintained for vehicle requirements for vision clearance.

G. Hangars within the AR airport residential district may be constructed with no yard setbacks to property lines adjacent to other properties within the airport residential or airport industrial districts

Applicant's Facts and Findings: Parking is proposed on private lots in driveways, on-street parallel, on-street in perpendicular "bays", and in designated parking lots. There are a total of 246 parking spaces proposed to serve the residential development plus either two or four parking spaces per unit within the garages of the single family homes.

In total, the project will provide the following parking space configuration:

- Apartment Parking – 91 Spaces
- Public Street Parking – 73 Spaces
- Private Street Parking – 85 Spaces
- R-1 Lot Parking – 72 Spaces
- 17′ Front Load Parking – 46 Spaces
- 17′ Rear Load Parking – 219 Spaces
- 21′ Front Load Spaces – 111 Spaces
- 21′ Rear Load Spaces – 268 Spaces
- 25′ Front Load Spaces – 52 Spaces
- 25′ Rear Load Spaces – 68 Spaces

The total number of spaces may vary based upon the revisions necessary to satisfy any conditions of approval or as a result of changes to the final plat and product configuration but the current design, showing detached units, currently provides 1,085 parking spaces.

The location of the proposed parking areas meets the requirements of this standard.

This standard is met.

15.415 Building and Site Design Standards

15.415.010 Main buildings and uses as accessory buildings.

A. Hereinafter, any building which is the only building on a lot is a main building.

B. In any residential district except RP, there shall be only one main use per lot or development site; provided, that home occupations shall be allowed where permitted.

C. In any residential district, there shall be no more than two accessory buildings on any lot or development site.

Applicant's Facts and Findings: The proposed residential development includes only main residential-use buildings at this time. The Applicant acknowledges that no more than two accessory buildings will be permitted on any lot in the R-zoned portions of the development.

This standard is met.

15.415.020 Building height limitation.

A. Residential.

1. **In the R-1, R-2, AR, and RP districts, no main building shall exceed 30 feet in height. Accessory buildings in the R-1, R-2, R-3, AR, and RP districts are limited to 16 feet in height, except as follows:**
   a. **Up to 800 square feet of an accessory building may have a height of up to 24 feet.**
   b. **Aircraft hangars in the AR district may be the same height as the main building.**

2. **In the R-3 district, no main building shall exceed 45 feet in height, except, where an R-3 district abuts upon an R-1 district, the maximum permitted building height shall be limited to 30 feet for a distance of 50 feet from the abutting boundary of the aforementioned district.**
3. **Single-family dwellings permitted in commercial or industrial districts shall not exceed 30 feet in height.**

Applicant's Facts and Findings: The proposed a combination of single-family three story attached and detached structures proposed will exceed the 30 foot height limits. The proposed buildings will be approximately 35 feet in height. The applicant has proposed a height allowance which exceeds the limitations of this section as part of an overall plan to create a planned unit development.

This standard is met.

B. Commercial and Industrial.

1. **In the C-1 district no main building or accessory building shall exceed 30 feet in height.**
2. **In the AI, C-2, C-3, M-1, M-2, and M-3 districts there is no building height limitation, except, where said districts abut upon a residential district, the maximum permitted building height shall not exceed the maximum building height permitted in the abutting residential district for a distance of 50 feet from the abutting boundary.**
3. **In the C-4 district, building height limitation is described in NMC 15.352.040(J)(1).**

Applicant's Facts and Findings: The multi-family buildings proposed in the C-2 zoned portion of this site require a conditional use permit. As such, the maximum height of buildings in the C-2 zoning district will be stated in the Conditional Use Permit, as required by subsection C., below.

This standard is not applicable as a Conditional Use Permit is requested and will state the maximum height of buildings.

C. The maximum height of buildings and uses permitted conditionally shall be stated in the conditional use permits.

Applicant's Facts and Findings: The Applicant proposes a maximum building height of 48 feet for the multi-family residential structures. This maximum height shall be stated on the Conditional Use Permit.

This standard is met.

15.415.040 Public access required.

No building or structure shall be erected or altered except on a lot fronting or abutting on a public street or having access to a public street over a private street or easement of record approved in accordance with provisions contained in this code. New private streets may not be created to provide

access except as allowed under NMC 15.332.020(B)(24), 15.336.020(B)(8), and in the M-4 zone. Existing private streets may not be used for access for new dwelling units, except as allowed under NMC 15.405.030. No building or structure shall be erected or altered without provisions for access roadways as required in the Oregon Fire Code, as adopted by the city.

Applicant's Facts and Findings: All proposed residential structures will have access to a public street either directly or via a connection from a private street, as permitted by the Planned Unit Development (PUD) criteria and as previously discussed in this narrative.

This standard is met.

15.420 Landscaping and Outdoor Areas

15.420.010 Required minimum standards.

A. Private and Shared Outdoor Recreation Areas in Residential Developments.

1. **Private Areas. Each ground-level living unit in a residential development subject to a design review plan approval shall have an accessible outdoor private space of not less than 48 square feet in area. The area shall be enclosed, screened or otherwise designed to provide increased privacy for unit residents, their guests and neighbors.**
2. **Individual and Shared Areas. Usable outdoor recreation space shall be provided for the individual and/or shared use of residents and their guests in any duplex or multifamily residential development, as follows:**
   a. **One- or two-bedroom units: 200 square feet per unit.**
   b. **Three- or more bedroom units: 300 square feet per unit.**
   c. **Storage areas are required in residential developments. Convenient areas shall be provided in residential developments for the storage of articles such as bicycles, barbecues, luggage, outdoor furniture, and the like. These shall be entirely enclosed.**
3. **In the AR airport residential district a five percent landscaping standard is required with the goal of "softening" the buildings and making the development "green" with plants, where possible. The existence of the runway, taxiway, and approach open areas already provide generally for the 15 percent requirement.**

Applicant's Facts and Findings: Each ground-level home within the community will have a minimum of 48 square feet of private outdoor open space. The multi-family housing area provides the required shared usable outdoor recreation space. Enclosed storage areas are provided attached to the outdoor private areas in the multi-family residential and in the garages of the single-family residential.

This standard is met.

B. Required Landscaped Area. The following landscape requirements are established for all developments except single-family dwellings:

1. **A minimum of 15 percent of the lot area shall be landscaped; provided, however, that computation of this minimum may include areas landscaped under subsection (B)(3) of this**

section. Development in the C-3 (central business district) zoning district and M-4 (large lot industrial) zoning district is exempt from the 15 percent landscape area requirement of this section. Additional landscaping requirements in the C-4 district are described in NMC 15.352.040(K). In the AI airport industrial district, only a five percent landscaping standard is required with the goal of "softening" the buildings and making the development "green" with plants, where possible. The existence of the runway, taxiway, and approach open areas already provide generally for the 15 percent requirement. Developments in the AI airport industrial district with a public street frontage shall have said minimum landscaping between the front property line and the front of the building.

Applicant's Facts and Findings: A minimum of fifteen percent (15%) of the area surrounding the multi-family development will be landscaped.

This standard is met.

2. **All areas subject to the final design review plan and not otherwise improved shall be landscaped.**

Applicant's Facts and Findings: All areas included with the final design review plan and not otherwise improved will be landscaped.

This standard is met.

3. **The following landscape requirements shall apply to the parking and loading areas:**
    a. **A parking or loading area providing 10 or more spaces shall be improved with defined landscaped areas totaling no less than 25 square feet per parking space.**
    b. **A parking, loading area, or drive aisle which runs adjacent to a property line shall be separate from any lot line adjacent to a street by a landscaped strip at least 10 feet in interior width or the width of the required yard, whichever is greater, and any other lot line by a landscaped strip of at least five feet in interior width. See subsections (B)(3)(c) and (d) of this section for material to plant within landscape strips.**
    c. **A landscaped strip separating a parking area, loading area, or drive aisle from a street shall contain street trees spaced as appropriate to the species, not to exceed 50 feet apart on average, and a combination of shrubs and ground cover, or lawn. This landscaping shall provide partial screening of these areas from the street.**
    d. **A landscaped strip separating a parking area, loading area, or drive aisle from an interior lot line shall contain any combination of trees, shrubs, ground cover or lawn. Plant material shall be selected from at least two different plant material groups (example: trees and shrubs, or lawn and shrubs, or lawn and trees and shrubs).**
    e. **Landscaping in a parking or loading area shall be located in defined landscaped areas which are uniformly distributed throughout the parking or loading area.**
    f. **Landscaping areas in a parking lot, service drive or loading area shall have an interior width of not less than five feet.**

g. All multifamily, institutional, commercial, or industrial parking areas, service drives, or loading zones which abut a residential district shall be enclosed with a 75 percent opaque, site-obscuring fence, wall or evergreen hedge along and immediately adjacent to any interior property line which abuts the residential district. Landscape plantings must be large enough to provide the required minimum screening requirement within 12 months after initial installation. Adequate provisions shall be maintained to protect walls, fences or plant materials from being damaged by vehicles using said parking areas.

h. An island of landscaped area shall be located to separate blocks of parking spaces. At a minimum, one deciduous shade tree per seven parking spaces shall be planted to create a partial tree canopy over and around the parking area. No more than seven parking spaces may be grouped together without an island separation unless otherwise approved by the director based on the following alternative standards:

i. Provision of a continuous landscaped strip, with a five-foot minimum width, which runs perpendicular to the row of parking spaces (see Appendix A, Figure 13).

ii. Provision of tree planting landscape islands, each of which is at least 16 square feet in size, and spaced no more than 50 feet apart on average, within areas proposed for back-to-back parking (see Appendix A, Figure 14).

Applicant's Facts and Findings: As identified on the included site plan, the parking areas providing 10 or more spaces all meet the minimum landscaping requirements. All landscaped areas in parking areas provide a minimum of two different plant material groups, including trees, shrubs, ground cover or lawn. Fencing will be provided in compliance with this Section.

This standard is met.

4. Trees, Shrubs and Ground Covers. The species of street trees required under this section shall conform to those authorized by the city council through resolution. The director shall have the responsibility for preparing and updating the street tree species list which shall be adopted in resolution form by the city council.

a. Arterial and minor arterial street trees shall have spacing of approximately 50 feet on center. These trees shall have a minimum two-inch caliper tree trunk or stalk at a measurement of two feet up from the base and shall be balled and burlapped or boxed.

b. Collector and local street trees shall be spaced approximately 35 to 40 feet on center. These trees shall have a minimum of a one and one-half or one and three-fourths inch tree trunk or stalk and shall be balled and burlapped or boxed.

c. Accent Trees. Accent trees are trees such as flowering cherry, flowering plum, crab-apple, Hawthorne and the like. These trees shall have a minimum one and one-half inch caliper tree trunk or stalk and shall be at least eight to 10 feet in height. These

trees may be planted bare root or balled and burlapped. The spacing of these trees should be approximately 25 to 30 feet on center.

d. **All broad-leafed evergreen shrubs and deciduous shrubs shall have a minimum height of 12 to 15 inches and shall be balled and burlapped or come from a two-gallon can. Gallon-can size shrubs will not be allowed except in ground covers. Larger sizes of shrubs may be required in special areas and locations as specified by the design review board. Spacing of these shrubs shall be typical for the variety, three to eight feet, and shall be identified on the landscape planting plan.**

e. **Ground Cover Plant Material. Ground cover plant material such as greening juniper, cotoneaster, minor Bowles, English ivy, hypericum and the like shall be one of the following sizes in specified spacing for that size:**

Gallon cans	**3 feet on center**
4'' containers	**2 feet on center**
2-1/4'' containers	**18'' on center**
Rooted cuttings	**12'' on center**

Applicant's Facts and Findings: As identified on the submitted landscaping plan, all street trees and ground cover provided in this development will meet city standards.

This standard is met.

5. **Automatic, underground irrigation systems shall be provided for all areas required to be planted by this section. The director shall retain the flexibility to allow a combination of irrigated and nonirrigated areas. Landscaping material used within nonirrigated areas must consist of drought- resistant varieties. Provision must be made for alternative irrigation during the first year after initial installation to provide sufficient moisture for plant establishment.**
6. **Required landscaping shall be continuously maintained.**
7. **Maximum height of tree species shall be considered when planting under overhead utility lines.**
8. **Landscaping requirements and standards for parking and loading areas (subsection (B)(3) of this section) will apply to development proposals unless the institution has addressed the requirements and standards by an approved site development master plan. With an approved site development master plan, the landscape requirements will be reviewed through an administrative Type I review process.**
9. **In the M-4 zone, landscaping requirements and standards for parking and loading areas (subsection (B)(3) of this section) do not apply unless within 50 feet of a residential district.**

Applicant's Facts and Findings: Automatic, underground irrigation systems will be provided for all landscaped areas. Landscaping will be continuously maintained by the project's Homeowner's Association. As identified in the included landscaping plan, the trees and shrubs

have been chosen for their appropriateness for the location in which they are to be planted.

This standard is met.

C. Installation of Landscaping. All landscaping required by these provisions shall be installed prior to the issuance of occupancy permits, unless security equal to 110 percent of the cost of the landscaping as determined by the director is filed with the city, insuring such installation within six months of occupancy. A security – cash, certified check, time certificates of deposit, assignment of a savings account, bond or such other assurance of completion as shall meet with the approval of the city attorney – shall satisfy the security requirements. If the installation of the landscaping is not completed within the six-month period, or within an extension of time authorized by the director, the security may be used by the city to complete the installation. Upon completion of the installation, any portion of the remaining security deposited with the city shall be returned to the applicant.

Applicant's Facts and Findings: Landscaping will be installed or assured according to City requirements prior to the issuance of occupancy permits.

This standard is met.

15.420.020 Landscaping and amenities in public rights-of-way.

The following standards are intended to create attractive streetscapes and inviting pedestrian spaces. A review body may require any of the following landscaping and amenities to be placed in abutting public rights-of-way as part of multifamily, commercial, industrial, or institutional design reviews, or for subdivisions and planned unit developments. In addition, any entity improving existing rights-of-way should consider including these elements in the project. A decision to include any amenity shall be based on comprehensive plan guidelines, pedestrian volumes in the area, and the nature of surrounding development.

A. Pedestrian Space Landscaping. Pedestrian spaces shall include all sidewalks and medians used for pedestrian refuge. Spaces near sidewalks shall provide plant material for cooling and dust control, and street furniture for comfort and safety, such as benches, waste receptacles and pedestrian-scale lighting. These spaces should be designed for short-term as well as long-term use. Elements of pedestrian spaces shall not obstruct sightlines and shall adhere to any other required city safety measures. Medians used for pedestrian refuge shall be designed for short-term use only with plant material for cooling and dust control, and pedestrian-scale lighting. The design of these spaces shall facilitate safe pedestrian crossing with lighting and accent paving to delineate a safe crossing zone visually clear to motorists and pedestrians alike.

1. **Street trees planted in pedestrian spaces shall be planted according to NMC 15.420.010(B)(4).**
2. **Pedestrian spaces shall have low (two and one-half feet) shrubs and ground covers for safety purposes, enhancing visibility and discouraging criminal activity.**
    a. **Plantings shall be 90 percent evergreen year-round, provide seasonal interest with fall color or blooms, and at maturity maintain growth within the planting area (refer to plant material matrix below).**

b. Plant placement shall also adhere to clear sight line requirements as well as any other relevant city safety measures

3. Pedestrian-scale lighting shall be installed along sidewalks and in medians used for pedestrian refuge.

a. Pole lights as well as bollard lighting may be specified; however, the amount and type of pedestrian activity during evening hours, e.g., transit stops, nighttime service districts, shall ultimately determine the type of fixture chosen.

b. Luminaire styles shall match the area/district theme of existing luminaires and shall not conflict with existing building or roadway lights causing glare.

c. Lighting heights and styles shall be chosen to prevent glare and to designate a clear and safe path and limit opportunities for vandalism (see Appendix A, Figure 17, Typical Pedestrian Space Layouts).

d. Lighting shall be placed near the curb to provide maximum illumination for spaces furthest from building illumination. Spacing shall correspond to that of the street trees to prevent tree foliage from blocking light.

4. Street furniture such as benches and waste receptacles shall be provided for spaces near sidewalks only.

a. Furniture should be sited in areas with the heaviest pedestrian activity, such as downtown, shopping districts, and shopping centers.

b. Benches should be arranged to facilitate conversation between individuals with L-shaped arrangements and should face the area focal point, such as shops, fountains, plazas, and should divert attention away from nearby traffic.

5. Paving and curb cuts shall facilitate safe pedestrian crossing and meet all ADA requirements for accessibility.

Applicant's Facts and Findings: The submitted landscaping plan identifies landscaping and amenities proposed for the public right-of-way. Due to the residential nature of the site and the amenities to be provided within the project's open spaces, the public rights-of-way have been provided with mainly plantings. Once the commercial component of this site develops, we would anticipate the need for more benches, trash receptacles and other pedestrian amenities, potentially within the rights-of-way.

This standard is met.

B. Planting Strip Landscaping. All planting strips shall be landscaped. Planting strips provide a physical and psychological buffer for pedestrians from traffic with plant material that reduces heat and dust, creating a more comfortable pedestrian environment. Planting strips shall have different arrangements and combinations of plant materials according to the frequency of on-street parking (see Appendix A, Figures 18 and 19).

1. Planting strips which do not have adjacent parking shall have a combination of ground covers, low (two and one-half feet) shrubs and trees. Planting strips adjacent to frequently used on-street parking, as defined by city staff, shall only have trees protected by tree grates, and planting strips adjacent to infrequently used on-street parking shall be planted with

ground cover as well as trees (see Appendix A, Figures 18 and 19, Typical Planting Strip Layouts). District themes or corridor themes linking individual districts should be followed utilizing a unifying plant characteristic, e.g., bloom color, habit, or fall color. When specifying thematic plant material, monocultures should be avoided, particularly those species susceptible to disease.

2. **Street trees shall be provided in all planting strips as provided in NMC 15.420.010(B)(4).**
   a. **Planting strips without adjacent parking or with infrequent adjacent parking shall have street trees in conjunction with ground covers and/or shrubs.**
   b. **Planting strips with adjacent parking used frequently shall have only street trees protected by tree grates.**
3. **Shrubs and ground covers shall be provided in planting strips without adjacent parking with low (two and one-half feet) planting masses to enhance visibility, discourage criminal activity, and provide a physical as well as psychological buffer from passing traffic.**
   a. **Plantings shall be 90 percent evergreen year-round, provide seasonal interest with fall color or blooms and at maturity maintain growth within the planting area.**
   b. **Ground cover able to endure infrequent foot traffic shall be used in combination with street trees for planting strips with adjacent occasional parking (refer to plant material matrix below).**
   c. **All plant placement shall adhere to clear sight line requirements as well as any other relevant city safety measures.**

C. Maintenance. All landscapes shall be maintained for the duration of the planting to encourage health of plant material as well as public health and safety. All street trees and shrubs shall be pruned to maintain health and structure of the plant material for public safety purposes.

Applicant's Facts and Findings: As identified in the included landscaping plan, all planting strips will be landscaped with a combination of ground covers, shrubs and trees. All landscaping will be maintained for the duration of the planting and all street trees and shrubs will be pruned to maintain the health and structure of the plants.

This standard is met.

D. Exception. In the AI airport industrial district and AR airport residential district, no landscape or amenities except for grass are required for any area within 50 feet of aircraft operation areas including aircraft parking areas, taxiways, clear areas, safety areas, object-free areas, and the runway.

Applicant's Facts and Findings: This standard is not in the AI or AR zone and, as such, this standard is not applicable.

15.425 Exterior Lighting

15.425.010 Purpose.

The purpose of this chapter is to regulate the placement, orientation, distribution patterns, and fixture types of on-site outdoor lighting. The intent of this section is to provide minimum lighting

standards that promote safety, utility, and security, prevent glare on public roadways, and protect the privacy of residents.

15.425.020 Applicability and exemptions.

A. Applicability. Outdoor lighting shall be required for safety and personal security in areas of assembly, parking, and traverse, as part of multifamily residential, commercial, industrial, public, recreational and institutional uses. The applicant for any Type I or Type II development permit shall submit, as part of the site plan, evidence that the proposed outdoor lighting plan will comply with this section. This information shall contain but not be limited to the following:

1. **The location, height, make, model, lamp type, wattage, and proposed cutoff angle of each outdoor lighting fixture.**
2. **Additional information the director may determine is necessary, including but not limited to illuminance level profiles, hours of business operation, and percentage of site dedicated to parking and access.**
3. **If any portion of the site is used after dark for outdoor parking, assembly or traverse, an illumination plan for these areas is required. The plan must address safety and personal security.**

B. Exemptions. The following uses shall be exempt from the provisions of this section:

1. **Public street and airport lighting.**
2. **Circus, fair, carnival, or outdoor governmentally sponsored event or festival lighting.**
3. **Construction or emergency lighting, provided such lighting is discontinued immediately upon completion of the construction work or abatement of the emergency necessitating said lighting.**
4. **Temporary Lighting. In addition to the lighting otherwise permitted in this code, a lot may contain temporary lighting during events as listed below:**
    a. **Grand Opening Event. A grand opening is an event of up to 30 days in duration within 30 days of issuance of a certificate of occupancy for a new or remodeled structure, or within 30 days of change of business or ownership. No lot may have more than one grand opening event per calendar year. The applicant shall notify the city in writing of the beginning and ending dates prior to the grand opening event.**
    b. **Other Events. A lot may have two other events per calendar year. The events may not be more than eight consecutive days in duration, nor less than 30 days apart.**
5. **Lighting activated by motion sensor devices.**
6. **Nonconforming lighting in place as of September 5, 2000. Replacement of nonconforming lighting is subject to the requirements of NMC 15.205.010 through 15.205.100.**
7. **Light Trespass onto Industrial Properties. The lighting trespass standards of NMC 15.425.040 do not apply where the light trespass would be onto an industrially zoned property.**

Applicant's Facts and Findings: The land use submittal includes a lighting plan identifying the location, height, make, model, lamp type, wattage, and proposed cutoff angle of each outdoor lighting fixture. Lighting is provided in the parking areas and the multi-family residential buildings.

This standard is met.

15.425.030 Alternative materials and methods of construction, installation, or operation.
The provisions of this section are not intended to prevent the use of any design, material, or methods of installation or operation not specifically prescribed by this section, provided any such alternate has been approved by the director. Alternatives must be an approximate equivalent to the applicable specific requirement of this section and must comply with all other applicable standards in this section.

Applicant's Facts and Findings: This land use submittal does not include a request for alternative materials and methods of construction, installation or operation.

This standard is met.

15.425.040 Requirements.
A. General Requirements – All Zoning Districts.

1. **Low-level light fixtures include exterior lights which are installed between ground level and six feet tall. Low-level light fixtures are considered nonintrusive and are unrestricted by this code.**
2. **Medium-level light fixtures include exterior lights which are installed between six feet and 15 feet above ground level. Medium-level light fixtures must either comply with the shielding requirements of subsection (B) of this section, or the applicant shall show that light trespass from a property has been designed not to exceed one-half foot-candle at the property line.**
3. **High-level light fixtures include exterior lights which are installed 15 feet or more above ground level. High-level light fixtures must comply with the shielding requirements of subsection (B) of this section, and light trespass from a property may not exceed one-half foot-candle at the property line.**

B. Table of Shielding Requirements.

Fixture Lamp Type	Shielded
Low/high pressure sodium, mercury vapor, metal halide and fluorescent over 50 watts	Fully
Incandescent over 160 watts	Fully
Incandescent 160 watts or less	None
Fossil fuel	None
Any light source of 50 watts or less	None
Other sources	As approved by NMC 15.425.030

Applicant's Facts and Findings: The land use submittal includes a lighting plan identifying the location, height, make, model, lamp type, wattage, and proposed cutoff angle of each outdoor lighting fixture. Lighting is provided in the parking areas and the multi-family residential buildings. All medium- and high-level lighting is designed to meet this section.

This standard is met.

15.430 Underground Utility Installation

15.430.010 Underground utility installation.

A. All new utility lines, including but not limited to electric, communication, natural gas, and cable television transmission lines, shall be placed underground. This does not include surface-mounted transformers, connections boxes, meter cabinets, service cabinets, temporary facilities during construction, and high-capacity electric lines operating at 50,000 volts or above.

B. Existing utility lines shall be placed underground when they are relocated, or when an addition or remodel requiring a Type II design review is proposed, or when a developed area is annexed to the city.

C. The director may make exceptions to the requirement to underground utilities based on one or more of the following criteria:

1. **The cost of undergrounding the utility is extraordinarily expensive.**
2. **There are physical factors that make undergrounding extraordinarily difficult.**
3. **Existing utility facilities in the area are primarily overhead and are unlikely to be changed.**

Applicant's Facts and Findings: All new utility lines will be located underground.

This standard is met.

15.440 Off-Street Parking, Bicycle Parking, and Private Walkways

Article I. Off-Street Parking Requirements

15.440.010 Required off-street parking.

A. Off-street parking shall be provided on the development site for all R-1, C-1, M-1, M-2 and M-3 zones. In all other zones, the required parking shall be on the development site or within 400 feet of the development site which the parking is required to serve. All required parking must be under the same ownership as the development site served except through special covenant agreements as approved by the city attorney, which bind the parking to the development site.

B. Off-street parking is not required in the C-3 district, except for:

1. **Dwelling units meeting the requirements noted in NMC 15.305.020.**
2. **New development which is either immediately adjacent to a residential district or separated by nothing but an alley.**

C. Within the C-4 district, the minimum number of required off-street parking spaces shall be 50 percent of the number required by NMC 15.440.030, except that no reduction is permitted for residential uses.

D. All commercial, office, or industrial developments that have more than 20 off-street parking spaces and that have designated employee parking must provide at least one preferential carpool/vanpool parking space. The preferential carpool/vanpool parking space(s) must be located close to a building entrance.

Applicant's Facts and Findings: The proposed parking for the single-family homes will be on the same lot as the use. Additional on-street parking and "guest parking" areas are proposed and will be owned and maintained according by the project's Homeowner's Association. The proposed parking for the multi-family buildings will also be on the same development site as the buildings, in a parking lot adjacent to the buildings. There are no commercial, office or industrial developments proposed at this time and, as such, no carpool/vanpool parking spaces are required.

This standard is met.

15.440.020 Parking area and service drive design.

A. All public or private parking areas, parking spaces, or garages shall be designed, laid out and constructed in accordance with the minimum standards as set forth in NMC 15.440.070.

B. Groups of three or more parking spaces, except those in conjunction with single-family or two-family dwellings on a single lot, shall be served by a service drive so that no backward movement or other maneuvering of a vehicle within a street, other than an alley, will be required. Service drives shall be designed and constructed to facilitate the flow of traffic, provide maximum safety in traffic access and egress and maximum safety of pedestrian and vehicular traffic on the site, but in no case shall two-way and one-way service drives be less than 20 feet and 12 feet, respectively. Service drives shall be improved in accordance with the minimum standards as set forth in NMC 15.440.060.

C. Gates. A private drive or private street serving as primary access to more than one dwelling unit shall not be gated to limit access, except as approved by variance.

D. In the AI airport industrial district and AR airport residential district, taxiways may be used as part of the service drive design where an overall site plan is submitted that shows how the circulation of aircraft and vehicles are safely accommodated, where security fences are located, if required, and is approved by the fire marshal, planning director, and public works director. The following submittal must be made:

1. **A drawing of the area to be developed, including the probable location, height, and description of structures to be constructed; the location and description of a security fence or gate to secure the aircraft operations areas of off-airport property from the other nonsecured pedestrian/auto/truck areas of on-airport property; the proposed location of the proposed taxiway access in accordance with FAA specifications (refer to Federal Aviation Administration Advisory Circular No. 150/5300-13 regarding airport design, and AC/5370-10B regarding construction standards for specifications that should be used as a guideline); and the identification of the vehicular traffic pattern area clearly separated from aircraft traffic. Once specific buildings have been designed, FAA Form 7460-1, Notice of Proposed Construction or Alteration, must be submitted to the City of Newberg, the private airport owner, and the FAA for airspace review.**

15.440.030 Parking spaces required.

Use	Minimum Parking Spaces Required
Residential Types	
Dwelling, multifamily and multiple single-family dwellings on a single lot	**1 per dwelling unit**
Studio or one-bedroom unit	**1.5 per dwelling unit**
Two-bedroom unit	**2 per dwelling unit**
Three- and four-bedroom unit	**0.75 spaces per bedroom**
Five- or more bedroom unit	
• Unassigned spaces	**If a development is required to have more than 10 spaces on a lot, then it must provide some unassigned spaces. At least 15 percent of the total required parking spaces must be unassigned and be located for convenient use by all occupants of the development. The location shall be approved by the director.**
• Visitor spaces	**If a development is required to have more than 10 spaces on a lot, then it must provide at least 0.2 visitor spaces per dwelling unit.**
• On-street parking credit	**On-street parking spaces may be counted toward the minimum number of required spaces for developments required to have more than 10 spaces on a lot. The on-street spaces must be directly adjoining and on the same side of the street as the subject property, must be legal spaces that meet all city standards, and cannot be counted if they could be removed by planned future street widening or a bike lane on the street.**
• Available transit service	**At the review body's discretion, affordable housing projects may reduce the required off-street parking by 10 percent if there is an adequate continuous pedestrian route no more than 1,500 feet in length from the development to transit service with an average of less than one hour regular service intervals during commuting periods or where the development provides its own transit. A developer may qualify for this parking reduction if improvements on a proposed pedestrian route are made by the developer, thereby rendering it an adequate continuous route.**
Dwelling, single-family or two-family	**2 for each dwelling unit on a single lot**

Applicant's Facts and Findings:

All single-family development will have parking on the individual lots with at least 2 parking spaces provided on each lot, one within the garage and one within the driveway provided for each single family lot. Many of the single family homes will be provided with up to 4 parking spaces on each lot as two car garages and two car driveways will be developed on the majority of the lots within the development. The multi-family development proposes to create 51 units with 27 one bedroom homes and 24 two bedroom homes. The required parking for the one bedroom units is 27 spaces, the two bedroom units require 36 parking spaces and a total of 10 visitor parking spaces are required for a total of 74 parking spaces. As proposed, 92 spaces are provided which are on the same site as the multi-family buildings. An additional 7 on-street parking spaces are provided adjacent to the multi-family lot.

In total, the project will provide the following parking space configuration:

Apartment Parking – 91 Spaces
Public Street Parking – 73 Spaces
Private Street Parking – 85 Spaces
R-1 Lot Parking – 72 Spaces
17′ Front Load Parking – 46 Spaces
17′ Rear Load Parking – 219 Spaces
21′ Front Load Spaces – 111 Spaces
21′ Rear Load Spaces – 268 Spaces
25′ Front Load Spaces – 52 Spaces
25′ Rear Load Spaces – 68 Spaces

The total number of spaces may vary based upon the revisions necessary to satisfy any conditions of approval or as a result of changes to the final plat and product configuration but the current design, showing detached units, currently provides 1,085 parking spaces.

This standard is met.

15.440.060 Parking area and service drive improvements.

All public or private parking areas, outdoor vehicle sales areas, and service drives shall be improved according to the following:

A. All parking areas and service drives shall have surfacing of asphaltic concrete or Portland cement concrete or other hard surfacing such as brick or concrete pavers. Other durable and dust-free surfacing materials may be approved by the director for infrequently used parking areas. All parking areas and service drives shall be graded so as not to drain stormwater over the public sidewalk or onto any abutting public or private property.

B. All parking areas shall be designed not to encroach on public streets, alleys, and other rights-of-way. Parking areas shall not be placed in the area between the curb and sidewalk or, if there is no sidewalk, in the public right-of-way between the curb and the property line. The director may issue a permit for exceptions for unusual circumstances where the design maintains safety and aesthetics.

C. All parking areas, except those required in conjunction with a single-family or two-family dwelling, shall provide a substantial bumper which will prevent cars from encroachment on abutting private and public property.

D. All parking areas, including service drives, except those required in conjunction with single-family or two-family dwellings, shall be screened in accordance with NMC 15.420.010(B).

E. Any lights provided to illuminate any public or private parking area or vehicle sales area shall be so arranged as to reflect the light away from any abutting or adjacent residential district.

F. All service drives and parking spaces shall be substantially marked and comply with NMC 15.440.070.

G. Parking areas for residential uses shall not be located in a required front yard, except as follows:

1. **Attached or detached single-family or two-family: parking is authorized in a front yard on a service drive which provides access to an improved parking area outside the front yard.**
2. **Three- or four-family: parking is authorized in a front yard on a service drive which is adjacent to a door at least seven feet wide intended and used for entrance of a vehicle (see Appendix A, Figure 12).**

H. A reduction in size of the parking stall may be allowed for up to a maximum of 30 percent of the total number of spaces to allow for compact cars. For high turnover uses, such as convenience stores or fast-food restaurants, at the discretion of the director, all stalls will be required to be full-sized.

I. Affordable housing projects may use a tandem parking design, subject to approval of the community development director.

J. Portions of off-street parking areas may be developed or redeveloped for transit-related facilities and uses such as transit shelters or park-and-ride lots, subject to meeting all other applicable standards, including retaining the required minimum number of parking spaces.

Applicant's Facts and Findings:	As identified on the submitted site plan and utility plans, all parking areas and service drives will be constructed to City standards. Parking areas do not encroach on public streets. Substantial parking bumpers are provided for the multi-family parking area. All parking area lighting will be designed to reduce light spill and glare away from any proposed or existing neighboring developments. This standard is met.

Article II. Bicycle Parking

15.440.090 Purpose.

Cycling is a healthy activity for travel and recreation. In addition, by maximizing bicycle travel, the community can reduce negative effects of automobile travel, such as congestion and pollution. To maximize bicycle travel, developments must provide effective support facilities. At a minimum, developments need to provide a secure place for employees, customers, and residents to park their bicycles. [Ord. 2564, 4-15-02; Ord. 2518, 9-21-99. Code 2001 § 151.625.1.]

15.440.100 Facility requirements.

Bicycle parking facilities shall be provided for the uses shown in the following table. Fractional space requirements shall be rounded up to the next whole number.

Use	Minimum Number of Bicycle Parking Spaces Required
New multiple dwellings, including additions creating additional dwelling units	One bicycle parking space for every four dwelling units

Applicant's Facts and Findings: The proposed 51 multi-family dwelling units requires 13 bicycle parking spaces. This proposal includes the provision of 13 bicycle parking spaces.

This standard is met.

15.440.110 Design.

A. Bicycle parking facilities shall consist of one or more of the following:

1. **A firmly secured loop, bar, rack, or similar facility that accommodates locking the bicycle frame and both wheels using a cable or U-shaped lock.**
2. **An enclosed locker.**
3. **A designated area within the ground floor of a building, garage, or storage area. Such area shall be clearly designated for bicycle parking.**
4. **Other facility designs approved by the director.**

B. All bicycle parking spaces shall be at least six feet long and two and one-half feet wide. Spaces shall not obstruct pedestrian travel.

C. All spaces shall be located within 50 feet of a building entrance of the development.

D. Required bicycle parking facilities may be located in the public right-of-way adjacent to a development subject to approval of the authority resp

Applicant's Facts and Findings: As shown on the included site development plans, the bicycle parking facility is designed to meet these requirements.

This standard is met.

Article III. Private Walkways

15.440.120 Purpose.

Sidewalks and private walkways are part of the city's transportation system. Requiring their construction is part of the city's plan to encourage multimodal travel and to reduce reliance on the automobile. Considerable funds have and will be expended to install sidewalks along the streets in the city. Yet there is little point to this expense if it is not possible for people to walk from the sidewalk to the developments along each side. The following requirements are intended to provide safe and convenient paths for employees, customers, and residents to walk from public sidewalks to development entrances, and to walk between buildings on larger sites.

15.440.130 Where required.

Private walkways shall be constructed as part of any development requiring Type II design review, including mobile home parks. In addition, they may be required as part of conditional use permits or planned unit developments. In the airport industrial (AI) district and residential (AR) district, on-site walks are not required in aircraft operations areas, such as parking aprons, taxiways, and runways.

Applicant's Facts and Findings: As this application includes a Planned Unit Development and Conditional Use Permit, walkways and sidewalks are required.

This standard is met.

15.440.140 Private walkway design.

A. All required private walkways shall meet the applicable building code and Americans with Disabilities Act requirements.

B. Required private walkways shall be a minimum of four feet wide.

C. Required private walkways shall be constructed of portland cement concrete or brick.

D. Crosswalks crossing service drives shall, at a minimum, be painted on the asphalt or clearly marked with contrasting paving materials or humps/raised crossings. If painted striping is used, it should consist of thermoplastic striping or similar type of durable application.

E. At a minimum, required private walkways shall connect each main pedestrian building entrance to each abutting public street and to each other.

F. The review body may require on-site walks to connect to development on adjoining sites.

G. The review body may modify these requirements where, in its opinion, the development provides adequate on-site pedestrian circulation, or where lot dimensions, existing building layout, or topography preclude compliance with these standards.

Applicant's Facts and Findings: The proposal includes private walkways connecting the multi-family units to Highway 99W and connecting the western portion of the site to Spring Meadow Park. These walkways will be a minimum of 4-feet in width and will be constructed of Portland cement concrete. Crosswalks will be provided on the site to delineate the shift from public streets to private streets. Crosswalks will be painted/clearly striped in conformance with these requirements.

This standard is met.

Division 15.500 Public Improvement Standards

15.505 Public Improvements Standards

15.505.010 Purpose.

This chapter provides standards for public infrastructure and utilities installed with new development, consistent with the policies of the City of Newberg comprehensive plan and adopted city master plans. The standards are intended to minimize disturbance to natural features, promote energy conservation and efficiency, minimize and maintain development impacts on surrounding

properties and neighborhoods, and ensure timely completion of adequate public facilities to serve new development.

15.505.020 Applicability.

The provision and utilization of public facilities and services within the City of Newberg shall apply to all land developments in accordance with this chapter. No development shall be approved unless the following improvements are provided for prior to occupancy or operation, unless future provision is assured in accordance with NMC 15.505.030(E).

A. Public Works Design and Construction Standards. The design and construction of all improvements within existing and proposed rights-of-way and easements, all improvements to be maintained by the city, and all improvements for which city approval is required shall comply with the requirements of the most recently adopted Newberg public works design and construction standards.

B. Street Improvements. All projects subject to a Type II design review, partition, or subdivision approval must construct street improvements necessary to serve the development.

C. Water. All developments, lots, and parcels within the City of Newberg shall be served by the municipal water system as specified in Chapter 13.15 NMC.

D. Wastewater. All developments, lots, and parcels within the City of Newberg shall be served by the municipal wastewater system as specified in Chapter 13.10 NMC.

E. Stormwater. All developments, lots, and parcels within the City of Newberg shall manage stormwater runoff as specified in Chapters 13.20 and 13.25 NMC.

F. Utility Easements. Utility easements shall be provided as necessary and required by the review body to provide needed facilities for present or future development of the area.

G. City Approval of Public Improvements Required. No building permit may be issued until all required public facility improvements are in place and approved by the director, or are otherwise bonded for in a manner approved by the review authority, in conformance with the provisions of this code and the Newberg Public Works Design and Construction Standards.

Applicant's Facts and Findings: As identified on the included public improvement plans, the design and construction of all improvements within existing and proposed public rights-of-way and easements and all improvements to be maintained by the city are designed to comply with the requirements of the most recently adopted Newberg public works design and construction standards. All improvements for which city approval is required are proposed to the most recently adopted Newberg public works design and construction standards or, in the case of private streets, as reviewed and approved by the Newberg Engineering Department. The site development plan includes private and public streets, utility easements where necessary, connection to public water and sanitary sewer services and management of stormwater runoff.

This standard is met.

15.505.030 Street standards.

A. Purpose. The purpose of this section is to:

1. **Provide for safe, efficient, and convenient multi-modal transportation within the City of Newberg.**
2. **Provide adequate access to all proposed and anticipated developments in the City of Newberg. For purposes of this section, "adequate access" means direct routes of travel between destinations; such destinations may include residential neighborhoods, parks, schools, shopping areas, and employment centers.**
3. **Provide adequate area in all public rights-of-way for sidewalks, wastewater and water lines, stormwater facilities, natural gas lines, power lines, and other utilities commonly and appropriately placed in such rights-of-way. For purposes of this section, "adequate area" means space sufficient to provide all required public services to standards defined in this code and in the Newberg public works design and construction standards.**

B. Applicability. The provisions of this section apply to:

1. **The creation, dedication, and/or construction of all public streets, bike facilities, or pedestrian facilities in all subdivisions, partitions, or other developments in the City of Newberg.**
2. **The extension or widening of existing public street rights-of-way, easements, or street improvements including those which may be proposed by an individual or the city, or which may be required by the city in association with other development approvals.**
3. **The construction or modification of any utilities, pedestrian facilities, or bike facilities in public rights-of-way or easements.**
4. **The designation of planter strips. Street trees are required subject to Chapter 15.420 NMC.**
5. **Developments outside the city that tie into or take access from city streets.**

Applicant's Facts and Findings: As demonstrated in the public improvement plans, this development includes public and private streets designed to provide safe and convenient vehicular and pedestrian access. Proposed improvements include paved streets, curbs (rolled curb on private streets), sidewalks, crosswalks, planter strips with street trees and appropriate groundcover, and utility easements where necessary.

This standard is met.

C. Layout of Streets, Alleys, Bikeways, and Walkways. Streets, alleys, bikeways, and walkways shall be laid out and constructed as shown in the Newberg transportation system plan. In areas where the transportation system plan or future street plans do not show specific transportation improvements, roads and streets shall be laid out so as to conform to previously approved subdivisions, partitions, and other developments for adjoining properties, unless it is found in the public interest to modify these patterns. Transportation improvements shall conform to the standards within the Newberg Municipal Code, the Newberg public works design and construction standards, the Newberg transportation system plan, and other adopted city plans.

Applicant's Facts and Findings: While no bikeways are proposed, the streets, alleys and walkways are designed to comply with the Newberg Transportation System Plan. Streets are planned to meet with adjoining roadways and to provide for future connectivity to the east.

This standard is met.

D. Construction of New Streets. Where new streets are necessary to serve a new development, subdivision, or partition, right-of-way dedication and full street improvements shall be required. Three-quarter streets may be approved in lieu of full street improvements when the city finds it to be practical to require the completion of the other one-quarter street improvement when the adjoining property is developed; in such cases, three-quarter street improvements may be allowed by the city only where all of the following criteria are met:

1. **The land abutting the opposite side of the new street is undeveloped and not part of the new development; and**
2. **The adjoining land abutting the opposite side of the street is within the city limits and the urban growth boundary.**

Applicant's Facts and Findings: Full street improvements are proposed throughout the site.

This standard is met.

E. Improvements to Existing Streets.

1. **All projects subject to partition, subdivision, or Type II design review approval shall dedicate right-of-way sufficient to improve the street to the width specified in subsection (G) of this section.**
2. **All projects subject to partition, subdivision, or Type II design review approval must construct a minimum of a three-quarter street improvement to all existing streets adjacent to, within, or necessary to serve the development. The director may waive or modify this requirement where the applicant demonstrates that the condition of existing streets to serve the development meets city standards and is in satisfactory condition to handle the projected traffic loads from the development. Where a development has frontage on both sides of an existing street, full street improvements are required.**
3. **In lieu of the street improvement requirements outlined in NMC 15.505.040(B), the review authority may elect to accept from the applicant monies to be placed in a fund dedicated to the future reconstruction of the subject street(s). The amount of money deposited with the city shall be 100 percent of the estimated cost of the required street improvements (including any associated utility improvements), and 10 percent of the estimated cost for inflation. Cost estimates used for this purpose shall be based on preliminary design of the constructed street provided by the applicant's engineer and shall be approved by the director.**

Applicant's Facts and Findings: The proposal includes development of full street improvements throughout the site. The public streets will be constructed to public street standards and

dedicated to the City of Newberg. The private streets will be full street improvements and will be owned and maintained by the future Homeowner's Association subject to the CC&Rs (a draft of which is submitted with this proposal).

This standard is met.

F. Improvements Relating to Impacts. Improvements required as a condition of development approval shall be roughly proportional to the impact of the development on public facilities and services. The review body must make findings in the development approval that indicate how the required improvements are roughly proportional to the impact. Development may not occur until required transportation facilities are in place or guaranteed, in conformance with the provisions of this code. If required transportation facilities cannot be put in place or be guaranteed, then the review body shall deny the requested land use application.

Applicant's Facts and Findings: Development of the proposed street network and utilities within the development and connecting to the neighboring properties is roughly proportional to the transportation and development impacts from the development. Transportation facilities will be in place or guaranteed prior to development of the site.

This standard is met.

G. Street Width and Design Standards.

1. **Design Standards. All streets shall conform with the standards contained in Table 15.505.030(G). Where a range of values is listed, the director shall determine the width based on a consideration of the total street section width needed, existing street widths, and existing development patterns. Preference shall be given to the higher value. Where values may be modified by the director, the overall width shall be determined using the standards under subsections (G)(2) through (10) of this section.**

Table 15.505.030(G) Street Design Standards

Type of Street	Right-of-Way Width	Curb-to-Curb Pavement Width	Motor Vehicle Travel Lanes	Median Type	Striped Bike Lane (Both Sides)	On-Street Parking
Arterial Streets						
Expressway**	ODOT	ODOT	ODOT	ODOT	ODOT	ODOT
Minor arterial	69 – 80 feet	48 feet	2 lanes	TWLTL or median*	Yes	No*
Collectors						
Minor	61 – 65 feet	40 feet	2 lanes	None*	Yes*	Yes*
Local Streets						
Local residential	54-60 feet	32 feet	2 lanes	None	No	Yes

2. **Motor Vehicle Travel Lanes. Collector and arterial streets shall have a minimum width of 12 feet.**
3. **Bike Lanes. Striped bike lanes shall be a minimum of six feet wide. Bike lanes shall be provided where shown in the Newberg transportation system plan.**
4. **Parking Lanes. Where on-street parking is allowed on collector and arterial streets, the parking lane shall be a minimum of eight feet wide.**
5. **Center Turn Lanes. Where a center turn lane is provided, it shall be a minimum of 12 feet wide.**
6. **Limited Residential Streets. Limited residential streets shall be allowed only at the discretion of the review authority, and only in consideration of the following factors:**
    a. **The requirements of the fire chief shall be followed.**
    b. **The estimated traffic volume on the street is low, and in no case more than 600 average daily trips.**
    c. **Use for through streets or looped streets is preferred over cul-de-sac streets.**
    d. **Use for short blocks (under 400 feet) is preferred over longer blocks.**
    e. **The total number of residences or other uses accessing the street in that block is small, and in no case more than 30 residences.**
    f. **On-street parking usage is limited, such as by providing ample off-street parking, or by staggering driveways so there are few areas where parking is allowable on both sides.**
7. **Sidewalks. Sidewalks shall be provided on both sides of all public streets. Minimum width is five feet.**
8. **Planter Strips. Except where infeasible, a planter strip shall be provided between the sidewalk and the curb line, with a minimum width of five feet. This strip shall be landscaped in accordance with the standards in NMC 15.420.020. Curb-side sidewalks may be allowed on limited residential streets. Where curb-side sidewalks are allowed, the following shall be provided:**
    a. **Additional reinforcement is done to the sidewalk section at corners.**
    b. **Sidewalk width is six feet.**
9. **Slope Easements. Slope easements shall be provided adjacent to the street where required to maintain the stability of the street.**
10. **Intersections and Street Design. The street design standards in the Newberg public works design and construction standards shall apply to all public streets, alleys, bike facilities, and sidewalks in the city.**
11. **The planning commission may approve modifications to street standards for the purpose of ingress or egress to a minimum of three and a maximum of six lots through a conditional use permit.**

Applicant's Facts and Findings: Streets, sidewalks and planter strips, as identified on the proposed public improvement plans, are designed to meet the standards of the Newberg Transportation System Plan and this section.

In one instance, the Applicant's proposed design departs from the City's standards. This proposed moficiation is requested within proposed planter width along the extension of Crestview Drive. A 0.5 foot reduction in planter width from 6 to 5.5 feet has been requested to accommodate grading for the lots proposed south of the round-a-bout. A total of 0.5 foot reduction has been proposed and is in the public interest as it allows for the retaining walls necessary for the extension of Crestview to be located outside of the public right-of-way. This reduction is only sought for the section of Crestview which is located between highway 99 and the proposed round-a-bout.

This standard is met.

H. Modification of Street Right-of-Way and Improvement Width. The director, pursuant to the Type II review procedures of Chapter 15.220 NMC, may allow modification to the public street standards of subsection (G) of this section, when the criteria in both subsections (H)(1) and (2) of this section are satisfied:

1. **The modification is necessary to provide design flexibility in instances where:**
    a. **Unusual topographic conditions require a reduced width or grade separation of improved surfaces; or**
    b. **Lot shape or configuration precludes accessing a proposed development with a street which meets the full standards of this section; or**
    c. **A modification is necessary to preserve trees or other natural features determined by the city to be significant to the aesthetic character of the area; or**
    d. **A planned unit development is proposed and the modification of street standards is necessary to provide greater privacy or aesthetic quality to the development.**
2. **Modification of the standards of this section shall only be approved if the director finds that the specific design proposed provides adequate vehicular access based on anticipated traffic volumes.**

Applicant's Facts and Findings: In one instance, the Applicant's proposed design departs from the City's standards. This proposed moficiation is requested within proposed planter width along the extension of Crestview Drive. A 0.5 foot reduction in planter width from 6 to 5.5 feet has been requested to accommodate grading for the lots proposed south of the round-a-bout. A total of 0.5 foot reduction has been proposed and is in the public interest as it allows for the retaining walls necessary for the extension of Crestview to be located outside of the public right-of-way. This reduction is only sought for the section of Crestview which is located between highway 99 and the proposed round-a-bout.

I. Temporary Turnarounds. Where a street will be extended as part of a future phase of a development, or as part of development of an abutting property, the street may be terminated with a temporary turnaround in lieu of a standard street connection or circular cul-de-sac bulb. The director and fire chief shall approve the temporary turnaround. It shall have an all-weather surface,

and may include a hammerhead-type turnaround meeting fire apparatus access road standards, a paved or graveled circular turnaround, or a paved or graveled temporary access road. For streets extending less than 150 feet and/or with no significant access, the director may approve the street without a temporary turnaround. Easements or right-of-way may be required as necessary to preserve access to the turnaround.

Applicant's Facts and Findings: The east-west minor collector dead-ends at the eastern property line for connection to future development. The easternmost north-south private street creates a hammerhead-type turnaround with the minor collector.

This standard is met.

J. Topography. The layout of streets shall give suitable recognition to surrounding topographical conditions in accordance with the purpose of this code.

Applicant's Facts and Findings: The layout of the streets takes into consideration the surrounding topography.

This standard is met.

K. Future Extension of Streets. All new streets required for a subdivision, partition, or a project requiring site design review shall be constructed to be "to and through": through the development and to the edges of the project site to serve adjacent properties for future development.

Applicant's Facts and Findings: The street network connects to the existing street to the north and future street development to the east. Connection to the west is not possible because the entire property line is adjacent to Spring Meadow Park. The connection to the south is the access from Highway 99W.

This standard is met.

L. Cul-de-Sacs.

1. **Cul-de-sacs shall only be permitted when one or more of the circumstances listed in this section exist. When cul-de-sacs are justified, public walkway connections shall be provided wherever practical to connect with another street, walkway, school, or similar destination.**
   a. **Physical or topographic conditions make a street connection impracticable. These conditions include but are not limited to controlled access streets, railroads, steep slopes, wetlands, or water bodies where a connection could not be reasonably made.**
   b. **Buildings or other existing development on adjacent lands physically preclude a connection now or in the future, considering the potential for redevelopment.**
   c. **Where streets or accessways would violate provisions of leases, easements, or similar restrictions.**

d. **Where the streets or accessways abut the urban growth boundary and rural resource land in farm or forest use, except where the adjoining land is designated as an urban reserve area.**

2. **Cul-de-sacs shall be no more than 400 feet long (measured from the centerline of the intersection to the radius point of the bulb).**
3. **Cul-de-sacs shall not serve more than 18 single-family dwellings.**
   Each cul-de-sac shall have a circular end with a minimum diameter of 96 feet, curb-to-curb, within a 109-foot minimum diameter right-of-way. For residential uses, a 35-foot radius may be allowed if the street has no parking, a mountable curb, curbside sidewalks, and sprinkler systems in every building along the street.

Applicant's Facts and Findings: No cul-de-sacs are proposed as part of this development and, as such, this standard is not applicable.

M. Street Names and Street Signs. Streets that are in alignment with existing named streets shall bear the names of such existing streets. Names for new streets not in alignment with existing streets are subject to approval by the director and the fire chief and shall not unnecessarily duplicate or resemble the name of any existing or platted street in the city. It shall be the responsibility of the land divider to provide street signs.

Applicant's Facts and Findings: The north-south major collector will be named Crestview Street as that is the name of the connection to the north. Other streets in the development are new and will be established with this development.

This standard is met.

N. Platting Standards for Alleys.

1. **An alley may be required to be dedicated and constructed to provide adequate access for a development, as deemed necessary by the director.**
2. **The right-of-way width and paving design for alleys shall be not less than 20 feet wide. Slope easements shall be dedicated in accordance with specifications adopted by the city council under NMC 15.505.010 et seq.**
3. **Where two alleys intersect, 10-foot corner cut-offs shall be provided.**
4. **Unless otherwise approved by the city engineer where topographical conditions will not reasonably permit, grades shall not exceed 12 percent on alleys, and centerline radii on curves shall be not less than 100 feet.**
5. **All provisions and requirements with respect to streets identified in this code shall apply to alleys the same in all respects as if the word "street" or "streets" therein appeared as the word "alley" or "alleys" respectively.**

Applicant's Facts and Findings: The alleys included with this proposal are all proposed as private streets owned and maintained by the Homeowner's Association.

This standard is met.

O. Platting Standards for Blocks.

1. **Purpose. Streets and walkways can provide convenient travel within a neighborhood and can serve to connect people and land uses. Large, uninterrupted blocks can serve as a barrier to travel, especially walking and biking. Large blocks also can divide rather than unite neighborhoods. To promote connected neighborhoods and to shorten travel distances, the following minimum standards for block lengths are established.**
2. **Maximum Block Length and Perimeter. The maximum length and perimeters of blocks in the zones listed below shall be according to the following table. The review body for a subdivision, partition, conditional use permit, or a Type II design review may require installation of streets or walkways as necessary to meet the standards below.**

Zones(s)	Maximum Block Length	Maximum Block Perimeter
R-1	800 feet	2,000 feet
R-2, R-3, RP, I	1,200 feet	3,000 feet

3. **Exceptions.**

a. **If a public walkway is installed mid-block, the maximum block length and perimeter may be increased by 25 percent.**
b. **Where a proposed street divides a block, one of the resulting blocks may exceed the maximum block length and perimeter standards provided the average block length and perimeter of the two resulting blocks do not exceed these standards.**
c. **Blocks in excess of the above standards are allowed where access controlled streets, street access spacing standards, railroads, steep slopes, wetlands, water bodies, preexisting development, ownership patterns or similar circumstances restrict street and walkway location and design. In these cases, block length and perimeter shall be as small as practical. Where a street cannot be provided because of these circumstances but a public walkway is still feasible, a public walkway shall be provided.**
d. **Institutional campuses located in an R‐1 zone may apply the standards for the institutional zone.**
e. **Where a block is in more than one zone, the standards of the majority of land in the proposed block shall apply.**
f. **Where a local street plan, concept master site development plan, or specific plan has been approved for an area, the block standards shall follow those approved in the plan. In approving such a plan, the review body shall follow the block standards listed above to the extent appropriate for the plan area.**

Applicant's Facts and Findings: The proposed development would create several blocks however the patterns of natural resources present on the site and the existing development surrounding the property make a traditional subdivision with blocks meeting the standards listed above impractical, particularly along the project's boundaries. Where future

connections to the east are possible, a block length patterns of less than 1,200 feet with perimeter distances of less than 1,800 feet have been set up for future extension. Along the northern, southern, and western boundaries, the pattern of existing development completely prevents the extension of roadways (Crestview Drive excluded).

Throughout the rest of the development, instead of a traditional block layout, the applicant has proposed a series of blocks which are porous and interconnected with private streets, walkways, and alleys. In no instance within the internal street network are block lengths or perimeters exceeding the standards.

The applicant's proposal qualifies for the exemptions listed in Subsection C of this requirement due to the presence of existing natural resources, and because of the unique existing roadway spacing plans described within the City's Transportation System Plan. This criterion is met.

This standard is met.

P. Private Streets. New private streets, as defined in NMC 15.05.030, shall not be created, except as allowed by NMC 15.240.020(L)(2).

Applicant's Facts and Findings: Private streets are proposed in compliance with NMC 15.240.020(L)(2), as addressed previously in this narrative.

This standard is met.

Q. Traffic Calming.

1. **The following roadway design features may be required in new street construction where traffic calming needs are anticipated:**
   a. **Serpentine alignment.**
   b. **Curb extensions.**
   c. **Traffic diverters/circles.**
   d. **Raised medians and landscaping.**
   e. **Other methods shown effective through engineering studies.**
2. **Traffic-calming measures such as speed humps should be applied to mitigate traffic operations and/or safety problems on existing streets. They should not be applied with new street constructions.**

Applicant's Facts and Findings: Traffic calming measures are not proposed as the submitted Transportation Impact Analysis demonstrates that the proposed street network is safe and effective.

This standard is met.

R. Vehicular Access Standards.

1. **Purpose. The purpose of these standards is to manage vehicle access to maintain traffic flow, safety, roadway capacity, and efficiency. They help to maintain an adequate level of service consistent with the functional classification of the street. Major roadways, including arterials and collectors, serve as the primary system for moving people and goods within and through the city. Access is limited and managed on these roads to promote efficient through movement. Local streets and alleys provide access to individual properties. Access is managed on these roads to maintain safe maneuvering of vehicles in and out of properties and to allow safe through movements. If vehicular access and circulation are not properly designed, these roadways will be unable to accommodate the needs of development and serve their transportation function.**
2. **Access Spacing Standards. Public street intersection and driveway spacing shall follow the standards in Table 15.505.R below. The Oregon Department of Transportation (ODOT) has jurisdiction of some roadways within the Newberg city limits, and ODOT access standards will apply on those roadways.**

Table 15.505.R. Access Spacing Standards

Roadway Functional Classification	Area[1]	Minimum Public Street Intersection Spacing (Feet)[2]	Driveway Setback from Intersecting Street[3]
Expressway	All	Refer to ODOT Access Spacing Standards	NA
Major Arterial	Urban CBD	Refer to ODOT Access Spacing Standards	
Minor Arterial	Urban CBD	500 200	150 100
Major Collector	All	400	150
Minor Collector	All	300	100

3. **Properties with Multiple Frontages. Where a property has frontage on more than one street, access shall be limited to the street with the lesser classification.**
4. **Driveways. More than one driveway is permitted on a lot accessed from either a minor collector or local street as long as there is at least 40 feet of lot frontage separating each driveway approach. More than one driveway is permitted on a lot accessed from a major collector as long as there is at least 100 feet of lot frontage separating each driveway approach.**
5. **Alley Access. Where a property has frontage on an alley and the only other frontages are on collector or arterial streets, access shall be taken from the alley only. The review body may allow creation of an alley for access to lots that do not otherwise have frontage on a public street provided all of the following are met:**
   a. **The review body finds that creating a public street frontage is not feasible.**
   b. **The alley access is for no more than six dwellings and no more than six lots.**
   c. **The alley has through access to streets on both ends.**

d. One additional parking space over those otherwise required is provided for each dwelling. Where feasible, this shall be provided as a public use parking space adjacent to the alley.

6. Closure of Existing Accesses. Existing accesses that are not used as part of development or redevelopment of a property shall be closed and replaced with curbing, sidewalks, and landscaping, as appropriate.

7. Shared Driveways.

a. The number of driveways onto arterial streets shall be minimized by the use of shared driveways with adjoining lots where feasible. The city shall require shared driveways as a condition of land division or site design review, as applicable, for traffic safety and access management purposes. Where there is an abutting developable property, a shared driveway shall be provided as appropriate. When shared driveways are required, they shall be stubbed to adjacent developable parcels to indicate future extension. "Stub" means that a driveway temporarily ends at the property line, but may be accessed or extended in the future as the adjacent parcel develops. "Developable" means that a parcel is either vacant or it is likely to receive additional development (i.e., due to infill or redevelopment potential).

b. Access easements (i.e., for the benefit of affected properties) and maintenance agreements shall be recorded for all shared driveways, including pathways, at the time of final plat approval or as a condition of site development approval.

c. No more than four lots may access one shared driveway.

d. Shared driveways shall be posted as no parking fire lanes where required by the fire marshal.

e. Where three lots or three dwellings share one driveway, one additional parking space over those otherwise required shall be provided for each dwelling. Where feasible, this shall be provided as a common use parking space adjacent to the driveway.

8. Frontage Streets and Alleys. The review body for a partition, subdivision, or design review may require construction of a frontage street to provide access to properties fronting an arterial or collector street.

9. ODOT or Yamhill County Right-of-Way. Where a property abuts an ODOT or Yamhill County right-of-way, the applicant for any development project shall obtain an access permit from ODOT or Yamhill County.

10. Exceptions. The director may allow exceptions to the access standards above in any of the following circumstances:

a. Where existing and planned future development patterns or physical constraints, such as topography, parcel configuration, and similar conditions, prevent access in accordance with the above standards.

b. Where the proposal is to relocate an existing access for existing development, where the relocated access is closer to conformance with the standards above and does not increase the type or volume of access.

c. **Where the proposed access results in safer access, less congestion, a better level of service, and more functional circulation, both on street and on site, than access otherwise allowed under these standards.**

11. **Where an exception is approved, the access shall be as safe and functional as practical in the particular circumstance. The director may require that the applicant submit a traffic study by a registered engineer to show the proposed access meets these criteria.**

Applicant's Facts and Findings:

This application proposes one access on Highway 99W.

The submitted plans show the driveways for Private Street G and Private Street H to the east of E Crestview Drive (major collector). The plans provided illustrate that Private Street G does not meet spacing requirements from a Public Street intersection but this intersection has been determined to be ideal for access to the northern portion of this block because of the presense of a wetland located to the east and because of the proposed private street and block platting pattern.

Because the applicant is not meeting street spacing standards, Private Street G, driveway setbacks need to be a minimum of 150-feet from E Crestview Drive per Table 15.505.R Access Spacing Standards. The Applicant is willing to accept a condition of approval requiring an access control device, such as a right-in/right-out access restriction at the northern end of Private Street G.

All other driveway and intersection spacing standards are met, as demonstrated on the submitted public improvement plans.

This standard is met.

S. Public Walkways.

1. **Projects subject to Type II design review, partition, or subdivision approval may be required to provide public walkways where necessary for public safety and convenience, or where necessary to meet the standards of this code. Public walkways are meant to connect cul-de-sacs to adjacent areas, to pass through oddly shaped or unusually long blocks, to provide for networks of public paths according to adopted plans, or to provide access to schools, parks or other community destinations or public areas. Where practical, public walkway easements and locations may also be used to accommodate public utilities.**
2. **Public walkways shall be located within a public access easement that is a minimum of 15 feet in width.**
3. **A walk strip, not less than 10 feet in width, shall be paved in the center of all public walkway easements. Such paving shall conform to specifications in the Newberg public works design and construction standards.**
4. **Public walkways shall be designed to meet the Americans with Disabilities Act requirements.**
5. **Public walkways connecting one right-of-way to another shall be designed to provide as short and straight of a route as practical.**

6. **The developer of the public walkway may be required to provide a homeowners' association or similar entity to maintain the public walkway and associated improvements.**
7. **Lighting may be required for public walkways in excess of 250 feet in length.**
8. **The review body may modify these requirements where it finds that topographic, preexisting development, or similar constraints exist.**

Applicant's Facts and Findings: Public walkways are proposed to connect the multi-family resident to Highway 99W, throughout the wetland/natural areas, and connecting from the development to Spring Meadow Park to the west.

This standard is met.

T. Street Trees. Street trees shall be provided for all projects subject to Type II design review, partition, or subdivision. Street trees shall be installed in accordance with the provisions of NMC 15.420.010(B)(4).

Applicant's Facts and Findings: As indicated on the submitted landscaping plans, street trees are proposed on all streets.

This standard is met.

U. Street Lights. All developments shall include underground electric service, light standards, wiring and lamps for street lights according to the specifications and standards of the Newberg public works design and construction standards. The developer shall install all such facilities and make the necessary arrangements with the serving electric utility as approved by the city. Upon the city's acceptance of the public improvements associated with the development, the street lighting system, exclusive of utility-owned service lines, shall be and become property of the city unless otherwise designated by the city through agreement with a private utility.

Applicant's Facts and Findings: This proposal includes developer-installed underground electric service, light standards, wiring and lamps for street lights according to the specifications and standards of the Newberg public works design and construction standards.

This standard is met.

V. Transit Improvements. Development proposals for sites that include or are adjacent to existing or planned transit facilities, as shown in the Newberg transportation system plan or adopted local or regional transit plan, shall be required to provide any of the following, as applicable and required by the review authority:

1. **Reasonably direct pedestrian connections between the transit facility and building entrances of the site. For the purpose of this section, "reasonably direct" means a route that does not deviate unnecessarily from a straight line or a route that does not involve a significant amount of out-of-direction travel for users.**

2. **A transit passenger landing pad accessible to disabled persons.**
3. **An easement of dedication for a passenger shelter or bench if such facility is in an adopted plan.**
4. **Lighting at the transit facility.**

Applicant's Facts and Findings: There are no transit facilities within or adjacent to this site and, as such, this standard is not applicable.

15.505.040 Public utility standards.

A. Purpose. The purpose of this section is to provide adequate services and facilities appropriate to the scale and type of development.

B. Applicability. This section applies to all development where installation, extension or improvement of water, wastewater, or private utilities is required to serve the development or use of the subject property.

C. General Standards.

1. **The design and construction of all improvements within existing and proposed rights-of-way and easements, all improvements to be maintained by the city, and all improvements for which city approval is required shall conform to the Newberg public works design and construction standards and require a public improvements permit.**
2. **The location, design, installation and maintenance of all utility lines and facilities shall be carried out with minimum feasible disturbances of soil and site. Installation of all proposed public and private utilities shall be coordinated by the developer and be approved by the city to ensure the orderly extension of such utilities within public right-of-way and easements.**

D. Standards for Water Improvements. All development that has a need for water service shall install the facilities pursuant to the requirements of the city and all of the following standards. Installation of such facilities shall be coordinated with the extension or improvement of necessary wastewater and stormwater facilities, as applicable.

1. **All developments shall be required to be linked to existing water facilities adequately sized to serve their intended area by the construction of water distribution lines, reservoirs and pumping stations which connect to such water service facilities. All necessary easements required for the construction of these facilities shall be obtained by the developer and granted to the city pursuant to the requirements of the city.**
2. **Specific location, size and capacity of such facilities will be subject to the approval of the director with reference to the applicable water master plan. All water facilities shall conform with city pressure zones and shall be looped where necessary to provide adequate pressure and fire flows during peak demand at every point within the system in the development to which the water facilities will be connected. Installation costs shall remain entirely the developer's responsibility.**
3. **The design of the water facilities shall take into account provisions for the future extension beyond the development to serve adjacent properties, which, in the judgment of the city, cannot be feasibly served otherwise.**

4. **Design, construction and material standards shall be as specified by the director for the construction of such public water facilities in the city.**

E. Standards for Wastewater Improvements. All development that has a need for wastewater services shall install the facilities pursuant to the requirements of the city and all of the following standards. Installation of such facilities shall be coordinated with the extension or improvement of necessary water services and stormwater facilities, as applicable.

1. **All septic tank systems and on-site sewage systems are prohibited. Existing septic systems must be abandoned or removed in accordance with Yamhill County standards.**
2. **All properties shall be provided with gravity service to the city wastewater system, except for lots that have unique topographic or other natural features that make gravity wastewater extension impractical as determined by the director. Where gravity service is impractical, the developer shall provide all necessary pumps/lift stations and other improvements, as determined by the director.**
3. **All developments shall be required to be linked to existing wastewater collection facilities adequately sized to serve their intended area by the construction of wastewater lines which connect to existing adequately sized wastewater facilities. All necessary easements required for the construction of these facilities shall be obtained by the developer and granted to the city pursuant to the requirements of the city.**
4. **Specific location, size and capacity of wastewater facilities will be subject to the approval of the director with reference to the applicable wastewater master plan. All wastewater facilities shall be sized to provide adequate capacity during peak flows from the entire area potentially served by such facilities. Installation costs shall remain entirely the developer's responsibility.**
5. **Temporary wastewater service facilities, including pumping stations, will be permitted only if the director approves the temporary facilities, and the developer provides for all facilities that are necessary for transition to permanent facilities.**
6. **The design of the wastewater facilities shall take into account provisions for the future extension beyond the development to serve upstream properties, which, in the judgment of the city, cannot be feasibly served otherwise.**
7. **Design, construction and material standards shall be as specified by the director for the construction of such wastewater facilities in the city.**

F. Easements. Easements for public and private utilities shall be provided as deemed necessary by the city, special districts, and utility companies. Easements for special purpose uses shall be of a width deemed appropriate by the responsible agency. Such easements shall be recorded on easement forms approved by the city and designated on the final plat of all subdivisions and partitions. Minimum required easement width and locations are as provided in the Newberg public works design and construction standards.

Applicant's Facts and Findings:	The development will connect to public utilities, including water and sanitary sewer. As demonstrated on the submitted public improvement plans, all public utilities are designed to be constructed to City standards. This standard is met.

15.505.050 Stormwater system standards.

A. Purpose. The purpose of this section is to provide for the drainage of surface water from all development; to minimize erosion; and to reduce degradation of water quality due to sediments and pollutants in stormwater runoff.

B. Applicability. The provisions of this section apply to all developments subject to site development review or land division review and to the reconstruction or expansion of such developments that increases the flow or changes the point of discharge to the city stormwater system. Additionally, the provisions of this section shall apply to all drainage facilities that impact any public storm drain system, public right-of-way or public easement, including but not limited to off-street parking and loading areas.

C. General Requirement. All stormwater runoff shall be conveyed to a public storm wastewater or natural drainage channel having adequate capacity to carry the flow without overflowing or otherwise causing damage to public and/or private property. The developer shall pay all costs associated with designing and constructing the facilities necessary to meet this requirement.

D. Plan for Stormwater and Erosion Control. No construction of any facilities in a development included in subsection (B) of this section shall be permitted until an engineer registered in the State of Oregon prepares a stormwater report and erosion control plan for the project. This plan shall contain at a minimum:

1. **The methods to be used to minimize the amount of runoff, sedimentation, and pollution created from the development both during and after construction.**
2. **Plans for the construction of stormwater facilities and any other facilities that depict line sizes, profiles, construction specifications, and other such information as is necessary for the city to review the adequacy of the stormwater plans.**
3. **Design calculations shall be submitted for all drainage facilities. These drainage calculations shall be included in the stormwater report and shall be stamped by a licensed professional engineer in the State of Oregon. Peak design discharges shall be computed based upon the design criteria outlined in the public works design and construction standards for the city.**

E. Development Standards. Development subject to this section shall be planned, designed, constructed, and maintained in compliance with the Newberg public works design and construction standards.

Applicant's Facts and Findings: The submitted public improvement plans include details of the proposed stormwater detention and treatment plan. The stormwater detention and treatment plan is designed to meet City standards and to preclude stormwater drainage on surrounding properties.

This standard is met.

SUMMARY AND CONCLUSION

Based upon the materials submitted herein, the Applicant respectfully requests approval from the City's Planning Commission of this application for a Planned Unit Development and a Conditional Use Permit.