ORDINANCE NO. 2008-2696: ARCHITECTURAL DESIGN STANDARDS FOR LARGE SCALE DEVELOPMENT IN THE C-2 DISTRICT

Additional Requirements for the Development in the C-2 Zoning District ***(as summarized)***

(1) *Building entrances. Each building on a lot shall have a primary pedestrian entrance oriented to the primary street. (A)*

Response: The existing Fred Meyer store meets this requirement. The proposed fueling facility includes a gasoline dispenser canopy and 8x14-foot kiosk and does not include a building with pedestrian entrance.

(2) *Parking and service drives. No off street parking or service drives shall be placed within the required front yard setback. (B)*

Response: The proposed fueling facility will be located towards the rear of the site and does not propose to chance any existing parking areas within the front setback.

(3) *Building mass, corner lots, pedestrian- scale building entrances and windows. (D-G)*

Response: These items do not apply to the proposed fueling facility because it is limited to a gasoline canopy and kiosk with no internal floor area open to the public.

(4) *Design of large scale building and developments. All buildings on a development site shall conform to the design standards included under §151.796 (H) where the total square footage of one commercial building exceeds 30,000 square feet of total ground floor area or all commercial buildings exceed 50,000 square feet of total ground floor area. Deviations from these standards may be approved where appropriate, through the conditional use process. (H)*

Response: Due to the nature of the proposal as a gas station on an existing retail site, deviation from these standards is requested.

a. *Facade articulation, pedestrian entrance, and building facades not fronting a street.*

Response: These items do not apply to the proposed fueling facility because it is limited to a gasoline canopy and kiosk with no internal floor area open to the public.

b. *On-site landscaping and screening.*

Response: The project is located in an existing parking lot that contains mature landscaping throughout, and dense screening on the west side. The project is also located away from the main roads and thus is buffered from views due to the distance and intervening mature landscaping. Proposed landscaping will match the existing planting pattern and will further complement and buffer the project.

(5) *Vehicle and pedestrian connectivity. Public streets may be required to be dedicated where needed to improve internal circulation and to connect to neighboring properties or streets. At a minimum, 95 percent of parking space shall be located within 75 feet of a private walkway or public sidewalk.*

Response: No additional vehicle connections are proposed, nor are any changes to existing access proposed.

(6) *Pedestrian-scale lighting.*

Response: The project will remove an existing lot light and replace it with low level canopy lighting specially designed to direct lighting downward and reduce glare. The proposed lighting will be an improvement over the existing condition.

(7) *Parking. The number of parking stalls shall not exceed 125 percent of the minimum number of stalls required.*

Response: The project will remove parking stalls and therefore will bring the property into closer compliance with code standards.

(8) *Existing development. Any existing legal conforming site, through future development exceeds the square footage threshold contained in §151.196 (H) shall follow the standards contained in §151.140 NON-CONFROMING USES AND BUILDINGS.*

Response: The proposed fueling facility is not a nonconforming use, nor is it the repair or expansion of a nonconforming use or building.

Vegetation Site Photographs

for

Fred Meyer Fueling Facility

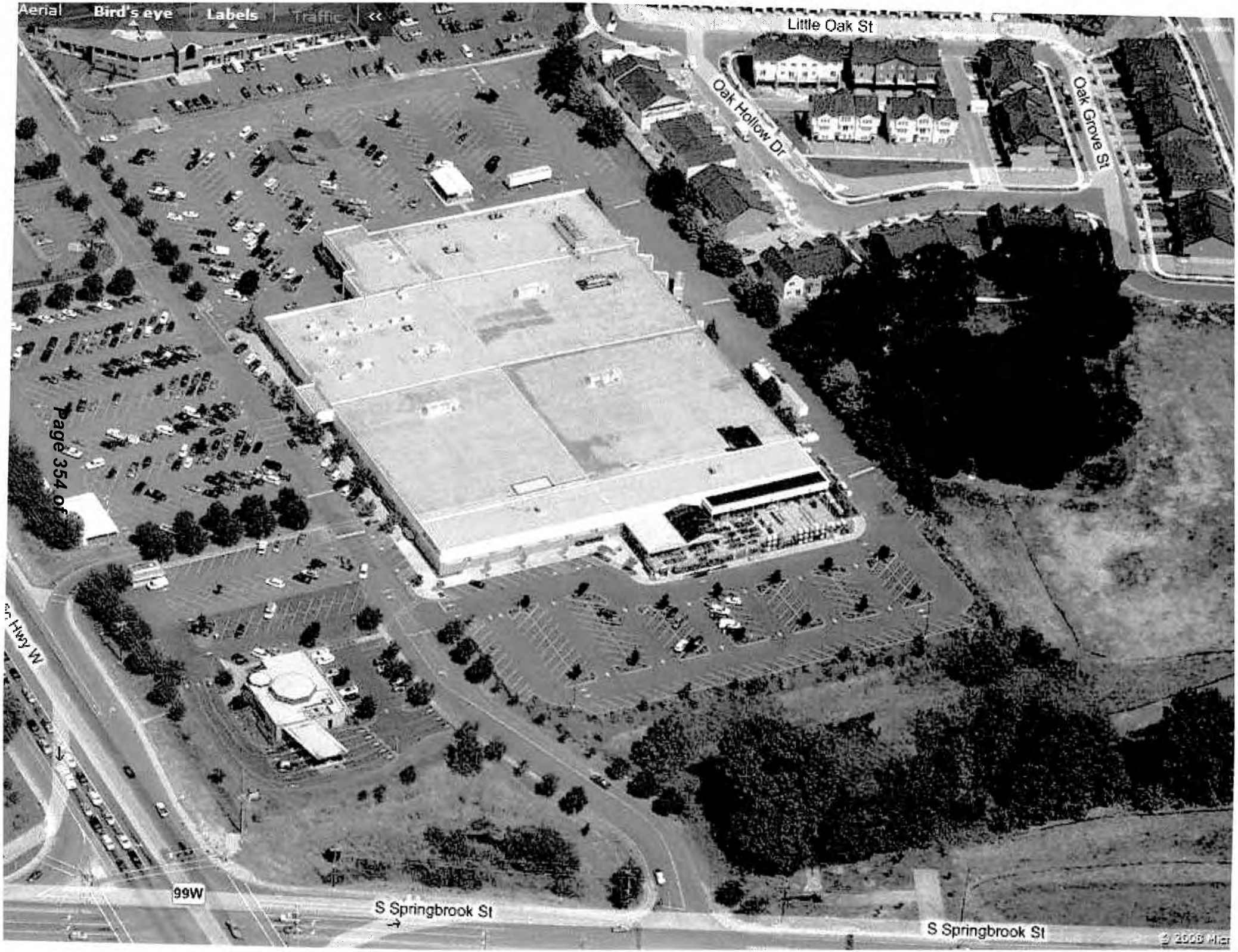
3300 Portland Road
Newberg, Oregon

Prepared By:

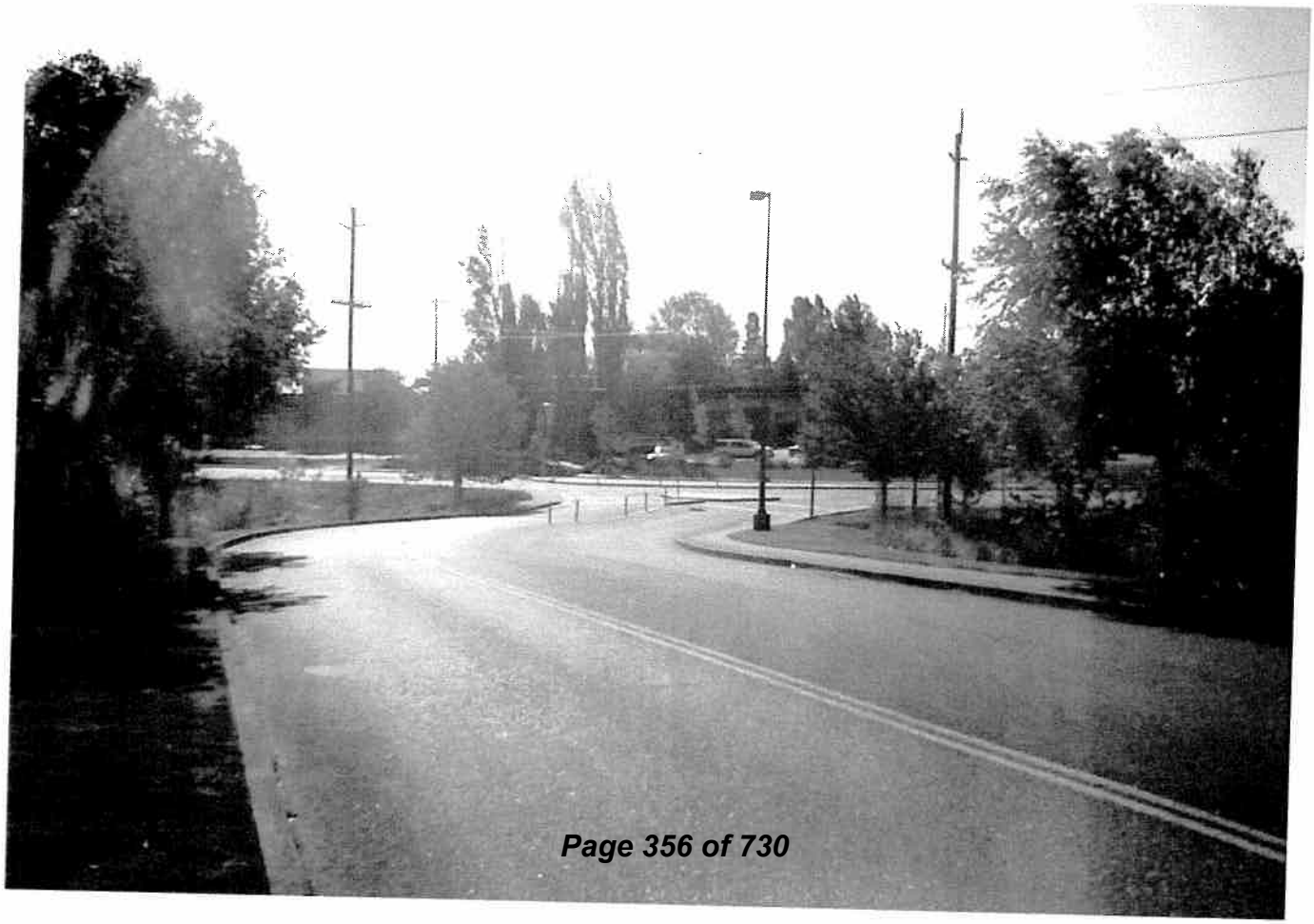
Barghausen Consulting Engineers, Inc.
18215 – 72nd Avenue South
Kent, WA 98032

Job No. 10315

Date: December 2008

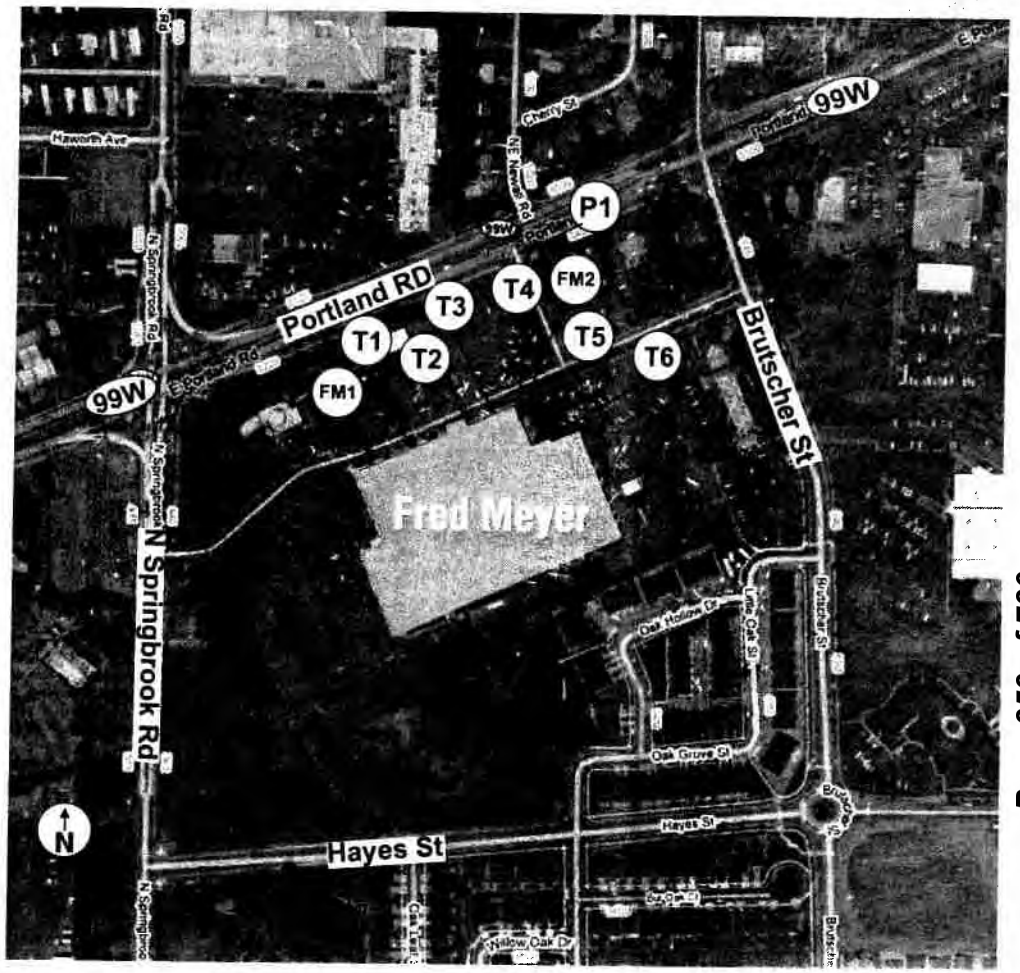

Aerial
Bird's eye
Labels
Traffic
Little Oak St
Oak Hollow Dr
Oak Grove St
99W
S Springbrook St
S Springbrook St

2D 3D
Road
Aerial
Bird's eye
Labels
Traffic
E
N
S
W
SW Pacific Hwy
Springbrook
Hayes St
Springbrook St
Royal
Burl St
Brutscher St
30 yds
Microsoft Virtual Earth™
© 2008 Microsoft Corporation © 2008 NAVTEQ © AND
© 2008 Pictometry International Corp.



FRED MEYER- Newberg
Existing Signage

Fm1	FM Letters on clips 52"M (277V)
FM2	FM Letters on clips 52"M (277V)
T1	WaMu Logo 36" x 36"
T2	Perfect Look Letter on raceway
T3	Lazer Quick on raceway
T4	Lazer Quick on raceway
T5	Starbucks Coffee on raceway
T6	Washington Mutual
P1	Fred Meyer Pylon (277V)



TubeArt
Architectural & Electrical Displays
4243-A SE International Way
Portland, OR 97222
TEL 503-653-1133
FAX 503-659-9191

QUOTE NUMBER	A. Conant SALESPERSON	12/31/08 DATE	
2308 CUSTOMER NUMBER	Sean DRAWN BY		
FM Newberg Photo Survey.cdr FILE NAME	CHECKED BY	REVISIONS	REVISIONS

[ ] Approved
[ ] Approved with changes noted

CUSTOMER SIGNATURE LANDLORD SIGNATURE

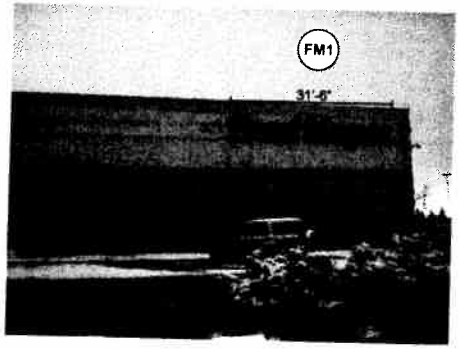
DATE DATE

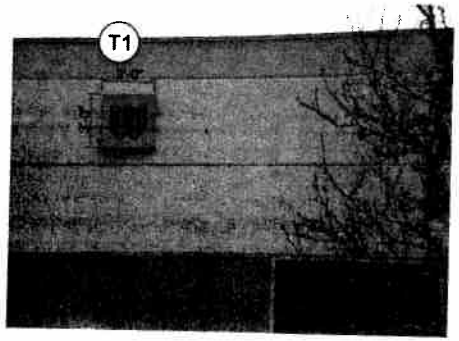
Fred Meyer
3300 Portland Rd
100, Newberg, OR

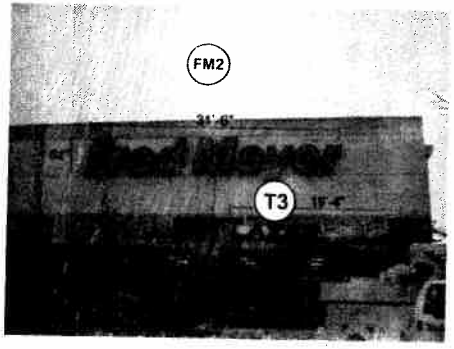
This original artwork is protected under Federal Copyright Laws. Make no reproduction of this design concept without permission from TubeArt

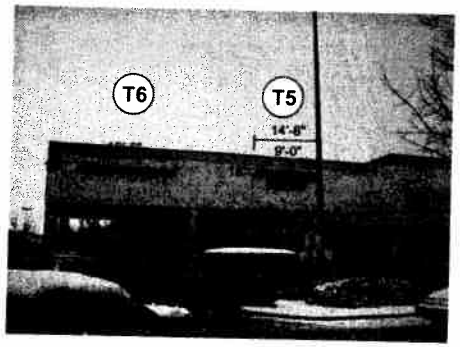
Colors on print do not accurately depict specified colors

Existing Site Conditions









Garden Center (no signage)

TubeArt
Architectural & Electrical Displays
4243-A SE International Way
Portland OR 97222
TEL 503-653-1133
FAX 503-659-9191

QUOTE NUMBER	A. Conant SALESPERSON	12/31/08 DATE	
2308 CUSTOMER NUMBER	Sean DRAWN BY		
FM Newberg Photo Survey.cdr FILE NAME	CHECKED BY	REVISIONS	REVISIONS

[ ] Approved
[ ] Approved with changes noted

CUSTOMER SIGNATURE — LANDLORD SIGNATURE
DATE — DATE

Fred Meyer
3300 Portland Rd
100, Newberg, OR

This original artwork is protected under Federal Copyright Laws. Make no reproduction of this design concept without permission from TubeArt.

Colors on print do not accurately depict specified colors.

MANUFACTURE AND INSTALL: ONE (1) DOUBLE FACED ILLUMINATED FUEL PRICING DISPLAY
Scale: ½" = 1'-0"

(a) Fabricated aluminum D/F cabinet with #13 retainers painted semi gloss Black. Horizontal fluorescent illumination.

Flat Lexan face with digital print logo on clear vinyl and 3M or Gerber black vinyl applied to first surface, letters and white of logo weeded to appear white. No hinged side, service by end retainer

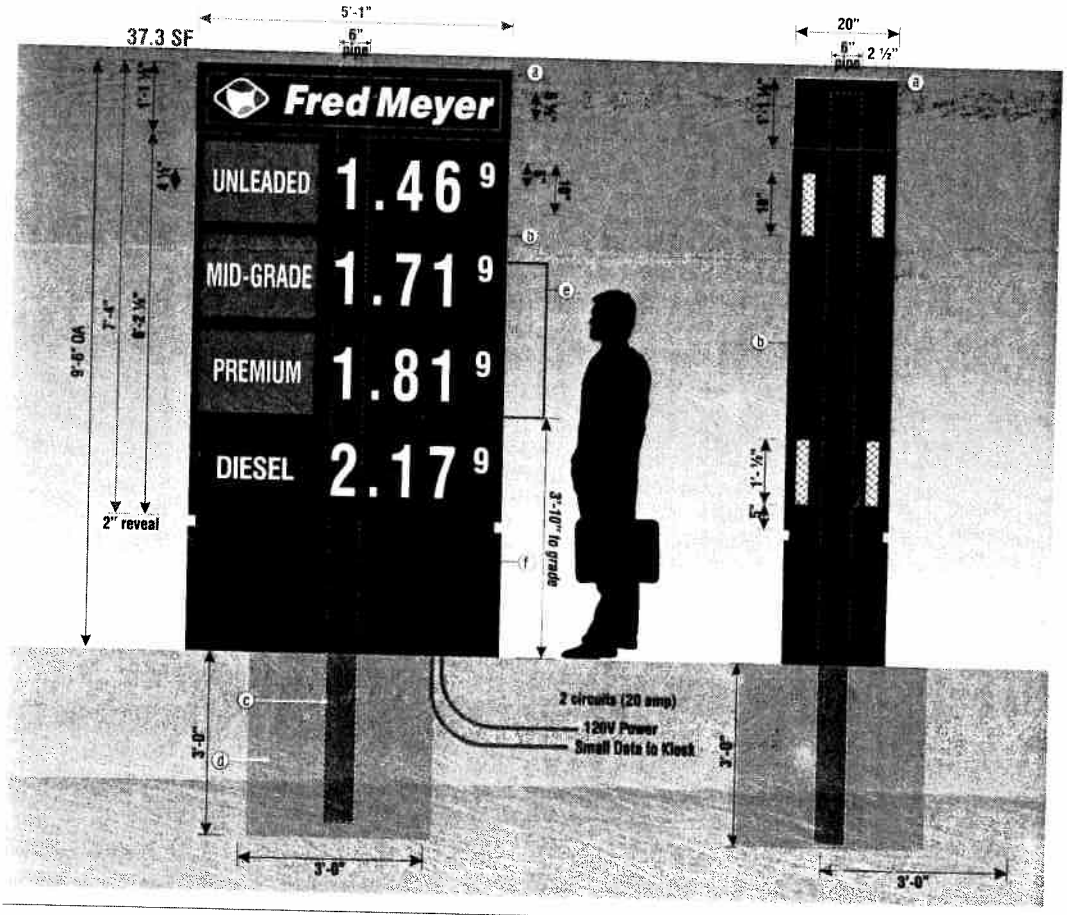
(b) Skyline 4 price vertically stacked D/F unit.

(c) 6" steel pole (verify)

(d) 4'-6" x 4'-6" x 5' footing (verify)

(e) Controller unit (By Skyline) to be 16" to grade.

(f) Base/Pole cover. Angle frame skinned with .090 Aluminum painted Black

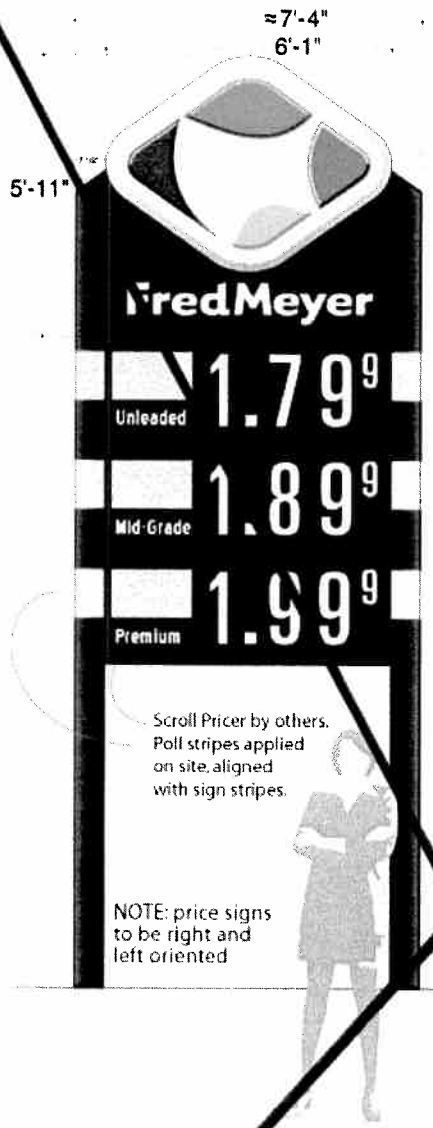


Sign #1 — Double Faced Illuminated Fuel Pricing Display

Scale: ½" = 1'-0"

This original artwork is protected under Federal Copyright Laws. Make no reproduction of this design concept without permission from TubeArt
Colors on print do not accurately

Welcome your customers with the friendly appeal of brightly illuminated signage displaying your colorful and inviting new logo! This new signage is quality manufactured by America's premier sign producer, Dualite Sales & Service, Inc. Dualite products are backed by a liberal warranty and our customer service and project management are the finest in the industry.



Scroll Pricer Pylon Sign

Vacuum thermo formed and embossed break-resistant SG Lexan™ plastic face, capped over CNC fabricated aluminum housing with routed out push-thru sculpted logo letters, illuminated with high output fluorescent lamps.

Units available as high rise and low profile signage, as permitted by local code.

Sign installation service can be provided by Dualite Project Management.

Does not apply to Newberg Fred Meyer

A variety of sign components can be provided by Dualite.
Call for info (973)-383-5774

Illuminated Icon & Logotype for Building Canopies

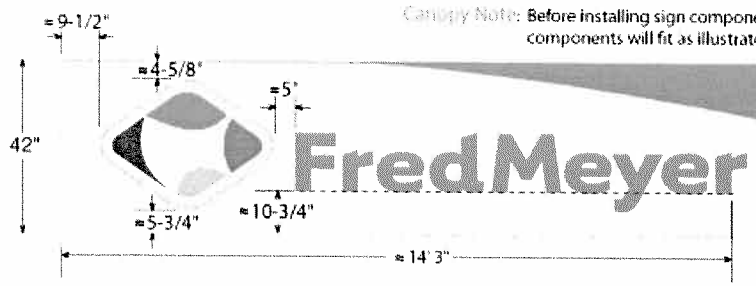
'A' size

A Size - 15" Cap Height Logotype, 33 1/2" X 45" Icon, all mounted to Canopy Fascia.

Vacuum thermo formed and embossed break-resistant SG Lexan™ plastic face, "capped- over" CNC fabricated aluminum housing with fluorescent illumination.

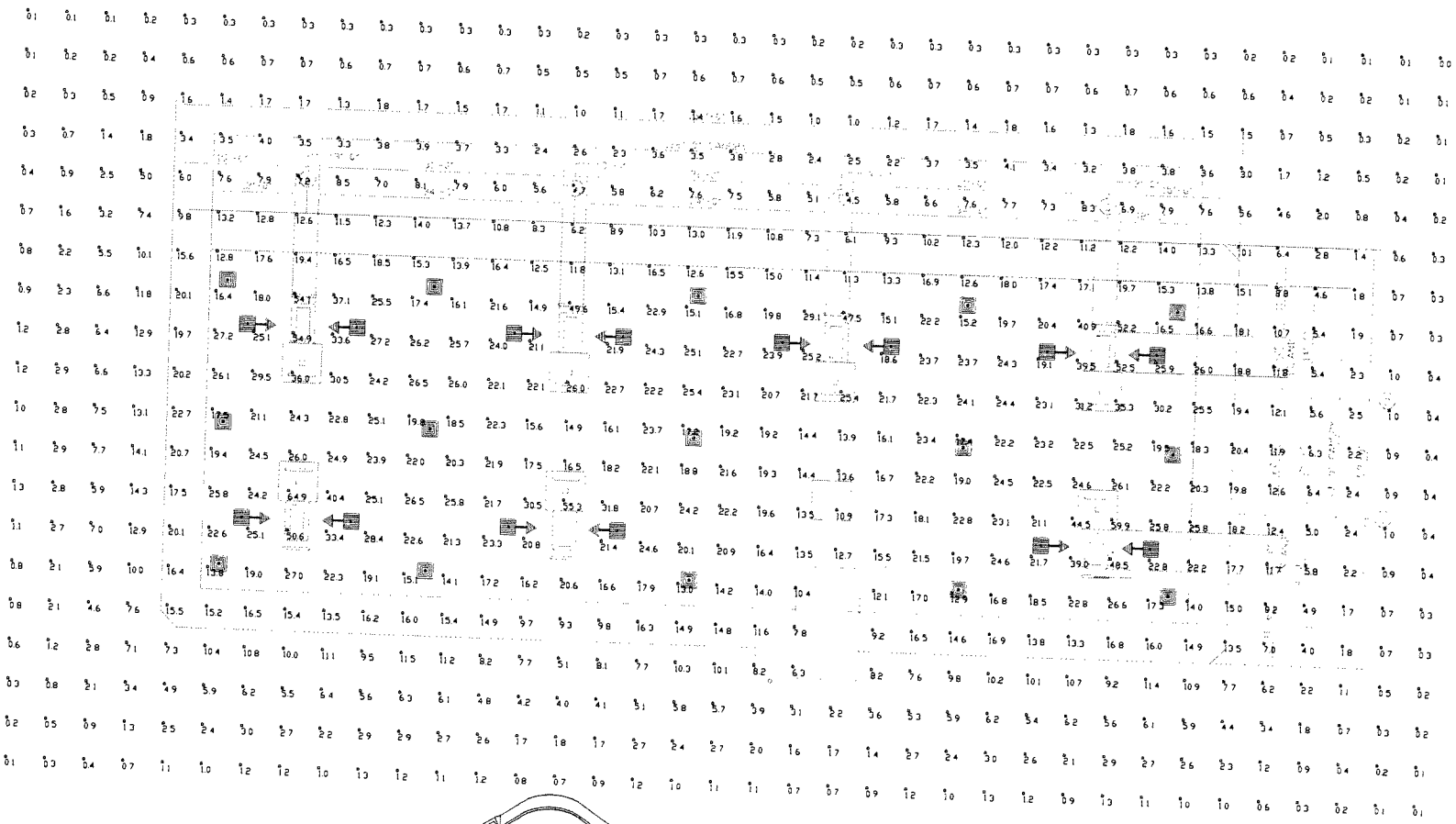
CNC routed acrylic letters with plastic trim cap over CNC fabricated aluminum housing with GelCore™ Red L.E.D. illumination.

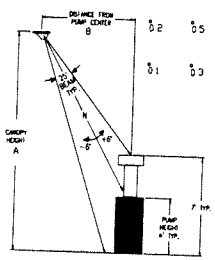
Canopy Note: Before installing sign components, check dimensions of canopy graphics to assure sign components will fit as illustrated. Sign component dimensions are approximate.



Design No 05-11-66 KROGER KSM

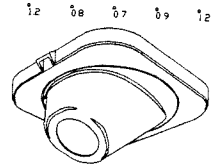
Based on the information provided, all dimensions and luminaire locations shown represent recommended positions. The engineer and/or architect must determine applicability of the layout to existing or future field conditions.





LAMP LAYOUT FOR 25° FLOOD

A VERTICAL HEIGHT OF CANOPY	B HORIZONTAL DISTANCE FROM CENTER OF DISPENSER TO CENTER OF FIXTURE								
	4'8"	5'4"	6'	6'8"	7'4"	8'	8'8"	9'4"	10'
16'	-6	-6	-6	N	N	N	N	+6	+6
15 1/2'	-6	-6	N	N	N	N	N	+6	+6
15'	-6	-6	N	N	N	N	N	+6	+6
14 1/2'	-6	-6	N	N	N	N	+6	+6	+6
14'	-6	-6	N	N	N	N	+6	+6	+6



FOCUS

FLAT LENS ENCORE

MAINTAINED FOOTCANDLE VALUES AT GRADE, USING A .72 MAINTENANCE FACTOR.

Numeric Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
DISPENSER	Illuminance	Fc	43.06	69.0	25.1	1.72	2.75

Statistical Area Summary

Label	Avg	Max	Min	Avg/Min	Max/Min
CANOPY	22.79	64.9	10.4	2.19	6.24

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Lumens	LLF	Description	Total Watts
	14	A	SINGLE	6000	0.720	ECTA-SP-100-P-38-FD	129
	15	B	SINGLE	23000	0.720	ECTA-S-250-PSMV-F	295

This lighting pattern represents illumination levels calculated from laboratory data taken under controlled conditions utilizing current industry standard lamp ratings in accordance with Illuminating Engineering Society approved methods. Actual performance of any manufacturer's luminaire may vary due to variation in electrical voltage, tolerance in lamps and other variable field conditions.

Rev.	Date	By

Revisions

LSI INDUSTRIES™

LIGHTING PROPOSAL FOR
KROGER STANDARD
CANOPIES 2005

SCALE: 1"=10'
DATE: 10-25-05
BY: BDB

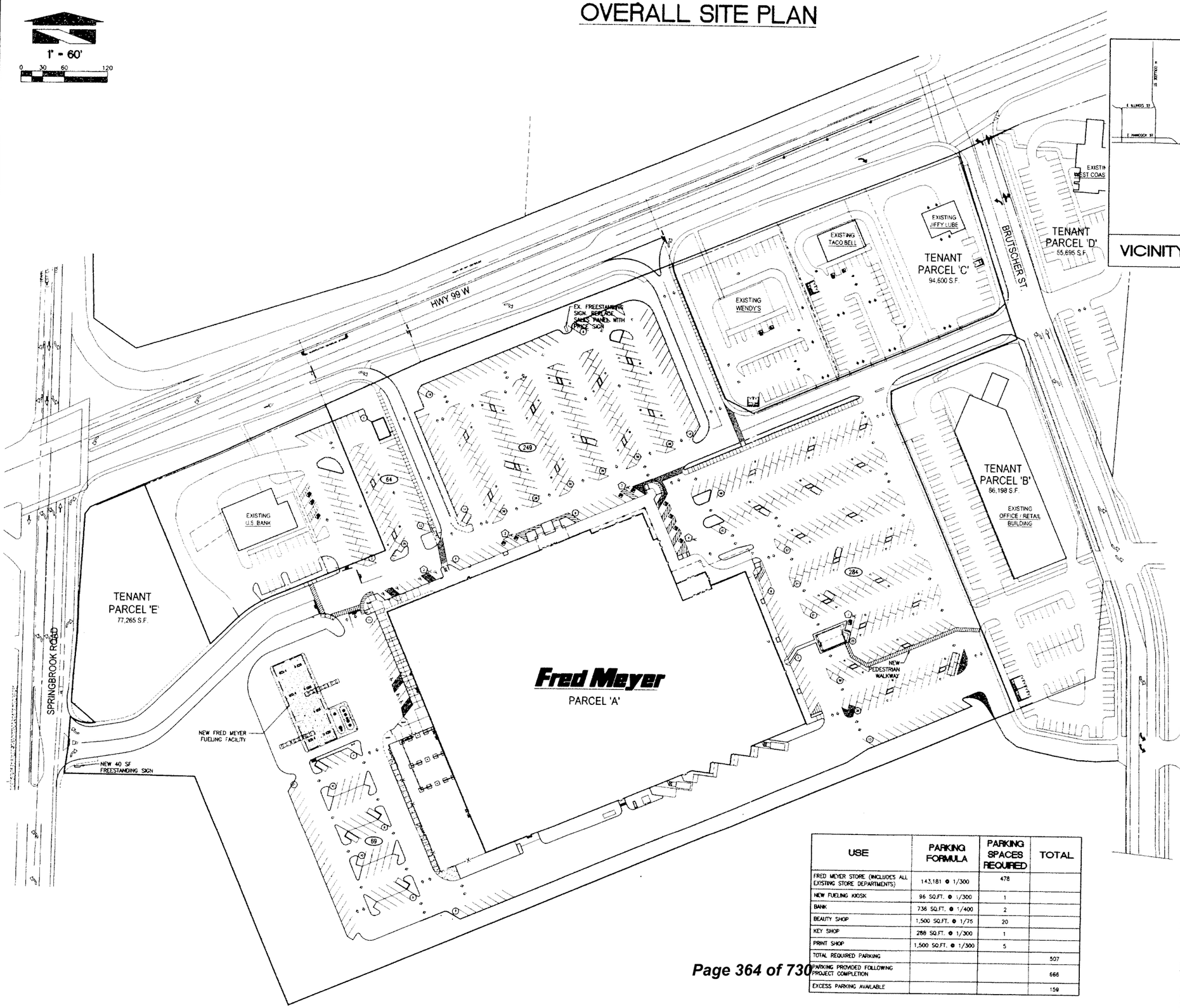
LO-720911-4

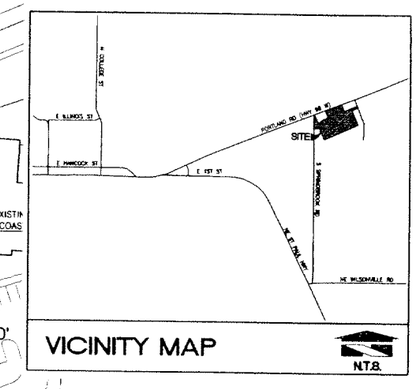
SHEET 1 OF 1

OVERALL SITE PLAN

1" = 60'

0 30 60 120





USE	PARKING FORMULA	PARKING SPACES REQUIRED	TOTAL
FRED MEYER STORE (INCLUDES ALL EXISTING STORE DEPARTMENTS)	143,181 @ 1/300	478	
NEW FUELING KIOSK	96 SQ.FT. @ 1/300	1	
BANK	736 SQ.FT. @ 1/400	2	
BEAUTY SHOP	1,500 SQ.FT. @ 1/75	20	
KEY SHOP	288 SQ.FT. @ 1/300	1	
PRINT SHOP	1,500 SQ.FT. @ 1/300	5	
TOTAL REQUIRED PARKING			507
PARKING PROVIDED FOLLOWING PROJECT COMPLETION			666
EXCESS PARKING AVAILABLE			159

GENERAL SITE DATA

1. ADDRESS/LOCATION: 3300 PORTLAND ROAD
2. PARCEL NUMBER: 3216-02004
3. MUNICIPALITY: CITY OF NEWBERG
4. EXISTING ZONING: C-2
5. SURROUNDING ZONING:
   NORTH: C-2
   SOUTH: R-P-SP
   EAST: C-2
   WEST: C-2 AND R-P-SP
6. EXISTING SITE USE: COMMERCIAL
7. SURROUNDING USES:
   NORTH: COMMERCIAL & SINGLE FAMILY RESIDENTIAL
   SOUTH: AGRICULTURAL, VACANT & SINGLE FAMILY RESIDENTIAL
   EAST: COMMERCIAL
   WEST: COMMERCIAL
8. PROJECT AREA DIMENSIONS:
   LENGTH: VARIES
   WIDTH: VARIES
   GROSS TOTAL AREA: 17.36 AC. (756,250 S.F.)
9. PARKING:
   COMPACT PROVIDED: 58 (8.7 PERCENT)
   HANDICAPPED PROVIDED: 10 (1.5 PERCENT)
10. SITE LANDSCAPING: 116,970 S.F. (15.47 PERCENT)

OWNERS

BANK OF NEW YORK MELLON TRUST COMPANY
700 S. FLOWER STREET, SUITE 500
LOS ANGELES, CA 90017

ENGINEER/PLANNER

BARGHAUSEN CONSULTING ENGINEERS, INC.
18215 72ND AVE. SOUTH
KENT, WA 98032
(425) 251-6222
CONTACT: CHRIS FERKO
FAX (425) 251-8782

Fred Meyer
STORE # 00220
NEWBERG

3300 Portland Road
Newberg, OR 97132

THE KROGER COMPANY AND FRED MEYER STORES INC.
3800 SE 22ND AVENUE
PORTLAND, OREGON, 97202
503.232.8844
503.797.3509 FAX

BARGHAUSEN CONSULTING ENGINEERS, INC.
18215 72nd Avenue South
KENT, WA 98032
t 425.251.6222 | f 425.251.8782
"ENGINEERING, LAND PLANNING, SURVEYING, ENVIRONMENTAL SERVICES"
Barghausen.com

FRED MEYER FUELING FACILITY ADDITION

3300 Portland Road
Newberg, OR 97132

12/9/08

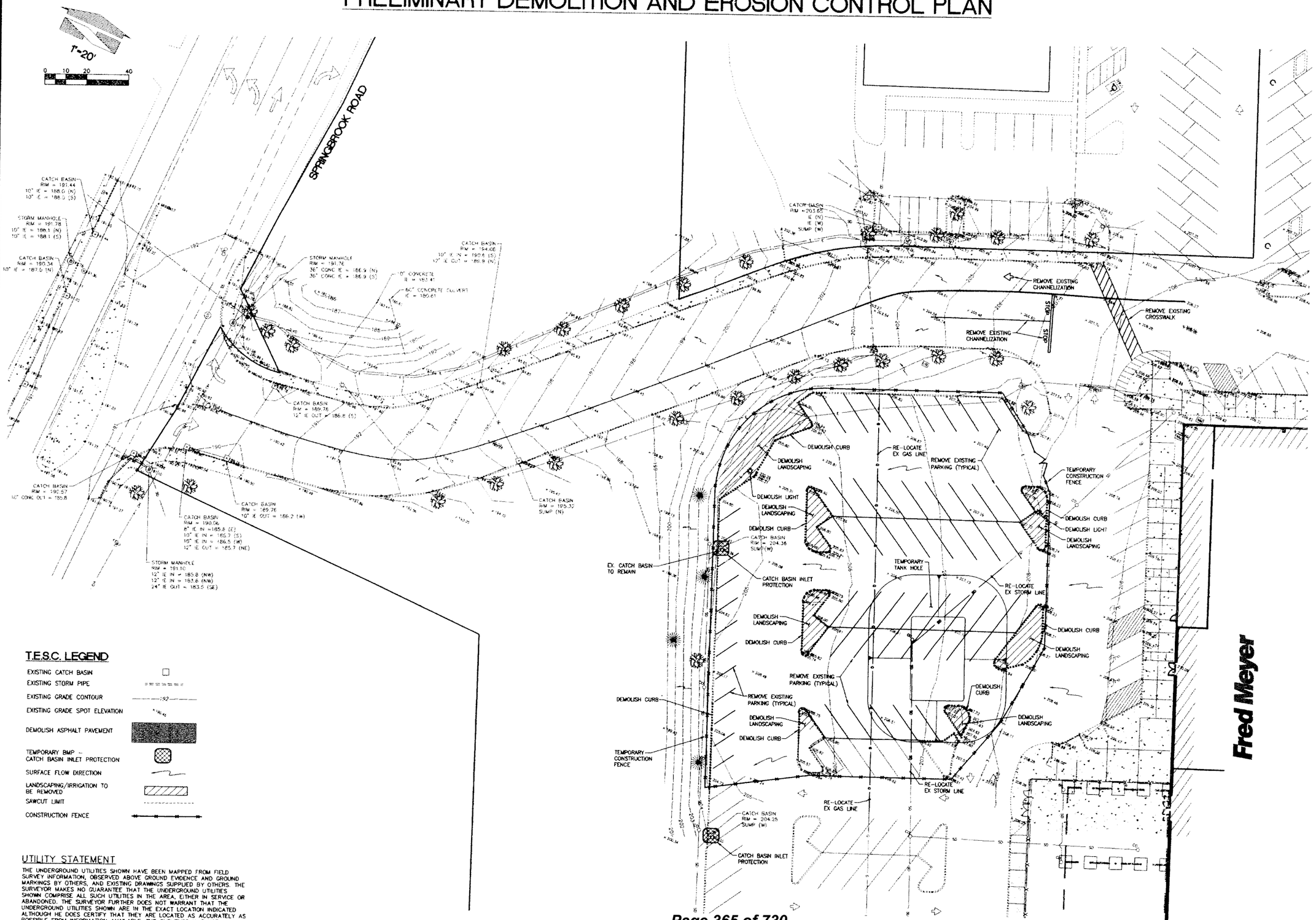
© Barghausen Consulting Engineers, Inc.
All rights reserved. No part of this document may be reproduced in any form or by any means without permission in writing from Barghausen Consulting Engineers, Inc.

△	DATE	DESCRIPTION

BCE #10315
PM: CHRIS FERKO

DD-1
OVERALL SITE PLAN

PRELIMINARY DEMOLITION AND EROSION CONTROL PLAN



T.E.S.C. LEGEND

- EXISTING CATCH BASIN
- EXISTING STORM PIPE
- EXISTING GRADE CONTOUR
- EXISTING GRADE SPOT ELEVATION
- DEMOLISH ASPHALT PAVEMENT
- TEMPORARY BMP – CATCH BASIN INLET PROTECTION
- SURFACE FLOW DIRECTION
- LANDSCAPING/IRRIGATION TO BE REMOVED
- SAWCUT LIMIT
- CONSTRUCTION FENCE

UTILITY STATEMENT

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN MAPPED FROM FIELD SURVEY INFORMATION, OBSERVED ABOVE GROUND EVIDENCE AND GROUND MARKINGS BY OTHERS, AND EXISTING DRAWINGS SUPPLIED BY OTHERS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

Fred Meyer
STORE # 00220
NEWBERG

3300 Portland Road
Newberg, OR 97132

THE KROGER COMPANY AND FRED MEYER STORES INC.
3800 SE 22ND AVENUE
PORTLAND, OREGON, 97202
503.232.8844
503.797.3509 FAX

BARGHAUSEN CONSULTING ENGINEERS, INC.
18215 72nd Avenue South
KENT, WA 98032
t 425.251.6222 | f 425.251.8782
"ENGINEERING, LAND PLANNING, SURVEYING, ENVIRONMENTAL SERVICES"
Barghausen.com

FRED MEYER FUELING FACILITY ADDITION

3300 Portland Road
Newberg, OR 97132

7/22/08

© Barghausen Consulting Engineers, Inc. All rights reserved. No part of this document may be reproduced in any form or by any means without permission in writing from Barghausen Consulting Engineers, Inc.

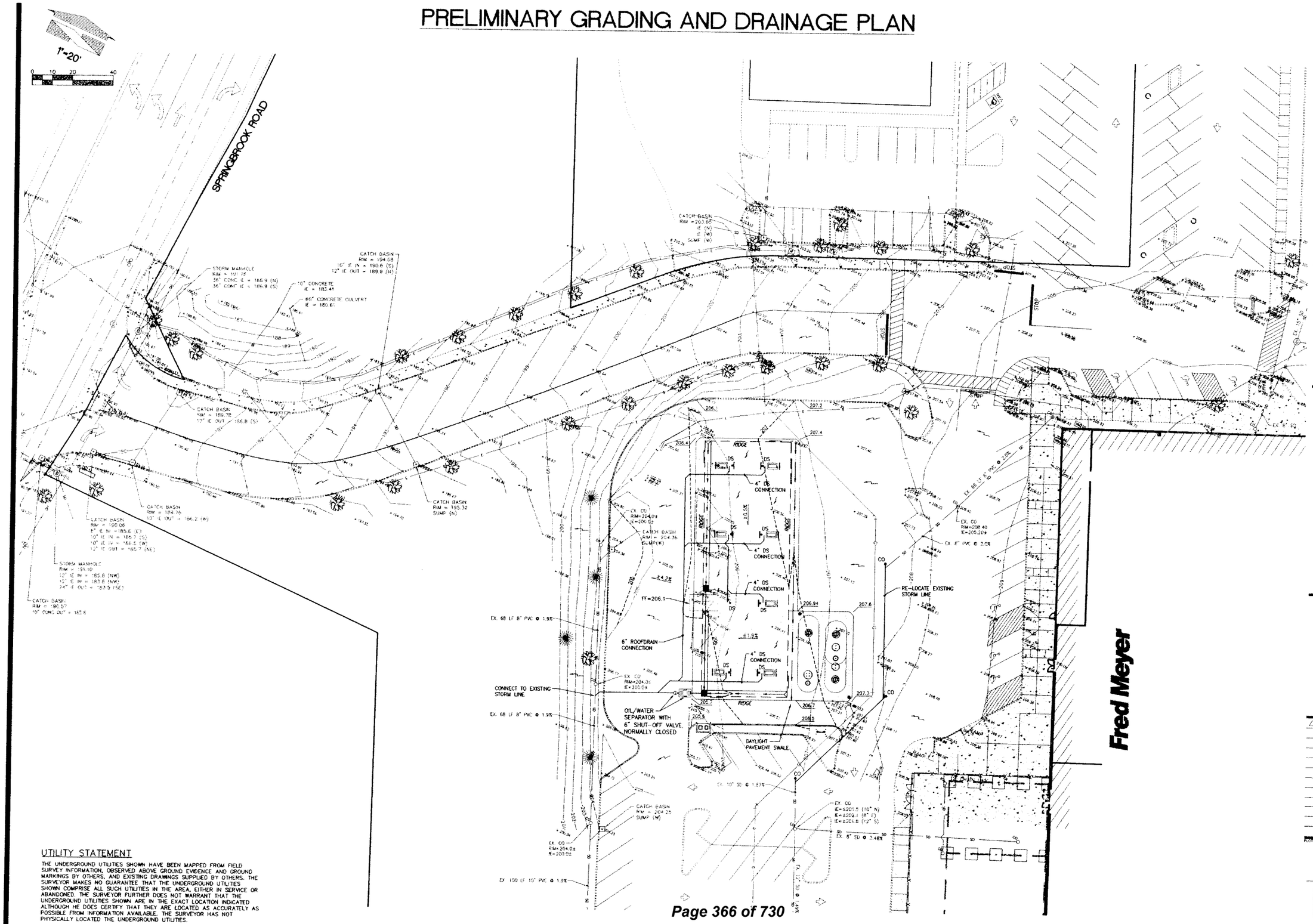
△	DATE	DESCRIPTION

PLOTTED ON Dec 08, 2008 - 12:18pm BY jaslanck

BCE #10315
PM: CHRIS FERKO

PRELIMINARY DEMOLITION AND EROSION CONTROL PLAN

PRELIMINARY GRADING AND DRAINAGE PLAN



UTILITY STATEMENT

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN MAPPED FROM FIELD SURVEY INFORMATION, OBSERVED ABOVE GROUND EVIDENCE AND GROUND MARKINGS BY OTHERS, AND EXISTING DRAWINGS SUPPLIED BY OTHERS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

Fred Meyer
STORE # 00220
NEWBERG

3300 Portland Road
Newberg, OR 97132

THE KROGER COMPANY AND FRED MEYER STORES INC.
3800 SE 22ND AVENUE
PORTLAND, OREGON, 97202
503.232.8844
503.797.3509 FAX

BARGHAUSEN CONSULTING ENGINEERS, INC.
18215 72nd Avenue South
KENT, WA 98032
t 425.251.6222 | f 425.251.8782
"ENGINEERING, LAND PLANNING, SURVEYING, ENVIRONMENTAL SERVICES"
Barghausen.com

FRED MEYER FUELING FACILITY ADDITION

3300 Portland Road
Newberg, OR 97132

7/22/08

© Barghausen Consulting Engineers, Inc. All rights reserved. No part of this document may be reproduced in any form or by any means without permission in writing from Barghausen Consulting Engineers, Inc.

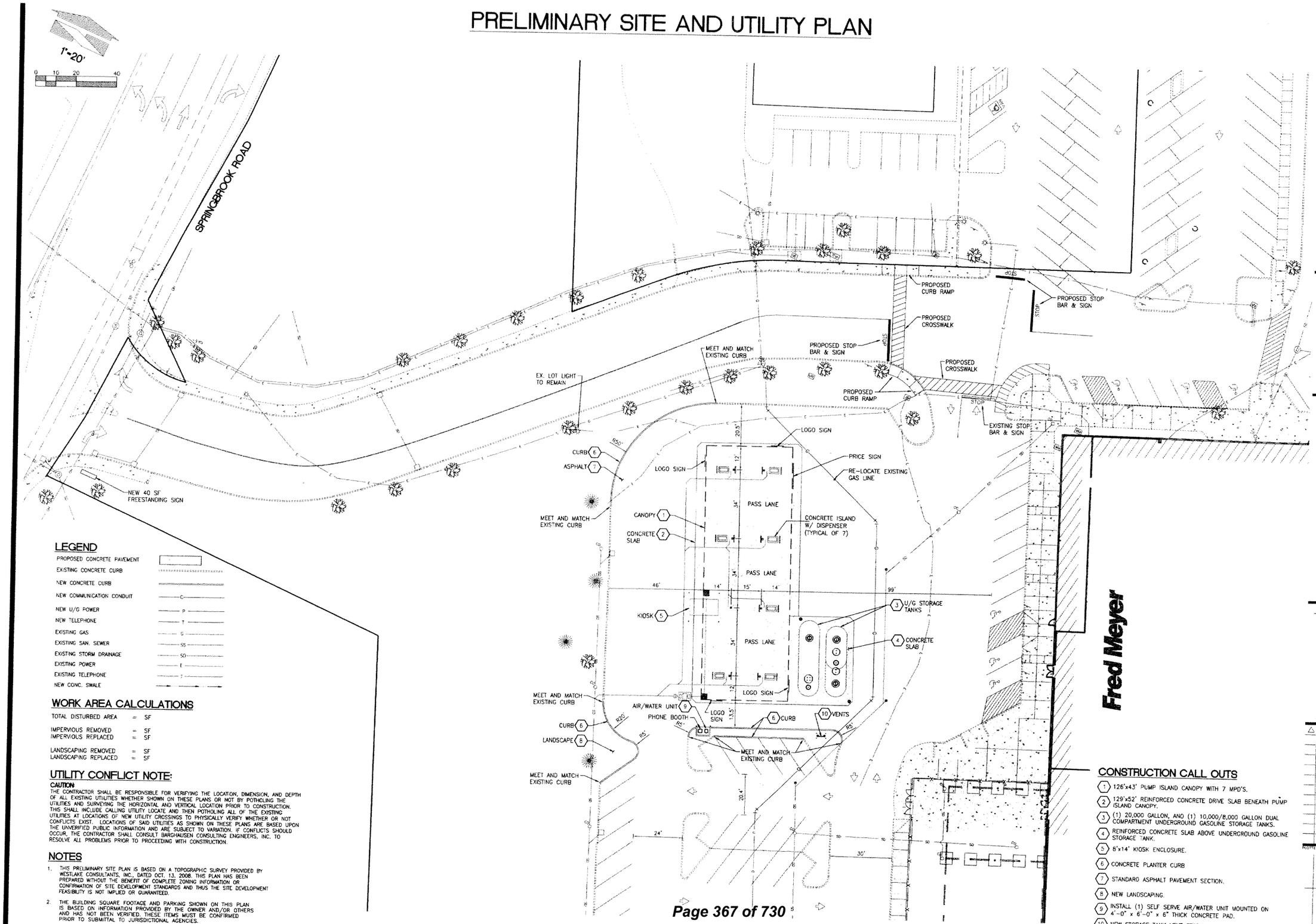
△	DATE	DESCRIPTION

PLOTTED ON: Dec 06, 2008 - 12:11pm, BY: jmalance

BCE #10315
PM: CHRIS FERKO

PRELIMINARY GRADING AND DRAINAGE PLAN

PRELIMINARY SITE AND UTILITY PLAN



LEGEND

PROPOSED CONCRETE PAVEMENT	
EXISTING CONCRETE CURB	
NEW CONCRETE CURB	
NEW COMMUNICATION CONDUIT	C
NEW U/G POWER	P
NEW TELEPHONE	T
EXISTING GAS	G
EXISTING SAN. SEWER	SS
EXISTING STORM DRAINAGE	SD
EXISTING POWER	E
EXISTING TELEPHONE	T
NEW CONC. SWALE	

WORK AREA CALCULATIONS

TOTAL DISTURBED AREA	=	SF
IMPERVIOUS REMOVED	=	SF
IMPERVIOUS REPLACED	=	SF
LANDSCAPING REMOVED	=	SF
LANDSCAPING REPLACED	=	SF

UTILITY CONFLICT NOTE:

CAUTION

THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, DIMENSION, AND DEPTH OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT BY POTHOLING THE UTILITIES AND SURVEYING THE HORIZONTAL AND VERTICAL LOCATION PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE CALLING UTILITY LOCATE AND THEN POTHOLING ALL OF THE EXISTING UTILITIES AT LOCATIONS OF NEW UTILITY CROSSINGS TO PHYSICALLY VERIFY WHETHER OR NOT CONFLICTS EXIST. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE UNVERIFIED PUBLIC INFORMATION AND ARE SUBJECT TO VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR SHALL CONSULT BARGHAUSEN CONSULTING ENGINEERS, INC. TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION.

NOTES

1. THIS PRELIMINARY SITE PLAN IS BASED ON A TOPOGRAPHIC SURVEY PROVIDED BY WESTLAKE CONSULTANTS, INC., DATED OCT. 13, 2008. THIS PLAN HAS BEEN PREPARED WITHOUT THE BENEFIT OF COMPLETE ZONING INFORMATION OR CONFIRMATION OF SITE DEVELOPMENT STANDARDS AND THUS THE SITE DEVELOPMENT FEASIBILITY IS NOT IMPLIED OR GUARANTEED.
2. THE BUILDING SQUARE FOOTAGE AND PARKING SHOWN ON THIS PLAN IS BASED ON INFORMATION PROVIDED BY THE OWNER AND/OR OTHERS AND HAS NOT BEEN VERIFIED. THESE ITEMS MUST BE CONFIRMED PRIOR TO SUBMITTAL TO JURISDICTIONAL AGENCIES.
3. MINOR ADJUSTMENT TO TANK LOCATION MAY BE APPLICABLE DURING CONSTRUCTION TO AVOID TEMP SHORING OF TANK EXCAVATION.

CONSTRUCTION CALL OUTS

1. 126'x43' PUMP ISLAND CANOPY WITH 7 MPD'S.
2. 129'x52' REINFORCED CONCRETE DRIVE SLAB BENEATH PUMP ISLAND CANOPY.
3. (1) 20,000 GALLON, AND (1) 10,000/8,000 GALLON DUAL COMPARTMENT UNDERGROUND GASOLINE STORAGE TANKS.
4. REINFORCED CONCRETE SLAB ABOVE UNDERGROUND GASOLINE STORAGE TANK.
5. 6'x14' KIOSK ENCLOSURE.
6. CONCRETE PLANTER CURB
7. STANDARD ASPHALT PAVEMENT SECTION.
8. NEW LANDSCAPING.
9. INSTALL (1) SELF SERVE AIR/WATER UNIT MOUNTED ON 4'-0" x 6'-0" x 6" THICK CONCRETE PAD.
10. NEW STORAGE TANK VENT STACK.

Fred Meyer
STORE # 00220
NEWBERG

3300 Portland Road
Newberg, OR 97132

THE KROGER COMPANY AND FRED MEYER STORES INC.
3800 SE 22ND AVENUE
PORTLAND, OREGON, 97202
503.232.8844
503.797.3509 FAX

BARGHAUSEN CONSULTING ENGINEERS, INC.
18215 72nd Avenue South
KENT, WA 98032
(425.251.6222) (425.251.8782)
"ENGINEERING, LAND PLANNING, SURVEYING, ENVIRONMENTAL SERVICES"
Barghausen.com

FRED MEYER FUELING FACILITY ADDITION

3300 Portland Road
Newberg, OR 97132

7/22/08

© Barghausen Consulting Engineers, Inc. All rights reserved. No part of this document may be reproduced in any form or by any means without permission in writing from Barghausen Consulting Engineers, Inc.

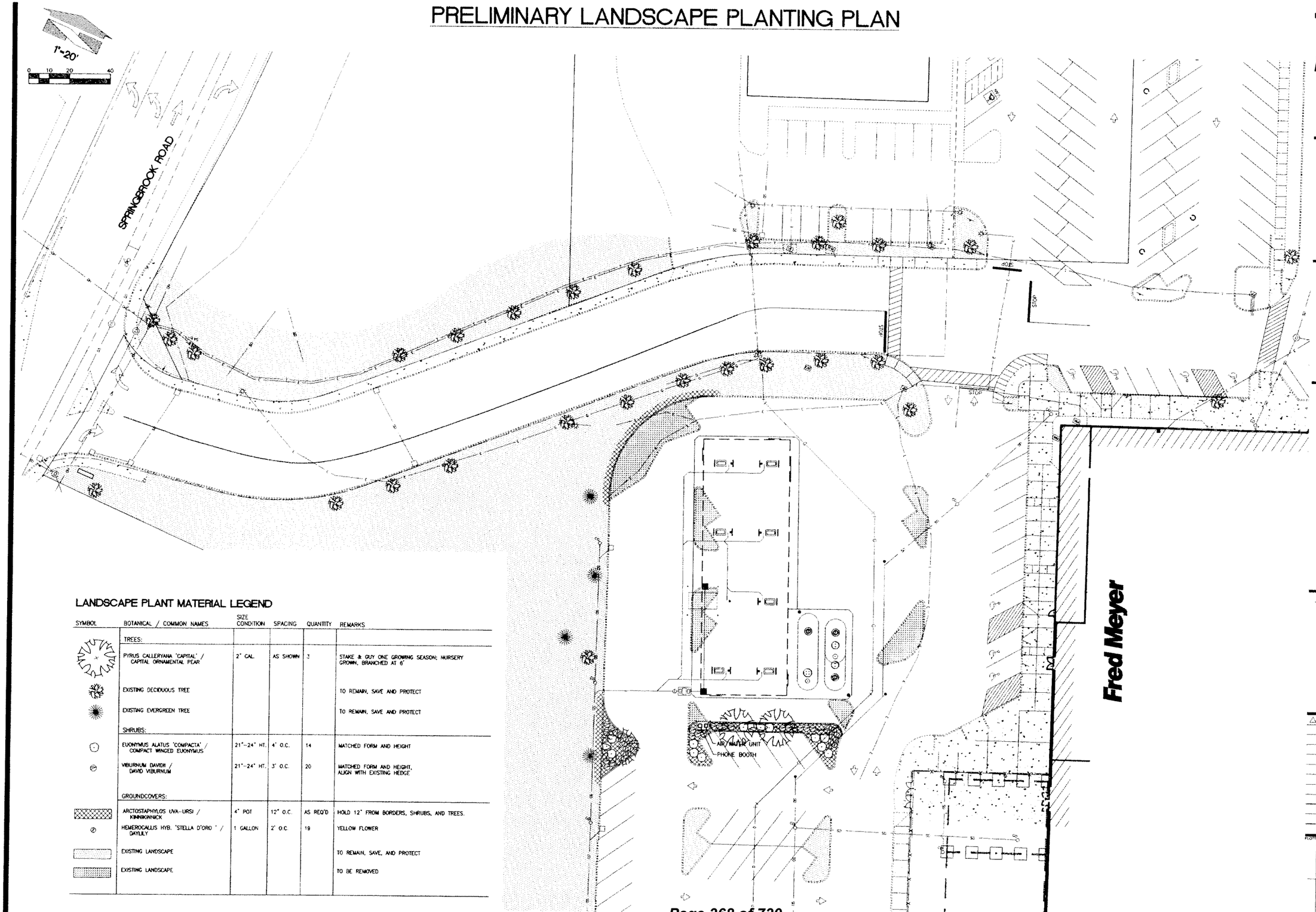
△	DATE	DESCRIPTION

PLOTTED ON: Dec 09, 2008 - 12:12pm BY: jdeberck

BCE #10315
PM: CHRIS FERKO

PRELIMINARY SITE AND UTILITY PLAN

PRELIMINARY LANDSCAPE PLANTING PLAN



LANDSCAPE PLANT MATERIAL LEGEND

SYMBOL	BOTANICAL / COMMON NAMES	SIZE CONDITION	SPACING	QUANTITY	REMARKS
	TREES:				
	PYRUS CALLERYANA 'CAPITAL' / CAPITAL ORNAMENTAL PEAR	2" CAL.	AS SHOWN	3	STAKE & GUY ONE GROWING SEASON; NURSERY GROWN, BRANCHED AT 6'
	EXISTING DECIDUOUS TREE				TO REMAIN, SAVE AND PROTECT
	EXISTING EVERGREEN TREE				TO REMAIN, SAVE AND PROTECT
	SHRUBS:				
	EUONYMUS ALATUS 'COMPACTA' / COMPACT WINGED EUONYMUS	21"-24" HT.	4' O.C.	14	MATCHED FORM AND HEIGHT
	VIBURNUM DAVIDII / DAVID VIBURNUM	21"-24" HT.	3' O.C.	20	MATCHED FORM AND HEIGHT, ALIGN WITH EXISTING HEDGE
	GROUNDCOVERS:				
	ARCTOSTAPHYLOS UVA-URSI / KINNIKINNICK	4" POT	12" O.C.	AS REQ'D	HOLD 12" FROM BORDERS, SHRUBS, AND TREES.
	HEMEROCALLIS HYB. 'STELLA D'ORO ' / DAYLILY	1 GALLON	2' O.C.	19	YELLOW FLOWER
	EXISTING LANDSCAPE				TO REMAIN, SAVE, AND PROTECT
	EXISTING LANDSCAPE				TO BE REMOVED

Fred Meyer
STORE # 00220
NEWBERG

3300 Portland Road
Newberg, OR 97132

THE KROGER COMPANY AND FRED MEYER STORES INC.
3800 SE 22ND AVENUE
PORTLAND, OREGON, 97202
503.232.8844
503.797.3509 FAX

BARGHAUSEN CONSULTING ENGINEERS, INC.
18215 72nd Avenue South
KENT, WA 98032
1.425.251.6222 | 1.425.251.8782
"ENGINEERING, LAND PLANNING, SURVEYING, ENVIRONMENTAL SERVICES"
Barghausen.com

FRED MEYER FUELING FACILITY ADDITION

3300 Portland Road
Newberg, OR 97132

7/22/08

REGISTERED
641
Arthur M. Seidel
OREGON
10/31/09
LANDSCAPE ARCHITECT

© Barghausen Consulting Engineers, Inc. All rights reserved. No part of this document may be reproduced in any form or by any means without permission in writing from Barghausen Consulting Engineers, Inc.

△	DATE	DESCRIPTION

PLOTTED ON: Dec 09, 2008 - 12:12pm BY: jstefanich

BCE #10315
PM: CHRIS FERKO

PRELIMINARY LANDSCAPE PLANTING PLAN

L-1

GROUP MACKENZIE

TRANSPORTATION IMPACT ANALYSIS

FRED MEYER FUEL FACILITY

Newberg, Oregon

REGISTERED PROFESSIONAL ENGINEER
19630PE
OREGON
MARCH 02, 1988
BRENT T. AHREND
EXPIRES: 12/31/09

Prepared For
Fred Meyer

Completed On
December 4, 2008

Revised On
March 17, 2009

Submittal To
City of Newberg

Project Number
2080406.00

GROUP MACKENZIE
Since 1960

Heritage Building
601 Main Street, Suite 101 | Vancouver, WA 98660
T 360.695.7879 | F 360.693.6637 | www.grpmack.com

TABLE OF CONTENTS PAGE

I. Introduction 3
II. Existing Conditions 4
III. Pre-Development Conditions 8
IV. Site Development 9
V. Intersection Analysis 13
VI. Summary 18
VII. Appendix 20

LIST OF TABLES

Table 1 – Roadway Characteristics 4
Table 2 – Study Area Crash Data 6
Table 3 – State Highway Crash Rates, Urban Highway System, Urban Cities . 7
Table 4 – Trip Generation Characteristics 10
Table 5 – Intersection Operation Analysis 14
Table 6 – Intersection Operation Analysis (2025) 15
Table 7 – Queue Lengths 16
Table 8 – Mitigated Intersection Operation Analysis 17

LIST OF FIGURES

1. Vicinity Map

2A. Fred Meyer Site Plan

2B. Fuel Facility Site Plan

3. Lane Configuration and Traffic Control

4A. 2008 Existing 30th Highest Hour Volumes – Weekday PM Peak Hour
4B. 2008 Existing 30th Highest Hour Volumes – Saturday Mid-day Peak Hour

5A. 2009 Background Growth 1.5% – Weekday PM Peak Hour
5B. 2009 Background Growth 1.5% – Saturday Mid-day Peak Hour

6A. In-process Traffic – Weekday PM Peak Hour

6B. In-process Traffic – Saturday Mid-day Peak Hour

7A. 2009 Pre-Development – Weekday PM Peak Hour
7B. 2009 Pre-Development – Saturday Mid-day Peak Hour

8A. New/Diverted Trip Distribution and Assignment – Weekday PM Peak Hour
8B. New/Diverted Trip Distribution and Assignment – Saturday Mid-day Peak Hour

9A. Pass-By Trip Distribution and Assignment – Weekday PM Peak Hour
9B. Pass-By Trip Distribution and Assignment – Saturday Mid-day Peak Hour

10A. 2009 Post-Development – Weekday PM Peak Hour
10B. 2009 Post-Development – Saturday Mid-day Peak Hour

11A 2025 Background Growth 27% – Weekday PM Peak Hour
11B 2025 Background Growth 27% – Saturday Mid-day Peak Hour

12. Crestview In-process Traffic

13A. 2025 Pre-Development – Weekday PM Peak Hour
13B. 2025 Pre-Development – Saturday Mid-day Peak Hour

14A. 2025 Post-Development – Weekday PM Peak Hour
14B. 2025 Post-Development – Saturday Mid-day Peak Hour

15A. 2025 Pre-Development with Bypass – Weekday PM Peak Hour
15B. 2025 Pre-Development with Bypass – Saturday Mid-day Peak Hour

16A. 2025 Post-Development with Bypass – Weekday PM Peak Hour
16B. 2025 Post-Development with Bypass – Saturday Mid-day Peak Hour

I. INTRODUCTION

This revised transportation impact analysis has been prepared for the proposed Fred Meyer fuel facility in Newberg, Oregon. The property is located on the south side of Highway 99W between North Springbrook Road and Brutscher Street. The property is currently zoned Community Commercial (C-2) in which the fuel facility is a conditional use. Figure 1 is a vicinity map indicating the project location.

PROJECT DESCRIPTION

The proposed fuel facility will be located in the existing Fred Meyer parking lot along Highway 99W and will have 14 fueling positions and kiosk for the attendant. No new driveways or changes to existing driveways are proposed. Construction is planned to occur in one phase with completion expected in 2009. Figure 2A presents the overall Fred Meyer site plan and Figure 2B provides a detailed fuel facility site plan.

SCOPE OF REPORT

This report has been prepared to address the impacts of the proposed fuel facility on the surrounding roadways and Fred Meyer driveways. The analysis area and buildout year (2009) evaluated for this study meet both City of Newberg and ODOT traffic impact study requirements. Review includes local pedestrian and bicycle facilities, crash history, sight distance, and intersection operation analysis. After review of the applicable standards and a discussion with City staff, the analysis study area includes the following three intersections and three site driveway locations:

Public Street intersections
- Highway 99W/North Springbrook Road
- Highway 99W/Brutscher Street
- North Springbrook Road/Hayes Street

Driveways
- Highway 99W/Fred Meyer Right-In Access
- Highway 99W/Fred Meyer East Access
- North Springbrook Road/Fred Meyer Access

The analysis includes traffic conditions for existing volumes, 2009 pre-development (background traffic) conditions and 2009 post-development (total traffic) conditions. Both PM and Saturday mid-day peak hour scenarios have been analyzed.

The City of Newberg has also asked for an analysis of 2025 conditions. We have included this analysis by adding an additional 16 years of background traffic growth to 2009 post-development conditions. The 2025 conditions are presented both with and without the proposed bypass project.

II. EXISTING CONDITIONS

SITE CONDITIONS

The site currently consists of a Fred Meyer store and out pads, including Jiffy Lube, Taco Bell and Wendy's Fast Food Restaurants, US Bank, a Locksmith shop and the Springbrook Oaks Office Building. The proposed fuel facility will occupy a portion of the Fred Meyer parking lot on the south west side currently striped for parking. The site has six existing driveways, of which two access Highway 99W, three access Brutscher Street, and one accesses North Springbrook Road. The City did not request analysis of the Brutscher Street driveways; therefore they were not included in this study.

The driveways on Highway 99W are limited to right turns by the raised median. The west driveway allows only right turns in to Fred Meyer. The Fred Meyer East driveway allows right-in and right-out turning movements from Highway 99W.

North Springbrook Road also has a raised median extending from Highway 99W past the Fred Meyer driveway, which limits turning movements to right-in and right-out only.

The Fred Meyer Brutscher Street driveways allow full turning movements.

EXISTING TRAFFIC COUNTS

Existing 2008 traffic turning movement counts were conducted October 9th (Thursday) 4:00-6:00 PM and October 11th (Saturday) 11:30 AM to 1:30 PM. The peak hour periods along Highway 99W were 4:30-5:30 during the Weekday PM peak and 12:00-1:00 mid-day peak for Saturday. Road tube counts were conducted prior to the peak hour counts to determine the peak times each day. A copy of the road tube count and intersection turning movement volumes are included in the appendix.

In accordance with ODOT's *Analysis Procedures Manual* standards, a seasonal adjustment factor of 1.06 was applied to through volumes along Highway 99W. This adjustment is required by ODOT to estimate the 30th highest hour for use in the analysis. This adjustment was applied to both weekday and Saturday time periods. A detailed description of how this adjustment was determined is included in the *Appendix*.

The adjusted Weekday PM and Saturday mid-day peak hour volumes are presented in Figures 4A and 4B.

TRANSPORTATION FACILITIES

Table 1 summarizes the study area roadway classifications and descriptions:

TABLE 1 – ROADWAY CHARACTERISTICS

Roadway	City Classification	Posted Speed	Travel Lanes	Bike Lanes	On-Street Parking	Sidewalks
Highway 99W (State Route)	Major Arterial	40	5	yes	no	yes
North Springbrook Road	Minor Arterial	35	2	no	no	varies
Brutscher Street	Minor Collector	25	2	yes	no	yes
Hayes Street	Minor Collector	25	2	yes	no	yes

Source: City of Newberg Transportation System Plan

There is no parking allowed on North Springbrook Road, Brutscher Street or Hayes Street.

All Fred Meyer driveways are stop controlled. The Highway 99W intersections at North Springbrook Road and Brutscher Street are both signalized and allow U-Turns along Highway 99W. Figure 3 presents the existing lane configurations.

PLANNED IMPROVEMENTS

The City's Capital Improvement Plan (CIP) identifies 21 future improvements throughout the City. There are three improvements listed within the vicinity to install traffic signals along Springbrook Road at Mountainview Drive, Fernwood Road and Haworth Avenue, but none of these locations are in the study area.

The proposed bypass around Newberg and Dundee would redirect through traffic away from the existing Highway 99W alignment. The construction of the bypass is uncertain at this time, but has been included as an option in the 2025 analysis required by the City.

PEDESTRIAN AND BICYCLE FACILITIES

Sidewalks are currently provided along the entire Fred Meyer site frontage. Bicycle lanes are currently provided on Highway 99W, Hayes Street and Brutscher Street. Bicycle lanes are not provided on Springbrook, but a fog line stripe provides a shoulder that bicycles can ride on.

TRANSIT SERVICE

There are two bus services, The Newberg Town Flyer # 4, and YCTA (Yamhill County Transit Area) Route 44 that provides transit service in the study area. The Newberg Town Flyer # 4, which is a local bus service, which has a stop about every hour and a half at the Fred Meyer Shopping Center which runs Monday – Saturday. The YCTA Route 44 travels along Highway 99W to/from Sherwood and Newberg that also has a stop at Fred Meyer. This bus service runs about every hour Monday – Friday from 6:34 AM to 7:23 PM and every two hours Saturday from 8:20 AM to 3:43 PM. The operation schedules for the two routes are located in the *Appendix*.

CRASH ANALYSIS

Intersection Crash Analysis

When evaluating relative intersection safety, consideration is given to the total number and types of crashes occurring and the number of vehicles entering the intersection. This leads to the concept know as "crash rate," usually expressed in terms of the number of crashes occurring per one million vehicles entering the intersection (mev). Intersections having a crash rate less than 1.0/mev are generally considered relatively safe and with crash rates higher than 1.0/mev, consideration may be given to correcting operational problems.

Crash data for the study area intersections were provided by ODOT for the five year period January 2003 to December 2007. The following table presents calculated crash rates at the study intersections for the five-years of data. Annual traffic entering the intersections was estimated by multiplying the average annual daily traffic (AADT) entering the intersection by 365. AADT was estimated by multiplying the intersection PM peak hour volumes by 10. A comparison of historical ODOT data for Highway 99W indicates a ratio of AADT to PM peak hour volumes of approximately 10.

A complete summary of these collisions are displayed in Table 2. They were analyzed to determine if traffic safety problems exist at any of the major intersections in the vicinity of the site. Crash data and calculations are located within the *Appendix*.

TABLE 2 – STUDY AREA CRASH DATA			
Intersection	Number of Crashes	Vehicle ADT	Crash Rate
Highway 99W/Brutscher Street	12	34,140	0.19
Highway 99W/ Fred Meyer East Access	2	13,750	0.08
Highway 99W/Fred Meyer West Access	1	15,590	0.04
Highway 99W/Springbrook Road	19	30,830	0.34
North Springbrook Road/ Fred Meyer Access	No Crashes Reported		
North Springbrook Road/Hayes Street	No Crashes Reported		

The crash rates along Highway 99W at the intersections for Brutscher Street, North Springbrook Road and the two Fred Meyer access driveways are all below the threshold rate of 1.0/mev. A detailed review of the crash data indicates that the majority of these crashes are rear-end type crashes. Rear-end collisions are typical at intersections on high speed arterials.

The crashes reported near the Fred Meyer driveways were also rear-end collisions, indicating they were probably related to the intersection at Brutscher Street. A raised median between Brutscher Street and North Springbrook Road limits the traffic to right turns and right turn deceleration lanes are provided on Highway 99W.

Segment Crash Analysis

A segment crash analysis was performed consistent with the ODOT *Analysis and Procedures Manual* (APM), Chapter 5. In order to evaluate the segment, first a segment crash rate must be calculated based on crash data and segment traffic volumes. Then the segment crash rate is compared to the average crash rate for similar highway classifications. If the crash rate for the study segment is less than the average crash rate for similar highways, then the segment can be considered safer than average.

Crash data for a one-mile segment (MP 21.30 – 22.30) were obtained from the ODOT Crash Data System. The segment extends approximately from the OR 99W/Klimeck Lane intersection to just west of the OR 99W/Deborah Road intersection. These points are approximately one-half mile from the OR 99W/Brutscher Street intersection in either direction.

The crash report shows 60 crashes have occurred on the one-mile segment of highway between January 1, 2005 and December 31, 2007. According to the APM, segment crash rates are evaluated in terms of crashes per million vehicle miles traveled (MVM). Therefore, the calculated crash rate for this highway segment is as follows:

(60 crashes * 1,000,000) / (41,084 vehicles * 365 days * 3 years * 1 mile) = 1.33 crashes per MVM.

All state highways have a functional classification. OR 99W from MP 21.36 – 24.29 is classified as "14-Urban Principal Arterial-Other"[1]. The average crash rate for Urban Principal Arterials is found in the ODOT 2007 State Highway Crash Rate Tables, Table II. A portion of the table is presented below:

[1] ODOT Functional Classification and National Highway System Status on Oregon State Highways, Page 5.

TABLE 3 – STATE HIGHWAY CRASH RATES, URBAN HIGHWAY SYSTEM, URBAN CITIES						
Jurisdictional and Functional Classification	Miles	2007 Rate	2006 Rate	2005 Rate	2004 Rate	2003 Rate
Other Principal Arterials	363.20	2.37	2.37	2.38	2.17	3.35

As shown in the previous table, the Statewide Crash Rate for highways similar to the OR 99W segment is 2.37 crashes per MVM for the past three years. This rate is higher than the 1.33 crashes per MVM calculated for the study segment of OR 99W. Therefore, no additional highway segment crash analysis is necessary.

III. PRE-DEVELOPMENT CONDITIONS

Traffic conditions in 2009 without the project are referred to as pre-development conditions. ODOT calls these "Background Volumes." Pre-development conditions include existing traffic volumes (adjusted to 30th HV), background growth and in-process traffic.

BACKGROUND TRAFFIC GROWTH

Background growth is general growth in traffic not related to specific projects. After review, it was found that for the most recent 5 years of data, 2003 – 2007 from ODOTs Automatic Traffic Recorder (ATR) a growth rate of 1.5% would be appropriate in this area. Figures 5A and 5B illustrate one-year background traffic growth for the PM and Saturday mid-day peak hours.

IN-PROCESS TRAFFIC

In-process traffic is traffic generated by approved projects not yet completed at the time of analysis. City staff identified three projects in the area that would add trips to the study area intersections. These projects include:

Crestview Crossing Subdivision – 16 lots

Memory Care Facility – 25,000 sf/48 bed for Alzheimer Patients

Friendsview Cottages – 21 duplex cottages for seniors

Trip generation was estimated for each of the in-process projects using trip rates in the Institute of Transportation Engineer's *Trip Generation, Seventh Edition*. A summary of the projects, trip generation, and trip assignment is included in the appendix. Figures 6A and 6B present the in-process traffic volumes for the PM and Saturday peak hours.

The Crestview Crossing project also included commercial parcels, but no development has been approved at this time. City staff has provided traffic volume projections to be included in the 2025 traffic projections for the commercial projects. Only PM peak hour volumes were available, so these have been assumed for Saturday peak hour conditions as well. Figure 12 presents these Crestview commercial volumes.

PRE-DEVELOPMENT TRAFFIC

Pre-development traffic is the sum of 2008 existing traffic, background growth and in-process traffic without the proposed development. Figures 7A and 7B present the 2009 pre-development intersection volumes during the Weekday PM and Saturday mid-day peak hours.

IV. SITE DEVELOPMENT

TRIP GENERATION

Trip Generation for Fred Meyer fuel facilities is estimated using the Institute of Transpiration Engineers (ITE) *Trip Generation 7th Edition*. The proposed Fred Meyer fuel facility will have 14 fueling positions. PM peak hour trip generation for the site was calculated using the average rate for ITE Land Use Code 944 – Gasoline/Service Station.

Because ITE has no Saturday rates for the proposed land use, Saturday peak hour trip generation was based on data from Fred Meyer fuel facilities, which indicates the peak hour on Saturday is approximately 16% higher than the Weekday PM peak hour.

Total Trips
Total trips are simply the number of vehicle trips to the fuel facility and consist of shared, pass-by trips, diverted link and primary trips.

Internal Trips
In a development such as Fred Meyer, many customers take advantage of the multiple services and retailers at the site in a single trip. These are known as internal or shared trips. The ITE's *Trip Generation Handbook* estimates the shared trip reduction between retail uses at 20%.

Fred Meyer's data for all Fuel Facilities indicates 89% of all customers use a Rewards Card, with 70% of customers receiving the larger discount. This means that 70% of the gas purchases were by customers also spending a minimum amount at the Fred Meyer store. Gas purchases must only occur in the same month, so do not necessarily occur in the same trip as the store purchases. Similarly, the other 30% of gas purchases may or may not have shopped at the Fred Meyer store in the same trip. The fact that 70% of gas customers clearly shopped at the Fred Meyer store indicates the probability for shared trips is high.

Surveys conducted at Fred Meyer stores in 2002, prior to the Rewards Card discounts, indicated 39% shared trips during the PM peak hour, with higher percentages for daily and Saturday time periods. The same surveys indicated trip rates were approximately 60% of ITE rates for a gas station. The Fred Meyer Fuel Facilities are busier now, due in large part to the discounts offered with the Rewards Cards. For this reason, the old surveys are no longer used for estimating trip generation. The ITE rates are now used instead. Given the high percentage of Fuel Facility customers receiving the highest discount for having shopped at the Fred Meyer store and 39% internal trips from earlier surveys, use of the ITE 20% internal trip estimate probably underestimates the internal trip percentage.

Pass-by Trips
Pass-by trips are those trips to the site that are already driving by on the adjacent roadways. These trips do not increase the total traffic volumes on the roadways, but do add to turning movement volumes at the site accesses. A pass-by trip to other uses at the site that also stops at the fuel facility is considered an internal trip. ITE indicates an average pass-by percentage of 52% during the weekday PM peak hour for gas stations. The same pass-by percentage was applied to the Saturday peak hour.

Diverted Link Trips
Diverted link trips are from vehicles already traveling in the area, but not on the streets immediately adjacent to the site, which change their direction to get to the site. Since the study area consists essentially of the site accesses, diverted trips from nearby roads have been treated as primary trips.

Primary Trips
Primary trips are vehicle trips to the site that stop only at the fuel facility and then return to their point of origin. In this traffic analysis the diverted link trips were analyzed as primary trips.

Table 3 summarizes the trip generation estimates of a Fred Meyer fuel facility with 14 fueling positions for the daily, PM and Saturday peak hours. Characteristics

TABLE 4 – TRIP GENERATION CHARACTERISTICS

Land Use (ITE Code)	ADT	Weekday PM Peak Hour			Saturday Peak Hour*		
		Enter	Exit	Total	Enter	Exit	Total
Gasoline/Service Station (944)	2360	97	97	194	113	113	226
Internal Capture (20%)		*(19)*	*(19)*	*(38)*	*(23)*	*(23)*	*(46)*
Total External Trips		**78**	**78**	**156**	**90**	**90**	**180**
Pass-By Trips 52%		*(41)*	*(41)*	*(82)*	*(47)*	*(47)*	*(94)*
Diverted/Primary Trips		**37**	**37**	**74**	**43**	**43**	**86**

* Saturday peak hour rates estimated at 16% above PM peak

The proposed fuel facility is expected to generate 74 PM peak hour and 86 Saturday peak hour diverted and primary trips.

TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution will be addressed differently for new trips and pass-by trips, as explained below. Because left turns are prohibited from the site to North Springbrook Road, all trips traveling to the south were assumed to drive across the Fred Meyer site to turn south on Brutscher Street. Many of these trips continue south to Hayes Street, then west to North Springbrook Road. For this reason, the trip assignment is shown at the main Fred Meyer access to Brutscher Street even though it is not being analyzed.

For purposes of this analysis with a study area generally limited to the site frontage, diverted trips are treated as primary trips. The distribution for primary trips will be similar to previous studies prepared for the Newberg Fred Meyer store as presented below. The overall primary/diverted trip distribution and assignment are presented in Figures 8A and 8B for Weekday PM and Saturday mid-day peak hours.

- 15% to and from the west on Highway 99W
- 35% to and from the east on Highway 99W
- 25% to and from the south on Springbrook Road and Brutscher Street
- 25% to and from the north on Springbrook Road

The pass-by trip distribution is based on the proportion of traffic traveling on each roadway past the site. This includes traffic on Highway 99W and North Springbrook Road. Figures 9A and 9B present pass-by trip distribution and assignment for Weekday PM and Saturday mid-day peak hours based on existing traffic counts. We anticipate the pass-by trips to come from the following traffic flows shown below.

- 45% from westbound Highway 99W
- 30% from eastbound Highway 99W
- 15% from southbound Springbrook Road
- 10% from northbound Springbrook Road

POST-DEVELOPMENT TRAFFIC

2009 post-development traffic (Total Volumes) is the sum of 2009 pre-development traffic and site trip assignment. Figures 10A and 10B illustrate 2009 post-development traffic volumes for the Weekday PM and Saturday mid-day peak hours.

2025 TRAFFIC CONDITIONS

The City of Newberg requires a 2025 analysis for the proposed conditional use. Traffic volumes for this analysis were estimated by adding 16 years of background growth and Crestview commercial trip estimates to 2009 pre-development traffic volumes. This growth is presented in Figures 11A and 11B for the Weekday PM and Saturday mid-day peak hours. The corresponding 2025 pre-development traffic conditions are presented in Figures 13A and 13B. The 2025 post-development conditions are shown in Figures 14A and 14B, with the addition of the fuel facility trips. It should be noted that these traffic volumes assume the proposed bypass is not constructed, and present a worst-case scenario.

Conditions with the proposed bypass have also been considered, and are presented in Figures 15A and 15B for pre-development and Figures 16A and 16B for post-development. An adjustment was made to account for the rerouting of through traffic to the bypass. The bypass traffic analysis shows a decrease in Average Daily Traffic volumes on Highway 99W in east Newberg from 48,000 to an average of 30,000 for all alternatives (Table 4-1). A copy of this table is included in the appendix. This is a rerouting of 37.5% of the traffic on the highway. The 2025 volumes for through traffic on Highway 99W were adjusted by this percentage to estimate conditions with the bypass.

SITE CIRCULATION

The proposed fuel facility will access the main Fred Meyer drive aisle near the US Bank driveway exit. The only entrance to the US Bank site is located at the next drive aisle to the east, where a left turn lane is provided. This turn lane extends across the US Bank exit lane and the access to the Fred Meyer parking area where the fuel facility is proposed. With the addition of the fuel facility traffic, this area will need better traffic control. Grades limit the ability to provide another access to the fuel facility area, so improvements to the existing intersection are proposed, which include all-way stop control, and removal of the left turn lane. The pedestrian crossing will be modified as well to cross the west and south legs of this internal intersection. A review of all-way stop control operational analysis indicates the intersection would have plenty of capacity during the peak analysis periods. This configuration is presented in the detailed fuel facility site plan in Figure 2B.

The Fred Meyer site has six driveways, two on Highway 99W, one on N Springbrook Road, and three on Brutscher Street. No changes are proposed to any of the driveways with the fuel facility project.

ACCESS ANALYSIS

The Fred Meyer site has six driveways, two on Highway 99W, one on North Springbrook Road, and three on Brutscher Street. No changes are proposed to any of the driveways with the fuel facility project.

The west driveway on Highway 99W is located approximately 465 feet east of North Springbrook Road and the east driveway is approximately 490 feet west of Brutscher Street, measured between centerlines. Both of these driveways are permitted by ODOT. Both are limited to right turns by the median, and have right turn deceleration lanes on the highway.

The North Springbrook Road driveway is located approximately 400 feet south of Highway 99W, measured between centerlines. This driveway is signed and striped for right-in/right-out turning movements. No left turns are permitted due to the Springbrook Road median.

SIGHT DISTANCE ANALYSIS

ODOT and the City of Newberg require intersection sight distances to be a minimum of the recommendation in AASHTO's *A Policy on Geometric Design of Highways and Streets*, 2004 Edition. The recommended sight distances for minor street left and right turns are based on the vehicular speed as described in AASHTO Exhibits 9-55 and 9-58, respectively. The sight distance recommendations provide sufficient time for the minor-road vehicle to accelerate from a stop and complete a turn without unduly interfering with major-road traffic operations. The measurements were based on equal eye and object heights of 3.5 feet at a location 15 ft back from the travel lane.

Highway 99W is posted for 40 mph, which corresponds to a recommendation of 385 feet for right turns. Left turns are not allowed at these driveways. Sight distances were observed to be in excess of 500 feet from both driveways.

North Springbrook Road is posted for a speed of 35 mph, which corresponds to a sight distance recommendation of 335 feet for right turns. Sight distance was observed at the driveway to be in excess of 400 feet to the south. Left turns are not permitted at this access due to the median along North Springbrook Road.

Although not included in the study area, sight distance availability from the main access to Brutscher Street was reviewed. Sight distance is available to the north to Highway 99W, approximately 275 away, and to the south in excess of 300 feet. Both of these distances are in excess of the recommended 280 feet for a speed of 25 mph.

Based on our evaluation in the field, sight distances at the existing site driveways noted above are currently provided in excess of AASHTO recommendations.

V. INTERSECTION ANALYSIS

CAPACITY ANALYSIS

Intersection operational analyses were conducted using the procedures in the *Highway Capacity Manual (2000)* for both signalized and unsignalized intersections, and for both the Weekday PM peak hour and Saturday mid-day peak hour. In accordance with ODOT standards, Synchro and SimTraffic software was utilized in preparing the analyses.

Unsignalized intersections are evaluated for volume-to-capacity ratio (V/C), average delay and level of service (LOS) on the critical lane on the stop controlled approach. This is typically a lane including left turns.

Signalized intersections are also evaluated for V/C, average delay and LOS, but these values are reported for the intersection as a whole.

The LOS criteria are stated as a letter grade, ranging from "A," indicating little or no delay, to "F," indicating that drivers experience long delays. The LOS worksheets for the results presented in this study are attached as an *Appendix* to this report.

The City of Newberg considers level of service "D" as the minimum acceptable design standard for intersections. This would require mitigation to an acceptable level where operation is expected to drop below an "E" or "F" level of service at the impacted intersection.

ODOT standards for intersection operation are identified in the *1999 Oregon Highway Plan* (OHP). ODOT uses V/C for the 30th highest hour to evaluate mobility deficiencies and needs. V/C is the ratio of hourly traffic volume to maximum hourly volume of vehicles that a roadway section/approach can accommodate. In other words, the V/C ratio measures the percentage of the capacity of the roadway section that is used during a single hour, in this case the 30th highest hour. This section of Highway 99W is classified as a Statewide Highway with a posted speed of 40 mph, with ODOT V/C standards of 0.75.

The intersection operation analysis results are summarized in Table 4 for the Weekday PM peak hour and Saturday mid-day peak hour for 2008 existing conditions, 2009 pre-development and 2009 post-development conditions.

TABLE 5 – INTERSECTION OPERATION ANALYSIS										
Intersection	Time Period	2008 Existing			2009 Pre-Development			2009 Post-Development		
		V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Highway 99W/ N Springbrook *(Signalized)*	PM Peak	0.82	37.9	D	0.83	39.2	D	0.84	40.7	D
	Sat Peak	0.77	31.7	C	0.78	32.0	C	0.80	33.9	C
Highway 99W/ FM East Access	PM Peak	0.01	9.6	A	0.01	9.5	A	0.04	9.6	A
	Sat Peak	0.03	9.9	A	0.02	9.4	A	0.06	10.0	A
Highway 99W/ Brutscher St *(Signalized)*	PM Peak	0.83	24.7	C	0.85	26.3	C	0.86	28.5	C
	Sat Peak	0.73	18.7	B	0.75	19.2	B	0.75	19.9	B
N Springbrook Road/ FM Access	PM Peak	0.39	13.8	B	0.40	14.0	B	0.47	15.2	C
	Sat Peak	0.30	11.5	B	0.27	11.1	B	0.38	12.5	B
N Springbrook Road/ Hayes St	PM Peak	0.40	15.0	B	0.40	15.0	B	0.42	15.8	B
	Sat Peak	0.25	20.9	C	0.23	17.6	B	0.26	20.7	C

Stop control results are reported for the critical movement

All study intersections will operate at acceptable levels of service (LOS D or better) for City of Newberg Standards through the 2009 post-development conditions.

ODOT standards call for a v/c ratio of 0.75, but this is not met under existing conditions at the North Springbrook and Brutscher Street traffic signals on Highway 99W. The addition of site traffic has little impact on intersection capacity.

The 2025 traffic conditions analysis required by the City is summarized in Table 5. Scenarios both with and without the proposed fuel facility, as well as conditions with and without the proposed bypass project are included.

TABLE 6 – INTERSECTION OPERATION ANALYSIS (2025)													
Intersection	Time Period	Pre-Development			Post Development			Pre-Development w/Bypass			Post-Development w/Bypass		
		V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Highway 99W/ North Springbrook *(Signalized)*	PM Peak	1.04	82.2	F	1.05	84.6	F	0.85	46.0	D	0.83	51.6	D
	Sat Peak	0.99	64.0	E	0.99	66.5	E	0.74	59.5	E	0.75	64.5	E
Highway 99W/ FM East Access	PM Peak	0.02	10.6	B	0.05	10.9	B	0.02	11.1	B	0.07	12.7	B
	Sat Peak	0.04	10.0	A	0.06	10.1	B	0.05	12.1	B	0.09	12.4	B
Highway 99W/ Brutscher St *(Signalized)*	PM Peak	1.06	58.7	E	1.02	61.1	E	0.75	56.1	E	0.76	62.4	E
	Sat Peak	0.98	39.1	D	0.98	38.7	D	0.72	29.2	C	0.73	30.0	C
North Springbrook Road/ FM Access	PM Peak	0.54	18.1	C	0.62	20.3	C	0.63	21.6	C	0.72	25.9	D
	Sat Peak	0.38	13.0	B	0.51	15.4	C	0.38	13.0	B	0.46	14.1	B
North Springbrook Road/ Hayes St	PM Peak	0.51	10.7	B	0.52	11.4	B	0.58	13.5	B	0.59	14.4	B
	Sat Peak	0.30	7.8	A	0.32	8.5	A	0.30	7.8	A	0.32	8.5	A

Under the estimated 2025 PM peak hour traffic conditions, the Highway 99W/North Springbrook Road intersection would exceed available capacity without the bypass project, regardless of the proposed fuel facility. With the bypass, post-development intersection operation would meet City of Newberg standards, and the v/c ratio would improve over pre-development conditions.

The Highway 99W/Brutscher Street intersection 2025 PM peak hour traffic conditions are estimated to exceed available capacity with or without the fuel facility, but the v/c ratio would improve over pre-development conditions. With the bypass, post-development intersection operation would meet City of Newberg standards, and the v/c ratio would increase by 0.01 over pre-development conditions.

All other intersections would operate at acceptable performance standards in 2025 with or without the proposed bypass.

QUEUING CALCULATIONS

Analyses were performed to determine the existing and anticipated 95th percentile queue lengths along the Fred Meyer frontage from the two study area signalized intersections. SimTraffic software was used in accordance with ODOT standards to calculate the anticipated queues, including an assumption of 25 feet per vehicle. The existing and anticipated future queue length for the Weekday PM and Saturday mid-day analysis scenarios is presented in Table 6, along with the available storage. Detailed queuing calculations summary sheets are included in the *Appendix*.

TABLE 7 – QUEUE LENGTHS

Intersection	Lane Group and Movement		Available Storage	2008 Existing PM (SAT)	2009 Pre-Dev. PM (SAT)	2009 Post-Dev. PM (SAT)
Highway 99W/ North Springbrook	NB	Lt	250	175 (125)	175(125)	225 (150)
		Th	300	**375** (150)	**350** (175)	**350** (175)
		Rt	225	200 (125)	200 (100)	225 (100)
Highway 99W/ Brutscher St.	EB	Th	375	**400** (325)	**400** (300)	**425** (325)
	NB	Lt	225	150 (150)	150 (150)	150 (150)
		Th/Rt	225	125 (125)	125 (125)	125 (150)

Note: Bold numbers show that vehicles in the queue exceed the lane storage.

Springbrook Road at Highway 99W

The northbound approach of Springbrook Road to Highway 99W is currently striped for four lanes (two left, one through, and one right). The two left lanes have approximately 250 feet of storage each, and the right lane has 225 feet of storage. The through lane provides approximately 300 feet of storage back to the Fred Meyer access. The analysis indicates queue lengths for the left- and right-turn lanes are adequate. Queues on the through lane will extend to the Fred Meyer access, as currently occurs in the PM peak hour. When this occurs, vehicles turning right from the Fred Meyer driveway may need to wait for the queue to clear before proceeding, which does not impact the public street operation.

Highway 99W at Brutscher Street

The eastbound approach along Highway 99W is currently striped for four lanes (one left, two through and one right). The Fred Meyer access, which is limited to right-in/right-out, is located approximately 400 feet west of Brutscher Street. The analysis shows that 2009 conditions will result in through queues extending just to the Fred Meyer right-out access.

Based on the queuing analysis, the addition of trips from the proposed fuel facility will not have a significant impact on vehicle queues.

VI. MITIGATION

As presented in the Capacity Analysis section of this TIA, the proposed Fred Meyer Fueling Facility is anticipated to increase the v/c ratio by 0.01 in the critical PM peak hour time period at the Highway 99W/North Springbrook and Highway 99W/Brutcher Street intersections. Because both intersections exceed the ODOT Mobility Standard of 0.75, mitigation must be identified.

HIGHWAY 99W/NORTH SPRINGBROOK

Improvements to the v/c ratio can be achieved by modifying lane configurations. Modifying North Springbrook to allow a free westbound right movement with two northbound lanes on North Springbrook north of the intersection, and changing the southbound right-turn lane into a shared through/right, improves the intersection PM peak hour v/c from 0.84 to 0.81. However, this mitigation is not recommended.

Combining the through/right volumes in one lane southbound causes the southbound operation to degrade so the critical lane switches to the southbound approach. Because two critical lanes are on the same approach, the lost time is reduced by 4 seconds (note lost time changes from 12 to 8 seconds), thus reducing the v/c for the intersection. The intersection really does not operate any better. In fact, delay is worse for the southbound through/right, as is the intersection average.

The Highway 99W/North Springbrook intersection operates as efficiently as possible given the existing roadway widths. Any significant mitigation would require widening and redesign of the intersection and signal and roadway infrastructure which would surpass the impacts of the proposed Fueling Facility.

HIGHWAY 99W/BRUTSCHER STREET

This intersection has a very high northbound left-turn movement. Improvements to the v/c can be achieved by switching the signal operation from a northbound/southbound common green to split phases for the northbound and southbound approaches, and changing the northbound approach lane configurations to a left turn only and shared left/through/right turn. With these changes, the intersection PM peak hour v/c improves from 0.86 to 0.80.

The 2009 post-development operation analysis with and without mitigation is presented in Table 7.

TABLE 8 – MITIGATED INTERSECTION OPERATION ANALYSIS

Intersection	Time Period	2009 Post-Development			Mitigated 2009 Post-Development		
		V/C	Delay	LOS	V/C	Delay	LOS
Highway 99W/ North Springbrook	PM Peak	0.84	40.7	D	0.81	41.3	D
	Sat Peak	0.80	33.9	C	0.80	33.1	C
Highway 99W/ Brutscher Street	PM Peak	0.86	28.5	C	0.80	33.1	C
	Sat Peak	0.75	19.9	B	0.74	28.4	C

Synchro analysis worksheets for the mitigated scenarios are included in the appendix.

VII. SUMMARY

This revised transportation impact analysis has been prepared for the proposed Fred Meyer fuel facility in Newberg, Oregon. The analysis follows City of Newberg and Oregon Department of Transportation standards, and responds to the ODOT review comments of February 20, 2009. It addresses impacts of the proposed fuel facility on the surrounding roadways and access issues for an ODOT Approach Application.

The property is located on the south side of Highway 99W between North Springbrook Road and Brutscher Street. The 14 fueling position fuel facility will be located in the west portion of the existing Fred Meyer parking lot. No other changes to the site or driveway locations are proposed.

The study area includes the intersections of Highway 99W with North Springbrook Road and Brutscher Street, as well as three site driveways. Conditions for existing traffic and pre- and post-development are analyzed for both the Weekday PM and Saturday mid-day peak hours. A 2025 pre- and post-development operation analysis is also provided to examine roadway operations with and without the proposed Newberg bypass.

Sidewalks are currently provided along the entire site frontage. Bicycle lanes are currently provided on Highway 99W, Hayes Street, and Brutscher Street, but not on North Springbrook Road.

Crash data for the study area intersections was reviewed for the five year period January 2003 to December 2007. All study area intersections have crash rates below the threshold rate of 1.0 crash per million entering vehicles; therefore, no safety mitigation is recommended.

A segment crash analysis was also performed for a one-mile segment (M.P 21.30 – 22.30) of Highway 99W including the project property frontage. The segment crash report showed 60 crashes for a three-year period resulting in a segment crash rate of 1.33. This rate is lower than the average crash rate reported by ODOT for similar highways.

Trip generation estimates were prepared using the Institute of Transportation Engineers (ITE) *Trip Generation*, 7th Edition, and Land Use Code 944 Gasoline/Service Station. The proposed facility will have 14 fueling positions, and generate a total of 2360 daily, 194 PM peak hour and 226 Saturday mid-day peak hour trips. Adjustments for internal and pass-by trips were applied consistent with ITE recommendations, resulting in 74 PM peak hour and 86 Saturday mid-day net new peak hour trips.

New trip distribution is based upon existing Fred Meyer driveway volumes and traffic flow on Highway 99W. In general, 15% to/from the west on Highway 99W, 35% to/from the east on Highway 99W, 25% to/from the south on North Springbrook Road and Brutscher Street, and 25% to/from the north on North Springbrook Road. Pass-by trip distribution is proportionally based on existing traffic on each roadway frontage.

The internal intersection of the Fuel Facility access and US Bank accesses with the main Fred Meyer drive aisle will be modified to provide all-way stop control, and remove the existing left-turn lane at the US Bank entrance drive aisle. This will provide better traffic control and sufficient capacity for this on-site intersection.

No changes are proposed to existing driveways. Sight distances at all existing site driveways were reviewed in accordance with recommendations in AASHTO's *A Policy on Geometric Design of Highways and Streets*, 2004 Edition. All driveways meet or exceed these recommendations.

Intersection operational analyses were conducted using Synchro/SimTraffic software, which follow *Highway Capacity Manual (2000)* procedures. All intersections will meet the City of Newberg level of service "D" standards in 2009 with development of the fuel facility. The ODOT standard for this section of Highway 99W's signalized intersections is a v/c ratio of 0.75 as identified in the *1999 Oregon Highway Plan* (OHP). The existing intersection operation already exceeds the ODOT standard, and the additional Fuel Facility trips will increase the v/c ratio by 0.01 at the Highway 99W/North Springbrook and Highway 99W/Brutcher Street intersections during the critical PM peak hour period.

Future 2025 conditions were reviewed as required by City of Newberg. Without the proposed bypass project, intersections on Highway 99W would operate over capacity with or without the fuel facility. With the bypass project, these intersections would operate at acceptable levels of service "D" during the critical PM peak hour, but still exceed ODOT's operating standard.

Analyses were performed to determine the existing and anticipated 95th percentile queue lengths along the site frontage at two signalized study area intersections. Based on the queuing analysis, the addition of trips from the proposed Fuel Facility will not have a significant impact on vehicle queues; however, queues on North Springbrook Road will extend to the Fred Meyer driveway a couple times during the peak hours.

The proposed Fred Meyer Fueling Facility is anticipated to increase the v/c ratio by 0.01 in the critical PM peak hour time period at the Highway 99W/North Springbrook and Highway 99W/Brutcher Street intersections. Because both intersections exceed the ODOT Mobility Standard of 0.75, mitigation must be identified.

The Highway 99W/North Springbrook intersection operates as efficiently as possible given the existing roadway widths. Any significant mitigation would require widening and redesign of the intersection and signal and roadway infrastructure which would surpass the impacts of the proposed Fueling Facility. Modifying existing North Springbrook lane configurations can improve the v/c ratio from 0.84 to 0.81, but this is not recommended.

The Highway 99W/Brutcher Street intersection can be mitigated by switching the signal operation from a northbound/southbound common green to split phases for the northbound and southbound approaches, and changing the northbound approach lane configurations to a left turn only and shared left/through/right turn. With these changes, the intersection PM peak hour v/c improves from 0.86 to 0.80.

VII. APPENDIX

A. Figures

B. Traffic Count Summaries

C. Transit Routes/Schedules

D. Crash Data

E. In-Process Traffic

F. Trip Generation

G. Capacity Calculations

H. Queuing Calculations

I. Mitigation Calculations

J. ODOT Volume Adjustment

K. Project Scoping Correspondence

APPENDIX A

Figures

NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

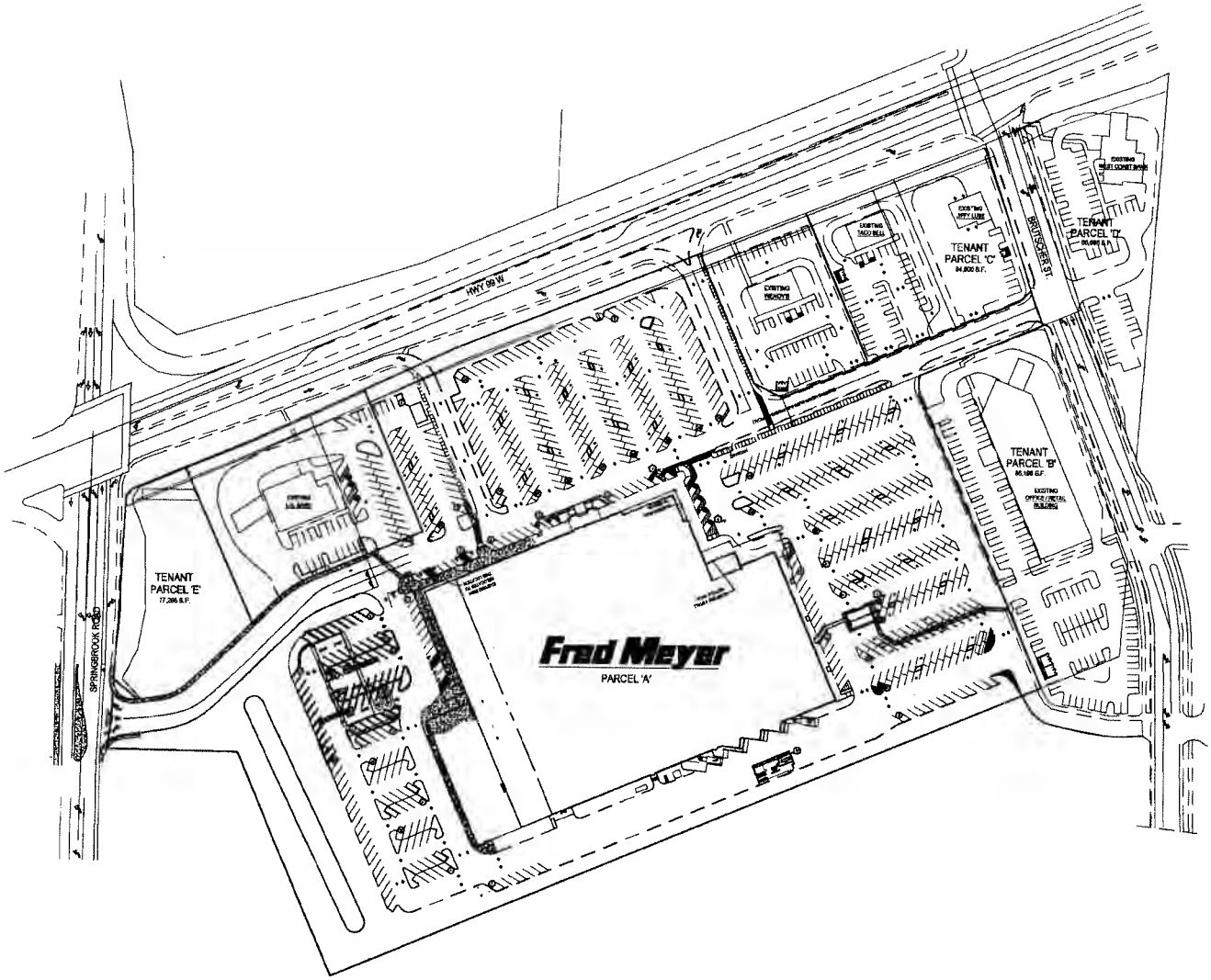
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER, WITHOUT PRIOR WRITTEN PERMISSION

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 2080406.00

VICINITY MAP

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 1



NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

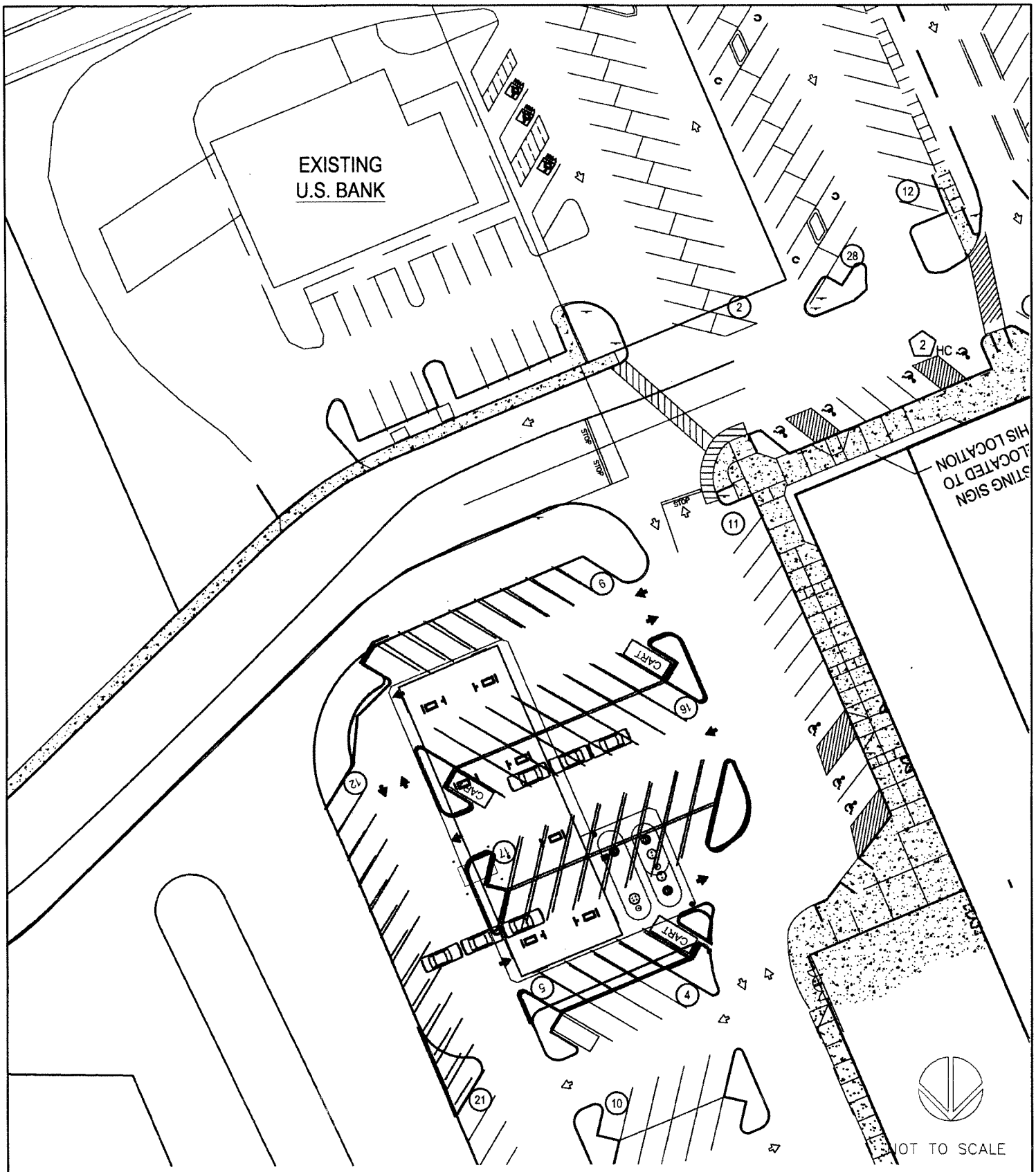
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER, WITHOUT PRIOR WRITTEN PERMISSION

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 208040

FRED MEYER SITE PLAN

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 2



GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

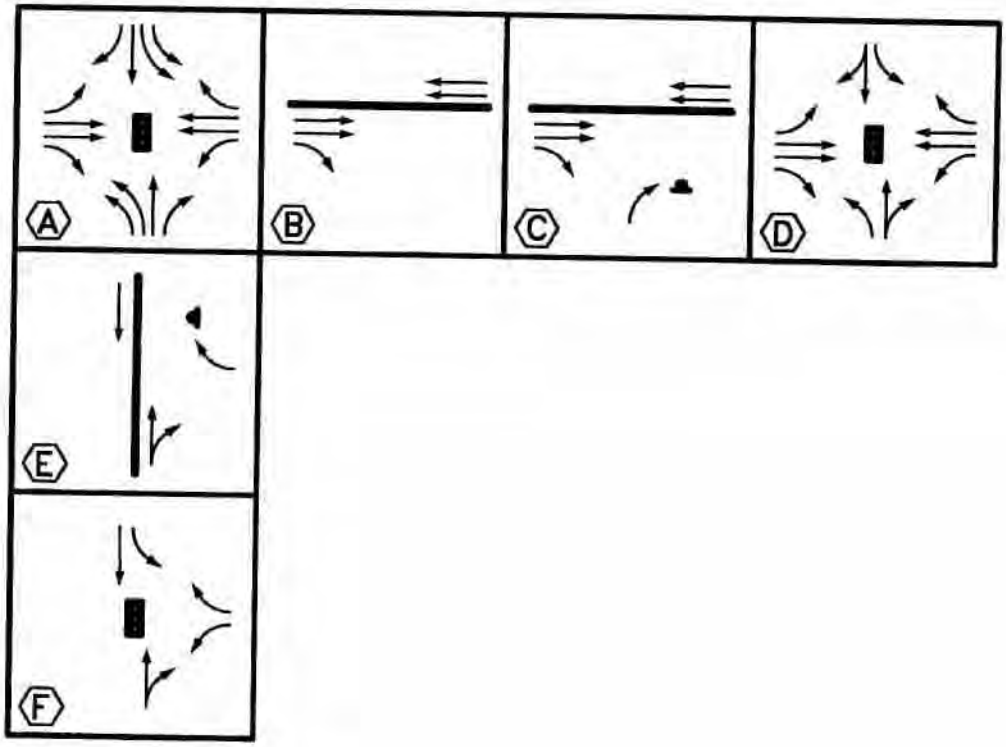
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER, WITHOUT PRIOR WRITTEN PERMISSION

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 2080406.00

FUEL FACILITY SITE PLAN

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE
2A



NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

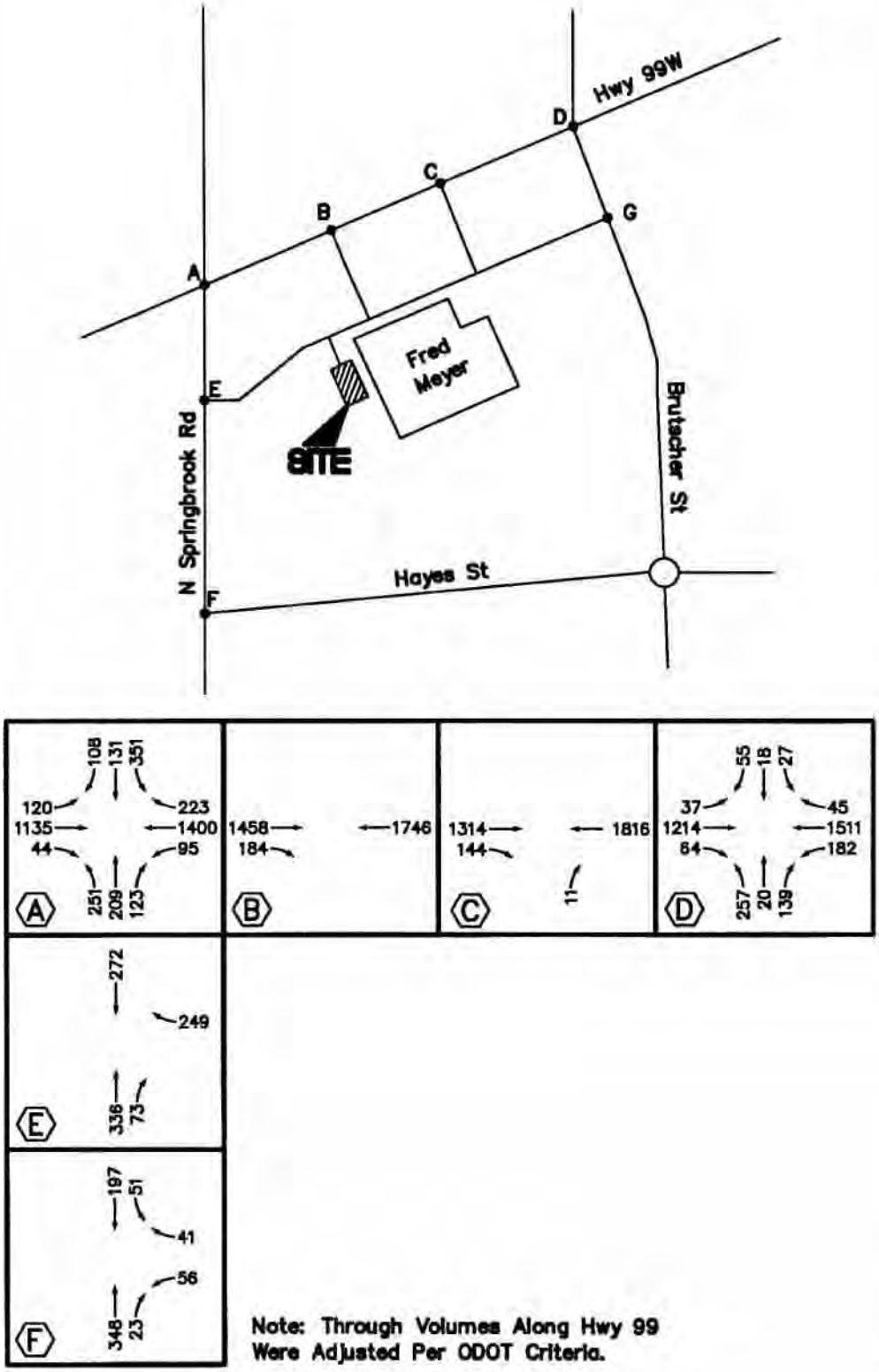
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER WITHOUT PRIOR WRITTEN PERMISSION

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 2080400.00

LANE CONFIGURATION AND TRAFFIC CONTROL

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 3



Note: Through Volumes Along Hwy 99 Were Adjusted Per ODOT Criteria.

NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

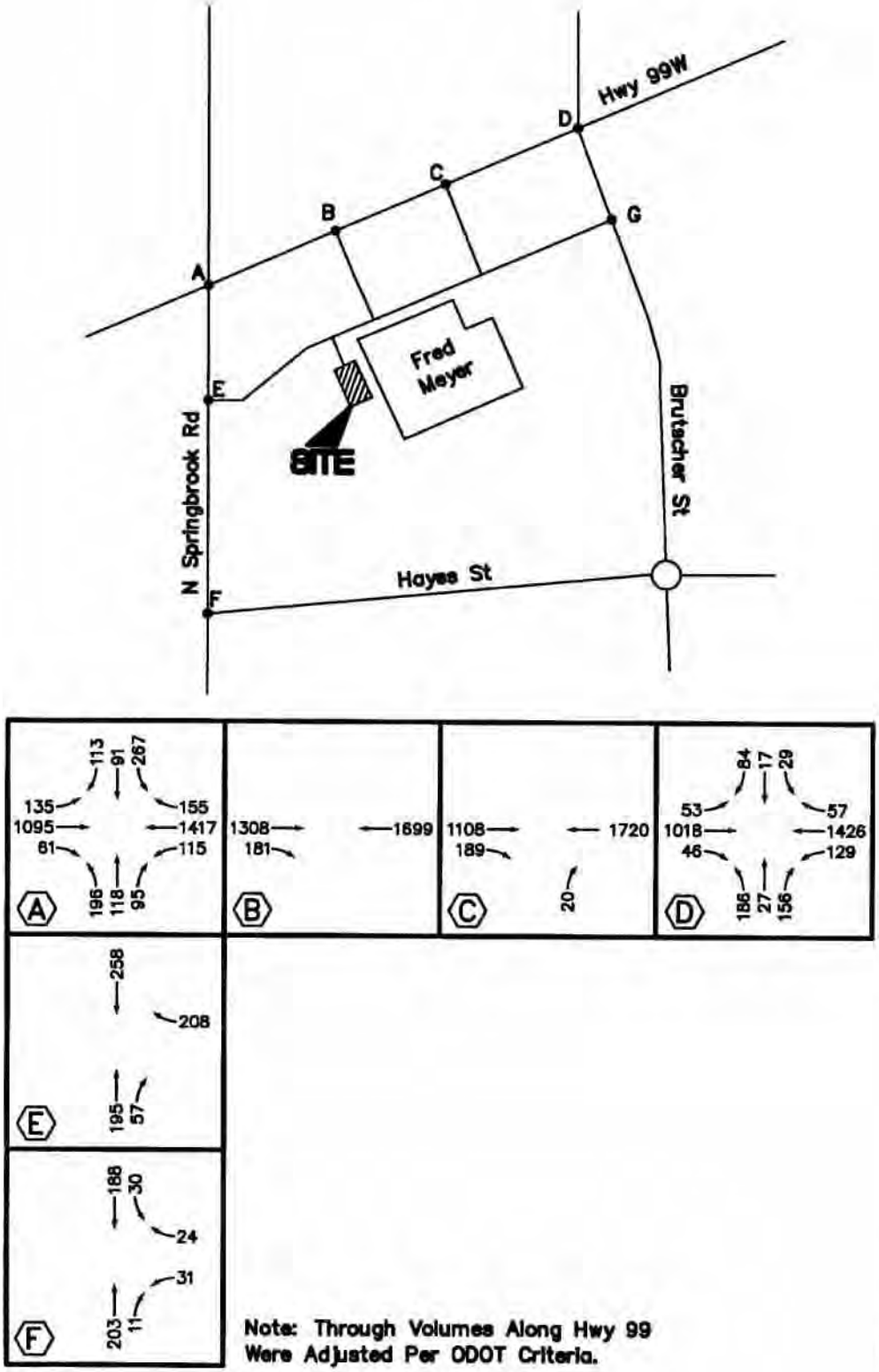
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER WITHOUT PRIOR WRITTEN PERMISSION.

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804P06.00

2008 EXISTING 30TH HIGHEST HOUR VOLUMES
WEEKDAY PM PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 4A



GROUP MACKENZIE

Portland OR 503.224.9560 Vancouver WA 360.695.7879 Seattle WA 206.749.9993

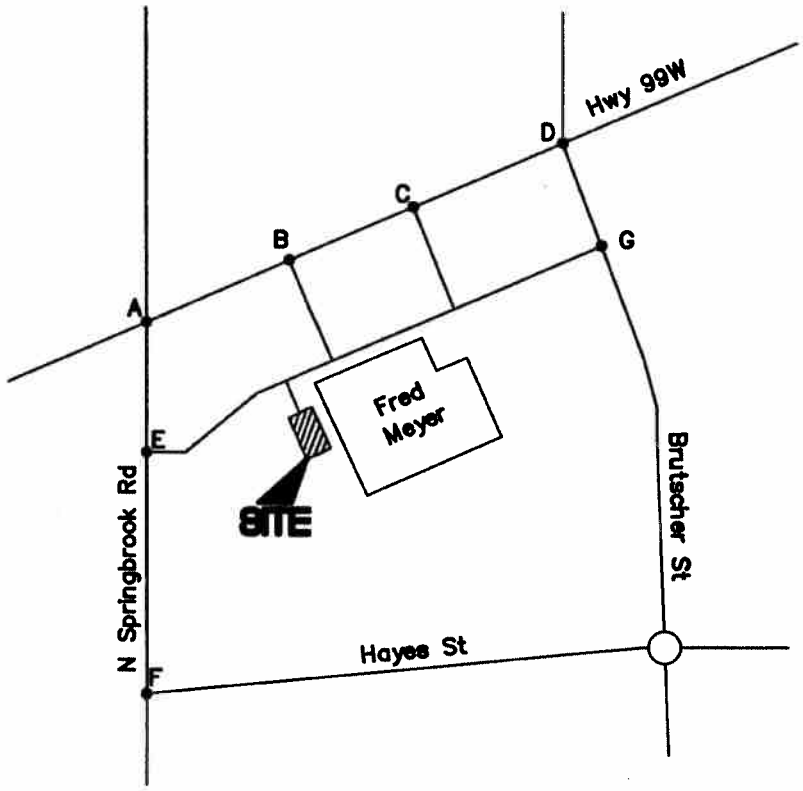
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER WITHOUT PRIOR WRITTEN PERMISSION

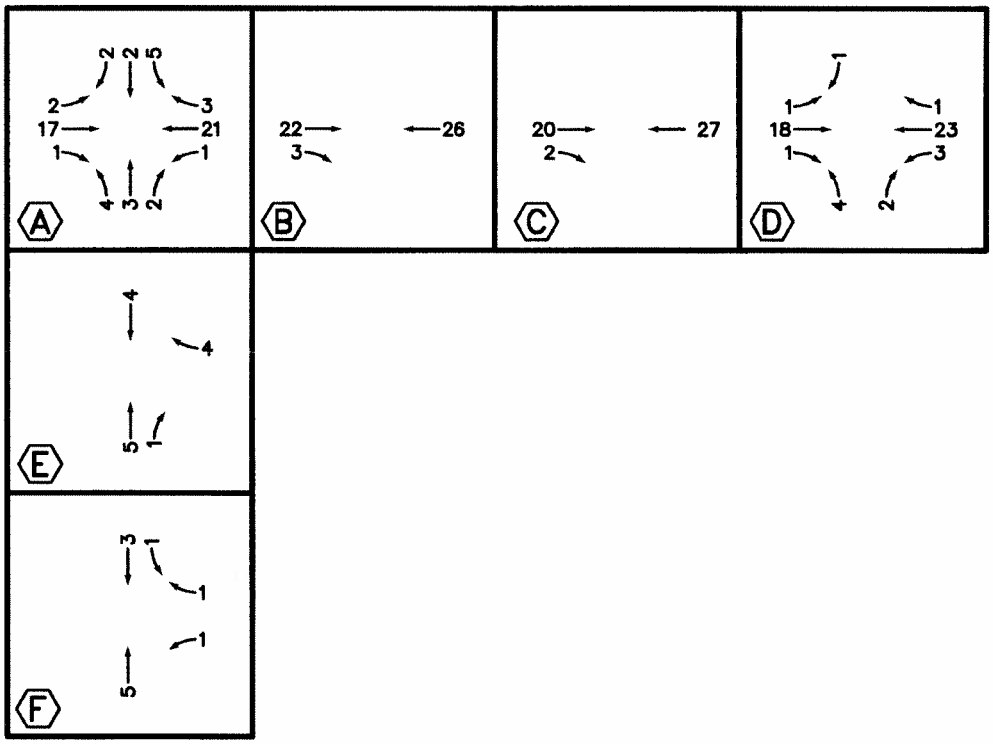
DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 2080406.00

2008 EXISTING 30TH HIGHEST HOUR VOLUMES SATURDAY MIDDAY PEAK

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 4B





NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 Vancouver WA 360.695.7879 Seattle WA 206.749.9993

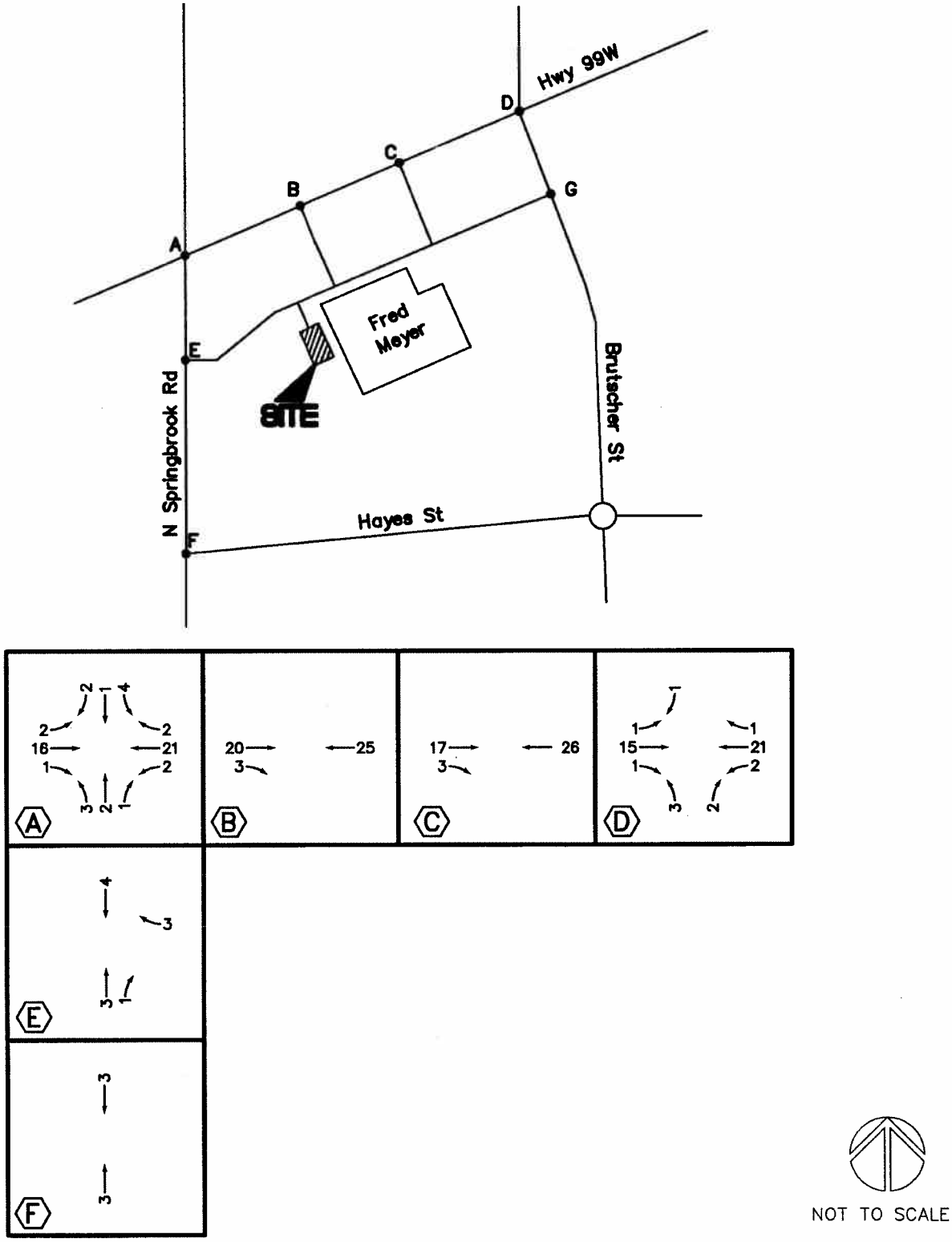
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER, WITHOUT PRIOR WRITTEN PERMISSION

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804P6.00

2009 BACKGROUND GROWTH 1.5%
WEEKDAY PM PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE
5A



GROUP MACKENZIE

Portland OR 503.224.9560 Vancouver WA 360.695.7879 Seattle WA 206.749.9993

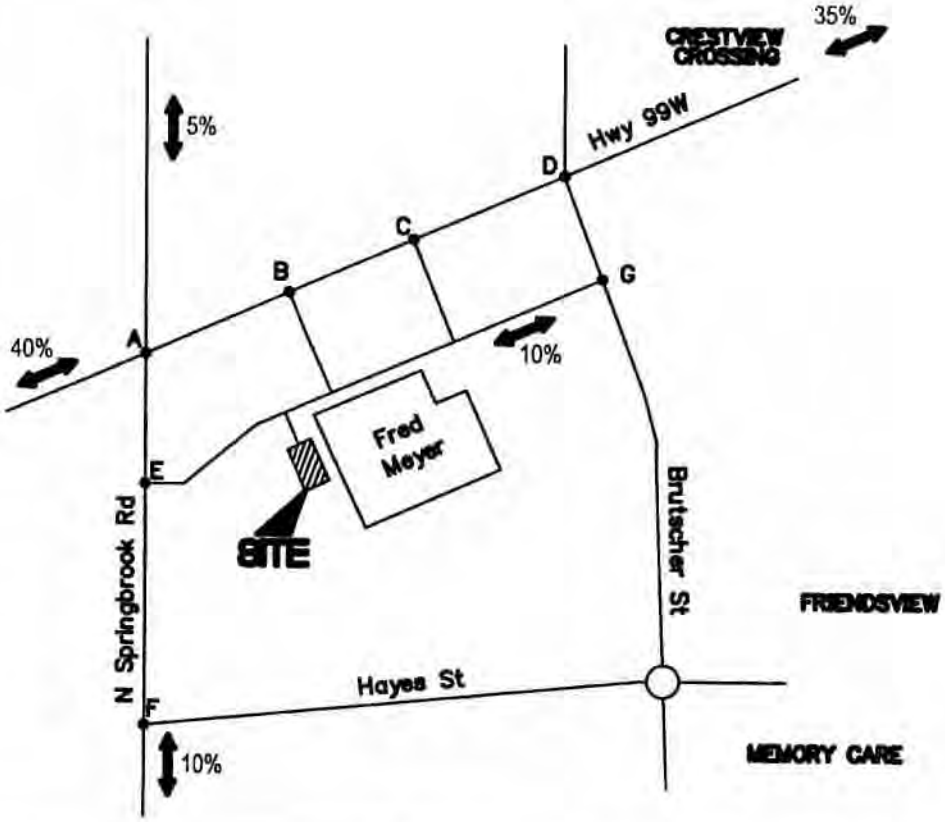
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER, WITHOUT PRIOR WRITTEN PERMISSION.

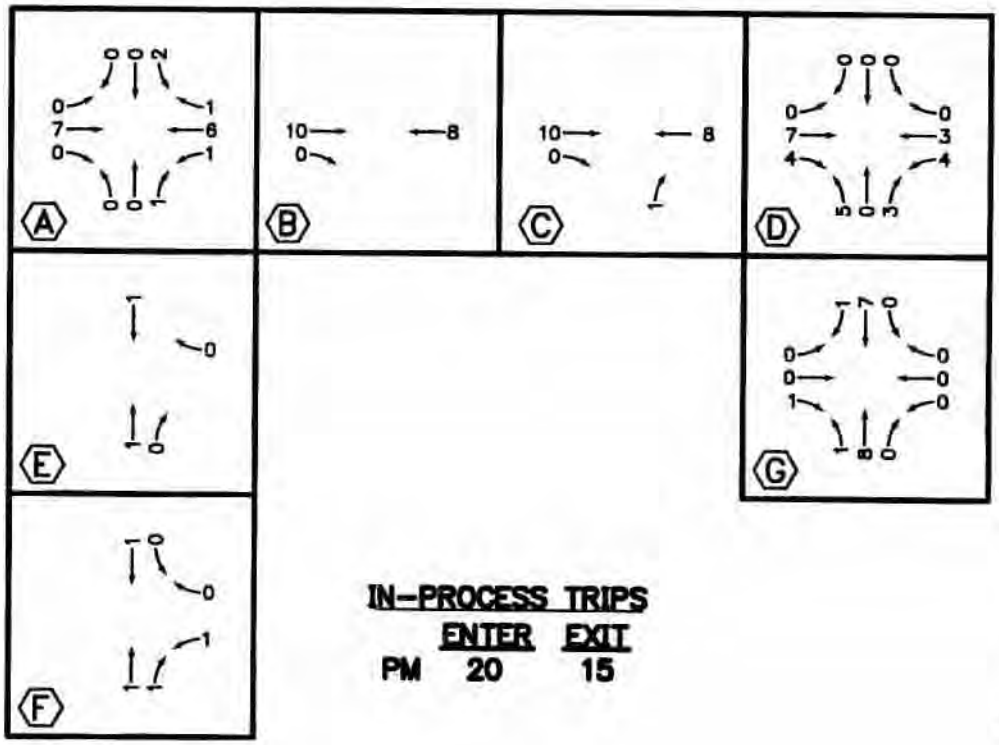
DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804.00

2009 BACKGROUND GROWTH 1.5%
SATURDAY MIDDAY PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 5B





IN-PROCESS TRIPS

	ENTER	EXIT
PM	20	15

NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

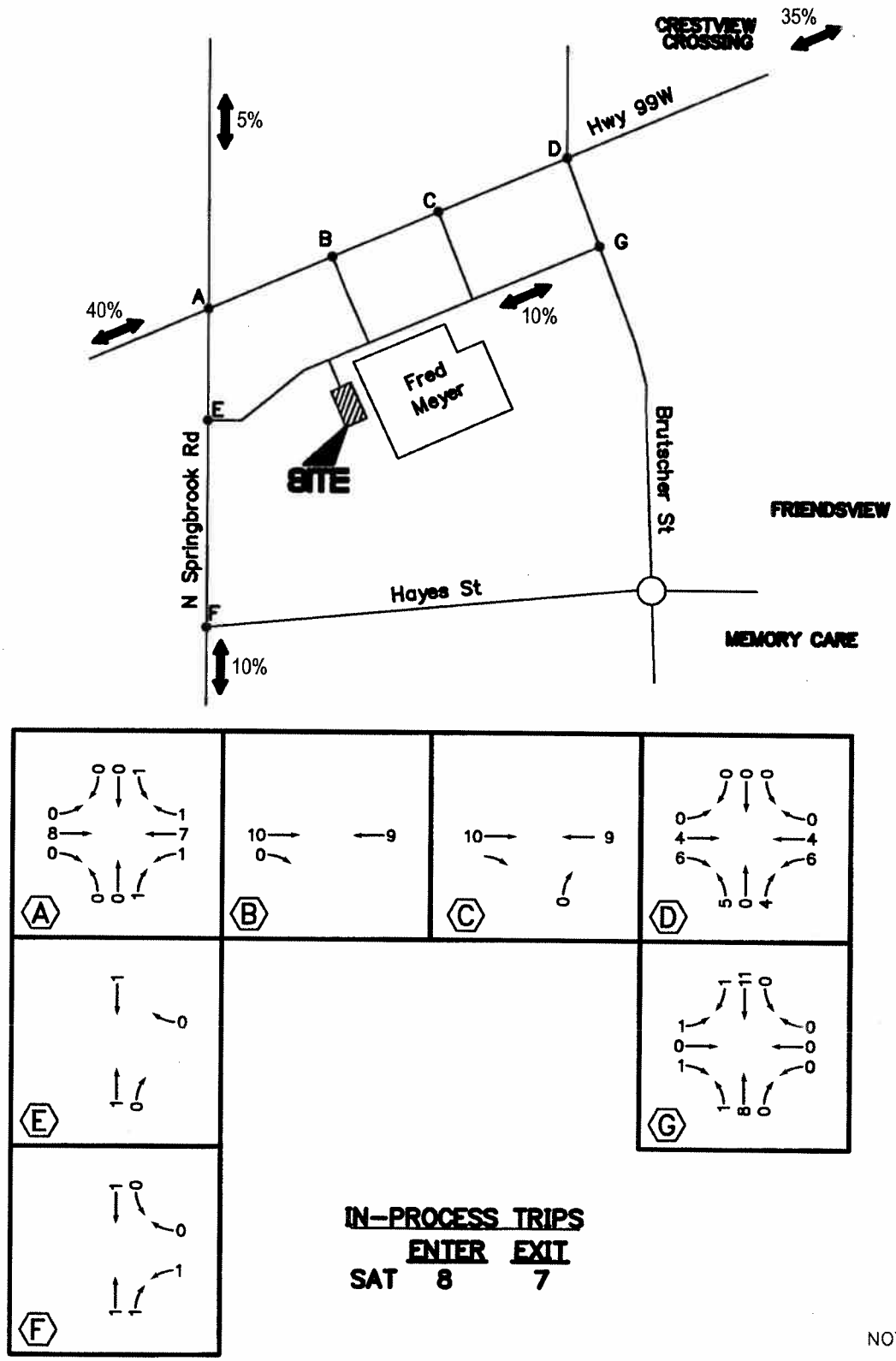
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER WITHOUT PRIOR WRITTEN PERMISSION

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 2080406.00

IN-PROCESS TRAFFIC
PM PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 6A



IN-PROCESS TRIPS

	ENTER	EXIT
SAT	8	7

NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 Vancouver WA 360.695.7879 Seattle WA 206.749.9993

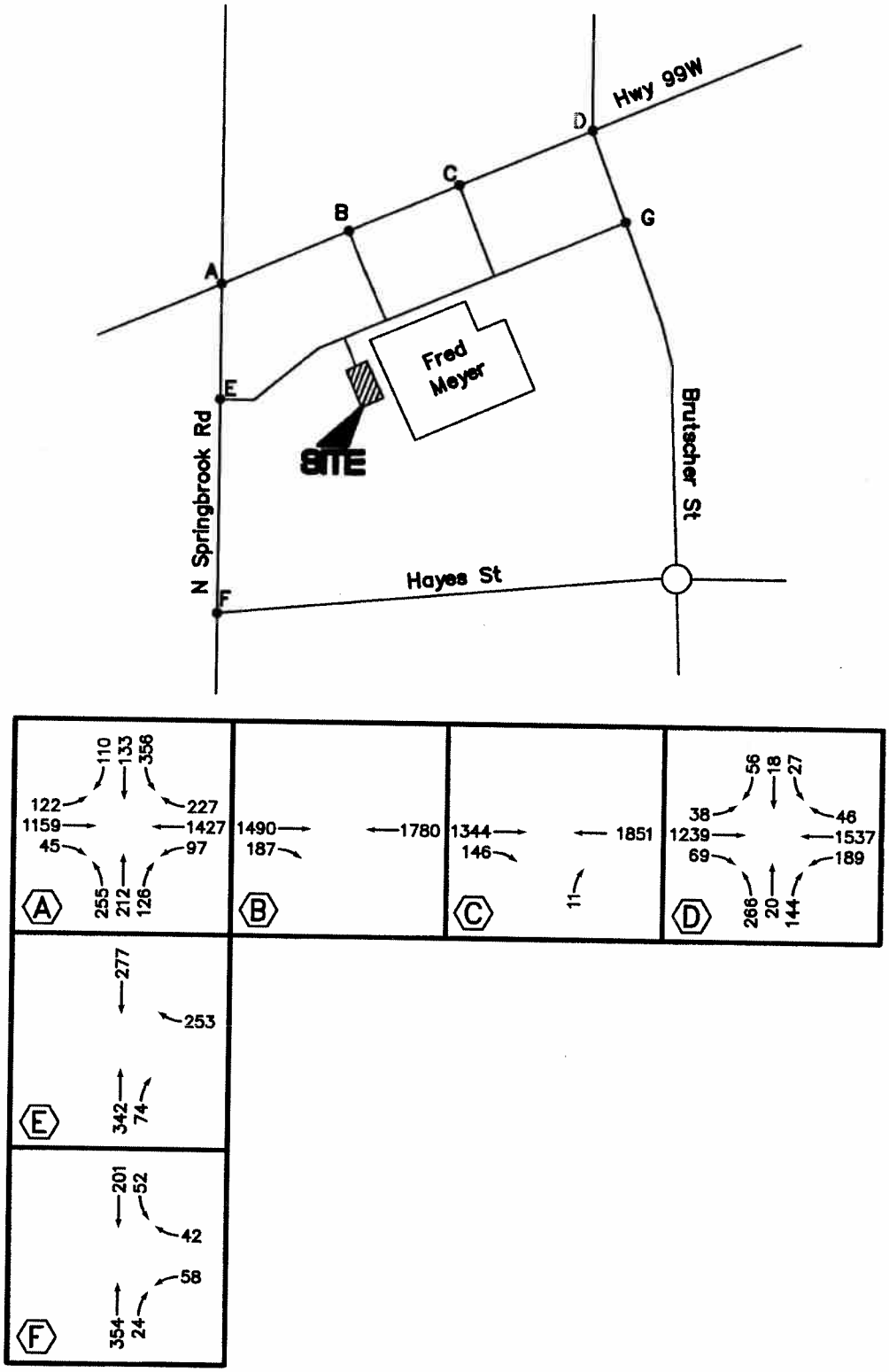
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER WITHOUT PRIOR WRITTEN PERMISSION

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804

IN-PROCESS TRAFFIC
SATURDAY PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 6B



NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

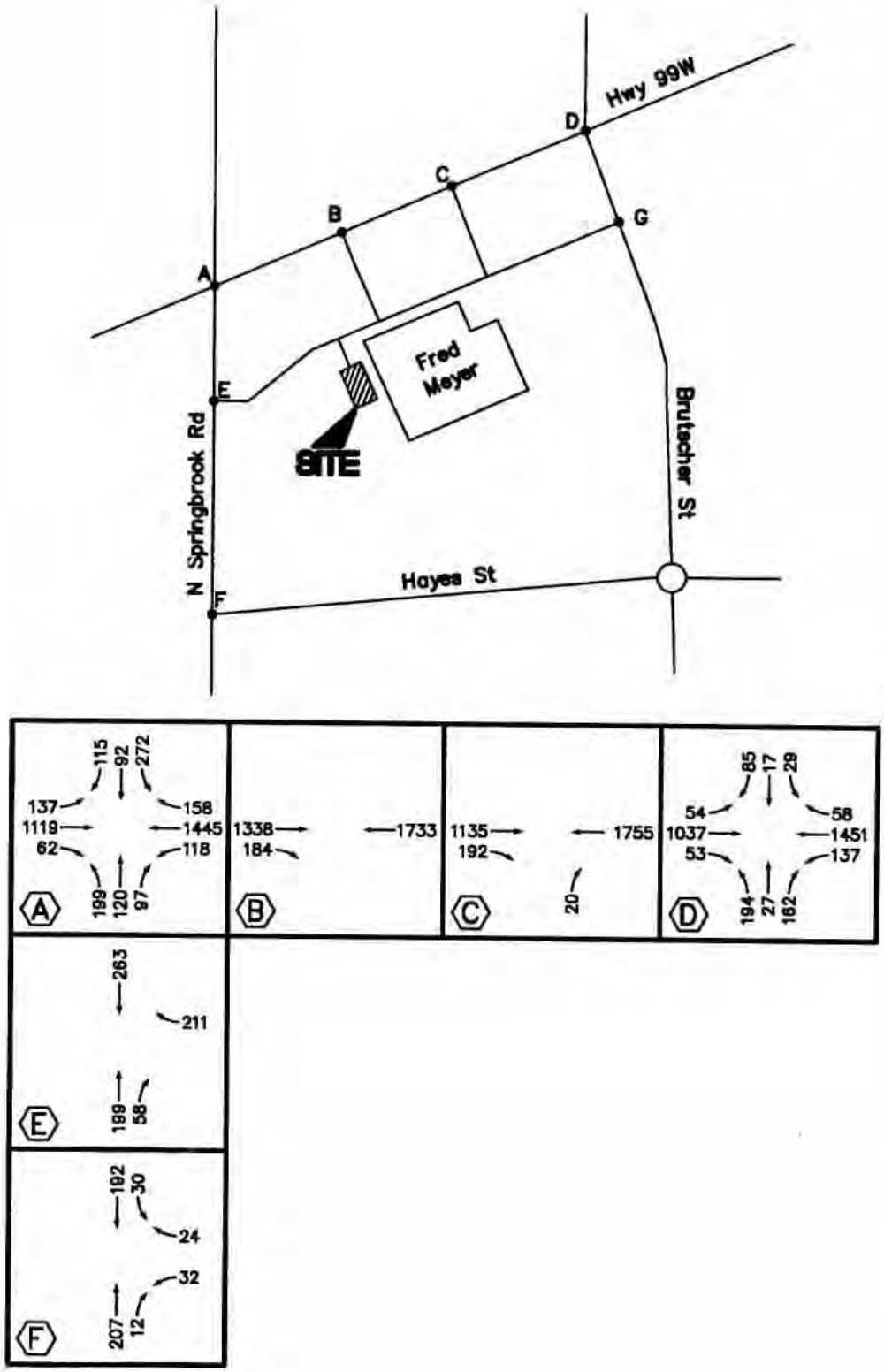
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER WITHOUT PRIOR WRITTEN PERMISSION

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804006.00

2009 PRE-DEVELOPMENT WEEKDAY PM PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 7A



NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 Vancouver WA 360.695.7879 Seattle WA 206.749.9993

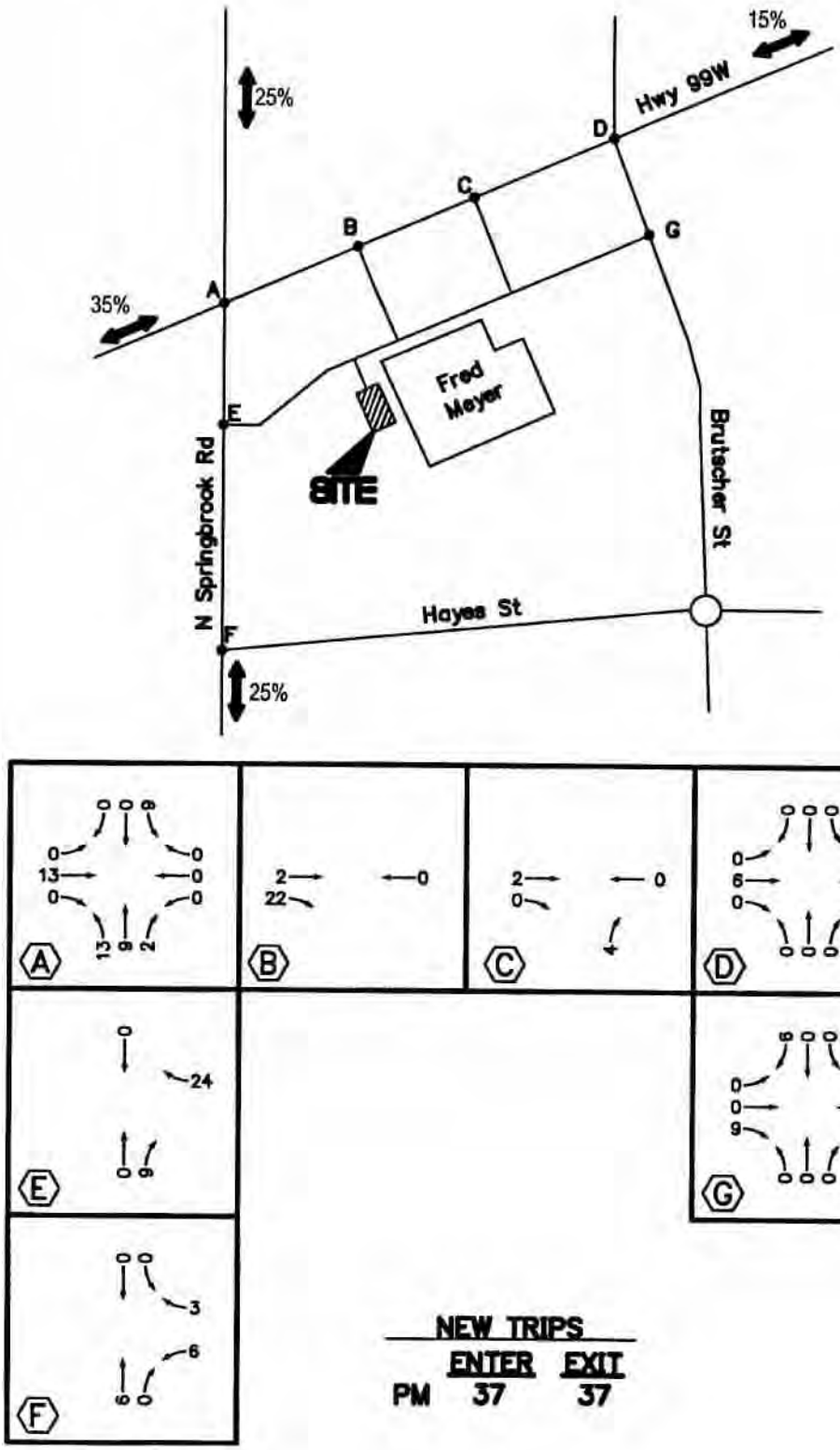
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER WITHOUT PRIOR WRITTEN PERMISSION

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804

2009 PRE-DEVELOPMENT SATURDAY PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 7B



NEW TRIPS

	ENTER	EXIT
PM	37	37

NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 Vancouver WA 360.695.7879 Seattle WA 206.749.9993

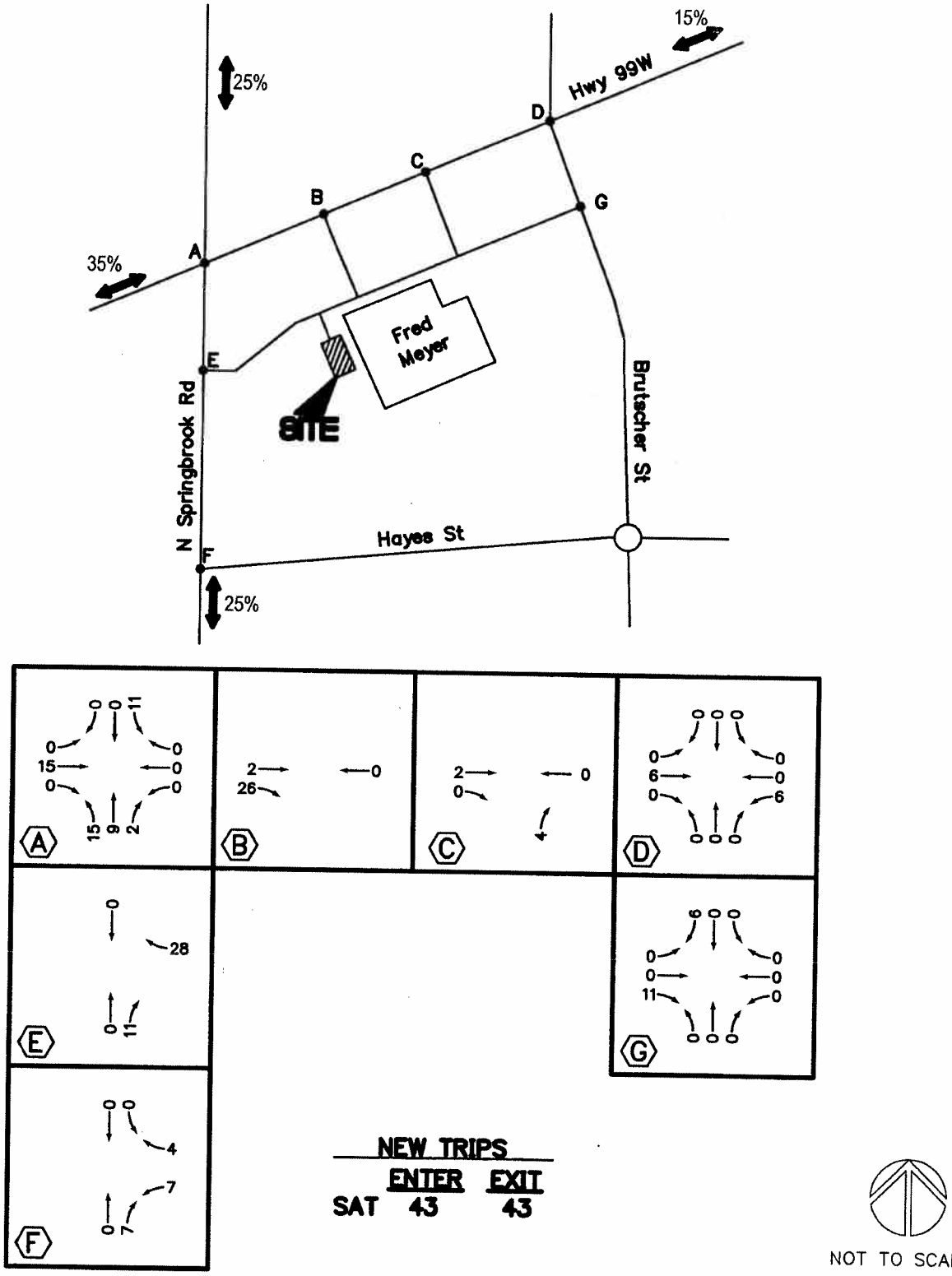
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER WITHOUT PRIOR WRITTEN PERMISSION

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804

NEW/DIVERTED TRIP DISTRIBUTION AND ASSIGNMENT - PM PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 8A



NEW TRIPS

	ENTER	EXIT
SAT	43	43

NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

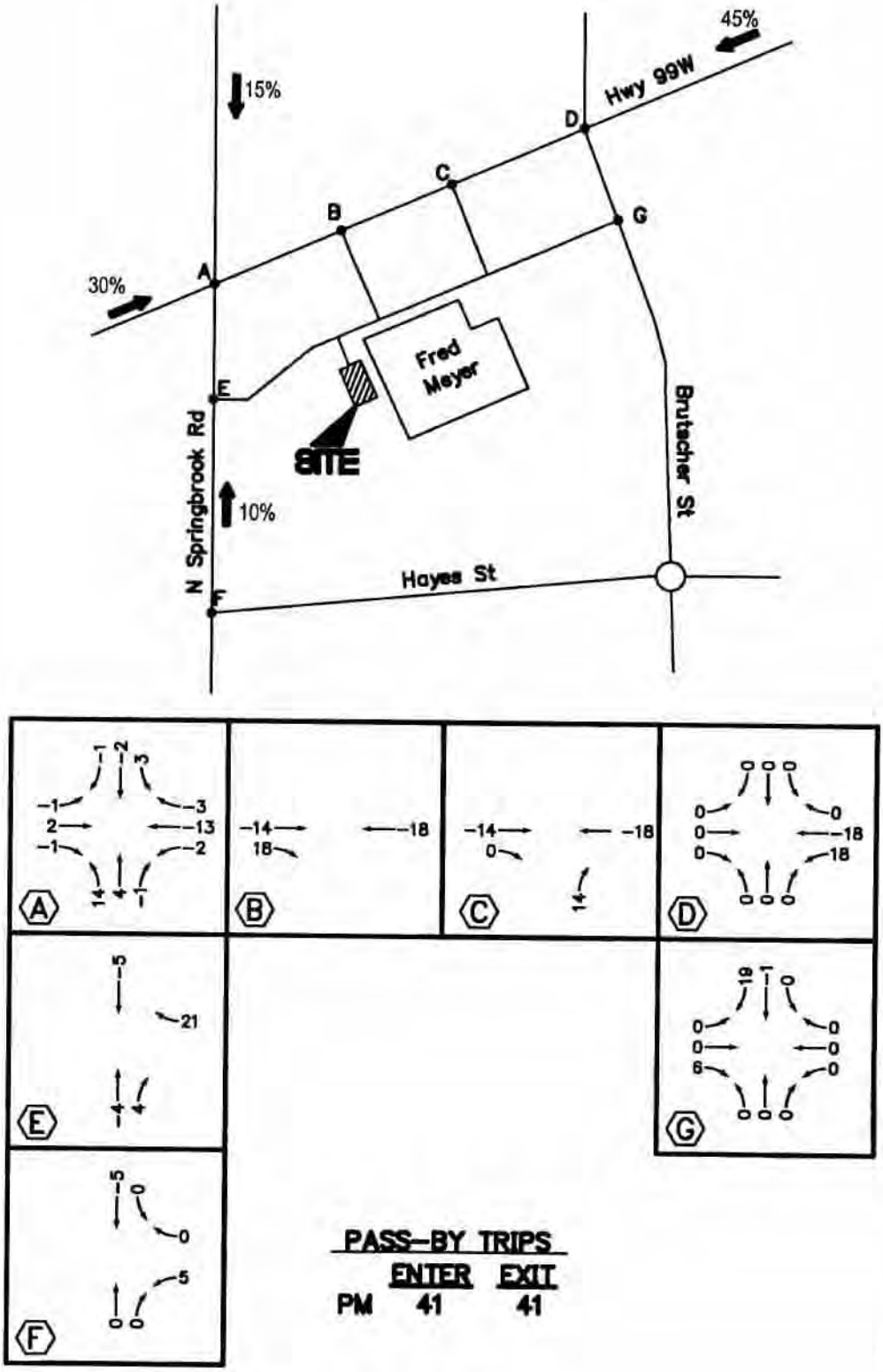
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER WITHOUT PRIOR WRITTEN PERMISSION

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 2080406.00

NEW/DIVERTED TRIP DISTRIBUTION AND ASSIGNMENT - SATURDAY PEAK

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE
8B



PASS-BY TRIPS

	ENTER	EXIT
PM	41	41

NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

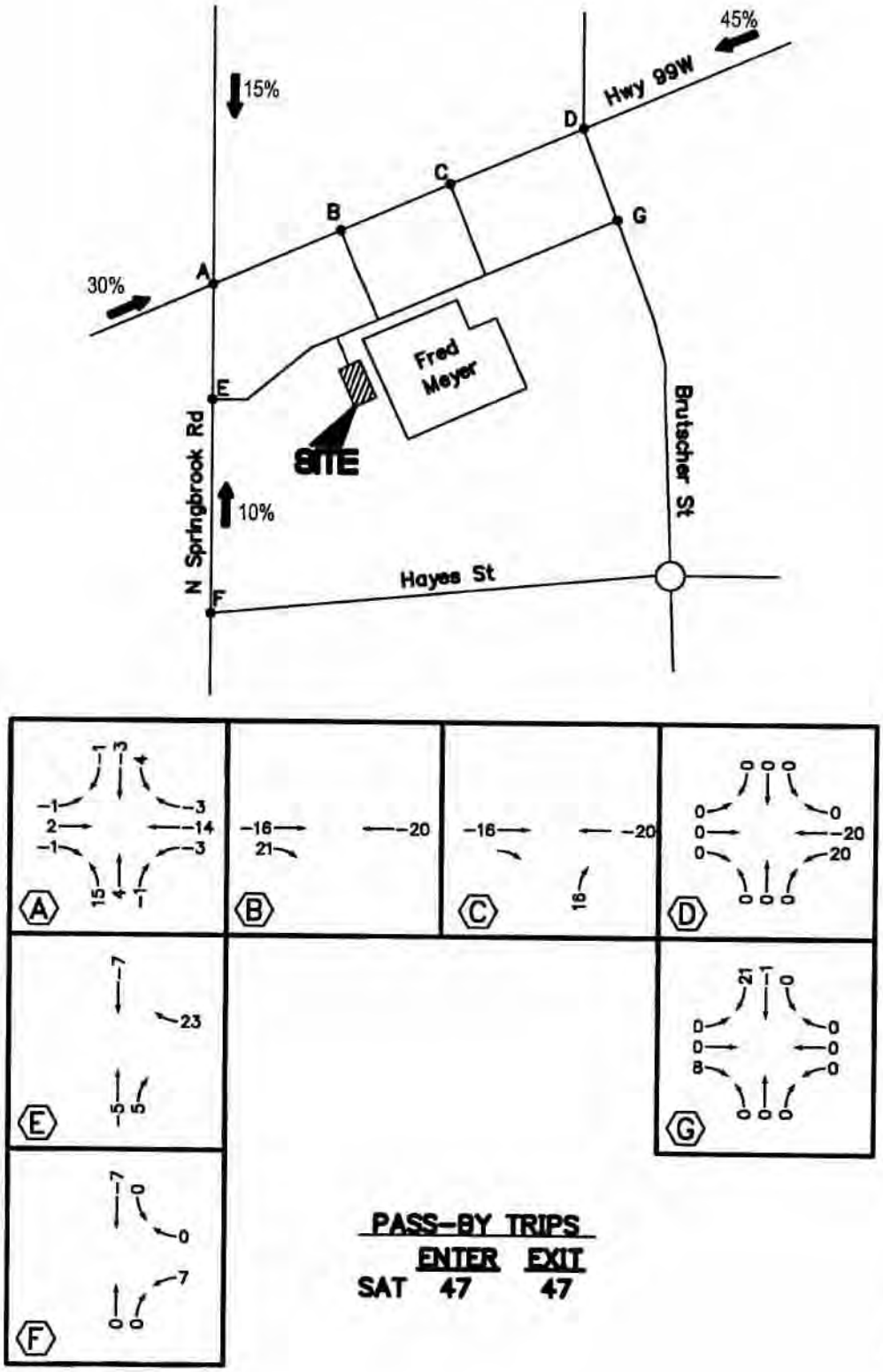
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER, WITHOUT PRIOR WRITTEN PERMISSION

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 2080406.00

PASS-BY TRIP DISTRIBUTION AND ASSIGNMENT - PM PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 9A



PASS-BY TRIPS

	ENTER	EXIT
SAT	47	47

NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

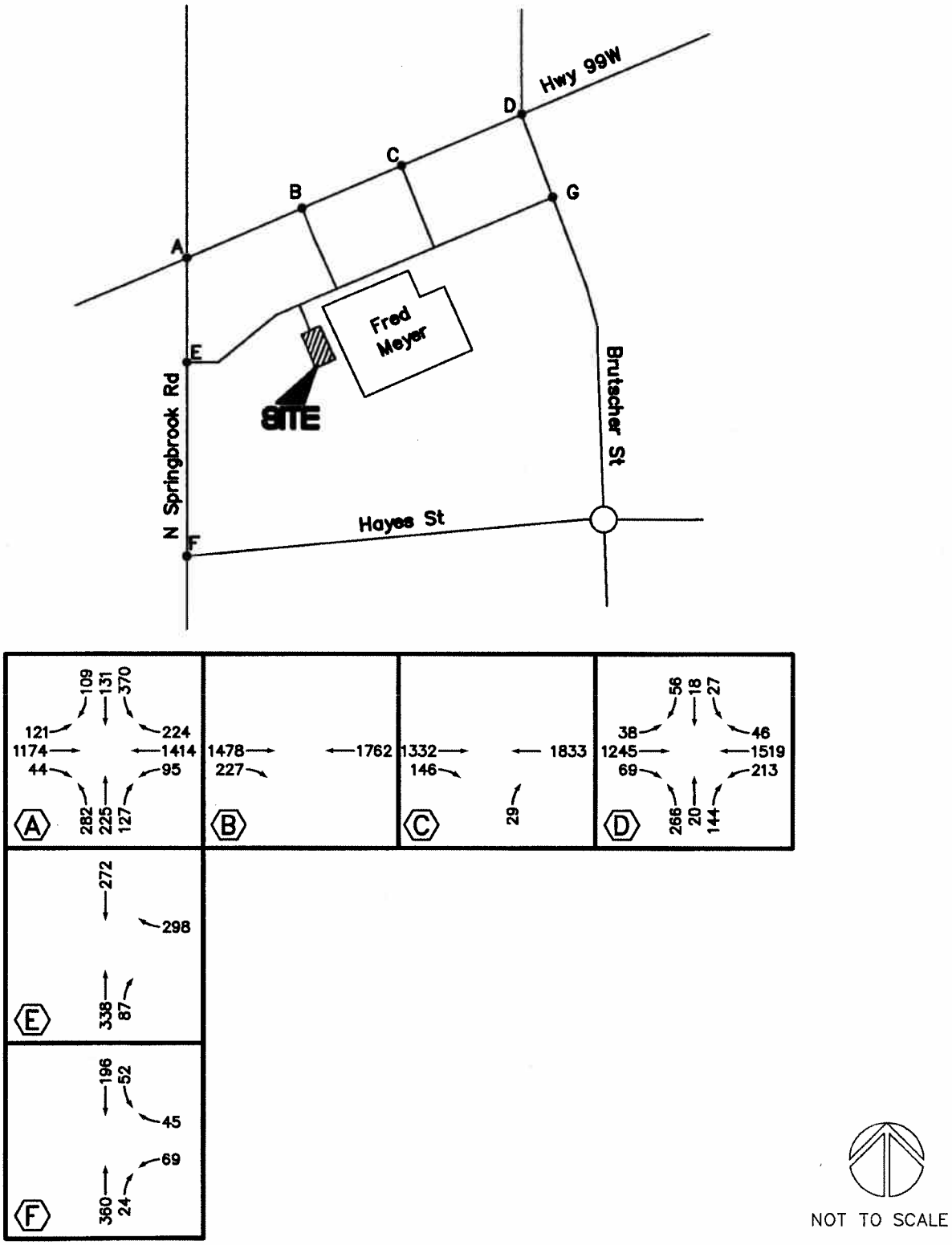
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER, WITHOUT PRIOR WRITTEN PERMISSION.

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804P06.00

PASS-BY TRIP DISTRIBUTION AND ASSIGNMENT - SATURDAY PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 9B



GROUP MACKENZIE

Portland OR 503.224.9560 Vancouver WA 360.695.7879 Seattle WA 206.749.9993

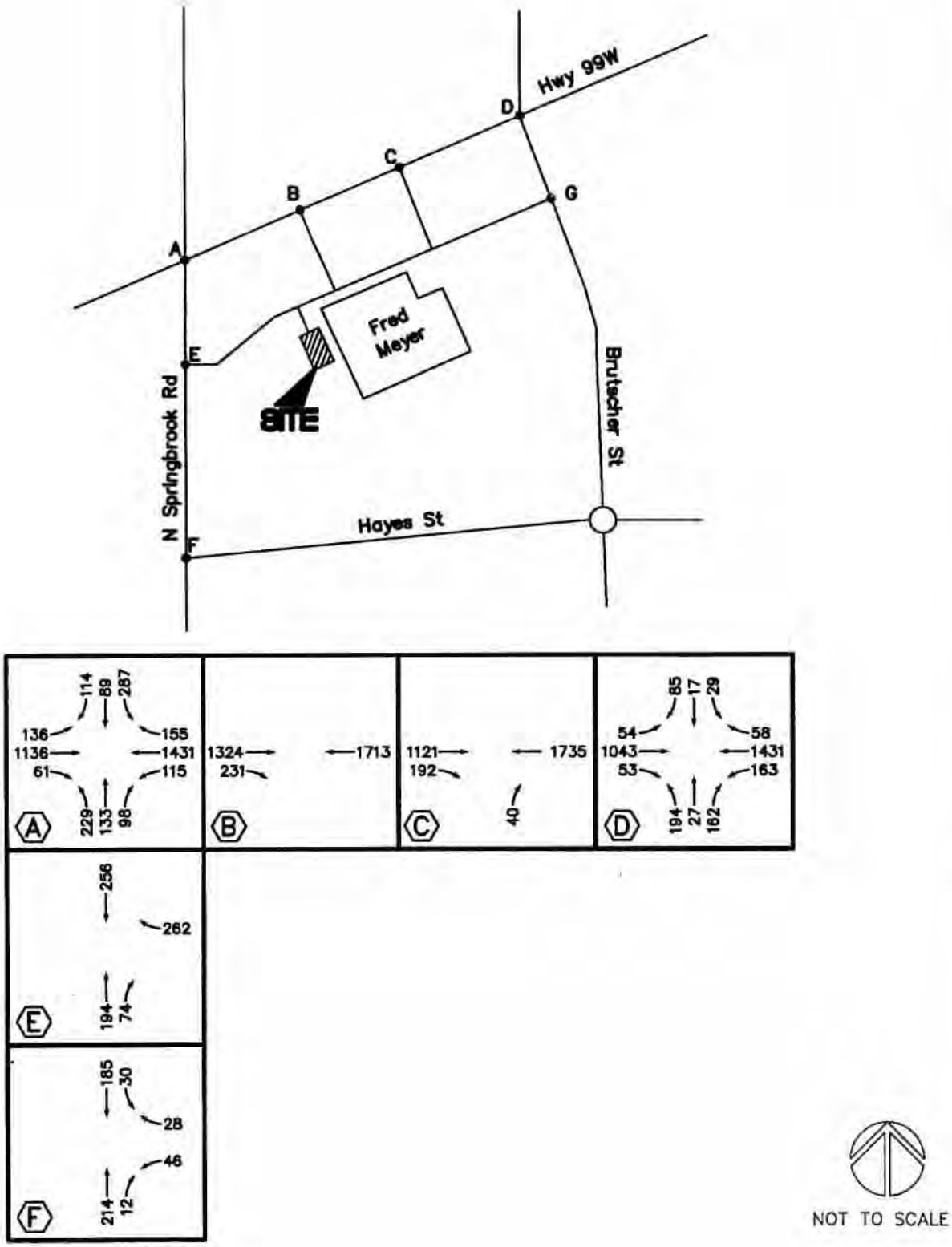
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER, WITHOUT PRIOR WRITTEN PERMISSION.

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804P6.00

2009 POST-DEVELOPMENT WEEKDAY PM PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 10A



GROUP MACKENZIE

Portland OR 503.224.9560 Vancouver WA 360.695.7879 Seattle WA 206.749.9993

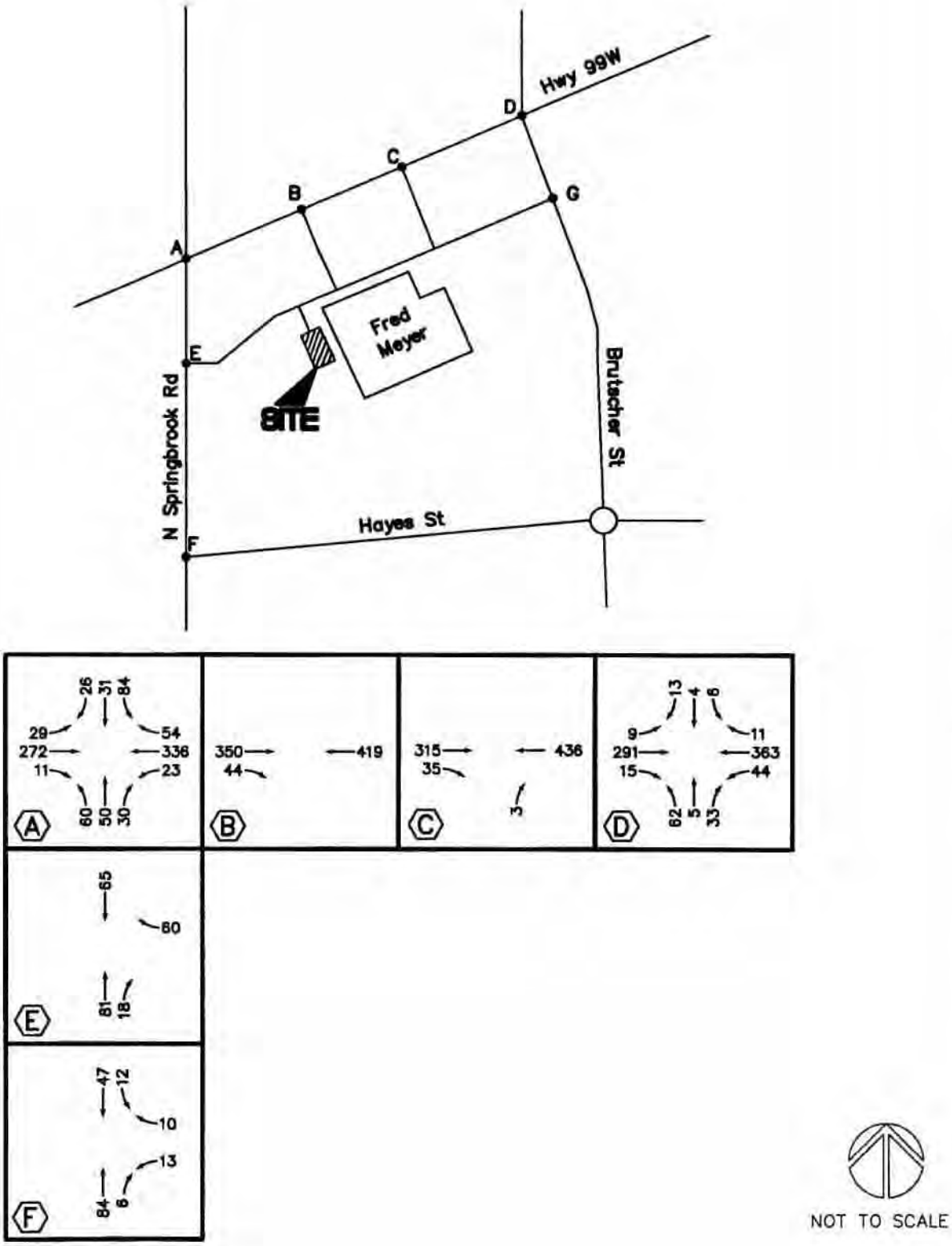
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER, WITHOUT PRIOR WRITTEN PERMISSION

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 2080406.00

2009 POST-DEVELOPMENT SATURDAY PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 10B



NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

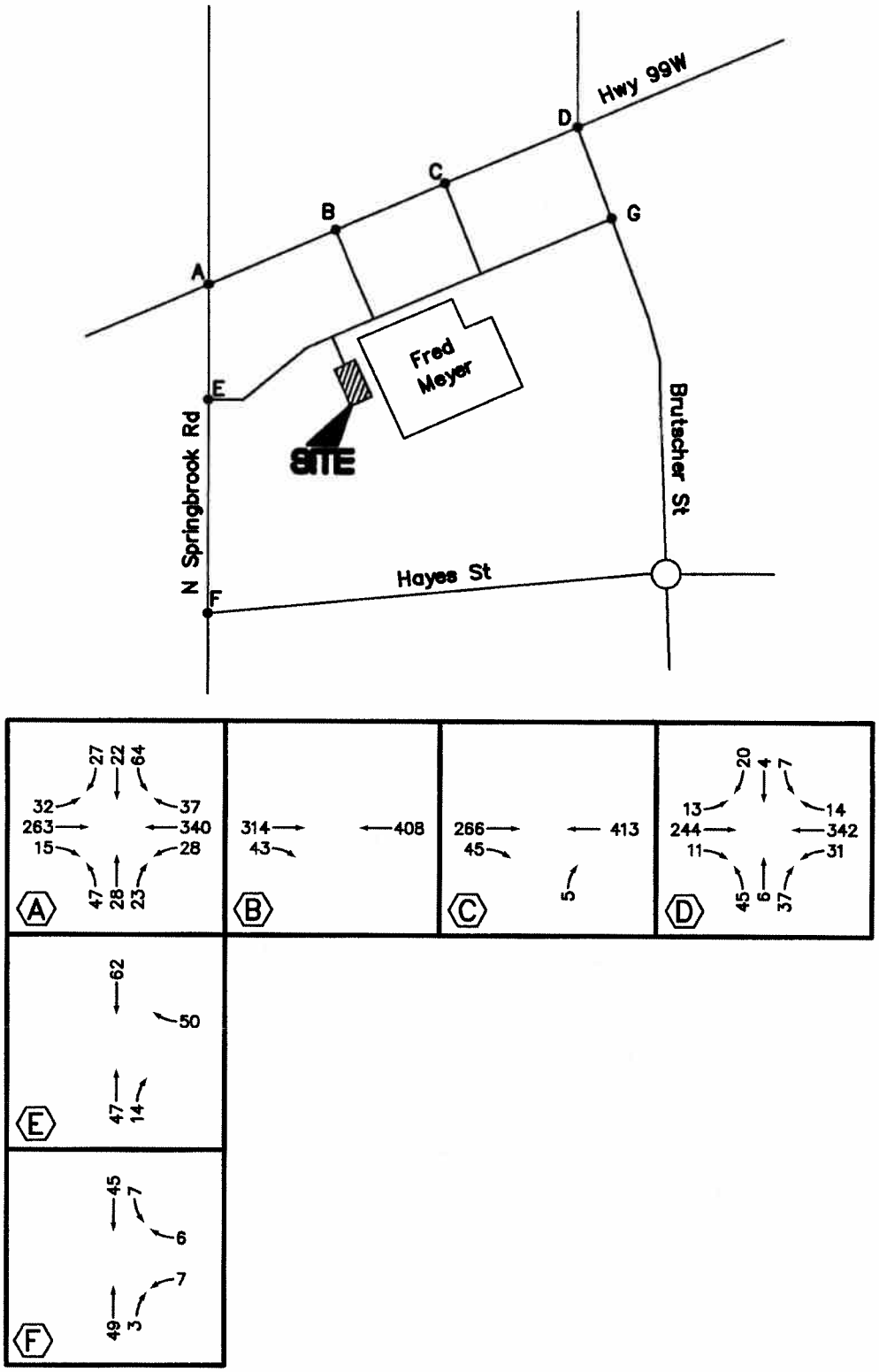
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER WITHOUT PRIOR WRITTEN PERMISSION

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804006.00

2025 BACKGROUND GROWTH 27%
WEEKDAY PM PEAK HOUR

FRIED MEYER NEWBERG
NEWBERG, OREGON

FIGURE
11A



NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 Vancouver WA 360.695.7879 Seattle WA 206.749.9993

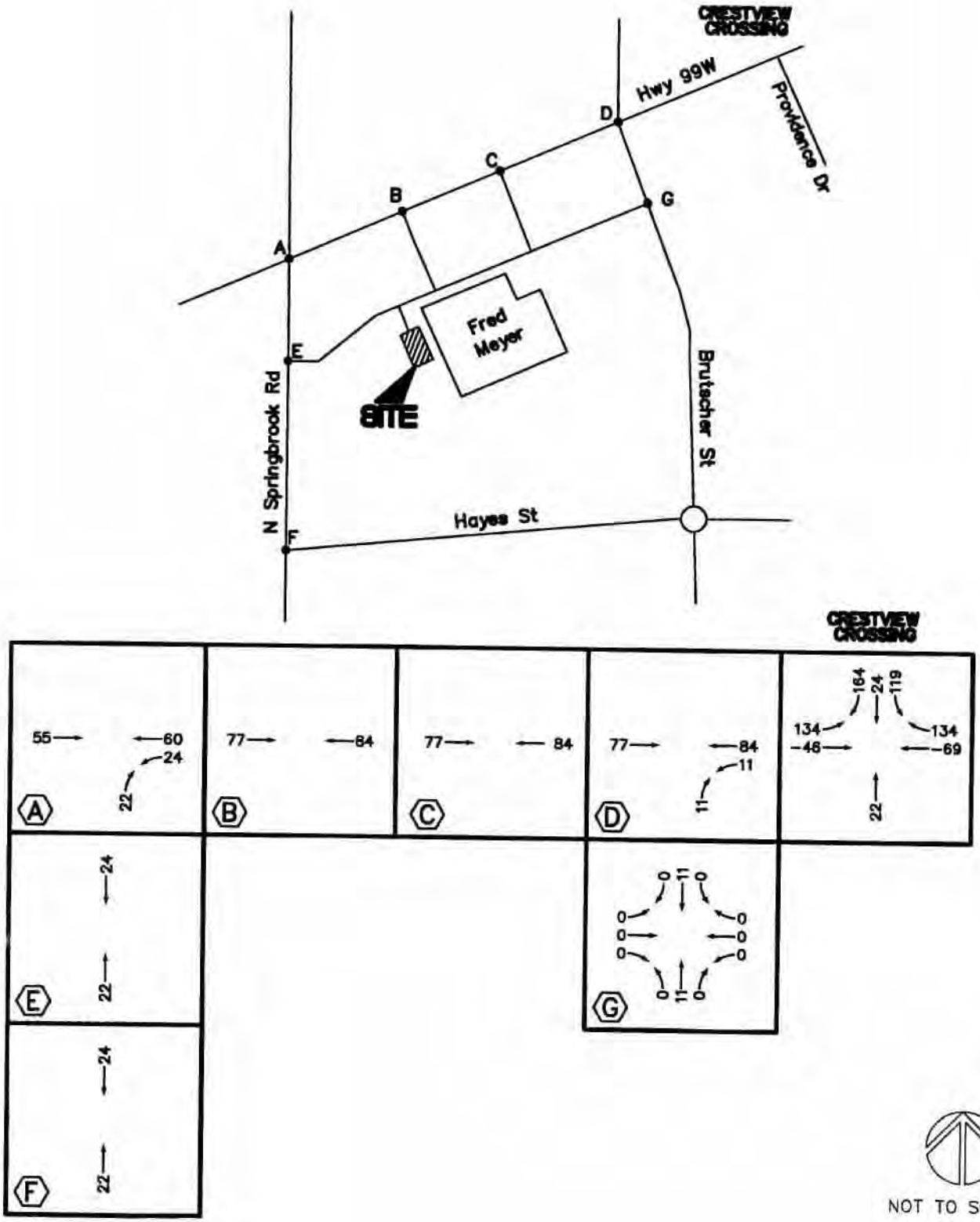
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER, WITHOUT PRIOR WRITTEN PERMISSION.

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804

2025 BACKGROUND GROWTH 27%
SATURDAY MIDDAY PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 11B



GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

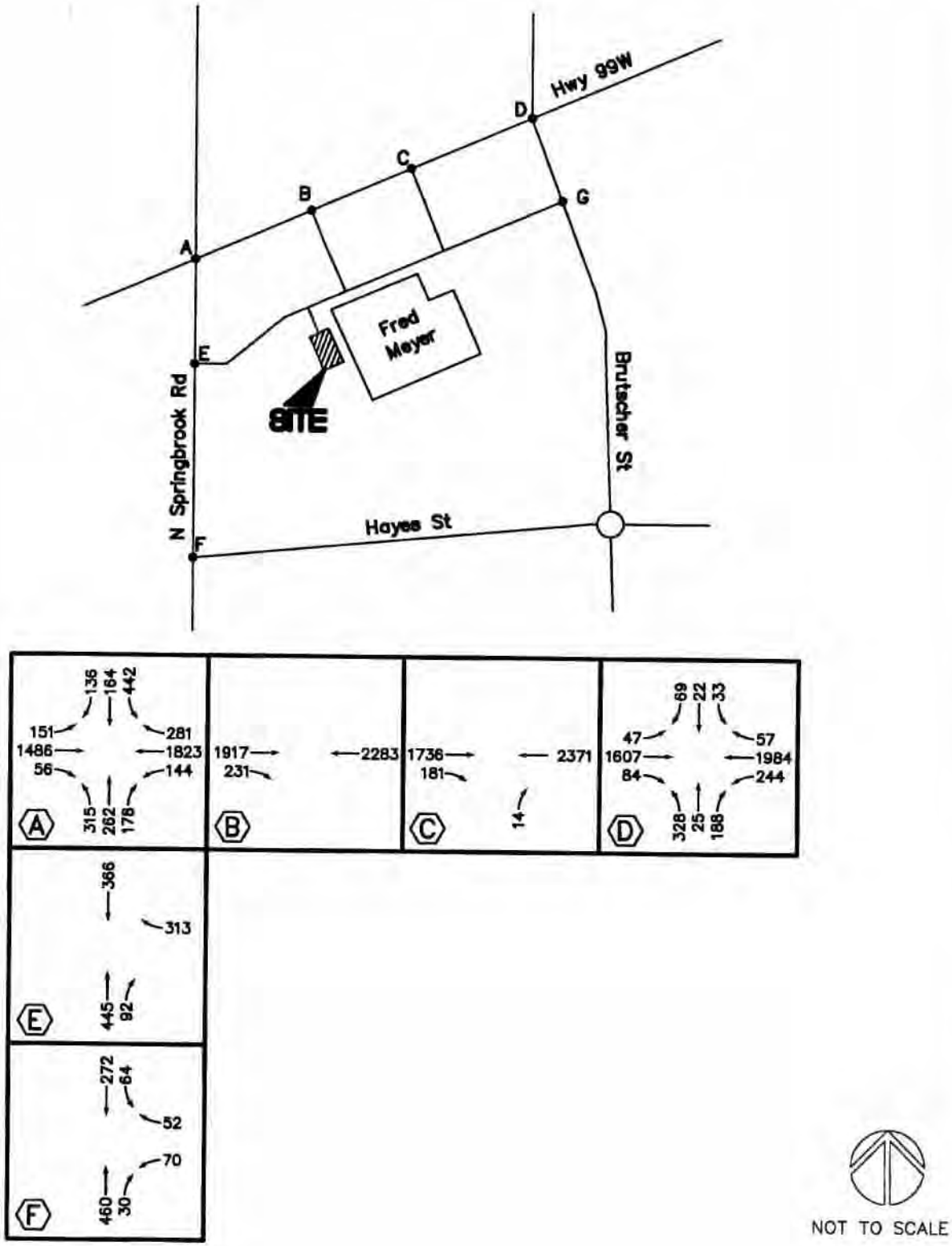
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER WITHOUT PRIOR WRITTEN PERMISSION

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 208040

CRESTVIEW IN-PROCESS TRAFFIC
PM + SATURDAY PEAK HOUR (2025)

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 12



NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 Vancouver WA 360.695.7879 Seattle WA 206.749.9993

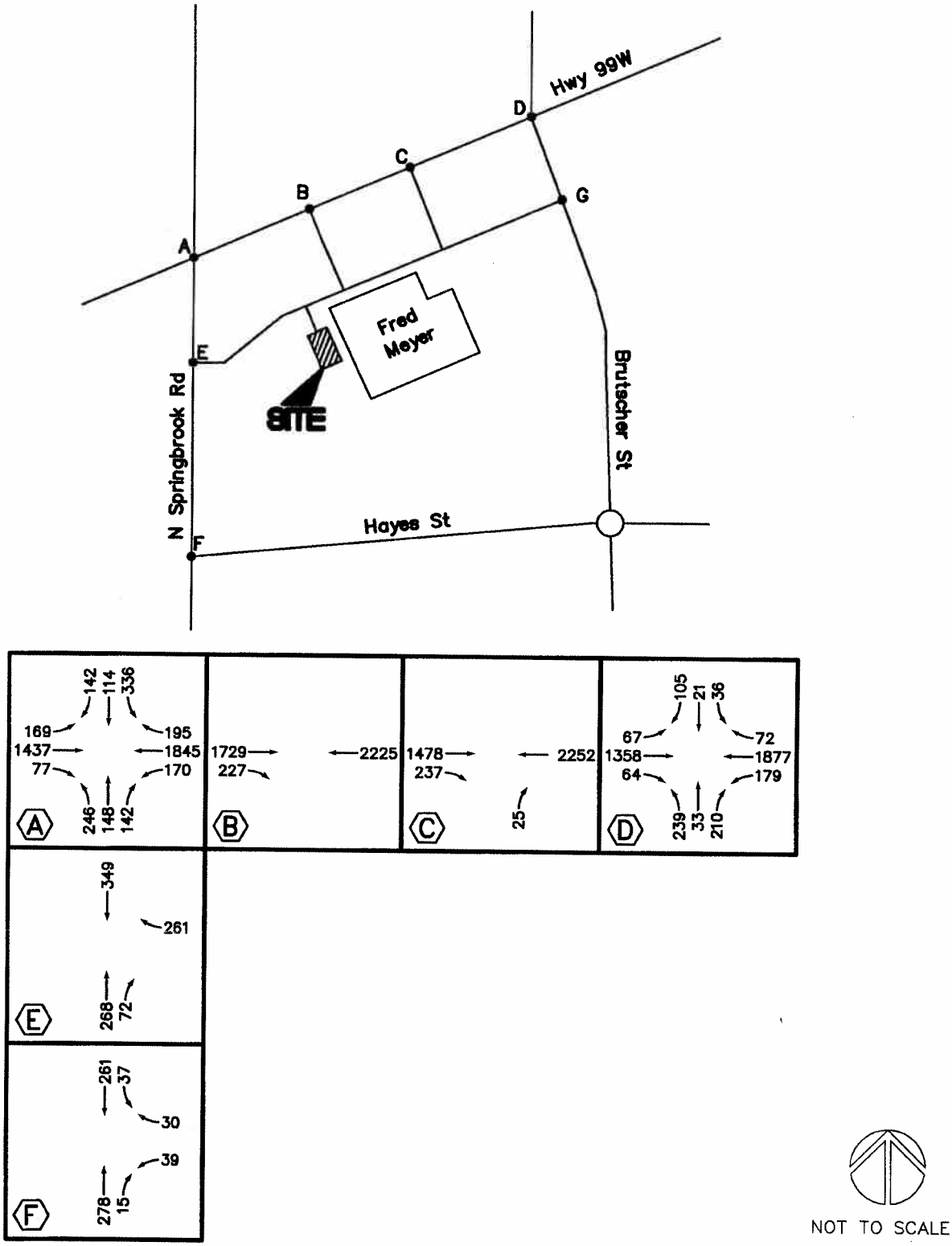
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER WITHOUT PRIOR WRITTEN PERMISSION

DATE: 11.14.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804

2025 PRE-DEVELOPMENT WEEKDAY PM PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 13A



NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 Vancouver WA 360.695.7879 Seattle WA 206.749.9993

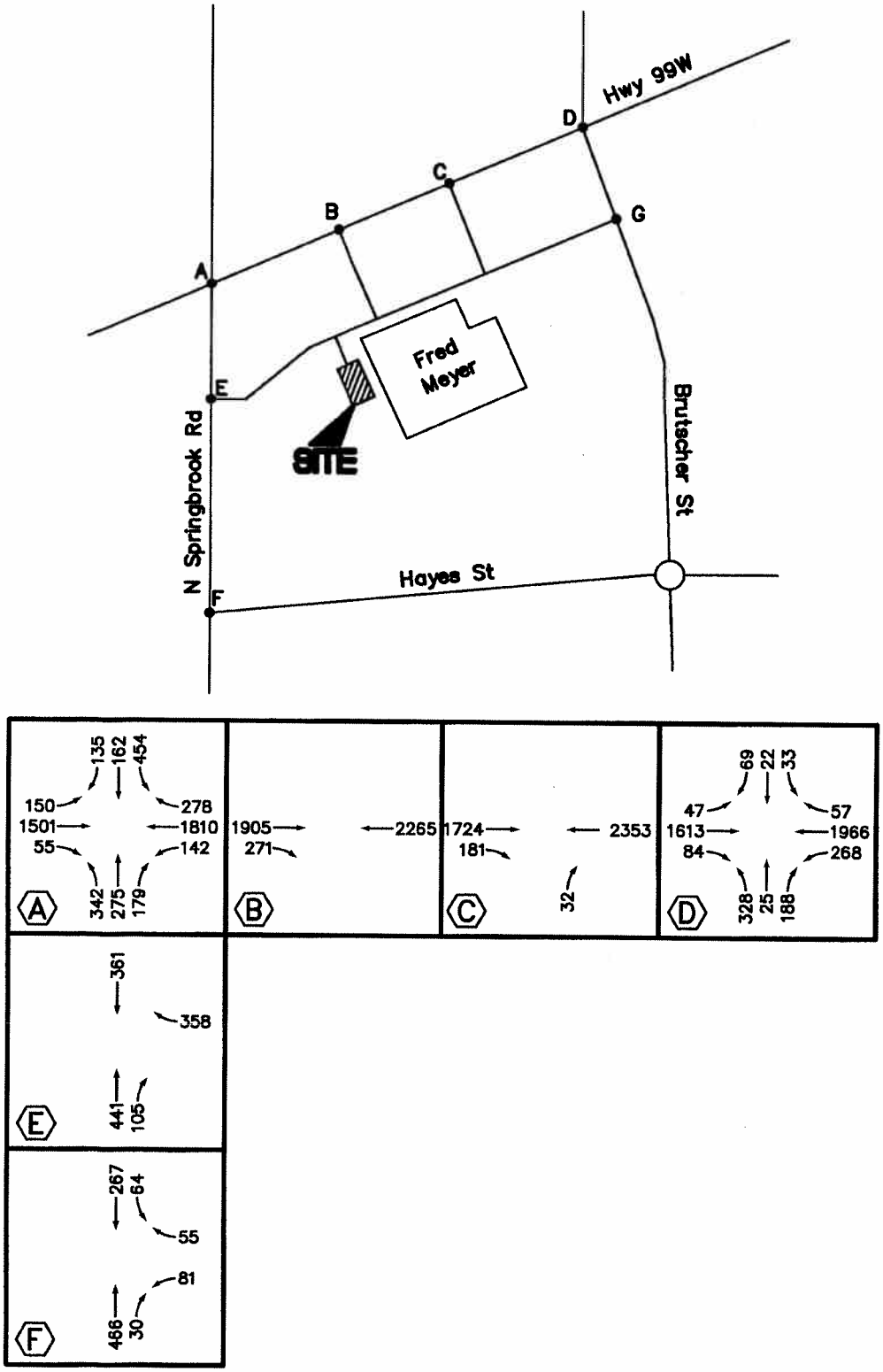
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER, WITHOUT PRIOR WRITTEN PERMISSION

DATE: 11.14.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804[illegible]

2025 PRE-DEVELOPMENT SATURDAY PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 13B



NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 Vancouver WA 360.695.7879 Seattle WA 206.749.9993

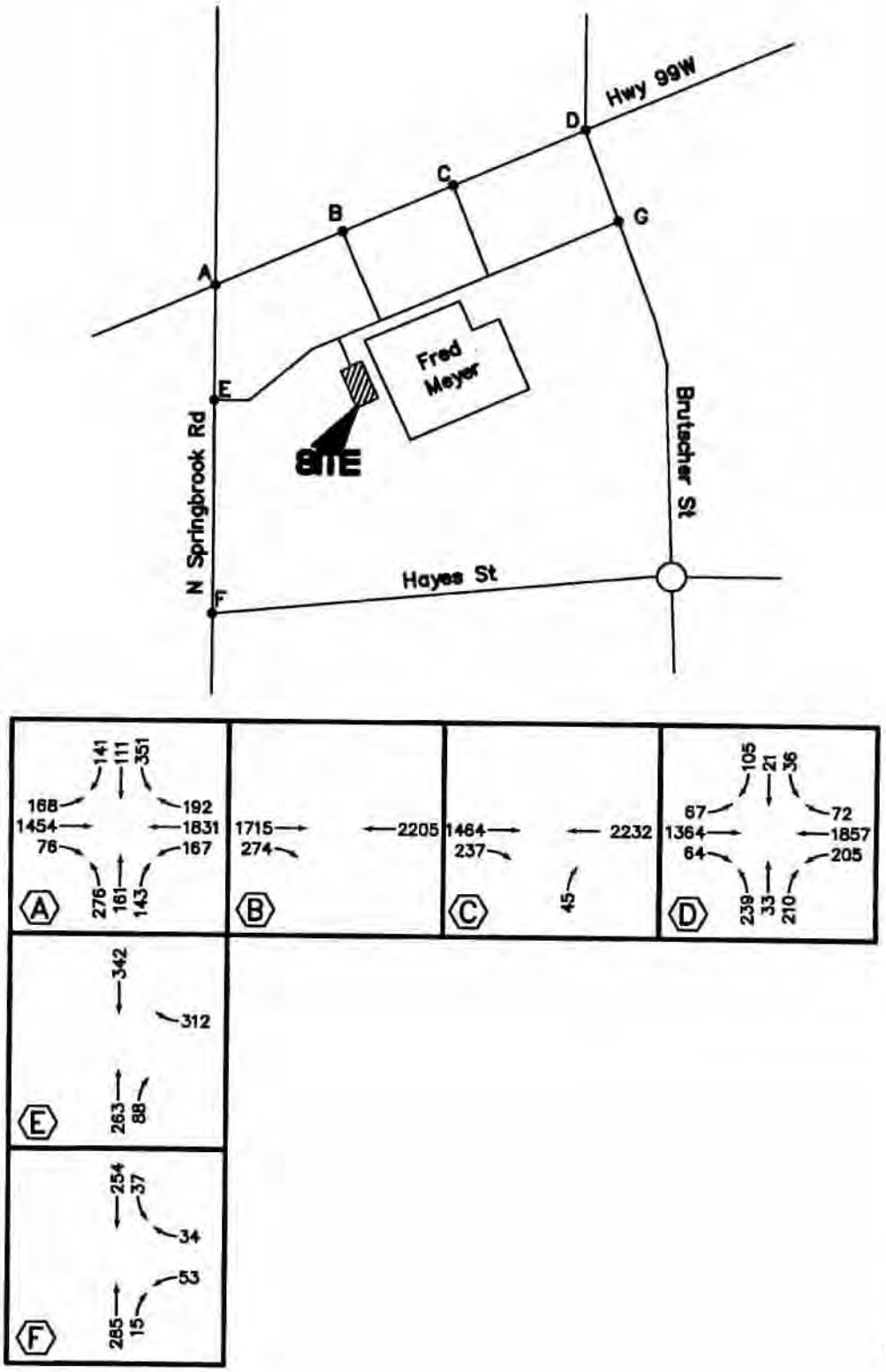
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER WITHOUT PRIOR WRITTEN PERMISSION

DATE: 11.14.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804

2025 POST-DEVELOPMENT WEEKDAY PM PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 14A



NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 Vancouver WA 360.695.7879 Seattle WA 206.749.9993

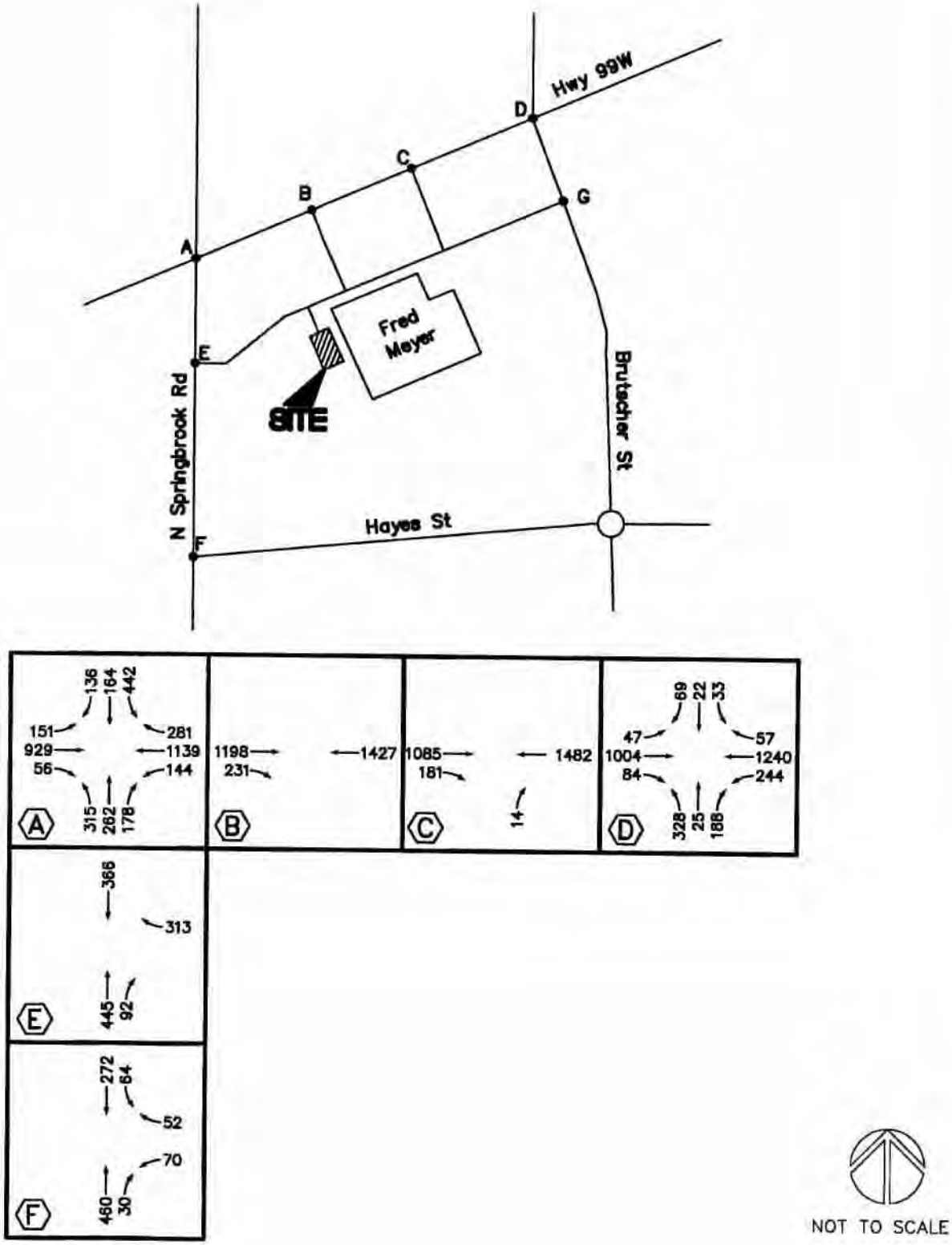
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER WITHOUT PRIOR WRITTEN PERMISSION

DATE: 11.14.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804.00

2025 POST-DEVELOPMENT SATURDAY PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 14B



NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 Vancouver WA 360.695.7879 Seattle WA 206.749.9993

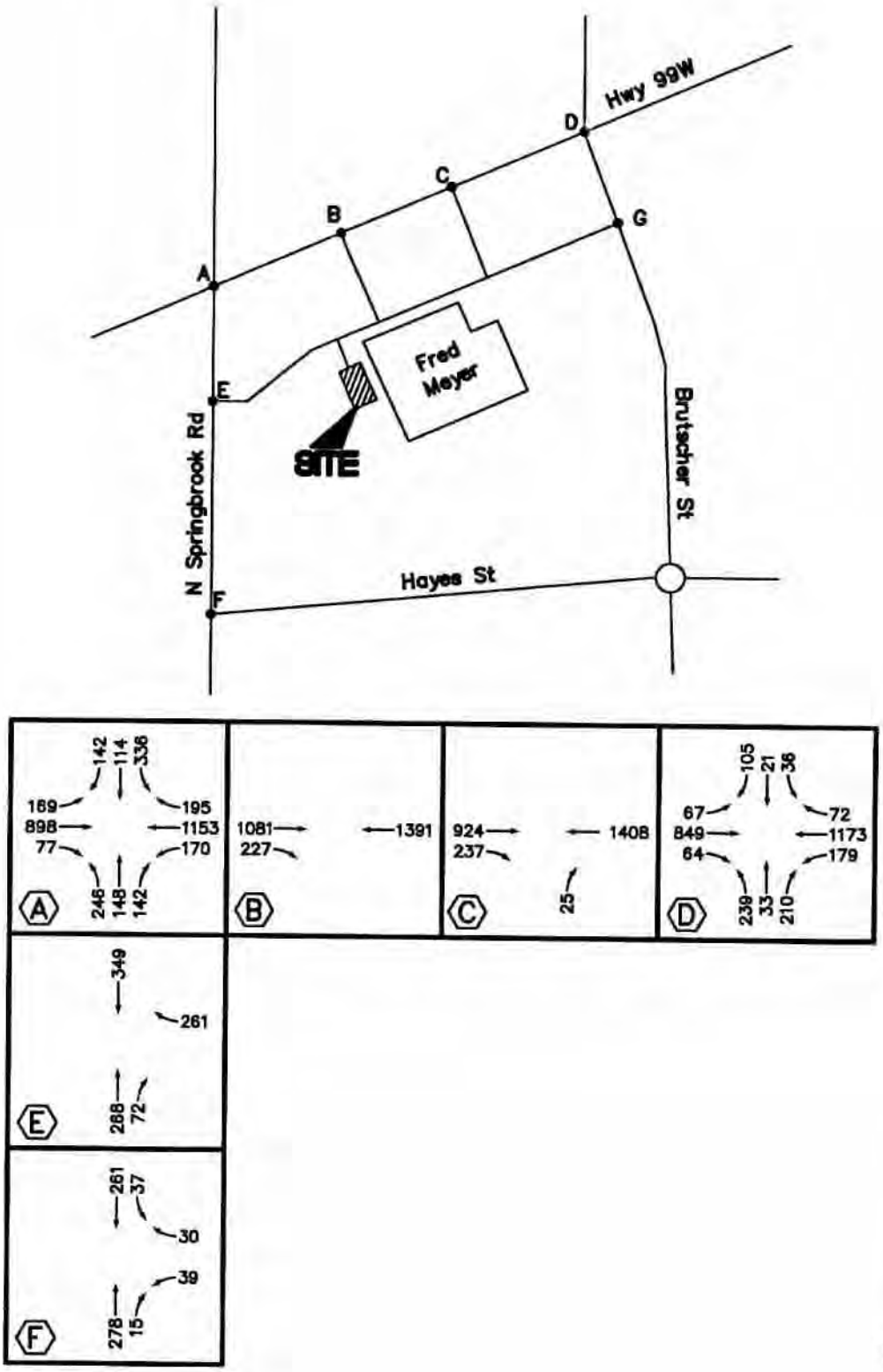
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER WITHOUT PRIOR WRITTEN PERMISSION

DATE: 11.14.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804

2025 PRE-DEVELOPMENT WITH BY-PASS WEEKDAY PM PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 15A



NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

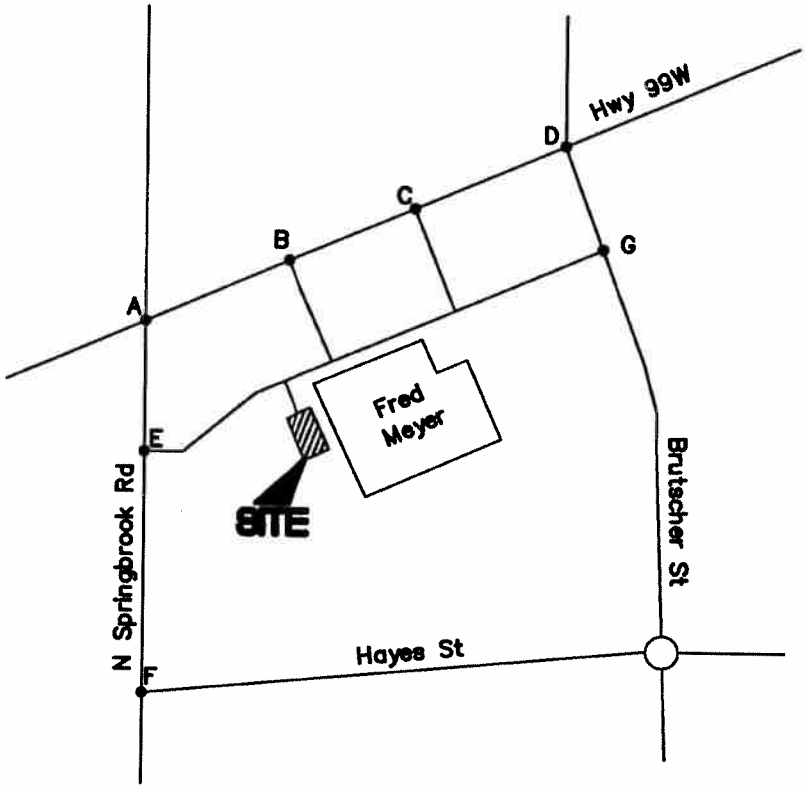
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER WITHOUT PRIOR WRITTEN PERMISSION

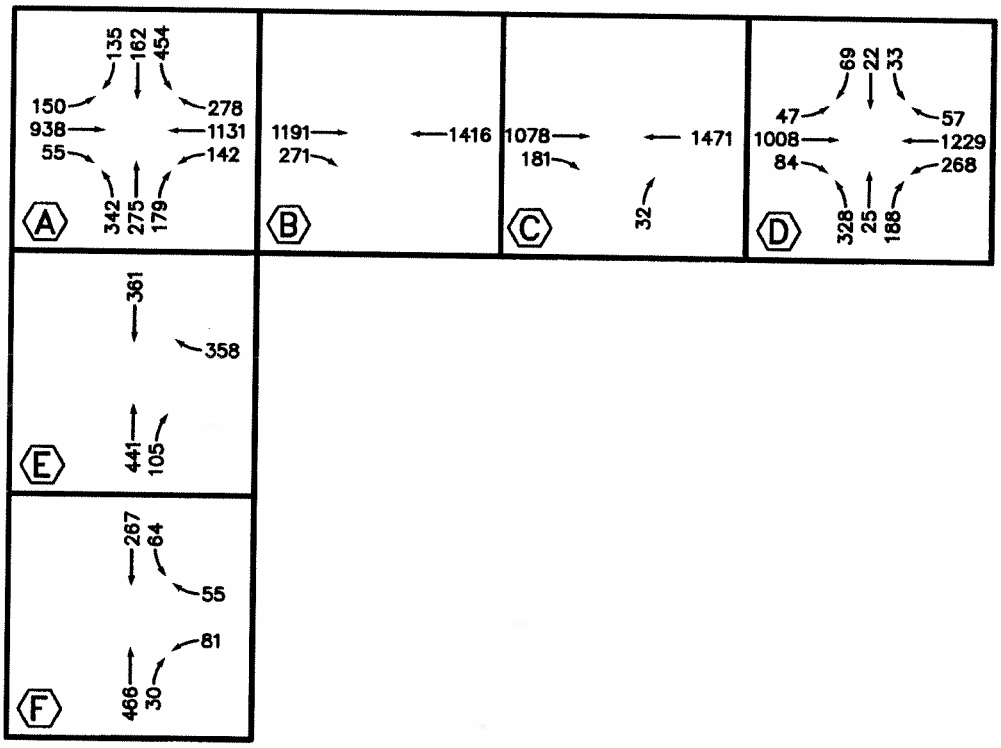
DATE: 11.14.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804[illegible]

2025 PRE-DEVELOPMENT WITH BY-PASS SATURDAY PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 15B





NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

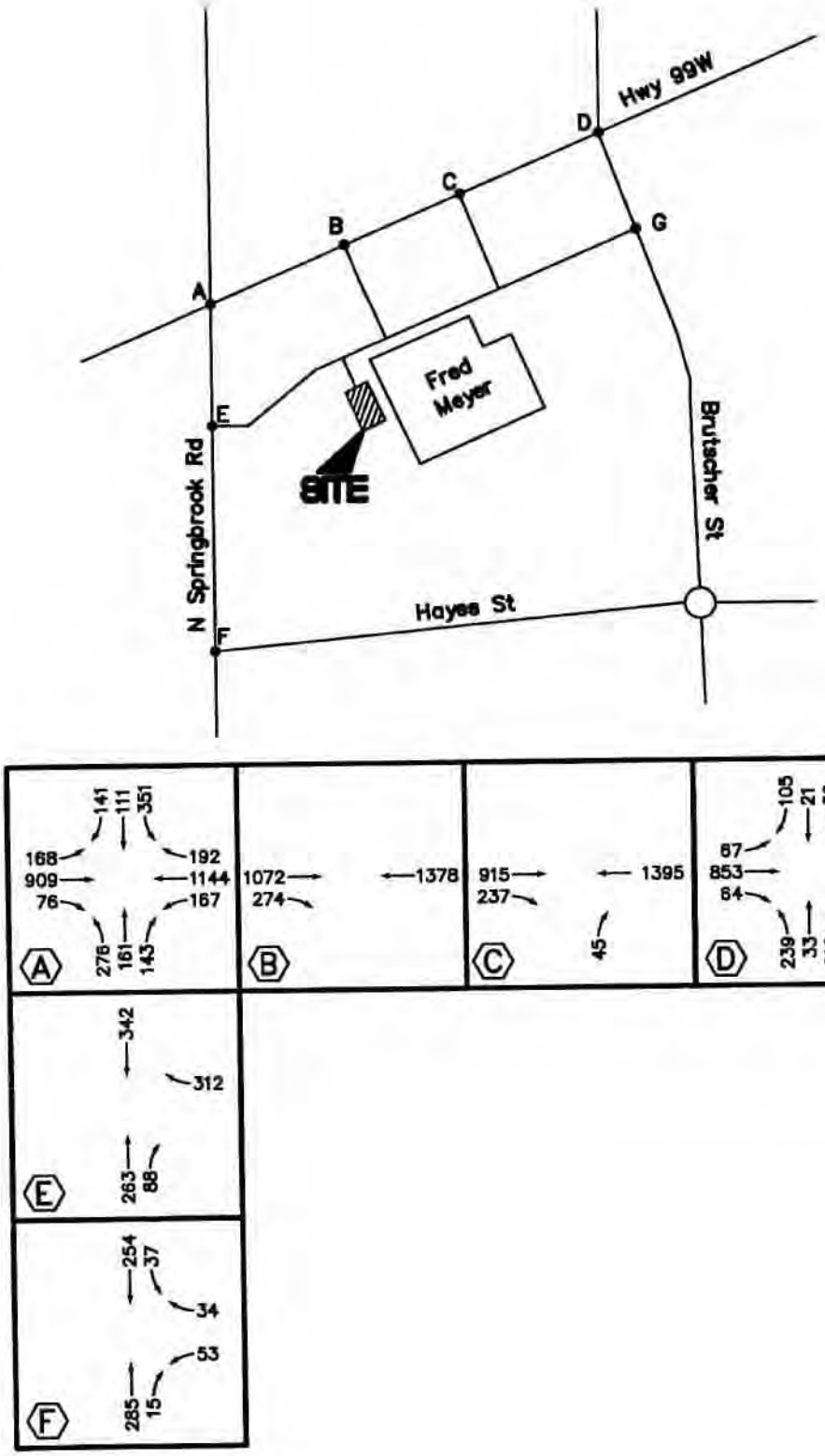
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER, WITHOUT PRIOR WRITTEN PERMISSION.

DATE: 11.14.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 208040

2025 POST-DEVELOPMENT WITH BY-PASS WEEKDAY PM PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 16A



NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 Vancouver WA 360.695.7879 Seattle WA 206.749.9993

© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER, WITHOUT PRIOR WRITTEN PERMISSION.

DATE: 11.14.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 2080.006.00

2025 POST-DEVELOPMENT WITH BY-PASS SATURDAY PEAK HOUR

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE 16B

APPENDIX B

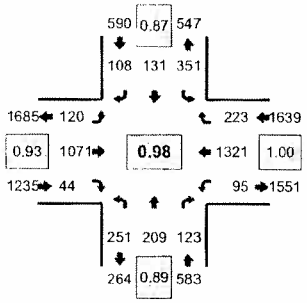
Traffic Count Summaries

Type of peak hour being reported: System Peak

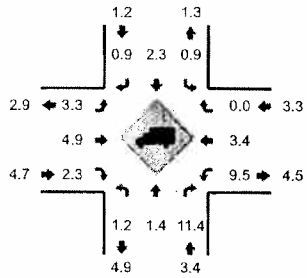
Method for determining peak hour: Total Entering Volume

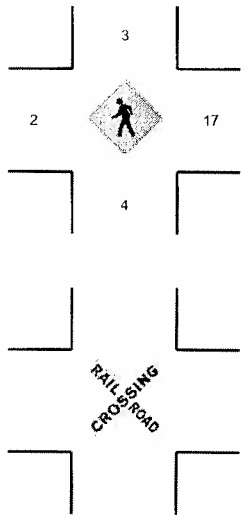
LOCATION: N Springbrook Rd -- Hwy 99W
CITY/STATE: Newberg, OR

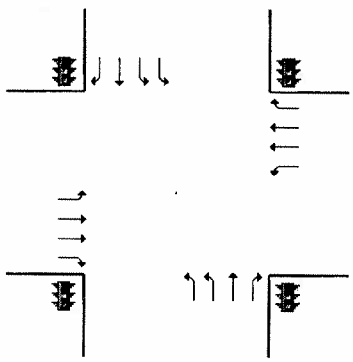
QC JOB #: 10388801
DATE: 10/9/2008 Thur

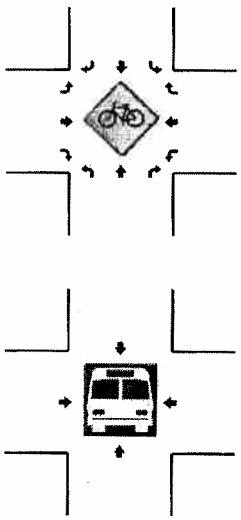


Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM









15-Min Count Period Beginning At	N Springbrook Rd (Northbound)				N Springbrook Rd (Southbound)				Hwy 99W (Eastbound)				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	41	36	23	0	85	41	28	0	25	263	12	1	18	348	41	2	964	
4:15 PM	66	52	25	0	95	31	23	0	27	248	15	0	19	310	48	3	962	
4:30 PM	65	48	32	0	71	26	27	0	26	281	8	3	27	352	44	1	1011	
4:45 PM	65	54	27	0	79	38	29	0	34	233	13	0	19	357	63	2	1013	3950
5:00 PM	64	57	43	0	110	35	24	0	25	293	14	1	17	298	54	2	1037	4023
5:15 PM	57	50	21	0	91	32	28	0	30	264	9	1	26	314	62	1	986	4047
5:30 PM	52	38	20	0	67	28	31	0	41	307	12	3	24	343	60	3	1029	4065
5:45 PM	55	38	23	0	72	24	19	0	33	226	14	1	26	332	68	4	935	3987

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	256	228	172	0	440	140	96	0	100	1172	56	4	68	1192	216	8	4148
Heavy Trucks	4	8	12		8	4	0		8	76	0		0	40	0		160
Pedestrians		8				0				4				8			20
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/17/2008 8:41 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

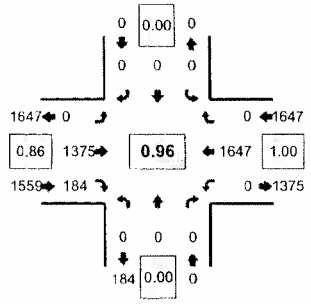
Type of peak hour being reported: System Peak

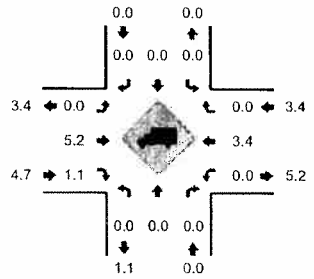
Method for determining peak hour: Total Entering Volume

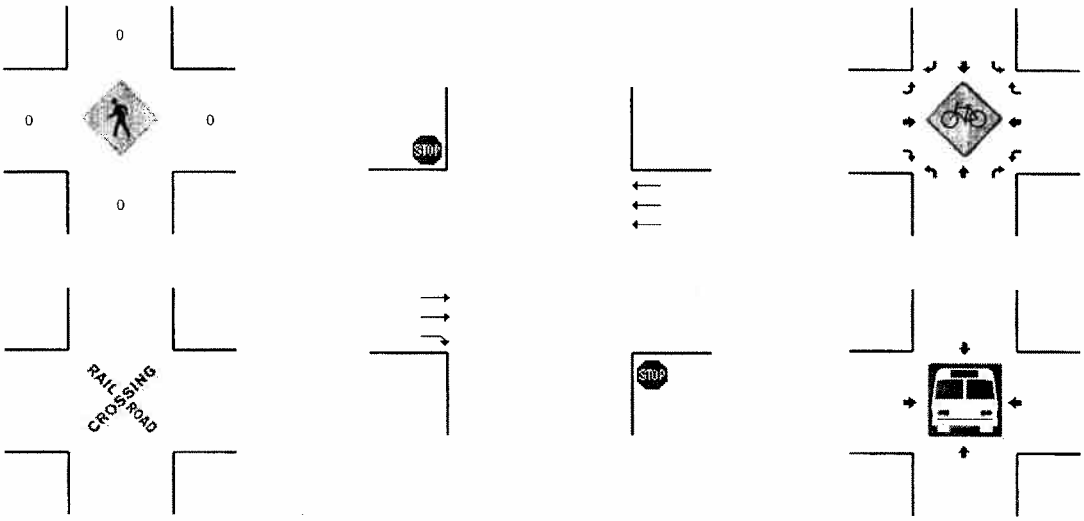
LOCATION: Fred Meyer Right In Dwy -- Hwy 99W
CITY/STATE: Newberg, OR

QC JOB #: 10388803
DATE: 10/9/2008 THUR

Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM







15-Min Count Period Beginning At	Fred Meyer Right In Dwy (Northbound)				Fred Meyer Right In Dwy (Southbound)				Hwy 99W (Eastbound)				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	338	38	0	0	398	0	0	774	
4:15 PM	0	0	0	0	0	0	0	0	0	322	49	0	0	391	0	0	762	
4:30 PM	0	0	0	0	0	0	0	0	0	336	49	0	0	414	0	0	799	
4:45 PM	0	0	0	0	0	0	0	0	0	311	32	0	0	438	0	0	781	3116
5:00 PM	0	0	0	0	0	0	0	0	0	393	58	0	0	382	0	0	833	3175
5:15 PM	0	0	0	0	0	0	0	0	0	335	45	0	0	413	0	0	793	3206
5:30 PM	0	0	0	0	0	0	0	0	0	360	34	0	0	412	0	0	806	3213
5:45 PM	0	0	0	0	0	0	0	0	0	295	34	0	0	434	0	0	763	3195

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	1572	232	0	0	1528	0	0	3332
Heavy Trucks	0	0	0		0	0	0		0	96	8		0	48	0		152
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/17/2008 8:41 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

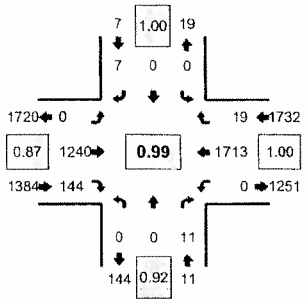
Type of peak hour being reported: System Peak

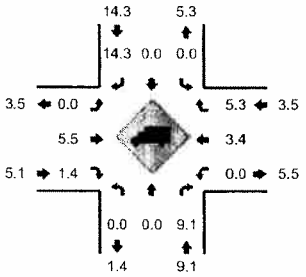
Method for determining peak hour: Total Entering Volume

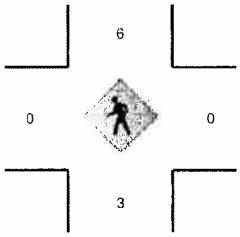
LOCATION: Fred Meyer Right In/Out Dwy -- Hwy 99W
CITY/STATE: Newberg, OR

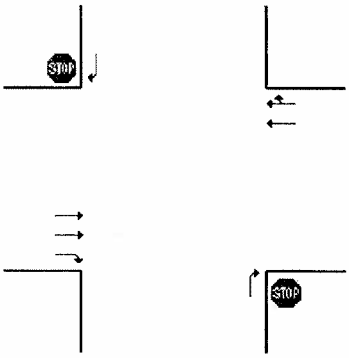
QC JOB #: 10388805
DATE: 10/9/2008 Thur

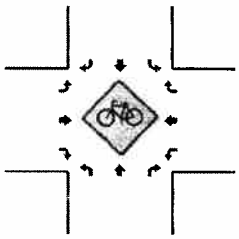
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

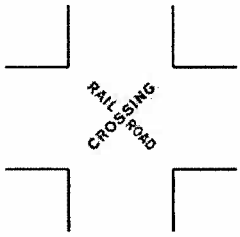


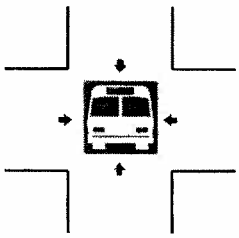












15-Min Count Period Beginning At	Fred Meyer Right In/Out Dwy (Northbound)				Fred Meyer Right In/Out Dwy (Southbound)				Hwy 99W (Eastbound)				Hwy 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	2	0	0	0	1	0	0	302	34	0	0	407	2	0	748	
4:15 PM	0	0	4	0	0	0	1	0	0	280	43	0	0	396	2	0	726	
4:30 PM	0	0	3	0	0	0	2	0	0	304	35	0	0	445	3	0	792	
4:45 PM	0	0	4	0	0	0	2	0	0	278	30	0	0	461	5	0	780	3046
5:00 PM	0	0	3	0	0	0	1	0	0	359	38	0	0	387	6	0	794	3092
5:15 PM	0	0	1	0	0	0	2	0	0	299	41	0	0	420	5	0	768	3134
5:30 PM	0	0	2	0	0	0	2	0	0	324	34	0	0	416	4	0	782	3124
5:45 PM	0	0	7	0	0	0	2	0	0	259	35	0	0	433	1	0	737	3081

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	4	0	0	1436	152	0	0	1548	24	0	3176
Heavy Trucks	0	0	0		0	0	0		0	96	4		0	44	0		144
Pedestrians		4				0				0				0			4
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/17/2008 8:41 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

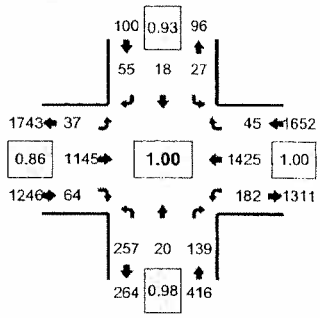
Type of peak hour being reported: System Peak

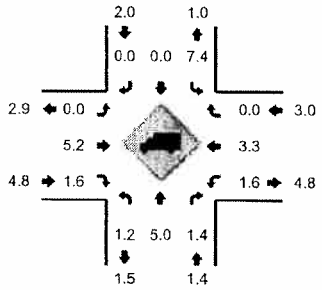
Method for determining peak hour: Total Entering Volume

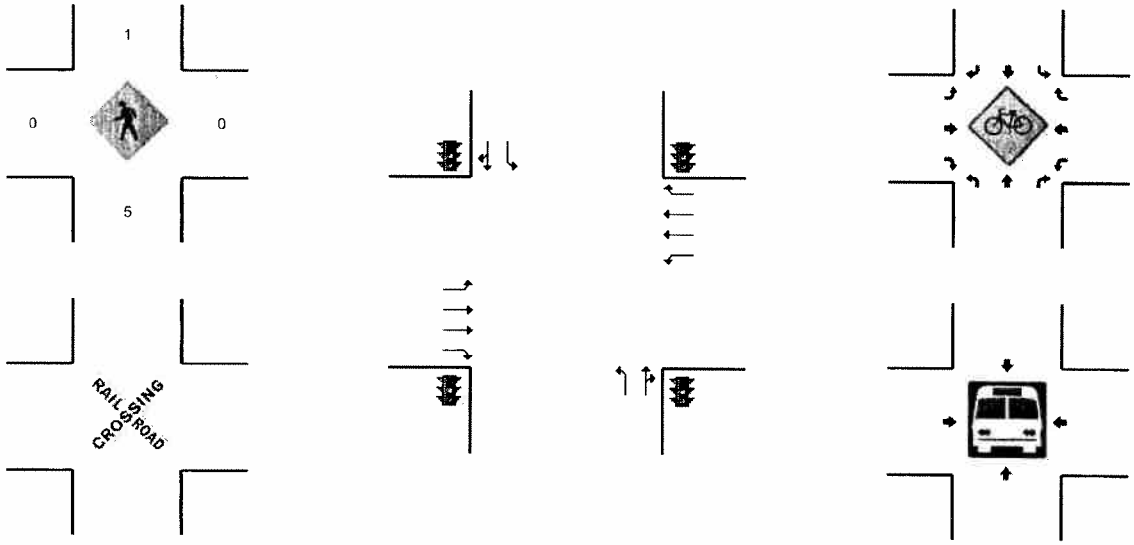
LOCATION: Brutscher St -- Hwy 99W
CITY/STATE: Newberg, OR

QC JOB #: 10388807
DATE: 10/9/2008 THUR

Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM







15-Min Count Period Beginning At	Brutscher St (Northbound)				Brutscher St (Southbound)				Hwy 99W (Eastbound)				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	63	6	22	0	7	3	14	0	9	272	16	0	44	333	11	0	800	
4:15 PM	53	5	32	0	5	2	16	0	7	245	18	0	48	334	12	0	777	
4:30 PM	58	6	34	0	9	1	16	0	15	276	18	1	45	383	10	0	872	
4:45 PM	59	4	39	0	7	8	12	0	5	251	18	3	57	385	11	0	869	3308
5:00 PM	72	5	29	0	5	4	18	0	5	340	16	2	38	305	18	0	855	3383
5:15 PM	68	5	37	0	6	5	9	0	6	278	12	0	42	352	8	0	828	3414
5:30 PM	43	0	36	0	4	6	10	0	7	300	13	3	63	370	9	0	864	3406
5:45 PM	54	2	29	0	1	6	8	0	3	268	9	0	49	357	12	0	798	3345

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	288	20	116	0	20	16	72	0	20	1360	64	8	152	1220	64	0	3420
Heavy Trucks	0	0	0		0	0	0		0	80	0		4	40	0		124
Pedestrians		8				0				0				0			8
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/17/2008 8:41 AM

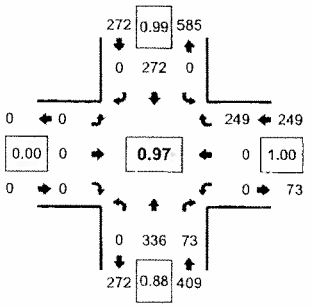
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of peak hour being reported: System Peak

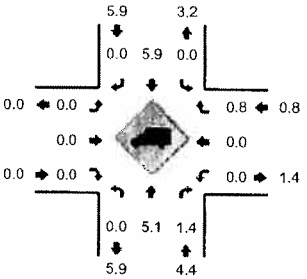
Method for determining peak hour: Total Entering Volume

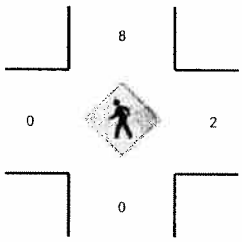
LOCATION: N Springbrook Rd -- Fred Meyer Right In/Out Dwy
CITY/STATE: Newberg, OR

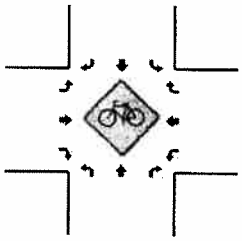
QC JOB #: 10388809
DATE: 10/9/2008 THUR

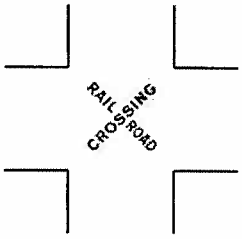


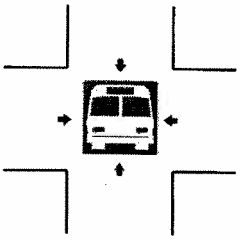
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM











15-Min Count Period Beginning At	N Springbrook Rd (Northbound)				N Springbrook Rd (Southbound)				Fred Meyer Right In/Out Dwy (Eastbound)				Fred Meyer Right In/Out 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	59	20	0	0	77	0	0	0	0	0	0	0	0	48	0	204	
4:15 PM	0	75	15	0	0	64	0	0	0	0	0	0	0	0	63	0	217	
4:30 PM	0	88	23	0	0	62	0	0	0	0	0	0	0	0	67	0	240	
4:45 PM	0	82	18	0	0	72	0	0	0	0	0	0	0	0	67	0	239	900
5:00 PM	0	100	16	0	0	69	0	0	0	0	0	0	0	0	54	0	239	935
5:15 PM	0	66	16	0	0	69	0	0	0	0	0	0	0	0	61	0	212	930
5:30 PM	0	68	8	0	0	64	0	0	0	0	0	0	0	0	48	0	188	878
5:45 PM	0	63	10	0	0	67	0	0	0	0	0	0	0	0	63	0	203	842

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	400	64	0	0	276	0	0	0	0	0	0	0	0	216	0	956
Heavy Trucks	0	20	0		0	4	0		0	0	0		0	0	0		24
Pedestrians		0				12				0				0			12
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/17/2008 8:41 AM

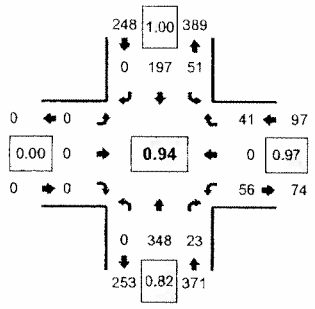
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of peak hour being reported: System Peak

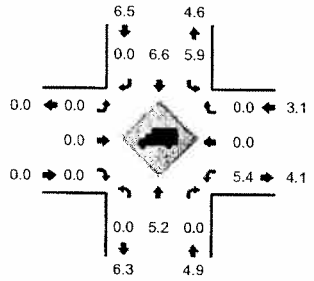
Method for determining peak hour: Total Entering Volume

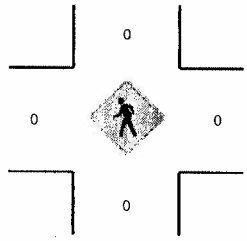
LOCATION: N Springbrook Rd -- Hayes St
CITY/STATE: Newberg, OR

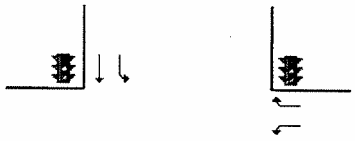
QC JOB #: 10388811
DATE: 10/9/2008 Thu

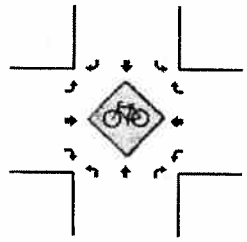


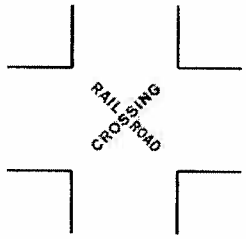
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

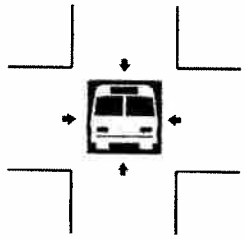












15-Min Count Period Beginning At	N Springbrook Rd (Northbound)				N Springbrook Rd (Southbound)				Hayes St (Eastbound)				Hayes St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	67	5	0	10	55	0	0	0	0	0	0	13	0	8	0	158	
4:15 PM	0	64	6	0	11	42	0	0	0	0	0	0	17	0	17	0	157	
4:30 PM	0	93	3	0	12	49	0	0	0	0	0	0	9	0	14	0	180	
4:45 PM	0	91	8	0	12	54	0	0	0	0	0	0	14	0	9	0	188	683
5:00 PM	0	102	11	0	11	41	0	0	0	0	0	0	19	0	6	0	190	715
5:15 PM	0	62	1	0	16	53	0	0	0	0	0	0	14	0	12	0	158	716
5:30 PM	0	57	7	0	15	43	0	0	0	0	0	0	13	0	14	0	149	685
5:45 PM	0	63	1	0	18	46	0	0	0	0	0	0	13	0	9	0	150	647

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	408	44	0	44	164	0	0	0	0	0	0	76	0	24	0	760
Heavy Trucks	0	20	0		0	0	0		0	0	0		4	0	0		24
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/17/2008 8:41 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

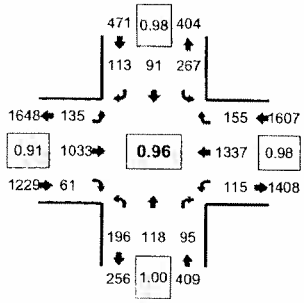
Type of peak hour being reported: System Peak

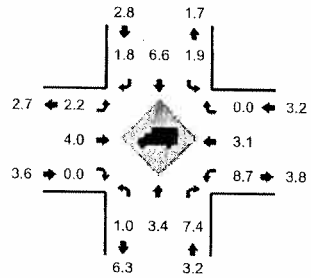
Method for determining peak hour: Total Entering Volume

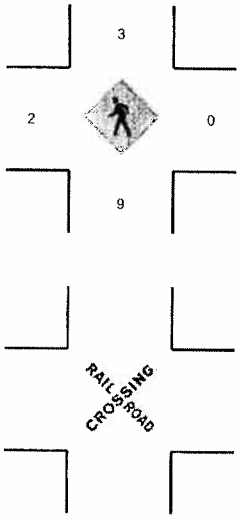
LOCATION: N Springbrook Rd -- Hwy 99W
CITY/STATE: Newberg, OR

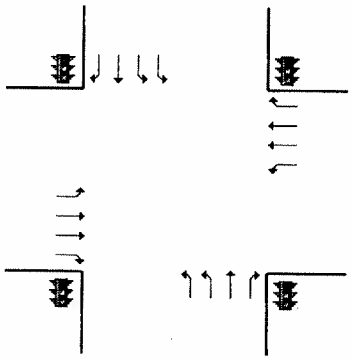
QC JOB #: 10388802
DATE: 10/11/2008

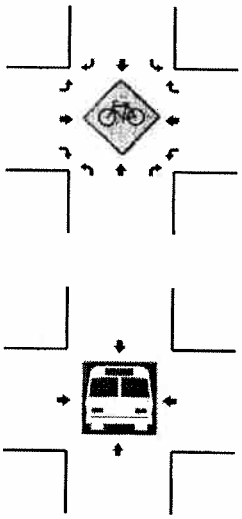
Peak-Hour: 12:00 PM -- 1:00 PM
Peak 15-Min: 12:00 PM -- 12:15 PM











15-Min Count Period Beginning At	N Springbrook Rd (Northbound)				N Springbrook Rd (Southbound)				Hwy 99W (Eastbound)				Hwy 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	60	33	24	0	50	27	26	0	28	279	13	2	19	313	28	2	904	
11:45 AM	37	33	27	1	78	26	35	0	25	244	12	0	21	333	34	2	908	
12:00 PM	43	25	31	1	64	24	32	0	46	273	17	2	25	343	42	1	969	
12:15 PM	46	30	22	0	70	17	25	0	23	263	21	0	24	300	33	3	877	3658
12:30 PM	52	29	20	1	66	24	34	0	41	268	8	0	19	358	34	7	961	3715
12:45 PM	53	34	22	0	67	26	22	0	21	229	15	2	34	336	46	2	909	3716
1:00 PM	47	39	23	0	55	19	37	0	33	267	16	2	24	292	33	3	890	3637
1:15 PM	50	18	16	1	61	19	28	0	36	275	20	1	24	320	40	1	910	3670

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	172	100	124	4	256	96	128	0	184	1092	68	8	100	1372	168	4	3876
Heavy Trucks	0	16	8		20	0	4		4	48	0		12	48	0		160
Pedestrians		16				0				0				0			16
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/17/2008 8:42 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

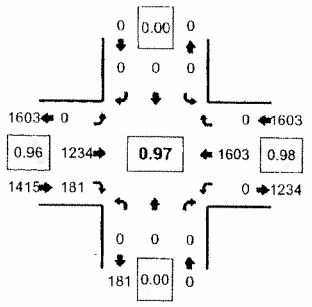
Type of peak hour being reported: System Peak

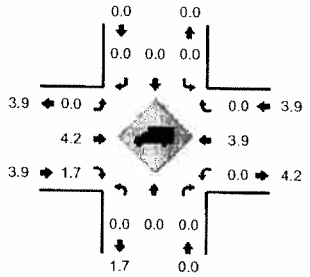
Method for determining peak hour: Total Entering Volume

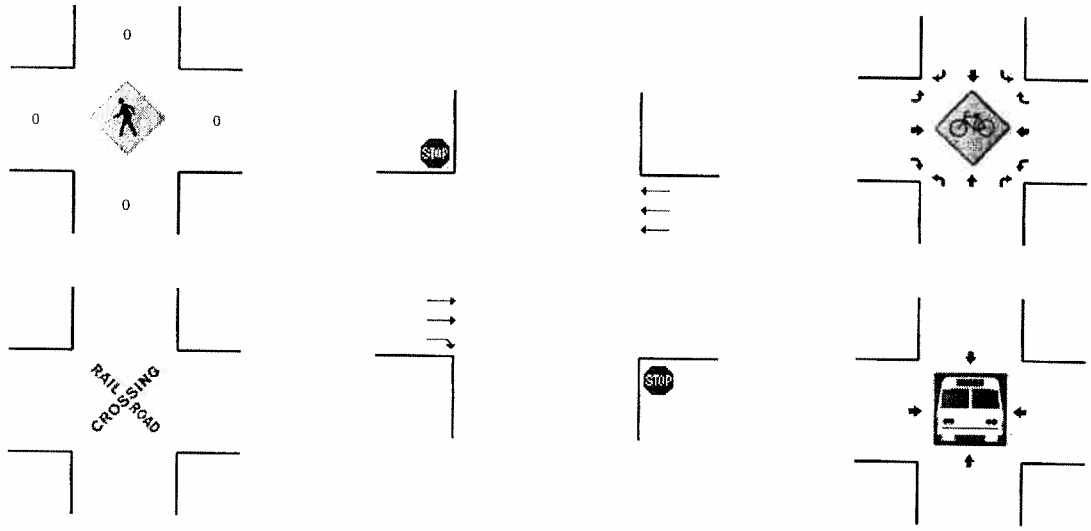
LOCATION: Fred Meyer Right In Dwy -- Hwy 99W
CITY/STATE: Newberg, OR

QC JOB #: 10388804
DATE: 10/11/2008

Peak-Hour: 12:00 PM -- 1:00 PM
Peak 15-Min: 12:00 PM -- 12:15 PM







15-Min Count Period Beginning At	Fred Meyer Right In Dwy (Northbound)				Fred Meyer Right In Dwy (Southbound)				Hwy 99W (Eastbound)				Hwy 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	0	0	0	0	0	0	0	0	0	323	35	0	0	352	0	0	710	
11:45 AM	0	0	0	0	0	0	0	0	0	317	38	0	0	391	0	0	746	
12:00 PM	0	0	0	0	0	0	0	0	0	315	54	0	0	410	0	0	779	
12:15 PM	0	0	0	0	0	0	0	0	0	318	40	0	0	350	0	0	708	2943
12:30 PM	0	0	0	0	0	0	0	0	0	319	45	0	0	423	0	0	787	3020
12:45 PM	0	0	0	0	0	0	0	0	0	282	42	0	0	420	0	0	744	3018
1:00 PM	0	0	0	0	0	0	0	0	0	316	29	0	0	347	0	0	692	2931
1:15 PM	0	0	0	0	0	0	0	0	0	310	46	0	0	389	0	0	745	2968

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	1260	216	0	0	1640	0	0	3116
Heavy Trucks	0	0	0		0	0	0		0	68	12		0	72	0		152
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/17/2008 8:42 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

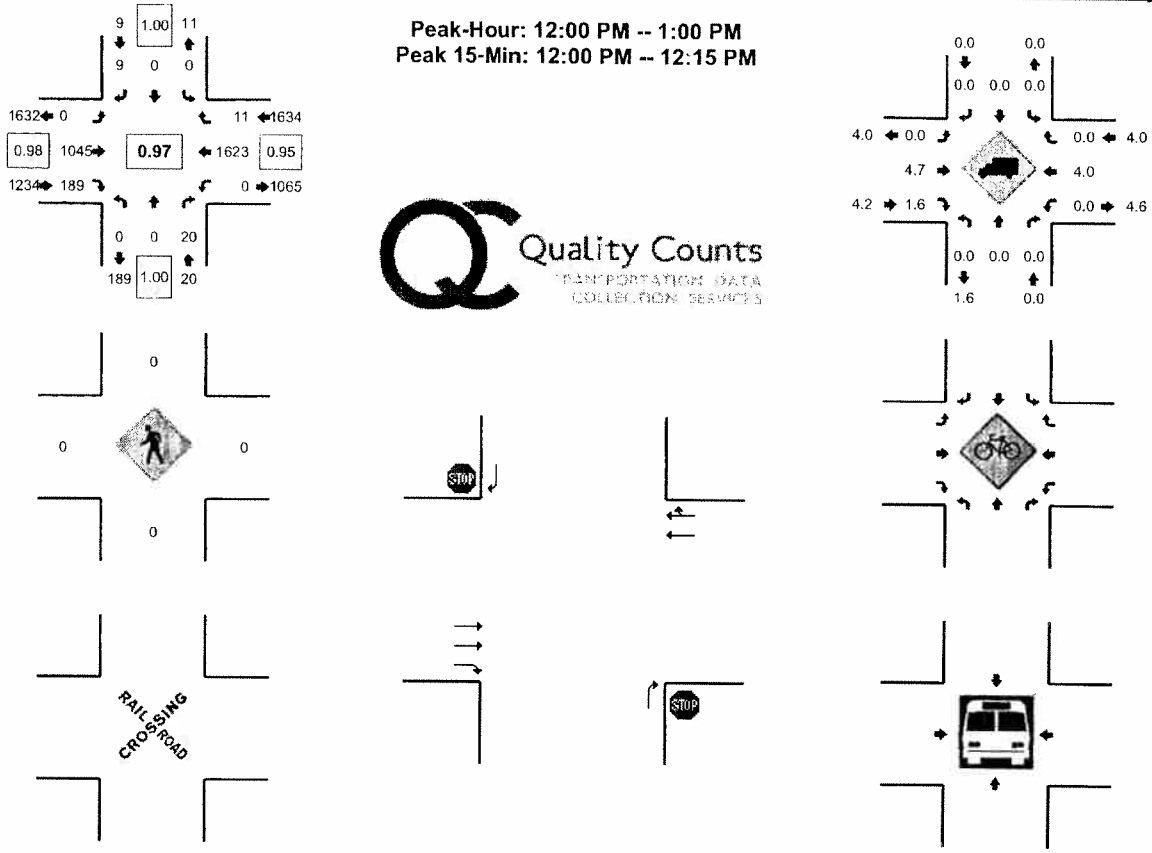
Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Fred Meyer Right In/Out Dwy -- Hwy 99W
CITY/STATE: Newberg, OR

QC JOB #: 10388806
DATE: 10/11/2008 SAT

Peak-Hour: 12:00 PM -- 1:00 PM
Peak 15-Min: 12:00 PM -- 12:15 PM



15-Min Count Period Beginning At	Fred Meyer Right In/Out Dwy (Northbound)				Fred Meyer Right In/Out Dwy (Southbound)				Hwy 99W (Eastbound)				Hwy 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	0	0	6	0	0	0	2	0	0	284	39	0	0	358	3	0	692	
11:45 AM	0	0	1	0	0	0	6	0	0	264	53	0	0	397	5	0	726	
12:00 PM	0	0	4	0	0	0	1	0	0	265	50	0	0	426	3	0	749	
12:15 PM	0	0	8	0	0	0	1	0	0	265	53	0	0	348	3	0	678	2845
12:30 PM	0	0	1	0	0	0	3	0	0	276	43	0	0	429	3	0	755	2908
12:45 PM	0	0	7	0	0	0	4	0	0	239	43	0	0	420	2	0	715	2897
1:00 PM	0	0	7	0	0	0	5	0	0	266	50	0	0	346	1	0	675	2823
1:15 PM	0	0	6	0	0	0	3	0	0	259	51	0	0	388	0	0	707	2852

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	16	0	0	0	4	0	0	1060	200	0	0	1704	12	0	2996
Heavy Trucks	0	0	0		0	0	0		0	68	0		0	76	0		144
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/17/2008 8:42 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

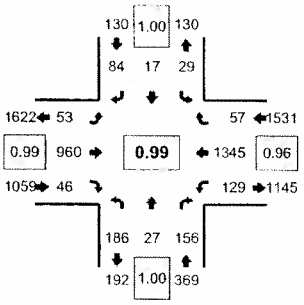
Type of peak hour being reported: System Peak

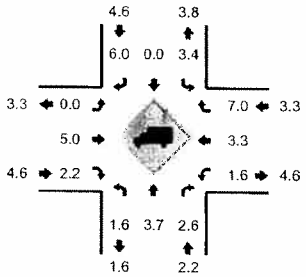
Method for determining peak hour: Total Entering Volume

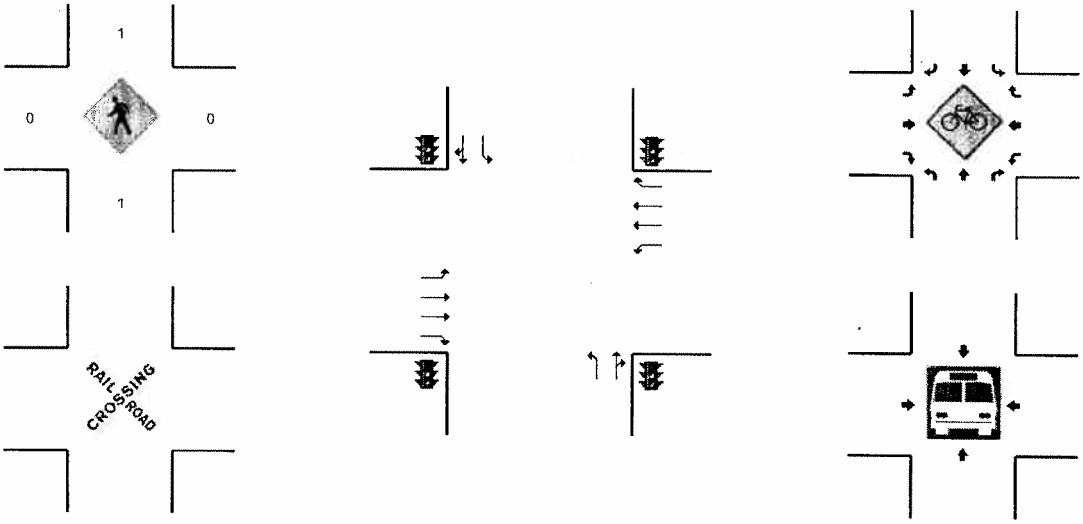
LOCATION: Brutscher St -- Hwy 99W
CITY/STATE: Newberg, OR

QC JOB #: 10388808
DATE: 10/11/2008 SAC

Peak-Hour: 12:00 PM -- 1:00 PM
Peak 15-Min: 12:00 PM -- 12:15 PM







15-Min Count Period Beginning At	Brutscher St (Northbound)				Brutscher St (Southbound)				Hwy 99W (Eastbound)				Hwy 99W (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	44	8	29	0	12	4	17	0	15	242	15	2	37	314	14	0	753	
11:45 AM	54	3	35	0	8	3	22	0	9	235	18	3	21	315	12	1	739	
12:00 PM	42	7	36	0	6	2	20	0	7	247	11	2	29	355	10	0	780	
12:15 PM	43	7	41	0	11	4	22	0	19	241	14	2	41	286	15	0	746	3018
12:30 PM	52	7	39	0	5	5	25	0	9	244	10	2	34	348	14	0	794	3059
12:45 PM	49	6	40	0	7	6	17	0	11	228	11	1	25	356	12	0	769	3089
1:00 PM	45	3	20	0	11	5	16	0	13	248	12	1	40	287	11	1	713	3022
1:15 PM	34	6	30	0	6	1	18	0	9	238	16	2	29	332	13	0	734	3010

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	168	28	144	0	24	8	80	0	28	988	44	8	116	1420	64	0	3120
Heavy Trucks	0	4	0		4	0	8		0	80	0		0	52	4		152
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/17/2008 8:42 AM

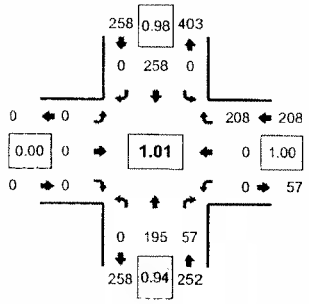
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of peak hour being reported: System Peak

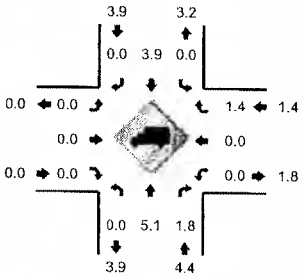
Method for determining peak hour: Total Entering Volume

LOCATION: N Springbrook Rd -- Fred Meyer Right In/Out Dwy
CITY/STATE: Newberg, OR

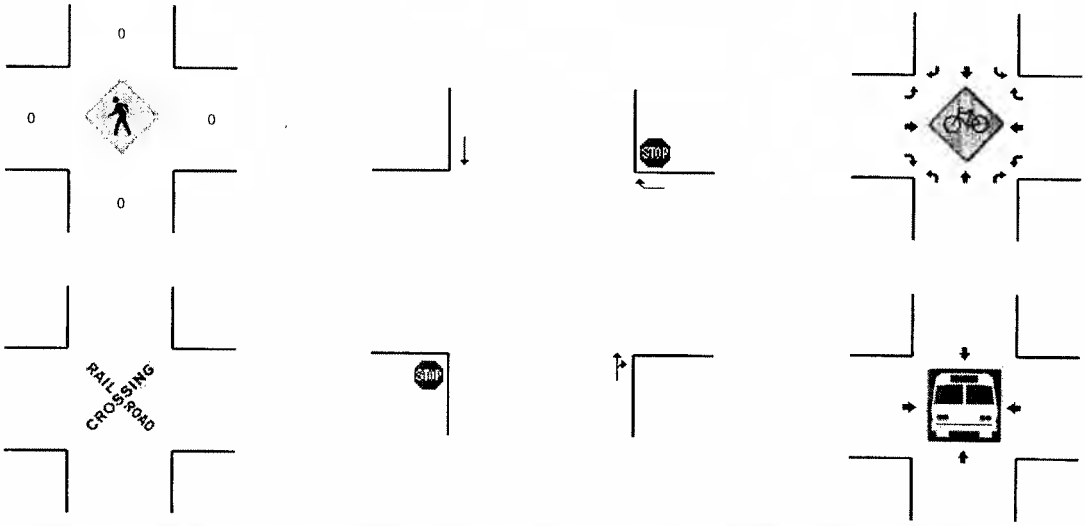
QC JOB #: 10388810
DATE: 10/11/2008 SAC



Peak-Hour: 12:00 PM -- 1:00 PM
Peak 15-Min: 12:00 PM -- 12:15 PM



Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES



15-Min Count Period Beginning At	N Springbrook Rd (Northbound)				N Springbrook Rd (Southbound)				Fred Meyer Right In/Out Dwy (Eastbound)				Fred Meyer Right In/Out Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	0	63	12	0	0	58	0	0	0	0	0	0	0	0	55	0	188	
11:45 AM	0	51	20	0	0	62	0	0	0	0	0	0	0	0	49	0	182	
12:00 PM	0	54	13	0	0	66	0	0	0	0	0	0	0	0	48	0	177	
12:15 PM	0	40	12	0	0	64	0	0	0	0	0	0	0	0	57	0	173	720
12:30 PM	0	47	13	0	0	52	0	0	0	0	0	0	0	0	53	0	165	697
12:45 PM	0	54	19	0	0	76	0	0	0	0	0	0	0	0	54	0	203	718
1:00 PM	0	61	11	0	0	59	0	0	0	0	0	0	0	0	46	0	177	718
1:15 PM	0	40	18	0	0	63	0	0	0	0	0	0	0	0	51	0	172	717

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	216	52	0	0	264	0	0	0	0	0	0	0	0	176	0	708
Heavy Trucks	0	20	0		0	4	0		0	0	0		0	0	8		32
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/17/2008 8:42 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

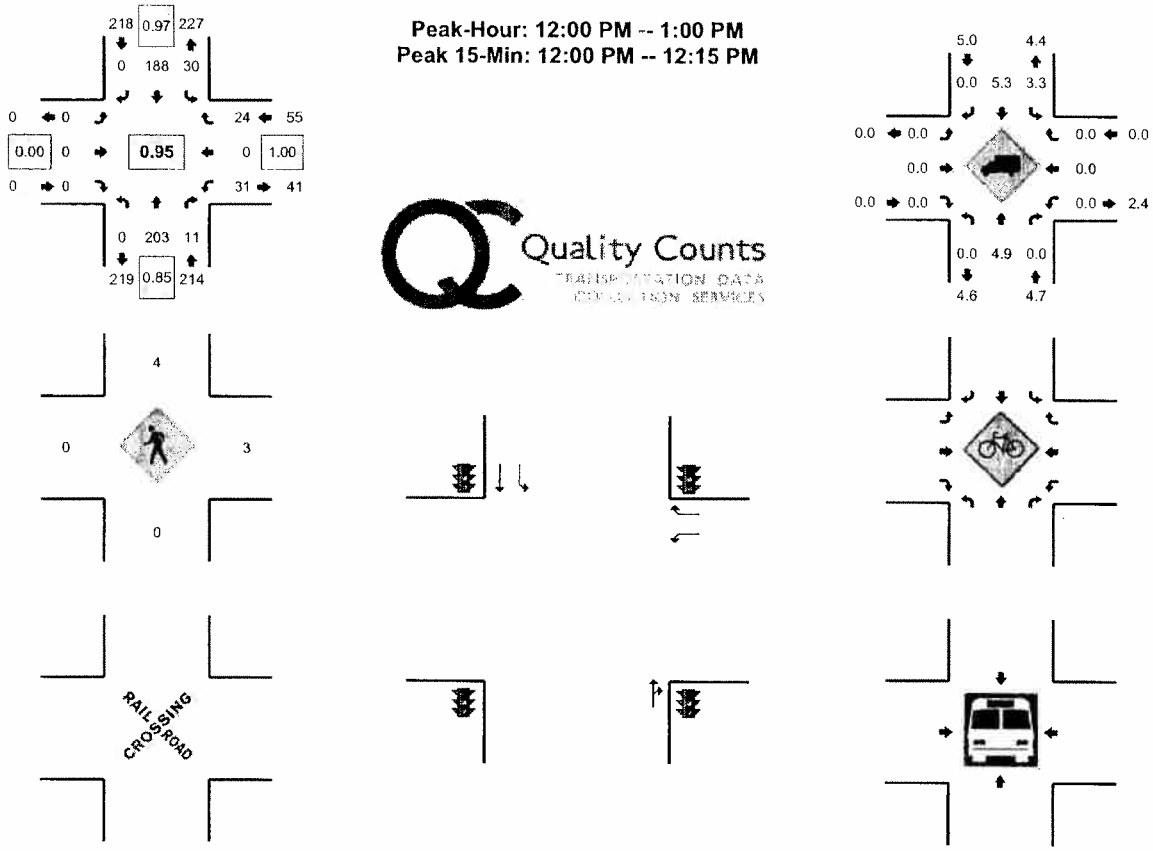
Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

LOCATION: N Springbrook Rd -- Hayes St
CITY/STATE: Newberg, OR

QC JOB #: 10388812
DATE: 10/11/2008

Peak-Hour: 12:00 PM -- 1:00 PM
Peak 15-Min: 12:00 PM -- 12:15 PM



15-Min Count Period Beginning At	N Springbrook Rd (Northbound)				N Springbrook Rd (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		
11:30 AM	0	64	3	0	6	46	0	0	0	0	0	0	7	0	12	0	138	
11:45 AM	0	52	6	0	14	41	0	0	0	0	0	0	6	0	12	0	131	
12:00 PM	0	63	0	0	6	50	0	0	0	0	0	0	6	0	3	0	128	
12:15 PM	0	38	4	0	9	40	0	0	0	0	0	0	10	0	8	0	109	506
12:30 PM	0	47	4	0	10	39	0	0	0	0	0	0	3	0	3	0	107	475
12:45 PM	0	55	3	0	5	59	0	0	0	0	0	0	12	0	9	0	143	487
1:00 PM	0	54	5	0	13	43	0	0	0	0	0	0	11	0	5	0	131	490
1:15 PM	0	45	4	0	8	47	0	0	0	0	0	0	15	0	0	0	119	500

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	252	0	0	24	200	0	0	0	0	0	0	24	0	12	0	512
Heavy Trucks	0	20	0		0	8	0		0	0	0		0	0	0		28
Pedestrians		0				4				0				0			4
Bicycles																	
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/17/2008 8:42 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

APPENDIX C

Transit Routes/ Schedules

99W Link Route 44	Monday to Friday Services														Saturday Service			
To McMinnville																		
Sherwood Shari's TriMet Depart			6:49	7:48	8:59	11:37	**12:39**	**1:47**	**2:54**	**4:10**	**5:27**	**6:55**	**7:38**		8:35	10:45	**1:48**	**3:58**
Newberg Safeway/RiteAid			7:04	8:03	9:14	11:52	**12:54**	**2:02**	**3:09**	**4:25**	**5:42**	**7:10**	**7:53**		8:50	**12:05**	**2:03**	**4:13**
Newberg J's Restaurant-Sitka & 99W			7:07		9:17	11:55	**12:57**	**2:05**	**3:12**	**4:28**	**5:45**	**7:13**			8:53	**12:08**	**2:06**	
Newberg Nap's Thriftway	5:15	6:15	7:12		9:22	**12:00**	**1:02**	**2:10**	**3:17**	**4:33**	**5:50**	**7:18**			8:58	**12:13**	**2:11**	
Dundee Womens Club	5:22	6:22	7:19		9:29	**12:07**	**1:09**	**2:17**	**3:24**	**4:40**	**5:57**	**7:25**			9:05	**12:20**	**2:18**	
Dayton Park	5:32	6:32	7:29		9:39	**12:17**	**1:18**	**2:26**	**3:33**	**4:49**	**6:06**	**7:34**			9:15	**12:30**	**2:28**	
Dayton High School 8th & Ferry	5:35	6:35	7:32		9:42	**12:20**	**1:21**	**2:29**	**3:36**	**4:52**	**6:09**	**7:37**			9:18	**12:33**	**2:31**	
Lafayette City Hall	5:42	6:42	7:39		9:49	**12:27**	**1:28**	**2:36**	**3:43**	**4:59**	**6:16**	**7:44**			9:25	**12:40**	**2:38**	
McMinnville - Lafayette Ave. at Safeway	5:49	6:49	7:46		9:56	**12:34**	**1:35**	**2:43**	**3:50**	**5:06**	**6:23**	**7:51**			9:32	**12:47**	**2:45**	
McMinnville - 5th & Ford- Arrive	5:52	6:53	7:49		10:00	**12:37**	**1:39**	**2:47**	**3:54**	**5:10**	**6:27**	**7:55**			9:35	**12:51**	**2:48**	
To Sherwood																		
McMinnville - 5th & Ford	5:52	6:53	8:02		10:00	**12:50**	**1:55**	**2:59**	**4:28**	**5:44**	**6:39**	**7:55**			9:48	**12:51**	**3:01**	
McMinnville Safeway	6:00	6:59	8:10		10:08	**12:58**	**2:02**	**3:06**	**4:35**	**5:51**	**6:46**	**8:02**			9:56	**12:59**	**3:09**	
Lafayette Post Office	6:05	7:04	8:15		10:13	**1:03**	**2:08**	**3:12**	**4:41**	**5:57**	**6:52**	**8:08**			10:01	**1:04**	**3:14**	
Dayton High School 8th & Ferry	6:09	7:08	8:19		10:17	**1:07**	**2:13**	**3:17**	**4:46**	**6:02**	**6:57**	**8:13**			10:05	**1:08**	**3:18**	
Dayton Park	6:10	7:09	8:20		10:18	**1:08**	**2:14**	**3:18**	**4:47**	**6:03**	**6:58**	**8:14**			10:06	**1:09**	**3:19**	
Dundee 9th and 99W	6:19	7:18	8:29		10:27	**1:17**	**2:25**	**3:29**	**4:58**	**6:14**	**7:09**	**8:25**			10:15	**1:18**	**3:28**	
Newberg Nap's Thriftway Arrive	6:24	7:23	8:34		10:32	**12:15**	**1:22**	**2:30**	**3:34**	**5:03**	**6:19**	**7:14**	**8:30**		10:20	**1:23**	**3:33**	
Newberg Nap's Thriftway Depart	6:24	7:23	8:34		11:12	**12:15**	**1:22**	**2:30**	**3:34**	**5:03**	**6:19**	**7:14**	**8:30**		10:20	**1:23**	**3:33**	
Newberg Walgreens	6:29	7:28	8:39		11:17	**12:19**	**1:27**	**2:34**	**3:38**	**5:07**	**6:23**	**7:18**	**8:34**	8:15	10:25	**1:28**	**3:38**
Newberg Fred Meyer-Grocery	6:34	7:33	8:44		11:22	**12:24**	**1:32**	**2:39**	**3:43**	**5:12**	**6:28**	**7:23**		8:20	10:30	**1:33**	**3:43**
Sherwood 12th/Sherwood Blvd	6:44	7:43	8:54		11:32	**12:34**	**1:42**	**2:49**	**3:53**	**5:22**	**6:38**	**7:33**		8:30	10:40	**1:43**	**3:53**
Sherwood Shari's TriMet Arrive	6:49	7:48	8:59		11:37	**12:39**	**1:47**	**2:54**	**3:58**	**5:27**	**6:43**	**7:38**		8:35	10:45	**1:48**	**3:58**

Mon. - Sat.	Newberg Town Flyer Route #4				
Transit & CPRD offices at S. Elliott	8.30	10.01	11.21		
			12.20	**1.51**	**3.11**
State Employment Office on Hancock Street	8.31	10.02	**12.21**	**1.52**	**3.12**
Fred Meyer-Grocery	8.34	10.05	**12.24**	**1.55**	**3.15**
Astor House	*By Request*				
Chehalem Springs	*By Request*				
Providence Newberg Hospital	8.41	10.12	**12.31**	**2.02**	**3.22**
Safeway/Riteaid	8.45	10.16	**12.35**	**2.06**	**3.26**
Springbrook Rd. & Vittoria	8.47	10.18	**12.37**	**2.08**	**3.28**
Mabel Rush School on Deborah Rd.	8.49	10.20	**12.39**	**2.10**	**3.30**
Bi-Mart at Deborah Rd & Haworth	8.51	10.22	**12.41**	**2.12**	**3.32**
Haworth & Sitka	8.54	10.25	**12.44**	**2.15**	**3.35**
J's Restaurant at Sitka & 99W	8.56	10.27	**12.46**	**2.17**	**3.37**
Medical offices on Villa	9.00	10.31	**12.50**	**2.21**	**3.41**
FriendsView	*By Request except at:*				**2.22**
George Fox University at Meridian & Franklin	9.02	10.33	**12.52**	**2.23**	**3.43**
Avemere on Foothills	9.05	10.36	**12.55**	**2.26**	**3.46**
Foothills & N. Main	9.08	10.39	**12.58**	**2.29**	**3.49**
Chehalem Sr. Center	*By Request*				
Ridgeview Mobile Pk. on Columbia Dr	9.16	10.47	**1.06**	**2.37**	**3.57**
	Route continues in next column >>>				

Mon. - Sat.	Newberg Town Flyer Route #4 (cont'd)				
Huffman House	*By Request*				
N. Main at Jaquith Park	9.18	10.49	**1.08**	**2.39**	**3.59**
N. Washington & Illinois	9.19	10.50	**1.09**	**2.40**	**4.00**
Public Library at Sheridan St.	9.20	10.51	**1.10**	**2.41**	**4.01**
Thrift Store/City Offices at Howard & 3rd	9.22	10.53	**1.12**	**2.43**	**4.03**
4th & College	9.24	10.55	**1.14**	**2.45**	**4.05**
River & 6th	9.25	10.56	**1.15**	**2.46**	**4.06**
Woodview Village on S. College	9.29	11.00	**1.19**	**2.50**	**4.10**
9th & College	9.30	11.01	**1.20**	**2.51**	**4.11**
9th & Blaine	9.31	11.02	**1.21**	**2.52**	**4.12**
5th & S. Main	9.32	11.03	**1.22**	**2.53**	**4.13**
S. Main & 2nd at Love Inc.	9.34	11.05	**1.24**	**2.55**	**4.15**
Naps Thriftway on 1st Street	9.35	11.06	**1.25**	**2.56**	**4.16**
Bank of America on 1st Street	9.36	11.07	**1.26**	**2.57**	**4.17**
Church St. & St.Paul Highway	9.37	11.08	**1.27**	**2.58**	**4.18**
Everest & 3rd Street	9.38	11.09	**1.28**	**2.59**	**4.19**
Colonial Village at 2nd & Doris	9.42	11.13	**1.32**	**3.03**	**4.23**
Springbrook Estates Mobile Park at Wilsonville Rd	9.47	11.18	**1.37**	**3.08**	**4.28**
MountainView Mobile Park (NutTree) on 2nd	9.49	11.20	**1.39**	**3.10**	**4.30**

By Request stops: call 30 min. prior to pickup.
Chehalem Valley Transit 503-538-7433 M-F, 8-4.

APPENDIX D

Crash Data

Project 2080406.00 Newberg Fred Meyer

Accident Analysis Worksheet *Jan. 2003-Dec. 2007*

Intersection: **Highway 99 at Brutscher Street**

Property		Percent			Percent
Damage Only	5	42%	Rear End	8	67%
Injury	7	58%	Angle	0	0%
Total	12		Turn	3	25%
			Other	1	8%
			Total	12	

PM Peak Hour	3,414	
ADT	34,140	Assumed to be PM Peak Hour/10 percent

Accident Rate= (Number of Accidents)/5 years) / (ADTx 365)*1,000,000 Vehicles
Accident Rate= 0.19 Average number of accidents per million entering vehicles

Intersection: Along Hwy 99 from Brutscher St to Fred Meyer RIRO (from MP 21.81 to 22.04)

Milepost - 21.81

Property		Percent			Percent
Damage Only	1	100%	Rear End	1	100%
Injury	0	0%	Angle	0	0%
Total	1		Turn	0	0%
			Other	0	0%
			Total	1	

PM Peak Hour	1,251	
ADT	12,510	Assumed to be PM Peak Hour/10 percent

Accident Rate= (Number of Accidents)/5 years) / (ADTx 365)*1,000,000 Vehicles
Accident Rate= 0.04 Average number of accidents per million entering vehicles

Intersection: Along Hwy 99 from Brutscher St to Fred Meyer RIRO (from MP 21.81 to 22.04)

Milepost - 21.82

Property		Percent			Percent
Damage Only	1	33%	Rear End	3	100%
Injury	2	67%	Angle	0	0%
Total	3		Turn	0	0%
			Other	0	0%
			Total	3	

PM Peak Hour	1,251	
ADT	12,510	Assumed to be PM Peak Hour/10 percent

Accident Rate= (Number of Accidents)/5 years) / (ADTx 365)*1,000,000 Vehicles
Accident Rate= 0.13 Average number of accidents per million entering vehicles

Project **2080406.00 Newberg Fred Meyer**

Accident Analysis Worksheet *Jan. 2003-Dec. 2007*

Intersection: Hwy 99 at Fred Meyer RIRO

Milepost - 21.94		Percent			Percent
Property			Rear End	2	100%
Damage Only	0	0%	Angle	0	0%
Injury	2	100%	Turn	0	0%
Total	2		Other	0	0%
			Total	2	

PM Peak Hour	1,375	
ADT	13,750	Assumed to be PM Peak Hour/10 percent

Accident Rate= (Number of Accidents)/5 years) / (ADTx 365)*1,000,000 Vehicles
Accident Rate= 0.08 Average number of accidents per million entering vehicles

Intersection: Hwy 99 at Fred Meyer Right-In Access

Milepost - 22.04		Percent			Percent
Property			Rear End	0	0%
Damage Only	1	100%	Angle	0	0%
Injury	0	0%	Turn	1	100%
Total	1		Other	0	0%
			Total	1	

PM Peak Hour	1,559	
ADT	15,590	Assumed to be PM Peak Hour/10 percent

Accident Rate= (Number of Accidents)/5 years) / (ADTx 365)*1,000,000 Vehicles
Accident Rate= 0.04 Average number of accidents per million entering vehicles

Intersection: Hwy 99 at Springbrook Road

Milepost - 22.05		Percent			Percent
Property			Rear End	11	58%
Damage Only	12	63%	Angle	1	5%
Injury	7	37%	Turn	6	32%
Total	19		Other	1	5%
			Total	19	

PM Peak Hour	3,083	
ADT	30,830	Assumed to be PM Peak Hour/10 percent

Accident Rate= (Number of Accidents)/5 years) / (ADTx 365)*1,000,000 Vehicles
Accident Rate= 0.34 Average number of accidents per million entering vehicles

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

091 PACIFIC HIGEWAY WEST

Pacific Highway #91 (OR 99W) / Intersection of Springbrook Rd. to Intersection of Brutscher St.
January 1, 2003 Through December 31, 2007

SER# INVNT	S P E D	A L C	D R S L	S W H K	C O R	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	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#	VEH TYPE	SPCL USE TRLR QTY OWNER	MOVE FROM TO	P#	PRIC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00749	Y	N	N			08/06/2004	YAMHILL	1	14		INTER	3-LEG	N		N	RAIN	ANGL-STP	01	NONE	0	TURN-R										01
NONE						Fri	NEWBERG	0	0	BRUTSCHER ST	NW		TRF SIGNAL		N	WET	TURN		PRVTE		NE NW								001		00
						7A	NEWBERG UA	21.80		PACIFIC HY 99W	06	0			N	DAY	PDO		PSNGR CAR			01	DRVR	NONE	00	M	OR-Y	001	017		01
																											OR>25				
																	02	NONE	0	STOP									012		00
																		PRVTE		NW SE									000		00
																		PSNGR CAR				01	DRVR	NONE	40	M	CR-Y				
																											CR<25				
01236	N	N	N			10/25/2003	YAMHILL	1	14		INTER	3-LEG	N		N	CLR	ANGL-OTH	01	NONE	0	TURN-R										02
NO RPT						Sat	NEWBERG	0	0	BRUTSCHER ST	CN		TRF SIGNAL		N	DRY	TURN		PRVTE		SE NE								000		00
						3P	NEWBERG UA	21.80		PACIFIC HY 99W	02	0			N	DAY	PDO		UNKNOWN			01	DRVR	NONE	00	U	UNK	028	000		02
																											UNK				
																	02	NONE	0	STRGHT									000		00
																		PRVTE		SW NE									000		00
																		PSNGR CAR				01	DRVR	NONE	20	F	OTH-Y	000			
																											N-RES				
01255		N	N			12/11/2003	YAMHILL	1	14		INTER	CROSS	N		N	CLR	O-STRGHT	01	NONE	0	STRGHT										02,10
NO RPT						Thu	NEWBERG	0	0	BRUTSCHER ST	CN		TRF SIGNAL		N	DRY	HEAD		PRVTE		NW SE								000		00
						2P	NEWBERG UA	21.80		PACIFIC HY 99W	02	0			N	DAY	PDO		PSNGR CAR			01	DRVR	NONE	17	F	OR-Y	C16	000		10
																											OR<25				
																	02	NONE	0	TURN-L									000		00
																		PRVTE		SE SW									000		02
																		PSNGR CAR				01	DRVR	NONE	39	M	OR-Y	016,020,028			
																											OR<25				
01207	N	N	N			12/23/2006	YAMHILL	1	14		INTER	3-LEG	N		N	RAIN	ANGL-OTH	01	NONE	0	STRGHT										04
NO RPT						Sat	NEWBERG	0	0	BRUTSCHER ST	CN		TRF SIGNAL		N	WET	TURN		PRVTE		SW NE								000		00
						5A	NEWBERG UA	21.80		PACIFIC HY 99W	02	0			N	DLIT	INJ		PSNGR CAR			01	DRVR	NONE	42	M	OTH-Y	020	000		04
																											N-RES				
																	02	NONE	0	TURN-L									000		00
																		PRVTE		SE SW									000		00
																		PSNGR CAR				01	DRVR	INJB	57	F	OR-Y	000			
																											OR<25				
01024	N	N	N			09/04/2003	YAMHILL	1	14		STRGHT		N		N	CLR	S-ISTOP	01	NONE	0	STRGHT										07
NONE						Thu	NEWBERG	0	0	01901	SW	(NONE)	UNKNOWN		N	DRY	REAR		PRVTE		NE SW								000		00
						5P	NEWBERG UA	21.81		00205	03				N	DAY	PDO		PSNGR CAR			01	DRVR	NONE	00	M	UNK	026	000		07
												(04)															UNK				
																	02	NONE	0	STOP									011		00
																		PRVTE		NE SW									000		00
																		PSNGR CAR				01	DRVR	NONE	00	U	UNK	000			
																											UNK				
																	03	NONE	0	STRGHT									022		00
																		PRVTE		NE SW									000		00
																		PSNGR CAR				01	DRVR	NONE	16	M	OR-Y	000			
																											OR<25				

091 PACIFIC HIGHWAY WEST

Pacific Highway #91 (OR 99W) / Intersection of Springbrook Rd. to Intersection of Brutscher St.
January 1, 2003 Through December 31, 2007

SER# INVEST	S P E D C	D R A L S	S U G L	W C O H K	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# FC COMPNT MLG TYP MILEPNT	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD WTHR RNDBT SURF DRVWY 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
00124	Y	N	N		02/06/2004	YAMHILL	1 14		STRGHT		Y	N CLR	S-STRGHT	01	NONE 0	STRGHT										013	01
NO RPT					Fri	NEWBERG	0 0	01901	SW	(NONE)	L-TURN REF	N WET	REAR		PRVTE	NE SW								000			00
					4P	NEWBERG UA	21.81	00205	03			N DAY	INJ		PSNGR CAR		01	DRVR	NONE	17	M	OR-Y	026	000			01
										(04)												OR>25					
														02	NONE 0	STRGHT											
															PRVTE	NE SW								006	013		00
															PSNGR CAR		01	DRVR	NONE	44	F	OR-Y	000	000			00
																						OR<25					
														03	NONE 0	STOP											
															PRVTE	NE SW								011			00
															OTHER		01	DRVR	INJC	40	F	OTH-Y	000	000			00
																						N-RES					
																	02	PSNG	INJC	41	M		000	000			00
																	03	PSNG	INJC	15	F		000	000			00
																	04	PSNG	INJC	11	F		000	000			00
00773	N	N	N		09/19/2004	YAMHILL	1 14		STRGHT		Y	N CLR	S-1STOP	01	NONE 0	STRGHT											10
NONE					Sun	NEWBERG	0 0	01901	SW	(NONE)	UNKNOWN	N DRY	REAR		PRVTE	SW NE								000			00
					2P	NEWBERG UA	21.81	00205	05			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	19	F	OR-Y	026	000			10
										(04)												OR>25					
														02	NONE 0	STOP											
															PRVTE	SW NE								011			00
															PSNGR CAR		01	DRVR	NONE	35	F	OTH-Y	000	000			00
																						N-RES					
01268	N	N	N		10/23/2006	YAMHILL	1 14		STRGHT		N	N CLR	S-STRGHT	01	NONE 0	STRGHT											13
NONE					Mon	NEWBERG	0 0	01901	SW	(NONE)	UNKNOWN	N DRY	SS-O		PRVTE	NE SW								000			00
					4P	NEWBERG UA	21.82	00205	03			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	47	M	OR-Y	045	000			13
										(04)												OR<25					
														02	NONE 0	STRGHT											
															PRVTE	NE SW								000			00
															PSNGR CAR		01	DRVR	NONE	53	F	OR-Y	000	000			00
																						OR<25					
01146	Y	N	N		12/09/2004	YAMHILL	1 14		STRGHT		N	N RAIN	S-STRGHT	01	NONE 0	STRGHT											01
NO RPT					Thu	NEWBERG	0 0	01901	SW	(NONE)	UNKNOWN	N WET	REAR		PRVTE	SW NE								001			00
					6A	NEWBERG UA	21.82	00205	05			N DLIT	PDO		PSNGR CAR		01	DRVR	NONE	57	F	OR-Y	042	000			01
										(04)												OR<25					
														02	NONE 0	STRGHT											
															PRVTE	SW NE								006			00
															PSNGR CAR		01	DRVR	NONE	48	F	OR-Y	000	000			00
																						OR<25					
00125	N	N	N		02/06/2007	YAMHILL	1 14		STRGHT		Y	N CLR	S-1STOP	01	NONE 0	STRGHT										013	07
NO RPT					Tue	NEWBERG	0 0	01901	SW	(NONE)	UNKNOWN	N DRY	REAR		PRVTE	SW NE								000			00
					3P	NEWBERG UA	21.82	00205	05			N DAY	INJ		PSNGR CAR		01	DRVR	NONE	39	M	OR-Y	026	000			07
										(04)												OR<25					

091 PACIFIC HIGHWAY WEST

Pacific Highway #91 (OR 99W) / Intersection of Springbrook Rd. to Intersection of Brutscher St.
January 1, 2003 Through December 31, 2007

SER# INVEST	S P E D E L C	D R U G S	S C H L	W O R K	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# FC COMPNT MLG TYP MILEPNT	CONN # FIRST SECOND	STREET STREET	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	A G E	S E X	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																02	NONE 0	STOP											
																	PRVTE	SW NE									011	013	00
																	PSNGR CAR		01	DRVR	INJC	17	F	OR-Y		000	000		00
																								OR<25					
																			02	PSNG	INJC	17	F			000	000		00
																03	NONE 0	STOP											
																	PRVTE	SW NE									011		00
																	PSNGR CAR		01	DRVR	NONE	50	M	OTH-Y		000	000		00
																								N-RES					
00381	N	N	N		04/22/2007	YAMHILL	1 14			STRGHT		Y	N	CLR	S-1STOP	01	NONE 0	STRGHT											10
NO RPT					Sun	NEWBERG	0 0	01901		SW	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	SW NE									000		00
					11A	NEWBERG UA	21.82	00205		05			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	55	M	OR-Y		026	000		10
											(04)													OR<25					
																02	NONE 0	STOP											
																	PRVTE	SW NE									011		00
																	PSNGR CAR		01	DRVR	INJC	50	M	OR-Y		000	000		00
																								OR<25					
																			02	PSNG	INJC	50	F			000	000		00
																			03	PSNG	INJC	18	M			000	000		00
																			04	PSNG	INJC	16	F			000	000		00
																			05	PSNG	INJC	10	M			000	000		00
																			06	PSNG	INJC	10	M			000	000		00
00384	N	N	N		02/25/2005	YAMHILL	1 14			STRGHT		N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NO RPT					Fri	NEWBERG	0 0	01901		SW	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	NE SW									000		00
					2P	NEWBERG UA	21.83	00205		04			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	22	M	OR-Y		026	000		07
											(04)													OR<25					
																02	NONE 0	STOP											
																	PRVTE	NE SW									011		00
																	PSNGR CAR		01	DRVR	NONE	00	M	UNK		000	000		00
																								UNK					
00402	N	N	N		05/06/2005	YAMHILL	1 14			STRGHT		Y	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	07
NO RPT					Fri	NEWBERG	0 0	01901		NE	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	NE SW									000		00
					5P	NEWBERG UA	21.86	01702		03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	16	F	OR-Y		026	000		07
											(04)													OR<25					
																02	NONE 0	STOP											
																	PRVTE	NE SW									011	013	00
																	PSNGR CAR		01	DRVR	NONE	35	M	OR-Y		000	000		00
																								OR<25					
																03	NONE 0	STOP											
																	PRVTE	NE SW									011		00
																	PSNGR CAR		01	DRVR	NONE	17	F	OR-Y		000	000		00
																								OR<25					

SER# INVEST	S P E D / R E A L / S U C H / S C O L / W O R K	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# FC COMPNT MLG TYP MILEPNT	CONN # FIRST SECOND	STREET STREET	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 INJ TYPE SVRTY	A G E	S E X	LICNS REG	PED LOC	ERROR	ACTN	EVENT	CAUSE
00368	N N N	04/17/2007	YAMHILL	1 14			STRGHT		N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										07
NO RPT		Tue	NEWBERG	0 0	01901		NE	(NONE)	UNKNOWN	N	WET	REAR		PRVTE	NE SW								001		00
		4P	NEWBERG UA	21.86	01702		03			N	DAY	INJ		PSNGR CAR		01	DRVR INJC	34	M	OR-Y		026	000		07
								(04)												OR<25					
													02	NONE 0	STOP										
														PRVTE	NE SW								011		00
														PSNGR CAR		01	DRVR INJC	23	F	OR-Y		000	000		00
																				OR<25					
																02	PSNG INJC	54	F			000	000		00
00179	N N N N N	02/16/2007	YAMHILL	1 14			GRADE		N	N	CLD	S-1STOP	01	NONE 0	STRGHT									002	07
CITY		Fri	NEWBERG	0 0	01901		NE	(RSDMD)	UNKNOWN	N	DRY	REAR		PRVTE	NE SW								000		00
		5P	NEWBERG UA	21.86	01702		04			N	DUSK	INJ		PSNGR CAR		01	DRVR NONE	41	M	OR-Y		043	000		07
								(04)												OR<25					
																02	PSNG NO<5	03	F			000	000	002	00
													02	NONE 0	STOP										
														PRVTE	NE SW								011		00
														PSNGR CAR		01	DRVR INJC	36	M	OR-Y		000	000		00
																				OR<25					
																02	PSNG INJC	28	F			000	000		00
																03	PSNG INJB	29	M			000	000		00
00235	N N N	07/29/2004	YAMHILL	1 14			STRGHT		N	N	CLR	S-1STOP	01	NONE 0	STRGHT										07
NONE		Thu	NEWBERG	0 0	01901		NE	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	NE SW								000		00
		4P	NEWBERG UA	21.91	02205		03			N	DAY	PDO		PSNGR CAR		01	DRVR NONE	19	M	OR-Y		026	000		07
								(04)												OR<25					
													02	NONE 0	STOP										
														PRVTE	NE SW								011		00
														PSNGR CAR		01	DRVR NONE	37	F	OR-Y		000	000		00
																				OR<25					
01340	Y N N N N	11/09/2003	YAMHILL	1 14			ALLEY		N	N	CLD	S-1TURN	01	NONE 0	STRGHT										07,01
CITY		Sun	NEWBERG	0 0	01901		N	(NONE)	STOP SIGN	N	DRY	REAR		PRVTE	NE SW								001		00
		3P	NEWBERG UA	21.93	02205		03			N	DAY	INJ		PSNGR CAR		01	DRVR NONE	45	M	OR-Y		043,047	000		07,01
								(04)												OR<25					
													02	NONE 0	TURN-R										
														PRVTE	NE N								019		00
														PSNGR CAR		01	DRVR INJC	49	F	SUSP		000	000		00
																				OR<25					
00037	N N N	01/31/2004	YAMHILL	1 14			STRGHT		N	N	RAIN	S-STRGHT	01	NONE 0	STRGHT										10
NONE		Sat	NEWBERG	0 0	01901		NE	(NONE)	UNKNOWN	N	WET	REAR		PRVTE	SW NE								000		00
		4P	NEWBERG UA	21.94	02205		06			N	DUSK	INJ		PSNGR CAR		01	DRVR NONE	19	M	OR-Y		026	000		10
								(04)												OR>25					
													02	NONE 0	STRGHT										
														PRVTE	SW NE								006		00
														PSNGR CAR		01	DRVR INJC	42	F	OR-Y		000	000		00
																				OR<25					

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

091 PACIFIC HIGHWAY WEST

Pacific Highway #91 (OR 99W) / Intersection of Springbrook Rd. to Intersection of Brutscher St.
January 1, 2003 Through December 31, 2007

SER# INVEST	S P E D	D R S W A U C O E L G H R C S L K	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# FC COMPNT MLG TYP MILEPNT	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CNTL	OFFRD WTHR RNDBT SURF DRVWY LIGHT	CRASH TYP COLL 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
00260	N	N N	03/31/2006	YAMHILL	1 14		STRGHT		Y	N RAIN	S-1STOP	01	NONE 0	STRGHT											07
NO RPT			Fri	NEWBERG	0 0	01901	NE	(NONE)	UNKNOWN	N WET	REAR		PRVTE	SW NE									000		00
			6P	NEWBERG UA	21.94	01702	05			N DLIT	INJ		PSNGR CAR		01	DRVR	NONE	17	M	OR-Y	026		000		07
								(04)												OR<25					
												02	NONE 0	STOP											
													PRVTE	SW NE									011		00
													PSNGR CAR		01	DRVR	NONE	24	F	OR-Y	000		000		00
																				OR<25					
												03	NONE 0	STOP											
													PRVTE	SW NE									011		00
													PSNGR CAR		01	DRVR	INJC	47	M	OR-Y	000		000		00
																				OR<25					
00[illegible]	N	N N	09/21/2004	YAMHILL	1 14		STRGHT		Y	N CLR	S-1STOP	01	NONE 0	STRGHT											10
NO RPT			Tue	NEWBERG	0 0	01901	NE	(NONE)	UNKNOWN	N DRY	REAR		PRVTE	NE SW									000		00
			5P	NEWBERG UA	21.98	02205	04			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	36	M	OR-Y	026		000		10
								(04)												OR<25					
												02	NONE 0	STOP											
													PRVTE	NE SW									011		00
													PSNGR CAR		01	DRVR	NONE	54	M	OR-Y	000		000		00
																				OR<25					
00[illegible]9	N	N N	10/21/2003	YAMHILL	1 14		STRGHT		N	N CLR	S-1STOP	01	NONE 0	STRGHT											07
NO RPT			Tue	NEWBERG	0 0	01901	NE	(NONE)	UNKNOWN	N DRY	REAR		PRVTE	NE SW									001		00
			5P	NEWBERG UA	21.99	02205	03			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	41	M	OR-Y	026		000		07
								(04)												OR<25					
												02	NONE 0	STOP											
													PRVTE	NE SW									011		00
													PSNGR CAR		01	DRVR	NONE	24	M	OR-Y	000		000		00
																				OR<25					
00003	N	N N	01/19/2005	YAMHILL	1 14		STRGHT		N	N CLR	S-1STOP	01	NONE 0	STRGHT											07
NO RPT			Wed	NEWBERG	0 0	01901	NE	(NONE)	UNKNOWN	N DRY	REAR		PRVTE	NE SW									000		00
			4P	NEWBERG UA	22.01	02205	03			N DAY	INJ		PSNGR CAR		01	DRVR	NONE	43	F	OR-Y	014		000		07
								(04)												OR<25					
												02	NONE 0	STOP											
													PRVTE	NE SW									011		00
													PSNGR CAR		01	DRVR	NONE	70	M	OR-Y	000		000		00
																				OR<25					
															02	PSNG	INJC	69	F		000		000		00
00989	Y	N N	10/16/2007	YAMHILL	1 14		STRGHT		N	N RAIN	ANGL-STP	01	NONE 0	STRGHT											01
NONE			Tue	NEWBERG	0 0	01901	NE	(NONE)	L-TURN REF	N WET	TURN		PRVTE	SW NE									001		00
			11A	NEWBERG UA	22.04	02205	05			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y	047,080		017		01
								(05)												UNK					

091 PACIFIC HIGHWAY WEST

Pacific Highway #91 (OR 99W) / Intersection of Springbrook Rd. to Intersection of Brutscher St.
January 1, 2003 Through December 31, 2007

SER# INVEST	SPEF / DRALCSGSWHLCK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# FC COMPNT MLG TYP MILEPNT	CONN # FIRST STREET SECOND STREET	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 PSNGR CAR	STOP NE SW	01	DRVR	NONE	44	M	OR-Y OR<25		000	012 000		00 00
00464 NO RPT	N N N	04/13/2003 Sun 5P	YAMHILL NEWBERG NEWBERG UA	1 14 0 0 22.05	PACIFIC HY 99W SPRINGBROOK ST	INTER NE 06	CROSS 2	N TRF SIGNAL	N N N	RAIN WET DAY	S-1STOP REAR PDO	01	NONE 0 PRVTE PSNGR CAR	STRGHT NE SW	01	DRVR	NONE	45	M	OR-Y OR<25		014	000 000		07 00 07
												02	NONE 0 PRVTE PSNGR CAR	STOP NE SW	01	DRVR	NONE	35	M	OR-Y OR<25		000	011 000		00 00
00144 NONE	Y N N	04/25/2003 Fri 10A	YAMHILL NEWBERG NEWBERG UA	1 14 0 0 22.05	PACIFIC HY 99W SPRINGBROOK ST	INTER NE 06	CROSS 2	N TRF SIGNAL	N N N	CLR DRY DAY	S-1STOP REAR PDO	01	NONE 0 PRVTE PSNGR CAR	STRGHT NE SW	01	DRVR	NONE	59	F	OR-Y OR<25		026	000 026		01 00 01
												02	NONE 0 PRVTE PSNGR CAR	STOP NE SW	01	DRVR	NONE	46	M	OR-Y OR<25		000	011 000		00 00
00068 NO RPT	N N N	07/08/2005 Fri 6P	YAMHILL NEWBERG NEWBERG UA	1 14 0 0 22.05	PACIFIC HY 99W SPRINGBROOK ST	INTER NE 06	CROSS 2	N TRF SIGNAL	N N N	RAIN WET DAY	S-1STOP REAR INJ	01	NONE 1 PRVTE PSNGR CAR	STRGHT NE SW	01	DRVR	NONE	23	M	OR-Y OR<25		026	000 000		07 00 07
												02	NONE 0 PRVTE PSNGR CAR	STOP NE SW	01 02	DRVR PSNG	INJC INJC	38 52	M F	OR-Y OR<25		000 000	011 000		00 00
00202 NONE	N N N	03/05/2006 Sun 8A	YAMHILL NEWBERG NEWBERG UA	1 14 0 0 22.05	PACIFIC HY 99W SPRINGBROOK ST	INTER NE 06	CROSS 2	N TRF SIGNAL	N N N	CLD DRY DAY	S-STRGHT REAR PDO	01	NONE 0 PRVTE PSNGR CAR	STRGHT NE SW	01	DRVR	NONE	19	F	OTH-Y OR<25		042	000 000		07 00 07
												02	NONE 0 PRVTE PSNGR CAR	STRGHT NE SW	01	DRVR	NONE	42	M	OR-Y OR<25		000	006 000		00 00
01113 NONE	N N N	12/04/2006 Mon 7P	YAMHILL NEWBERG NEWBERG UA	1 14 0 0 22.05	PACIFIC HY 99W SPRINGBROOK ST	INTER NE 06	CROSS 0	N TRF SIGNAL	N N N	CLR DRY DLIT	S-1STOP REAR INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT NE SW	01	DRVR	NONE	42	F	OR-Y OR<25		026	000 000	013	07 00 07

091 PACIFIC HIGHWAY WEST

Pacific Highway #91 (OR 99W) / Intersection of Springbrook Rd. to Intersection of Brutscher St.
January 1, 2003 Through December 31, 2007

SER# INVEST	SPED LIGHT	DRUG ALC	WRK ZONE	SCHL BUS	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	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#	PRIC INJ TYPE SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																02	NONE 0 PRVTE PSNGR CAR	STOP NE SW	01	DRVR INJC	20	F	OR-Y GR>25	000		011	013	00 00
																03	NONE 0 PRVTE PSNGR CAR	STOP NE SW	01	DRVR NONE	32	F	OR-Y OR<25	000		011 000		00 00
01069 NONE	N	N	N		11/01/2006 Wed 6P	YAMHILL NEWBERG NEWBERG UA	1 14 0 0 22.05		PACIFIC HY 99W SPRINGBROOK ST	INTER NE 09	CROSS 2	N TRF SIGNAL	N N N	RAIN WET DLIT	S-1STOP REAR PDO	01	NONE 0 PRVTE PSNGR CAR	STRGHT SE NW	01	DRVR NONE	50	F	OR-Y OR<25	026		000 000		27 00 27
																02	NONE 0 PRVTE PSNGR CAR	STOP SE NW	01	DRVR NONE	54	F	OR-Y OR<25	000		011 000		00 00
01226 NONE	N	N	N		12/22/2007 Sat 7P	YAMHILL NEWBERG NEWBERG UA	1 14 0 0 22.05		SPRINGBROOK ST	INTER SW 05	CROSS 0	N TRF SIGNAL	N N N	CLR WET DLIT	S-OTHER TURN PDO	01	NONE 0 PRVTE PSNGR CAR	TURN-L S SW	01	DRVR NONE	47	F	OR-Y OR<25	007		000 000		08 00 08
																02	NONE 0 PRVTE PSNGR CAR	TURN-L S SW	01	DRVR NONE	27	M	OR-Y OR<25	000		000 000		00 00
																			02	PSNG NO<5	02	M		000		000		00
00252 NONE	Y	N	N		03/15/2003 Sat 6P	YAMHILL NEWBERG NEWBERG UA	1 14 0 0 22.05		PACIFIC HY 99W SPRINGBROOK ST	INTER SW 06	CROSS 99	N UNKNOWN	N N N	CLR DRY DAY	S-1STOP REAR PDO	01	NONE 0 PRVTE PSNGR CAR	STRGHT SW NE	01	DRVR NONE	51	M	OR-Y OR<25	026		000 000		01 00 01
																02	NONE 0 PRVTE PSNGR CAR	STOP SW NE	01	DRVR NONE	40	F	OR-Y OR<25	000		011 000		00 00
01058 NONE	N	N	N		09/23/2003 Tue 10A	YAMHILL NEWBERG NEWBERG UA	1 14 0 0 22.05		PACIFIC HY 99W SPRINGBROOK ST	INTER SW 06	CROSS 2	N TRF SIGNAL	N N N	CLR DRY DAY	S-1STOP REAR PDO	01	NONE 0 PRVTE PSNGR CAR	STRGHT SW NE	01	DRVR NONE	20	M	OR-Y OR<25	026		000 000		10 00 10
																02	NONE 0 PRVTE PSNGR CAR	STOP SW NE	01	DRVR NONE	27	M	OR-Y OR<25	000		011 000		00 00

SER# INVEST	SPEED	DALCOHOL	DRUGS	SCHOOL	WEATHER	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# FC COMPNT MLG TYP MILEPNT	CONN # FIRST STREET SECOND STREET	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
00112	N	N	N			02/05/2004	YAMHILL	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											10
NONE						Thu	NEWBERG	0 0	PACIFIC HY 99W	SW		TRF SIGNAL	N	DRY	REAR ✓		PRVTE	SW NE											00
						10A	NEWBERG UA	22.05	SPRINGBROOK ST	06	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	17	F	OR-Y OR<25		026	000		10
																02	NONE 0	STOP									011		00
																	PRVTE	SW NE									000		00
																	PSNGR CAR		01	DRVR	INJC	69	F	OR-Y OR<25		000			
																			02	PSNG	NO<5	02	M			000	000		00
00362	N	N	N			05/23/2004	YAMHILL	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	10
NO RPT						Sun	NEWBERG	0 0	PACIFIC HY 99W	SW		L-TURN REF	N	DRY	REAR ✓		PRVTE	SW NE									000		00
						10A	NEWBERG UA	22.05	SPRINGBROOK ST	06	2		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	33	M	OR-Y OR<25		026	000		10
																02	NONE 0	STOP									012	015	00
																	PRVTE	SW NE									000		00
																	PSNGR CAR		01	DRVR	NONE	51	F	OR-Y OR<25		000			
																03	NONE 0	STOP									012		00
																	PRVTE	SW NE									000		00
																	PSNGR CAR		01	DRVR	NONE	65	M	OR-Y OR<25		000			
00257	N	N	N			03/14/2007	YAMHILL	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NO RPT						Wed	NEWBERG	0 0	PACIFIC HY 99W	SW		TRF SIGNAL	N	DRY	REAR ✓		PRVTE	SW NE									000		00
						9A	NEWBERG UA	22.05	SPRINGBROOK ST	06	2		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	29	F	OR-Y OR<25		043	000		07
																02	NONE 0	STOP									011		00
																	PRVTE	SW NE									000		00
																	PSNGR CAR		01	DRVR	NONE	50	F	OR-Y OR<25		000			
00536	N	N	N	N	N	06/09/2006	YAMHILL	1 14		INTER	CROSS	N	N	CLD	ANGL-OTH	01	NONE 0	TURN-L											04,06
CITY						Fri	NEWBERG	0 0	PACIFIC HY 99W	CN		TRF SIGNAL	N	DRY	TURN ✓		PRVTE	N NE									000		00
						6P	NEWBERG UA	22.05	SPRINGBROOK ST	01	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	17	F	OR-Y OR<25		000	000		00
																			02	PSNG	INJB	40	F			000	000		00
																02	NONE 0	STRGHT									031		00
																	PRVTE	NE SW									000		04,06
																	PSNGR CAR		01	DRVR	NONE	49	F	OR-Y OR<25		020,044			
00289	N	N	N	N	N	04/14/2005	YAMHILL	1 14		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
CITY						Thu	NEWBERG	0 0	PACIFIC HY 99W	CN		TRF SIGNAL	N	DRY	ANGL ✓		PRVTE	NE SW									000		00
						7P	NEWBERG UA	22.05	SPRINGBROOK ST	02	2		N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y OR<25		020	000		04

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

091 PACIFIC HIGHWAY WEST

Pacific Highway #91 (OR 99W) / Intersection of Springbrook Rd. to Intersection of Brutscher St.
January 1, 2003 Through December 31, 2007

NLN# INVEST	SPFED	DRUGS	SCHOOL	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# FC COMPNT MLG TYP MILEPNT	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) IEGS (#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 PSNGR CAR	STRGHT S N	01	DRVR	NONE	54	F	OR-Y OR<25		000	000	00	00
																	02	PSNG	INJC	22	F			000	000	00	00
																	03	PSNG	INJB	55	M			000	000	00	00
00241 CITY	N	N	N	N N	03/21/2006 Tue 10P	YAMHILL NEWBERG NEWBERG UA	1 14 0 0 22.05 PACIFIC HY 99W SPRINGBROOK ST	INTER CN 02	CROSS 2	N TRF SIGNAL	N N N	CLD DRY DLIT	O-1TURN TURN PDO	01	NONE 0 PRVTE PSNGR CAR	STRGHT NE SW	01	DRVR	NONE	65	M	OR-Y OR<25		000	000	04 00 00	00
														02	NONE 0 PRVTE PSNGR CAR	TURN-L SW N	01	DRVR	NONE	18	M	OR-Y OR<25		020	000	00	04
00303 NO RPT	N	N	N		04/08/2006 Sat 8P	YAMHILL NEWBERG NEWBERG UA	1 14 0 0 22.05 PACIFIC HY 99W SPRINGBROOK ST	INTER CN 02	CROSS 2	N L-GRN-SIG	N N N	CLR DRY DUSK	O-1TURN TURN INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT NE SW	01	DRVR	INJC	60	F	OR-Y OR>25		020	000	04 00	04
														02	NONE 0 PRVTE PSNGR CAR	TURN-L SW N	01	DRVR	INJB	19	F	OR-Y OR<25		000	000	00	00
00428 NO RPT	N	N	N		08/17/2006 Thu 3P	YAMHILL NEWBERG NEWBERG UA	1 14 0 0 22.05 PACIFIC HY 99W SPRINGBROOK ST	INTER CN 03	CROSS 2	N TRF SIGNAL	N N N	CLR DRY DAY	ANGL-OTH TURN PDO	01	NONE 0 PRVTE PSNGR CAR	STRGHT SW NE	01	DRVR	NONE	59	M	OTH-Y N-RES		020	000	04 00	04
														02	NONE 0 PRVTE PSNGR CAR	TURN-L N NE	01	DRVR	NONE	47	M	OR-Y OR<25		000	000	00	00
00161 NO RPT	N	N	N		12/12/2004 Sun 11A	YAMHILL NEWBERG NEWBERG UA	1 14 0 0 22.05 PACIFIC HY 99W SPRINGBROOK ST	INTER CN 04	CROSS 2	N TRF SIGNAL	N N N	CLR DRY DAY	O-1TURN TURN PDO	01	NONE 0 PRVTE PSNGR CAR	STRGHT S N	01	DRVR	NONE	73	M	OR-Y OR<25		000	000	02 00	00
														02	NONE 0 PRVTE PSNGR CAR	TURN-L N NE	01	DRVR	NONE	19	F	OR-Y OR<25		000	000	00	00
00096 NO RPT	N	N	N		02/22/2005 Tue 9P	YAMHILL NEWBERG NEWBERG UA	1 14 0 0 22.05 PACIFIC HY 99W SPRINGBROOK ST	INTER CN 04	CROSS 2	N TRF SIGNAL	N N N	CLR DRY DLIT	PED PED INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT SW NE	01	DRVR	NONE	24	F	OR-Y OR>25		000	000	04 00	00
																STRGHT S N	01	PED	INJC	00	M		02	055	035		04

TABLE II: FIVE-YEAR COMPARISON OF STATE HIGHWAY CRASH RATES

Table II presents a comparison of state highway crash rates for the past five years, for urban and rural areas, by functional classification. Mileage is shown for the current data year only.

See Table IV for information on official highway mileage and VMT data.

JURISDICTION AND FUNCTIONAL CLASSIFICATION	MILES*	2007 Rate	2006 Rate	2005 Rate	2004 Rate	2003 Rate
TOTAL STATE HWY SYSTEM	**7,455.23**	**0.85**	**0.85**	**0.87**	**0.79**	**0.98**
Interstate Freeways	729.57	0.38	0.39	0.41	0.38	0.42
Other Fwys/Expressways	52.26	0.73	0.78	0.80	0.78	0.87
Non-Freeways (combined)	6,673.40	1.27	1.26	1.25	1.13	1.45
Other Principal Arterials	3,281.04	1.28	1.29	1.28	1.16	1.52
Minor Arterials	1,964.61	1.20	1.14	1.14	1.02	1.20
Urban Collectors	8.69	1.10	0.68	1.19	1.23	2.08
Rural Major Collectors	1,382.20	1.25	1.11	1.14	0.93	1.25
Rural Minor Collectors	36.86	0.64	0.66	1.30	0.32	1.30
Rural Local	0.00	0.00	16.52	4.23	2.68	8.06
URBAN HWY SYSTEM	**821.51**	**1.12**	**1.14**	**1.16**	**1.08**	**1.46**
Interstate Freeways	176.15	0.48	0.48	0.51	0.50	0.61
Other Fwys/Expressways	52.26	0.73	0.78	0.80	0.78	0.87
Non-Freeways (combined)	593.10	2.05	2.06	2.04	1.84	2.69
Other Principal Arterials	512.29	2.06	2.06	2.05	1.85	2.72
Minor Arterials	72.12	2.03	2.09	1.93	1.75	2.36
Urban Collectors	8.69	1.10	0.68	1.19	1.23	2.08
Urban Cities	**565.77**	**1.24**	**1.28**	**1.29**	**1.22**	**1.68**
Interstate Freeways	114.87	0.53	0.56	0.57	0.57	0.67
Other Fwys/Expressways	45.54	0.74	0.77	0.79	0.78	0.90
Non-Freeways (combined)	405.36	2.38	2.38	2.39	2.18	3.33
Other Principal Arterials	363.20	2.37	2.37	2.38	2.17	3.35
Minor Arterials	40.51	2.61	2.59	2.48	2.27	3.08
Urban Collectors	1.65	1.95	1.84	1.78	1.51	1.68
Suburban Areas	**255.74**	**0.73**	**0.71**	**0.76**	**0.64**	**0.72**
Interstate Freeways	61.28	0.32	0.27	0.33	0.28	0.37
Other Fwys/Expressways	6.72	0.64	0.85	0.96	0.78	0.61
Non-Freeways (combined)	187.74	1.17	1.21	1.20	1.00	1.04
Other Principal Arterials	149.09	1.19	1.21	1.23	1.03	1.08
Minor Arterials	31.61	1.09	1.31	0.94	0.66	0.51
Urban Collectors	7.04	0.86	0.42	0.94	0.84	3.10
RURAL HWY SYSTEM	**6,633.72**	**0.61**	**0.60**	**0.61**	**0.54**	**0.63**
Interstate Freeways	553.42	0.28	0.28	0.31	0.25	0.25
Non-Freeways (combined)	6,080.30	0.83	0.80	0.80	0.72	0.86
Other Principal Arterials	2,768.75	0.72	0.72	0.69	0.64	0.77
Minor Arterials	1,892.49	1.03	0.95	1.00	0.88	1.03
Rural Major Collectors	1,382.20	1.25	1.11	1.14	0.93	1.25
Rural Minor Collectors	36.86	0.64	0.66	1.30	0.32	1.30
Rural Local	0.00	0.00	16.52	4.23	2.68	8.06
Rural Cities	**219.71**	**1.13**	**1.01**	**1.03**	**1.09**	**1.34**
Interstate Freeways	14.05	0.24	0.14	0.25	0.07	0.07
Non-Freeways (combined)	205.66	1.32	1.20	1.18	1.28	1.61
Other Principal Arterials	110.36	1.19	1.13	1.08	1.19	1.51
Minor Arterials	53.45	1.71	1.33	1.34	1.76	1.87
Rural Major Collectors	41.60	1.30	1.37	1.45	0.95	1.73
Rural Minor Collectors	0.25	0.00	4.57	0.00	0.00	0.00
Rural Areas	**6,414.01**	**0.58**	**0.58**	**0.59**	**0.51**	**0.59**
Interstate Freeways	539.37	0.28	0.29	0.31	0.25	0.26
Non-Freeways (combined)	5,874.64	0.79	0.77	0.77	0.68	0.80
Other Principal Arterials	2,658.39	0.68	0.69	0.67	0.61	0.71
Minor Arterials	1,839.04	0.99	0.93	0.98	0.83	0.97
Rural Major Collectors	1,340.60	1.24	1.08	1.10	0.92	1.20
Rural Minor Collectors	36.61	0.69	0.36	1.40	0.35	1.40
Rural Local	0.00	0.00	16.52	4.23	2.68	8.06

* Couplet and Roadway 3 data are included. Frontage road and connection data are excluded.

02/24/2009

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

SYSTEM CRASH VEHICLE DIRECTION LIST

Highway 091 MP 21.30 to 22.30, Both Add and Non-Add mileage 01/01/2005 to 12/31/2007

1 - 60 of 60 rows shown.

HWY #	RDWY #	COM P	CON #	MLG TYP	MILE POINT	CRASH DATE	TIME	LIGHT	SURF	RD CH	OFF RD	COLL TYPE	PEOPLE INJURY K	A	B	C	VEHICLE 1 TYPE	FR	TO	VEHICLE 2 TYPE	FR	TO	VEHICLE 3 TYPE	FR	TO	ADD VEH
091	1	MN		0	21.31	01/11/2006	9A	DAY	WET	1	N	TURN	0	0	0	0	01	E	S	01	S	N				
091	1	MN		0	21.54	05/20/2005	8A	DAY	DRY	1	N	TURN	0	0	0	1	01	NE	SW	01	NW	NE				
091	1	MN		0	21.54	01/30/2006	4P	DAY	DRY	1	N	TURN	0	0	1	0	01	NE	SW	01	NW	NE				
091	1	MN		0	21.54	02/09/2006	5P	DAY	DRY	1	N	REAR	0	0	0	1	01	NE	SW	01	NE	SW	01	NE	SW	
091	1	MN		0	21.59	02/14/2006	5P	DAY	DRY	7	N	REAR	0	0	0	0	01	NE	SW	01	NE	SW				
091	1	MN		0	21.79	12/29/2006	11A	DAY	DRY	3	N	REAR	0	0	0	2	01	NE	SW	01	NE	SW				
091	1	MN		0	21.79	01/26/2007	3P	DAY	DRY	3	N	REAR	0	0	0	1	01	NE	SW	01	NE	SW				
091	1	MN		0	21.79	01/26/2007	3P	DAY	DRY	3	N	BACK	0	0	0	0	01	SW	NE	01	SW	NE				
091	1	MN		0	21.79	09/27/2007	5P	DAY	DRY	3	N	REAR	0	0	0	1	01	SW	NE	01	SW	NE				
091	1	MN		0	21.80	01/04/2005	6P	DLIT	DRY	1	N	REAR	0	0	0	1	01	SW	NE	01	SW	NE				
091	1	MN		0	21.80	03/21/2005	1P	DAY	DRY	1	N	REAR	0	0	0	0	01	NE	SW	01	NE	SW				
091	1	MN		0	21.80	04/11/2006	4P	DAY	DRY	1	N	REAR	0	0	0	1	01	NE	SW	01	NE	SW	01	NE	SW	
091	1	MN		0	21.80	06/14/2006	1P	DAY	DRY	1	N	REAR	0	0	0	0	01	NE	SW	01	NE	SW				
091	1	MN		0	21.80	09/28/2006	9A	DAY	DRY	1	N	REAR	0	0	2	0	01	NE	SW	01	NE	SW	01	NE	SW	1
091	1	MN		0	21.80	10/28/2006	12P	DAY	WET	1	N	REAR	0	0	0	1	01	NE	SW	01	NE	SW				
091	1	MN		0	21.80	11/17/2006	1P	DAY	DRY	1	N	REAR	0	0	0	1	01	NE	SW	01	NE	SW				
091	1	MN		0	21.80	12/23/2006	5A	DLIT	WET	1	N	TURN	0	0	1	0	01	SW	NE	01	SE	SW				
091	1	MN		0	21.82	10/23/2006	4P	DAY	DRY	3	N	SS-O	0	0	0	0	01	NE	SW	01	NE	SW				
091	1	MN		0	21.82	02/06/2007	3P	DAY	DRY	3	N	REAR	0	0	0	2	01	SW	NE	01	SW	NE	01	SW	NE	
091	1	MN		0	21.82	04/22/2007	11A	DAY	DRY	3	N	REAR	0	0	0	6	01	SW	NE	01	SW	NE				
091	1	MN		0	21.83	02/25/2005	2P	DAY	DRY	3	N	REAR	0	0	0	0	01	NE	SW	01	NE	SW				
091	1	MN		0	21.86	05/06/2005	5P	DAY	DRY	3	N	REAR	0	0	0	0	01	NE	SW	01	NE	SW	01	NE	SW	
091	1	MN		0	21.86	02/16/2007	5P	DUSK	DRY	7	N	REAR	0	0	1	2	01	NE	SW	01	NE	SW				
091	1	MN		0	21.86	04/17/2007	4P	DAY	WET	3	N	REAR	0	0	0	3	01	NE	SW	01	NE	SW				
091	1	MN		0	21.94	03/31/2006	6P	DLIT	WET	3	N	REAR	0	0	0	1	01	SW	NE	01	SW	NE	01	SW	NE	
091	1	MN		0	22.01	01/19/2005	4P	DAY	DRY	3	N	REAR	0	0	0	1	01	NE	SW	01	NE	SW				
091	1	MN		0	22.04	10/16/2007	11A	DAY	WET	3	N	TURN	0	0	0	0	01	SW	NE	01	NE	SW				
091	1	MN		0	22.05	02/22/2005	9P	DLIT	DRY	1	N	PED	0	0	0	1	01	SW	NE							
091	1	MN		0	22.05	04/14/2005	7P	DUSK	DRY	1	N	ANGL	0	0	1	1	01	NE	SW	01	S	N				
091	1	MN		0	22.05	07/08/2005	6P	DAY	WET	1	N	REAR	0	0	0	2	01	NE	SW	01	NE	SW				
091	1	MN		0	22.05	03/05/2006	8A	DAY	DRY	1	N	REAR	0	0	0	0	01	NE	SW	01	NE	SW				
091	1	MN		0	22.05	03/21/2006	10P	DLIT	DRY	1	N	TURN	0	0	0	0	01	NE	SW	01	SW	N				
091	1	MN		0	22.05	04/08/2006	8P	DUSK	DRY	1	N	TURN	0	0	1	1	01	NE	SW	01	SW	N				
091	1	MN		0	22.05	06/09/2006	6P	DAY	DRY	1	N	TURN	0	0	1	0	01	N	NE	01	NE	SW				
091	1	MN		0	22.05	08/17/2006	3P	DAY	DRY	1	N	TURN	0	0	0	0	01	SW	NE	01	N	NE				
091	1	MN		0	22.05	11/01/2006	6P	DLIT	WET	1	N	REAR	0	0	0	0	01	SE	NW	01	SE	NW				
091	1	MN		0	22.05	12/04/2006	7P	DLIT	DRY	1	N	REAR	0	0	0	1	01	NE	SW	01	NE	SW	01	NE	SW	
091	1	MN		0	22.05	03/14/2007	9A	DAY	DRY	1	N	REAR	0	0	0	0	01	SW	NE	01	SW	NE				
091	1	MN		0	22.05	12/22/2007	7P	DLIT	WET	1	N	TURN	0	0	0	0	01	S	SW	01	S	SW				
091	1	MN		0	22.06	05/18/2005	5P	DAY	WET	3	N	REAR	0	0	0	0	01	SW	NE	01	SW	NE				
091	1	MN		0	22.06	01/11/2006	6A	DARK	WET	3	N	REAR	0	0	0	1	01	SW	NE	01	SW	NE				
091	1	MN		0	22.06	08/26/2006	4P	DAY	DRY	3	N	REAR	0	0	0	0	01	SW	NE	01	SW	NE	01	SW	NE	1
091	1	MN		0	22.06	11/12/2006	2P	DAY	WET	3	N	REAR	0	0	0	0	01	NE	SW	01	NE	SW				
091	1	MN		0	22.06	11/29/2007	7P	DLIT	WET	3	N	REAR	0	0	0	0	01	SW	NE	01	SW	NE				

091	1	MN	0	22.07	07/09/2006	10A	DAY	DRY	3	N	REAR	0	0	0	0	01	NE	SW	01	NE	SW			
091	1	MN	0	22.09	12/17/2007	4P	DUSK	WET	3	N	REAR	0	0	0	1	01	SW	NE	01	SW	NE			
091	1	MN	0	22.09	12/29/2007	3P	DAY	WET	3	N	REAR	0	0	0	3	01	SW	NE	01	SW	NE	01	SW	NE 1
091	1	MN	0	22.11	05/03/2007	7A	DAY	DRY	3	N	REAR	0	0	0	0	01	SW	NE	01	SW	NE			
091	1	MN	0	22.19	06/21/2005	3P	DAY	DRY	2	N	TURN	0	0	0	0	01	S	NE	01	SW	NE			
091	1	MN	0	22.20	04/01/2005	6P	DLIT	DRY	3	N	PED	0	1	0	0	09	SW	NE						
091	1	MN	0	22.20	11/08/2005	4P	DAY	DRY	3	N	REAR	0	0	0	0	01	SW	NE	01	SW	NE			
091	1	MN	0	22.21	01/02/2005	4P	DAY	DRY	1	N	REAR	0	0	0	0	01	SW	NE	01	SW	NE			
091	1	MN	0	22.21	06/21/2005	3P	DAY	DRY	1	N	TURN	0	0	0	0	01	N	NE	01	NE	SW			
091	1	MN	0	22.21	08/07/2006	4P	DAY	DRY	1	N	TURN	0	0	0	0	01	N	SW	01	N	SW			
091	1	MN	0	22.21	09/09/2006	8P	DLIT	DRY	1	N	REAR	0	0	0	0	01	SW	NE	01	SW	NE			
091	1	MN	0	22.21	09/10/2006	4P	DAY	DRY	1	N	SS-O	0	0	0	0	01	SW	NE	01	SW	NE			
091	1	MN	0	22.23	09/19/2007	6A	DAWN	DRY	3	N	REAR	0	0	0	1	01	SW	NE	01	SW	NE	01	SW	NE
091	1	MN	0	22.23	09/27/2007	6A	DAY	DRY	3	N	REAR	0	0	0	1	01	NE	SW	01	NE	SW			
091	1	MN	0	22.30	07/18/2005	5P	DAY	DRY	3	N	REAR	0	0	0	1	01	NE	SW	01	NE	SW	01	NE	SW
091	1	MN	0	22.30	11/27/2007	6A	DLIT	WET	3	N	REAR	0	0	0	0	01	SW	NE	01	SW	NE			

First

The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate.

Functional Classification and National Highway System Status on Oregon State Highways

Hwy	Mlge Type	Beg MP	Mlge Type	End MP	NHS	FC	Notes	HPMS Area	Urban Area
60		0.00		2.09	No	14-Urban Principal Arterial-Other		2	Grants Pass
60		2.09		14.95	No	06-Rural Minor Arterial		1	
61		-0.04		4.21	Yes	11-Urban Principal Arterial-Interstate		4	Portland
62		0.02		0.74	Yes	14-Urban Principal Arterial-Other		2	Florence
62		0.74		47.46	Yes	02-Rural Principal Arterial-Other		1	
62	Z	47.27	Z	47.46	Yes	02-Rural Principal Arterial-Other		1	
62		47.46		52.69	Yes	02-Rural Principal Arterial-Other		1	
63		0.00		1.64	No	14-Urban Principal Arterial-Other		3	Medford
63		3.60		5.48	No	14-Urban Principal Arterial-Other		3	Medford
63		8.13		19.46	No	14-Urban Principal Arterial-Other		3	Medford
63		20.84		22.52	No	14-Urban Principal Arterial-Other		3	Medford
63		22.52		24.12	No	06-Rural Minor Arterial		1	
64		0.00		2.13	Yes	11-Urban Principal Arterial-Interstate		4	Portland
64		2.13		5.11	Yes	01-Rural Principal Arterial-Interstate		1	
64		5.11		26.56	Yes	11-Urban Principal Arterial-Interstate		4	Portland
66		-0.08		0.19	No	02-Rural Principal Arterial-Other		1	
66		0.19		4.43	No	14-Urban Principal Arterial-Other		2	LaGrande
66		4.43		16.51	No	06-Rural Minor Arterial		1	
66		16.51		49.27	No	07-Rural Major Collector		1	
66		49.27		51.79	No	16-Urban Minor Arterial		2	Baker City
66		51.79		53.91	No	14-Urban Principal Arterial-Other		2	Baker City
66		53.91		54.46	No	06-Rural Minor Arterial		1	
67		-0.03		3.92	No	14-Urban Principal Arterial-Other		2	Pendleton
67		3.92		4.62	Yes	14-Urban Principal Arterial-Other	Common with Hwy 8	2	Pendleton
67		4.62		5.03	No	14-Urban Principal Arterial-Other		2	Pendleton
67		5.03		6.60	No	06-Rural Minor Arterial		1	
68		0.00		10.18	No	14-Urban Principal Arterial-Other		4	Portland
69		0.00		1.26	Yes	02-Rural Principal Arterial-Other		1	
69		1.26		4.24	Yes	14-Urban Principal Arterial-Other		4	Eugene
69		4.24		12.79	Yes	12-Urban Principal Arterial-Other Fwy or Exp		4	Eugene
69		12.79		13.00	No	12-Urban Principal Arterial-Other Fwy or Exp		4	Eugene
70		0.00		11.21	Yes	01-Rural Principal Arterial-Interstate		1	
71		0.00		49.17	No	06-Rural Minor Arterial		1	
71		49.17		50.96	No	14-Urban Principal Arterial-Other		2	Baker City
72		0.00		3.34	No	12-Urban Principal Arterial-Other Fwy or Exp		4	Salem
72		3.34		5.19	No	14-Urban Principal Arterial-Other		4	Salem
72		5.19		7.92	Yes	14-Urban Principal Arterial-Other		4	Salem
72		7.92		8.48	Yes	12-Urban Principal Arterial-Other Fwy or Exp		4	Salem
81		-6.09		-3.75	Yes	14-Urban Principal Arterial-Other		4	Portland
81		1.00		5.46	Yes	14-Urban Principal Arterial-Other		4	Portland
81		5.46		15.01	No	14-Urban Principal Arterial-Other		4	Portland
81		15.01		19.26	No	06-Rural Minor Arterial		1	
81		19.26		22.05	No	14-Urban Principal Arterial-Other		2	Canby
81		22.05		30.87	No	06-Rural Minor Arterial		1	
81		30.87		33.62	No	14-Urban Principal Arterial-Other		2	Woodburn
81		33.62		42.21	No	06-Rural Minor Arterial		1	
81		42.21		46.49	No	14-Urban Principal Arterial-Other		4	Salem
91		-5.76		-4.75	No	16-Urban Minor Arterial		4	Portland
91		-0.44		-0.06	No	16-Urban Minor Arterial		4	Portland
91		0.85		1.67	No	16-Urban Minor Arterial		4	Portland
91		1.67		7.56	No	14-Urban Principal Arterial-Other		4	Portland
91		7.56		19.00	Yes	14-Urban Principal Arterial-Other		4	Portland
91	Z	18.99	Z	19.00	Yes	14-Urban Principal Arterial-Other		4	Portland
91		19.00		19.88	Yes	14-Urban Principal Arterial-Other		4	Portland
91		19.88		21.36	Yes	02-Rural Principal Arterial-Other		1	
91		21.36		24.29	Yes	14-Urban Principal Arterial-Other		2	Newberg
91		24.29		24.58	Yes	02-Rural Principal Arterial-Other		1	

HPMS Area: 1=Rural, 2=Small Urban, 3 and 4=Urbanized

Prepared by the Road Inventory and Classification Services Unit of the Oregon Department of Transportation

(503) 986-4386 6/9/2008

APPENDIX E

In-Process Traffic

Planning & Building.
(503) 537-1240

City Attorney
(503) 537-1206

City of Newberg

414 East First St.
PO Box 970
Newberg, OR 97132

October 27, 2008

RECEIVED

VANCOUVER
GROUP MACKENZIE

Brent Ahrend, P.E.
Group Mackenzie
601 Main Street, Suite 101
Vancouver, WA 98660

Re: Fred Meyer fuel facility – trip generation & scope letter

Dear Brent:

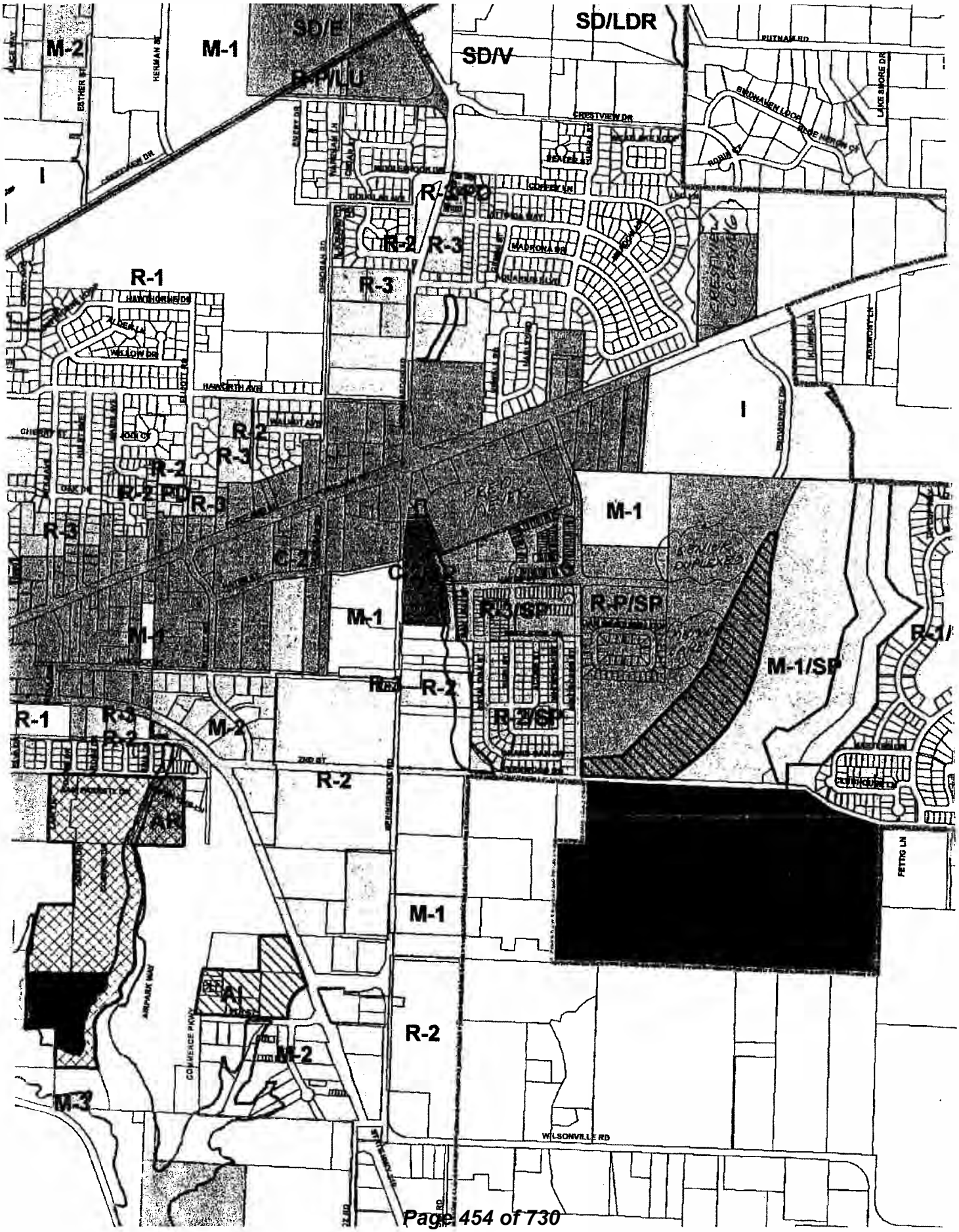
The Planning Director reviewed the trip generation and scope letter and had a couple of comments. He felt there were three projects in-progress east of the site that might add traffic to study area intersections:

1. Crestview Crossing subdivision – see attached site plan. 16 single family residential lots, plus two large commercial lots (6.5 acres and 1.4 acres). We have not yet received any specific proposals for the commercial lots.
2. Memory Care facility – see attached location map. 25,000 sf facility with 48 beds for Alzheimer patients.
3. Friendsview Cottages – see attached location map. 21 duplex cottages for seniors.

He also noted that in Figure 11, the intersection G trips seem incorrect. There are several hundred residential units just south of the Fred Meyer site and most will use Brutscher Street to access Hwy 99W and Fred Meyer. We would expect that some of these trips would turn left into Fred Meyer at intersection G for groceries, gas, or both.

Regards,

Steve Olson
Associate Planner
503-537-1215

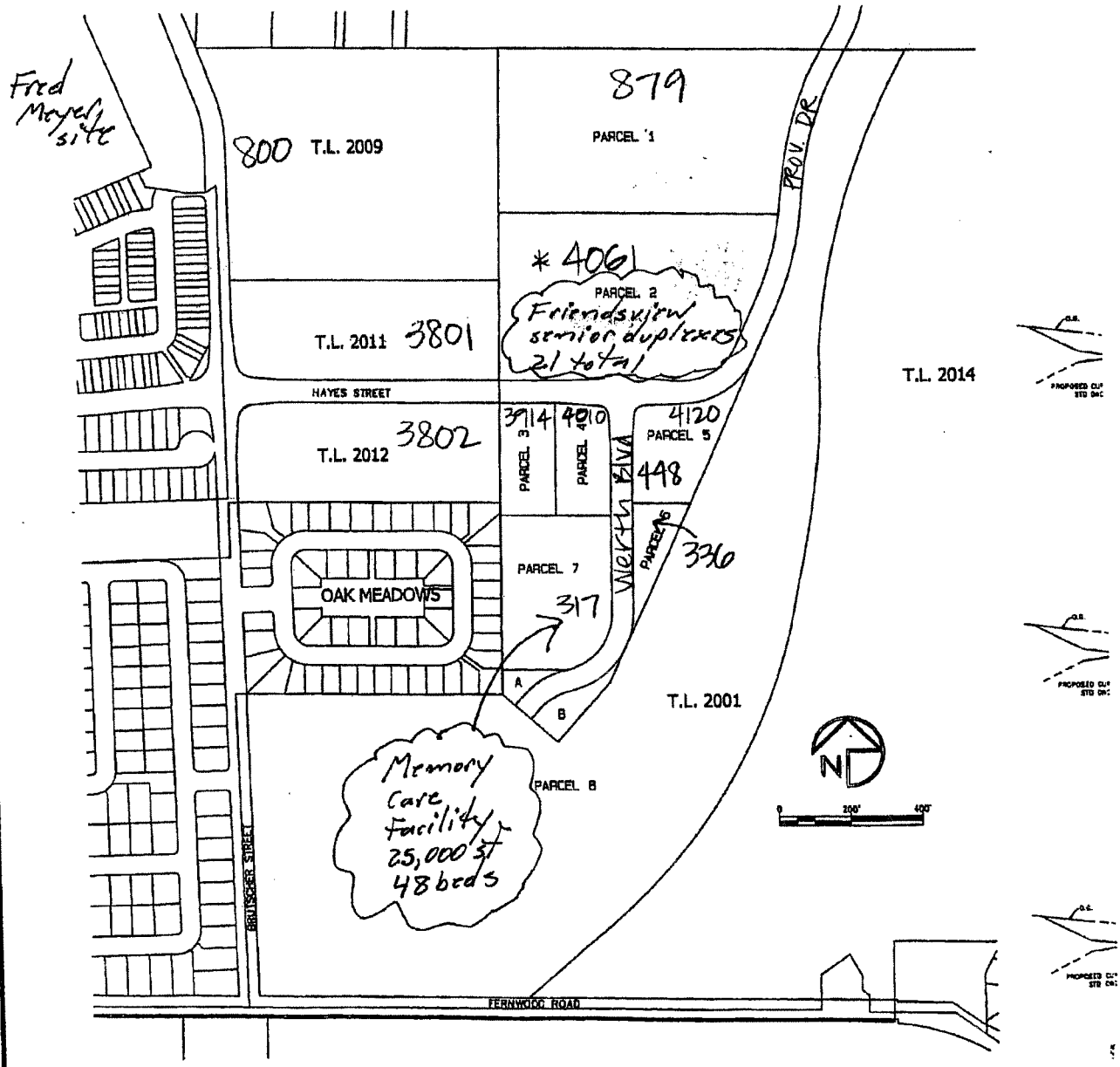

SD/E
SD/LDR
SD/V
M-2
M-1
R-P/LU
I
R-3/PD
R-2
R-3
R-1
R-3
R-2
R-3
R-2
R-2 PD
R-3
R-3
C-2
M-1
M-1
M-1
R-3/SP
R-P/SP
M-1/SP
R-1
R-3
R-2
M-2
R-2
R-2/SP
R-2
AR
M-1
AI
R-2
M-2
M-3
WILSONVILLE RD
CRESTVIEW DR
PUTNAM RD
HAWTHORNE DR
HAWORTH AVE
WILLOW DR
MADRONA DR
COFFEY LN
ESTHER ST
HERMAN ST
LAKE SHORE DR
FETTIG LN
COMMERCE PKWY
AIRPARK WAY

NW = odd
SE = even

OAK MEADOWS

TAX MAP: 3 2 16
TAX LOT: 2001

SE 1/4 SEC 15, S 1/2 SEC16, N 1/2 SEC
AND NW 1/4 SEC 22 T3S, R2W, W.M.
CITY OF NEWBERG, YAMHILL COUNTY, OR



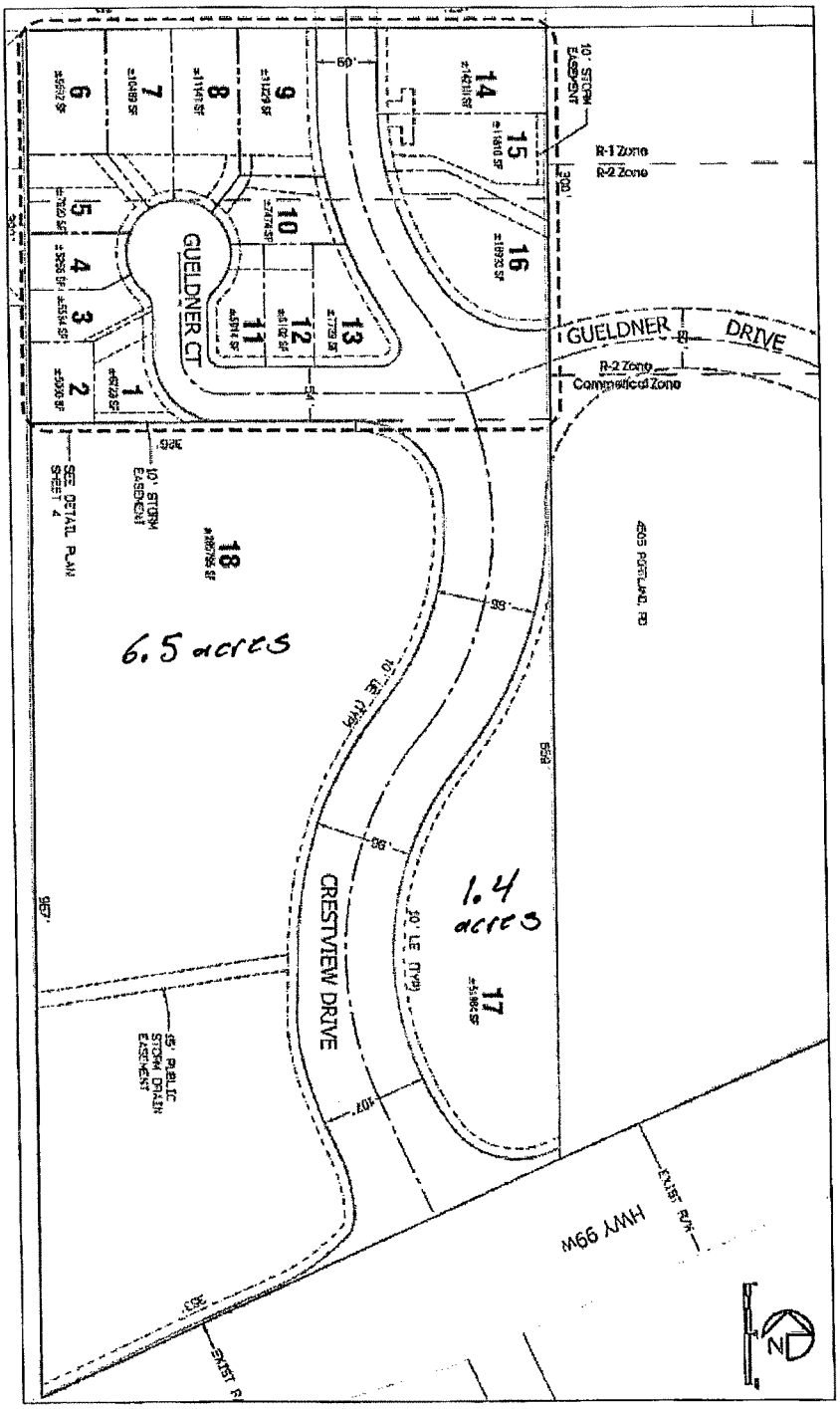
1 OVERALL PLAN
NTS

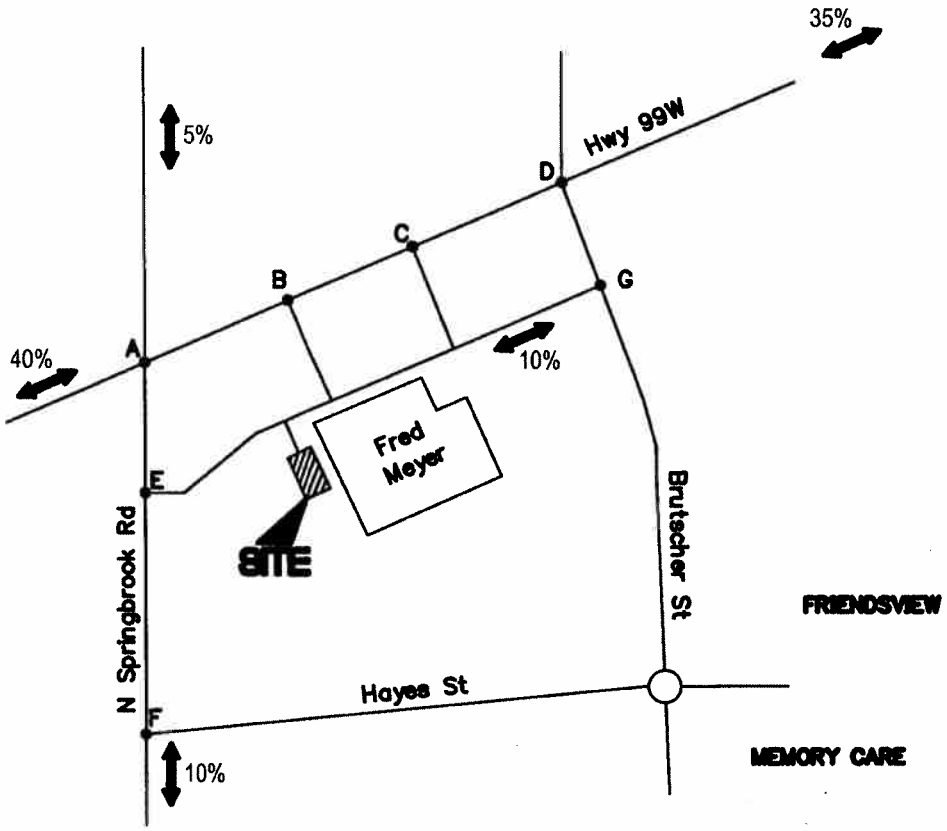
Crestview Crossing subdivision

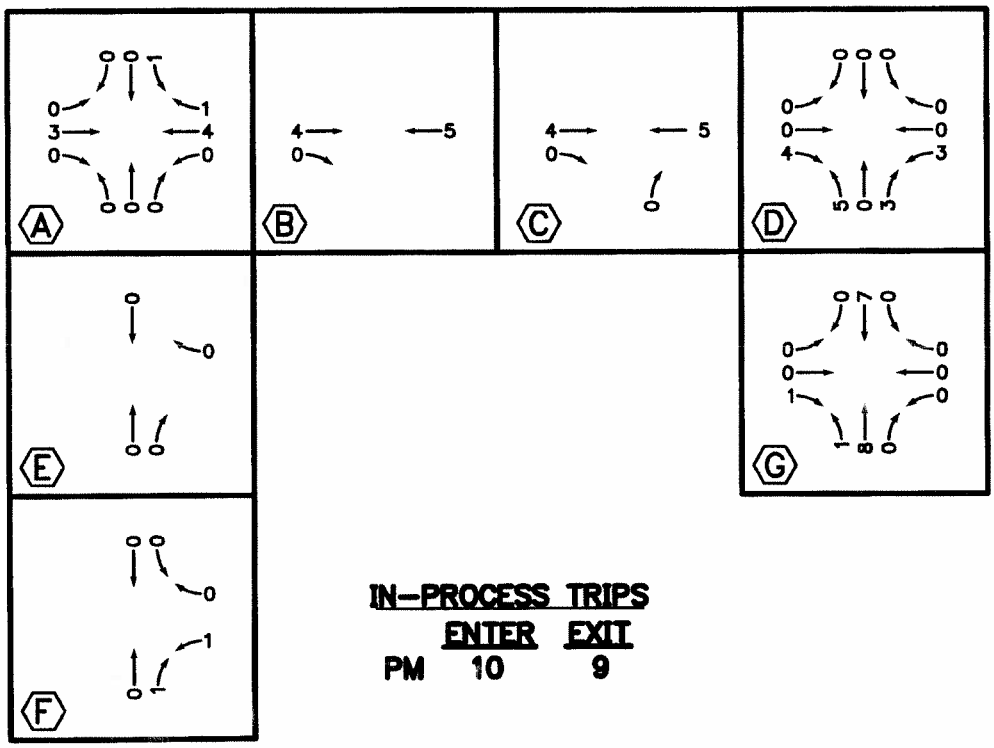
• 16 SF res. units

• 7.9 acres commercial

ATTACHMENT 4: REVISED SITE PLAN
SUB3-08-003 – MOD 1







IN-PROCESS TRIPS

	ENTER	EXIT
PM	10	9

NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 Vancouver WA 360.695.7879 Seattle WA 206.749.9993

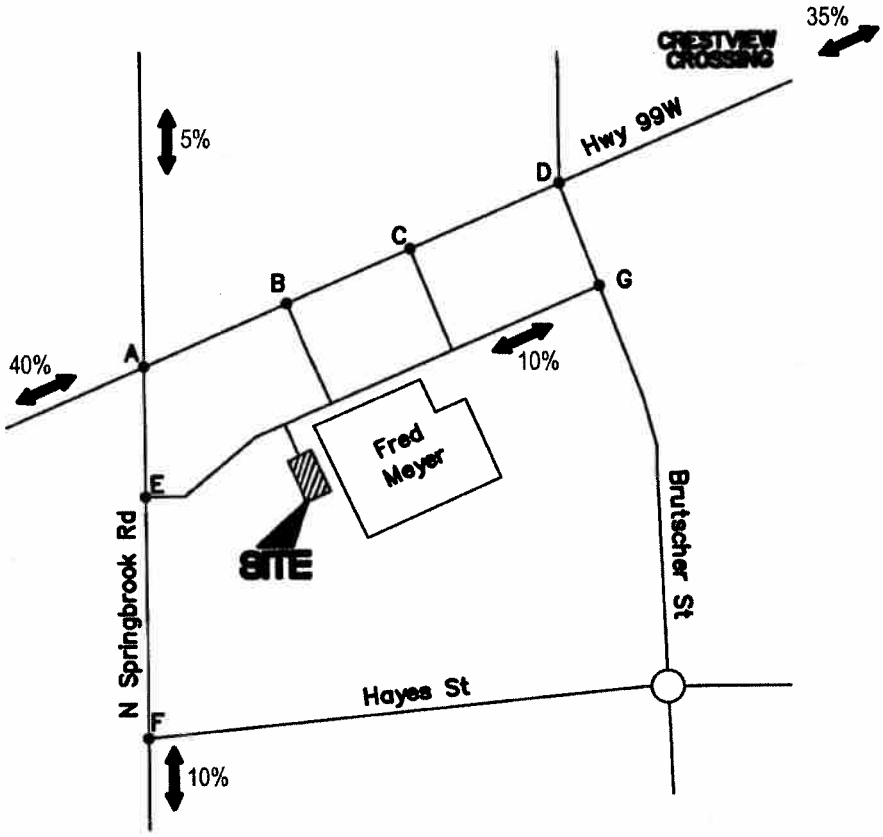
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER, WITHOUT PRIOR WRITTEN PERMISSION.

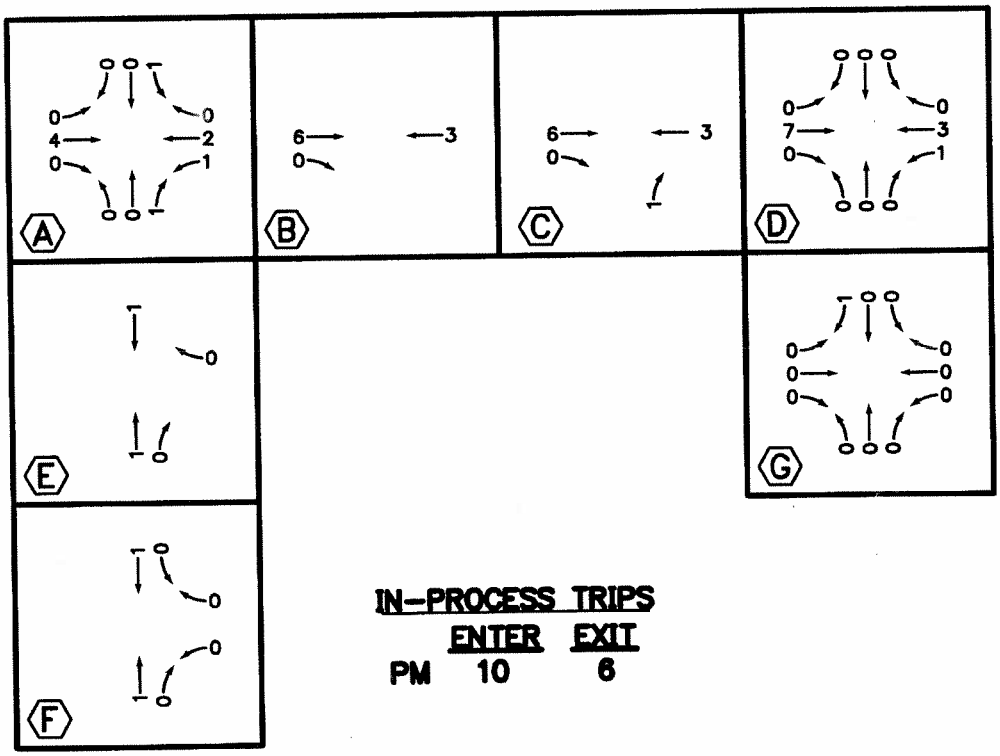
DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804.06.00

IN-PROCESS TRAFFIC FOR MEMORY CARE + FRIENDS VIEW (PM PEAK HOUR)

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE A





IN-PROCESS TRIPS

	ENTER	EXIT
PM	10	6

NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

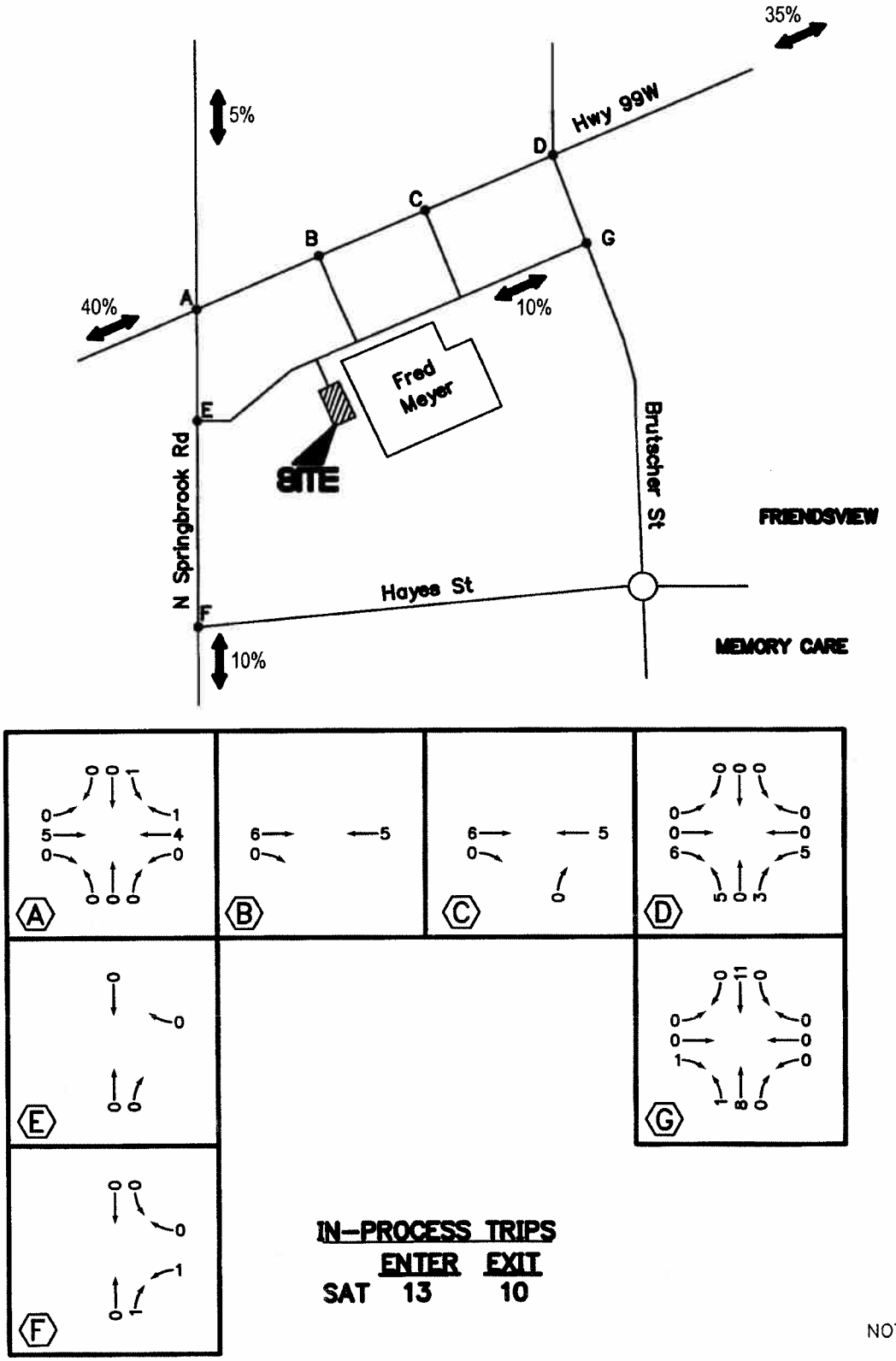
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER, WITHOUT PRIOR WRITTEN PERMISSION

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 2080

IN-PROCESS TRAFFIC FOR CRESTVIEW SUBDIVISION (PM PEAK HOUR)

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE
B



IN-PROCESS TRIPS

	ENTER	EXIT
SAT	13	10

NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

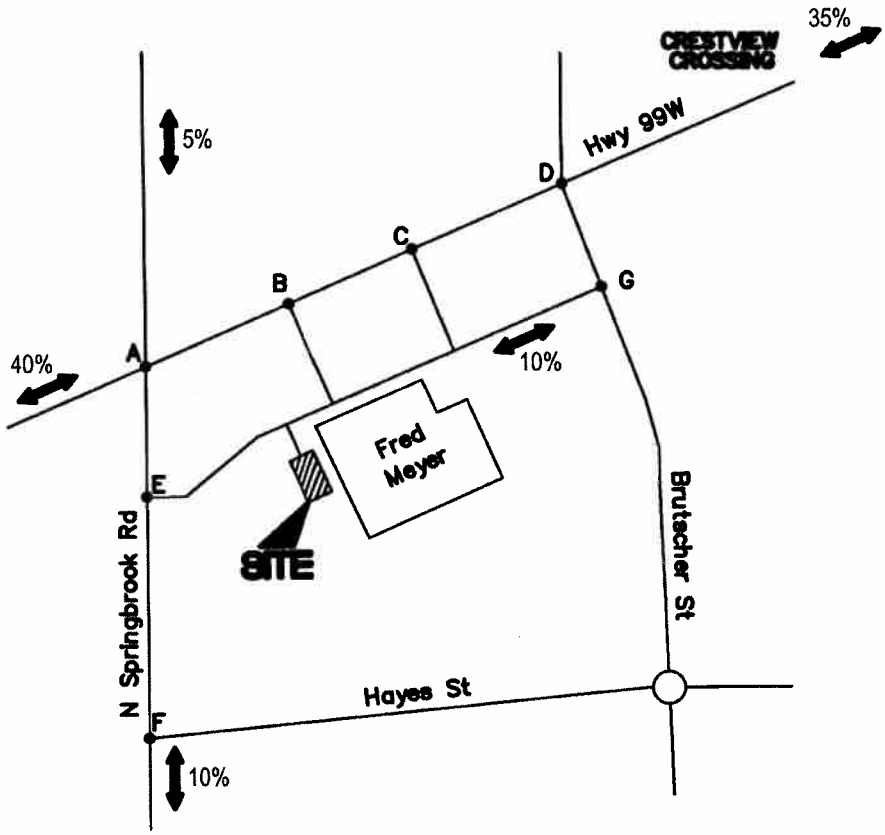
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER, WITHOUT PRIOR WRITTEN PERMISSION

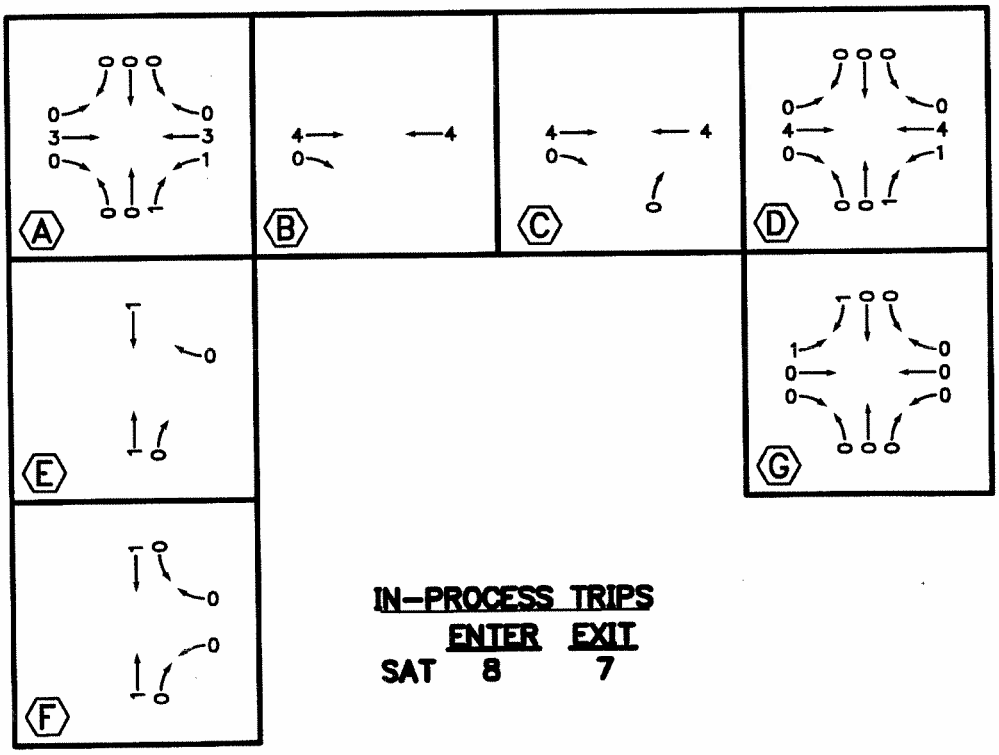
DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 2080

IN-PROCESS TRAFFIC FOR MEMORY CARE + FRIENDS VIEW (SAT PEAK HOUR)

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE C





IN-PROCESS TRIPS

	ENTER	EXIT
SAT	8	7

NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

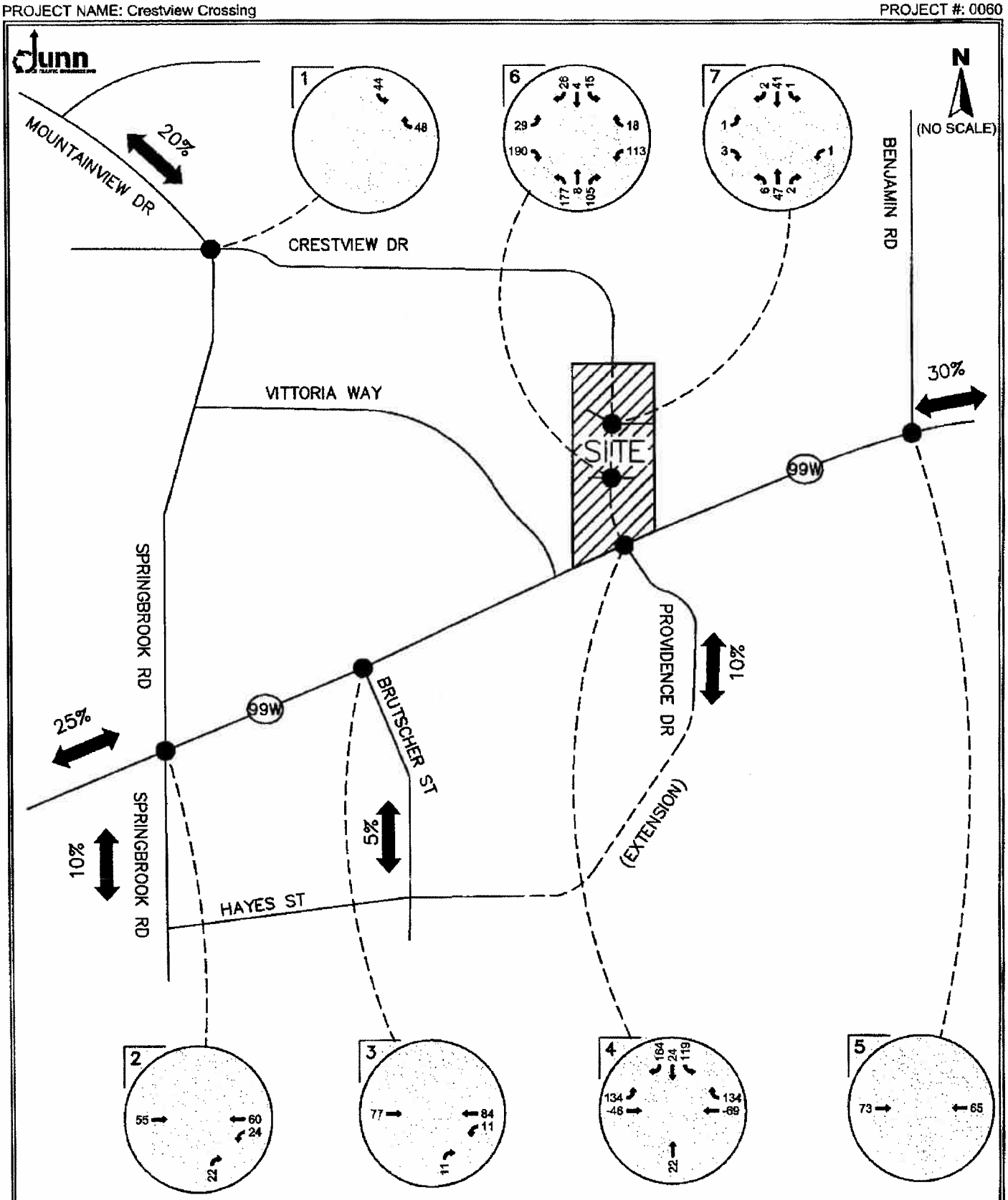
© GROUP MACKENZIE 2008 ALL RIGHTS RESERVED
THESE DRAWINGS ARE THE PROPERTY OF GROUP MACKENZIE AND ARE NOT TO BE USED OR REPRODUCED IN ANY MANNER, WITHOUT PRIOR WRITTEN PERMISSION

DATE: 10.24.08
DRAWN BY: SFM
CHECKED BY: SFM
JOB NO: 20804.00

IN-PROCESS TRAFFIC FOR CRESTVIEW SUBDIVISION (SAT PEAK HOUR)

FRED MEYER NEWBERG
NEWBERG, OREGON

FIGURE
D



LEGEND	SITE TRAFFIC DISTRIBUTION AND ASSIGNMENT WEEKDAY PM PEAK HOUR	FIGURE No.:
## = PEAK HOUR TRAFFIC VOLUME % = PERCENT SITE TRIP DISTRIBUTION	FEBRUARY, 2008	7

APPENDIX F

Trip Generation

TRIP GENERATION WORKSHEET
RATES

Development: Newberg Fred Meyer Fuel Facility
Size: 14 Fueling Stations

ITE Land Use Code: Gasoline/Service Station, Code 944 (7th Edition)

Variable: Number of Fueling Stations (F)

Total Weekday Trips

R = 168.56 x (F)

		Enter	Exit	Total
Vehicle Trips		1180	1180	2360
Site Distribution		50%	50%	100%
50%	**Pass-by Trips**	590	590	1180
33%	**Diverted Trips**	390	389	779
17%	**New Trips**	200	201	401
				2360

Weekday AM Peak Hour Trips

R = 12.07 x (F)

		Enter	Exit	Total
Vehicle Trips		84	85	169
20%	**Shared Trips**	17	17	34
Total (Less Shared)		39	39	78
Site Distribution		50%	50%	100%
58%	**Pass-by Trips**	23	23	46
21%	**Diverted Trips**	8	8	16
21%	**New Trips**	8	8	16
				78

Weekday PM Peak Hour Trips

R =13.86 x (F)

		Enter	Exit	Total
Vehicle Trips		97	97	194
20%	**Shared Trips**	19	20	39
Total (Less Shared)		44	45	89
Site Distribution		50%	50%	100%
52%	**Pass-by Trips**	23	23	46
34%	**Diverted Trips**	15	15	30
14%	**New Trips**	6	7	13
				89

Table 7.1 Unconstrained Internal Capture Rates for Trip Origins within a Multi-Use Development

		WEEKDAY		
		MIDDAY PEAK HOUR	p.m. PEAK HOUR OF ADJACENT STREET TRAFFIC	DAILY
from OFFICE	to Office	2%	1%	2%
	to Retail	20%	23%	22%
	to Residential	0%	2%	2%
from RETAIL	to Office	3%	3%	3%
	to Retail	29%	20%	30%
	to Residential	7%	12%	11%
from RESIDENTIAL	to Office	N/A	N/A	N/A
	to Retail	34%	53%	38%
	to Residential	N/A	N/A	N/A

Caution: The estimated typical internal capture rates presented in this table rely directly on data collected at a limited number of multi-use sites in Florida. While ITE recognizes the limitations of these data, they represent the only known credible data on multi-use internal capture rates and are provided as illustrative of typical rates. ***If local data on internal capture rates by paired land uses can be obtained, the local data may be given preference.***

N/A—Not Available; logic indicates there is some interaction between these two land uses; however, the limited data sample on which this table is based did not record any interaction.

Table 7.2 Unconstrained Internal Capture Rates for Trip Destinations Within a Multi-Use Development

		WEEKDAY		
		MIDDAY PEAK HOUR	p.m. PEAK HOUR OF ADJACENT STREET TRAFFIC	DAILY
to OFFICE	from Office	6%	6%	2%
	from Retail	38%	31%	15%
	from Residential	0%	0%	N/A
to RETAIL	from Office	4%	2%	4%
	from Retail	31%	20%	28%
	from Residential	5%	9%	9%
to RESIDENTIAL	from Office	0%	2%	3%
	from Retail	37%	31%	33%
	from Residential	N/A	N/A	N/A

Caution: The estimated typical internal capture rates presented in this table rely directly on data collected at a limited number of multi-use sites in Florida. While ITE recognizes the limitations of these data, they represent the only known credible data on multi-use internal capture rates and are provided as illustrative of typical rates. ***If local data on internal capture rates by paired land uses can be obtained, the local data may be given preference.***

N/A—Not Available; logic indicates there is some interaction between these two land uses; however, the limited data sample on which this table is based did not record any interaction.

APPENDIX G

Capacity Calculations

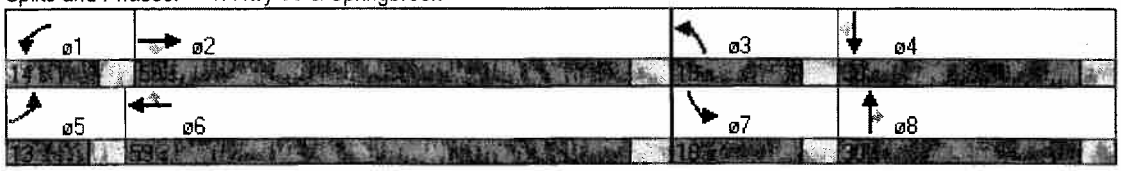
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1135	44	95	1400	223	251	209	123	351	131	108
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	450		150	0		175	0		0	225		175
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			28			133			126			110
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		931			440			385			481	
Travel Time (s)		15.9			7.5			10.5			13.1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	5%	2%	10%	3%	0%	1%	1%	11%	1%	2%	1%
Adj. Flow (vph)	122	1158	45	97	1429	228	256	213	126	358	134	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	122	1158	45	97	1429	228	256	213	126	358	134	110
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	1.0	10.0	10.0	1.0	10.0	10.0	1.0	6.0	6.0	1.0	6.0	6.0
Minimum Split (s)	5.0	35.5	35.5	5.0	35.5	35.5	5.0	30.0	30.0	5.0	30.0	30.0
Total Split (s)	13.0	58.0	58.0	14.0	59.0	59.0	18.0	30.0	30.0	18.0	30.0	30.0
Total Split (%)	10.8%	48.3%	48.3%	11.7%	49.2%	49.2%	15.0%	25.0%	25.0%	15.0%	25.0%	25.0%
Maximum Green (s)	9.0	53.5	53.5	10.0	54.5	54.5	14.0	26.0	26.0	14.0	26.0	26.0
Yellow 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
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.2	4.2	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Minimum Gap (s)	0.5	2.2	2.2	1.0	2.2	2.2	0.5	0.5	0.5	0.5	0.5	0.5
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Flash Dont Walk (s)		26.0	26.0		26.0	26.0		21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	9.1	51.7	51.7	9.5	52.1	52.1	12.3	17.8	17.8	14.0	19.5	19.5
Actuated g/C Ratio	0.08	0.47	0.47	0.09	0.48	0.48	0.11	0.16	0.16	0.13	0.18	0.18
v/c Ratio	0.89	0.75	0.06	0.72	0.91	0.29	0.70	0.74	0.38	0.85	0.43	0.31
Control Delay	104.0	28.3	9.4	79.8	36.5	8.7	58.5	59.6	10.5	67.8	45.5	9.8
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	104.0	28.3	9.4	79.8	36.5	8.7	58.5	59.6	10.5	67.8	45.5	9.8
LOS	F	C	A	E	D	A	E	E	B	E	D	A
Approach Delay		34.7			35.3			48.7			52.2	
Approach LOS		C			D			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 109.6
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 39.3 Intersection LOS: D
Intersection Capacity Utilization 83.8% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Hwy 99 & Springbrook



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1135	44	95	1400	223	251	209	123	351	131	108
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	1.00	0.95	1.00	0.97	1.00	1.00	0.97	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)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
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)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
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)	122	1158	45	97	1429	228	256	213	126	358	134	110
RTOR Reduction (vph)	0	0	15	0	0	70	0	0	106	0	0	90
Lane Group Flow (vph)	122	1158	30	97	1429	158	256	213	20	358	134	20
Heavy Vehicles (%)	3%	5%	2%	10%	3%	0%	1%	1%	11%	1%	2%	1%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4
Actuated Green, G (s)	9.1	51.7	51.7	9.5	52.1	52.1	12.3	17.8	17.8	14.0	19.5	19.5
Effective Green, g (s)	9.1	51.7	51.7	9.5	52.1	52.1	12.3	17.8	17.8	14.0	19.5	19.5
Actuated g/C Ratio	0.08	0.47	0.47	0.09	0.48	0.48	0.11	0.16	0.16	0.13	0.18	0.18
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	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	138	1538	708	135	1580	728	369	290	224	420	314	270
v/s Ratio Prot	c0.07	0.36		0.06	c0.43		0.08	c0.12		c0.11	0.08	
v/s Ratio Perm			0.02			0.10			0.01			0.01
v/c Ratio	0.88	0.75	0.04	0.72	0.90	0.22	0.69	0.73	0.09	0.85	0.43	0.07
Uniform Delay, d1	49.7	23.7	15.6	48.7	26.4	16.8	46.8	43.6	39.0	46.7	40.0	37.5
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	43.3	2.3	0.0	15.6	7.9	0.2	4.9	8.5	0.1	15.0	0.5	0.1
Delay (s)	93.0	26.0	15.6	64.3	34.3	17.0	51.7	52.1	39.1	61.7	40.6	37.5
Level of Service	F	C	B	E	C	B	D	D	D	E	D	D
Approach Delay (s)		31.8			33.7			49.2			52.6	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	37.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Volume (vph)	1314	144	0	1816	0	11
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)		200	0		0	0
Storage Lanes		1	0		0	1
Taper Length (ft)		100	100		100	100
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	3226	1515	0	3320	0	1428
Flt Permitted						
Satd. Flow (perm)	3226	1515	0	3320	0	1428
Link Speed (mph)	30			30	30	
Link Distance (ft)	435			490	248	
Travel Time (s)	9.9			11.1	5.6	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	6%	1%	0%	3%	0%	9%
Adj. Flow (vph)	1327	145	0	1834	0	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1327	145	0	1834	0	11
Enter Blocked Intersection	Yes	Yes	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 56.3% ICU Level of Service B
Analysis Period (min) 15

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Volume (veh/h)	1314	144	0	1816	0	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	1327	145	0	1834	0	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	875			490		
pX, platoon unblocked			0.79		0.72	0.79
vC, conflicting volume			1473		2244	664
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1058		602	30
tC, single (s)			4.1		6.8	7.1
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			100		100	99
cM capacity (veh/h)			524		312	799

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	664	664	145	917	917	11
Volume Left	0	0	0	0	0	0
Volume Right	0	0	145	0	0	11
cSH	1700	1700	1700	1700	1700	799
Volume to Capacity	0.39	0.39	0.09	0.54	0.54	0.01
Queue Length 95th (ft)	0	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.6
Lane LOS						A
Approach Delay (s)	0.0			0.0		9.6
Approach LOS						A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		

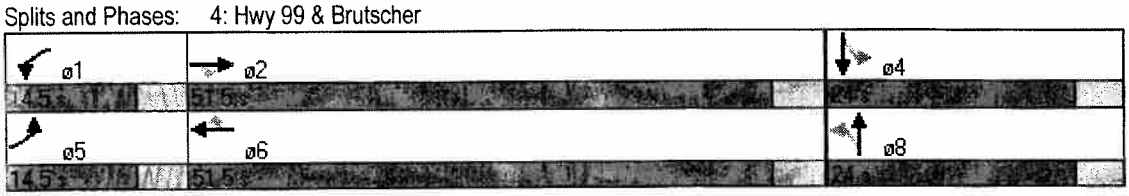
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	1214	64	182	1511	45	257	20	139	27	18	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	200		200	250		75	225		225	50		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
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			0.850			0.850		0.869			0.886	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1710	3257	1500	1676	3320	1530	1693	1541	0	1598	1595	0
Flt Permitted	0.950			0.950			0.709			0.573		
Satd. Flow (perm)	1710	3257	1500	1676	3320	1530	1264	1541	0	964	1595	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			65			19		142			56	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		490			310			315			277	
Travel Time (s)		8.4			5.3			8.6			7.6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	5%	2%	2%	3%	0%	1%	5%	1%	7%	0%	0%
Adj. Flow (vph)	38	1239	65	186	1542	46	262	20	142	28	18	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1239	65	186	1542	46	262	162	0	28	74	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	24.5	55.0	55.0	24.5	55.0	55.0	33.0	33.0		34.0	34.0	
Total Split (s)	14.5	51.5	51.5	14.5	51.5	51.5	24.0	24.0	0.0	24.0	24.0	0.0
Total Split (%)	16.1%	57.2%	57.2%	16.1%	57.2%	57.2%	26.7%	26.7%	0.0%	26.7%	26.7%	0.0%
Maximum Green (s)	10.5	47.0	47.0	10.5	47.0	47.0	20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	2.8	2.8	0.5	2.8	2.8	2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	5.0	5.0		5.0	5.0	
Recall Mode	None	Min	Min	None	Min	Min	None	None		None	None	
Walk Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		16.0	16.0		17.0	17.0	24.0	24.0		25.0	25.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	6.7	39.7	39.7	10.6	47.8	47.8	19.3	19.3		19.3	19.3	
Actuated g/C Ratio	0.08	0.48	0.48	0.13	0.58	0.58	0.23	0.23		0.23	0.23	
v/c Ratio	0.27	0.79	0.09	0.86	0.80	0.05	0.88	0.34		0.12	0.18	
Control Delay	42.7	21.9	3.3	73.6	19.1	6.7	63.9	9.5		29.1	12.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	42.7	21.9	3.3	73.6	19.1	6.7	63.9	9.5		29.1	12.8	
LOS	D	C	A	E	B	A	E	A		C	B	
Approach Delay		21.6			24.5			43.1			17.3	
Approach LOS		C			C			D			B	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 82.3
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 25.4 Intersection LOS: C
Intersection Capacity Utilization 81.2% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 4: Hwy 99 & Brutscher



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	1214	64	182	1511	45	257	20	139	27	18	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.89	
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)	1710	3257	1500	1676	3320	1530	1693	1540		1598	1596	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.71	1.00		0.57	1.00	
Satd. Flow (perm)	1710	3257	1500	1676	3320	1530	1263	1540		964	1596	
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)	38	1239	65	186	1542	46	262	20	142	28	18	56
RTOR Reduction (vph)	0	0	33	0	0	8	0	109	0	0	43	0
Lane Group Flow (vph)	38	1239	32	186	1542	38	262	53	0	28	31	0
Heavy Vehicles (%)	0%	5%	2%	2%	3%	0%	1%	5%	1%	7%	0%	0%
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		
Actuated Green, G (s)	4.4	41.6	41.6	10.6	47.8	47.8	19.3	19.3		19.3	19.3	
Effective Green, g (s)	4.4	41.6	41.6	10.6	47.8	47.8	19.3	19.3		19.3	19.3	
Actuated g/C Ratio	0.05	0.50	0.50	0.13	0.57	0.57	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)	90	1613	743	211	1889	871	290	354		221	367	
v/s Ratio Prot	0.02	0.38		c0.11	c0.46			0.03			0.02	
v/s Ratio Perm			0.02			0.02	c0.21			0.03		
v/c Ratio	0.42	0.77	0.04	0.88	0.82	0.04	0.90	0.15		0.13	0.08	
Uniform Delay, d1	38.6	17.3	10.9	36.1	14.6	8.0	31.4	25.8		25.7	25.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	2.6	0.0	31.7	3.2	0.0	29.2	0.1		0.2	0.1	
Delay (s)	40.4	19.9	11.0	67.8	17.8	8.0	60.6	25.9		25.9	25.5	
Level of Service	D	B	B	E	B	A	E	C		C	C	
Approach Delay (s)		20.0			22.8			47.4			25.6	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	24.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	84.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	249	336	73	0	272
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.976			
Flt Protected						
Satd. Flow (prot)	0	1542	1685	0	0	1698
Flt Permitted						
Satd. Flow (perm)	0	1542	1685	0	0	1698
Link Speed (mph)	30		30			30
Link Distance (ft)	1394		715			385
Travel Time (s)	31.7		16.3			8.8
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	5%	1%	0%	6%
Adj. Flow (vph)	0	257	346	75	0	280
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	257	421	0	0	280
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		24			12
Link Offset(ft)	0		6			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 46.3% ICU Level of Service A
Analysis Period (min) 15

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	249	336	73	0	272
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	257	346	75	0	280
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			715			385
pX, platoon unblocked	0.94					
vC, conflicting volume	664	384			422	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	615	384			422	
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	61			100	
cM capacity (veh/h)	432	666			1148	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	257	422	280
Volume Left	0	0	0
Volume Right	257	75	0
cSH	666	1700	1700
Volume to Capacity	0.39	0.25	0.16
Queue Length 95th (ft)	45	0	0
Control Delay (s)	13.8	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.8	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

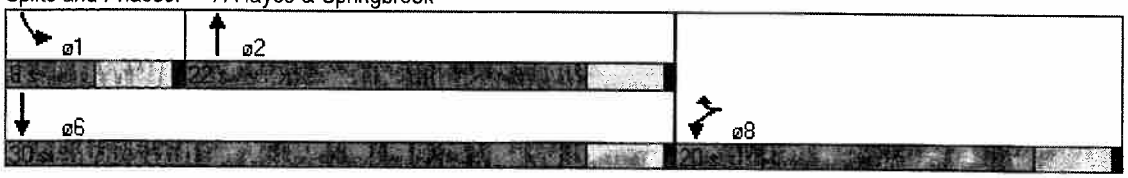
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	56	41	348	23	51	197
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0	0		0	175	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100	100		100	100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.992			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1629	1530	1706	0	1613	1682
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1629	1530	1706	0	1613	1682
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		44	7			
Link Speed (mph)	25		40			25
Link Distance (ft)	1176		606			715
Travel Time (s)	32.1		10.3			19.5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	0%	5%	0%	6%	7%
Adj. Flow (vph)	60	44	370	24	54	210
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	44	394	0	54	210
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		8.0	20.0
Total Split (s)	20.0	20.0	22.0	0.0	8.0	30.0
Total Split (%)	40.0%	40.0%	44.0%	0.0%	16.0%	60.0%
Maximum Green (s)	16.0	16.0	18.0		4.0	26.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	5.0	5.0	5.0			5.0
Flash Dont Walk (s)	11.0	11.0	11.0			11.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	7.1	7.1	31.6		4.0	35.0
Actuated g/C Ratio	0.16	0.16	0.71		0.09	0.78
v/c Ratio	0.23	0.16	0.33		0.37	0.16
Control Delay	17.7	7.3	7.2		26.5	3.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	17.7	7.3	7.2		26.5	3.3
LOS	B	A	A		C	A
Approach Delay	13.3		7.2			8.0
Approach LOS	B		A			A

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 44.6
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.37
Intersection Signal Delay: 8.3 Intersection LOS: A
Intersection Capacity Utilization 37.5% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: Hayes & Springbrook



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	56	41	348	23	51	197
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1629	1530	1705		1613	1682
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1629	1530	1705		1613	1682
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	60	44	370	24	54	210
RTOR Reduction (vph)	0	40	3	0	0	0
Lane Group Flow (vph)	60	4	391	0	54	210
Heavy Vehicles (%)	5%	0%	5%	0%	6%	7%
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						
Actuated Green, G (s)	4.8	4.8	30.0		1.7	35.7
Effective Green, g (s)	4.8	4.8	30.0		1.7	35.7
Actuated g/C Ratio	0.10	0.10	0.62		0.04	0.74
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	161	151	1055		57	1238
v/s Ratio Prot	c0.04	0.00	c0.23		c0.03	0.12
v/s Ratio Perm						
v/c Ratio	0.37	0.03	0.37		0.95	0.17
Uniform Delay, d1	20.4	19.7	4.6		23.4	1.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.5	0.1	1.0		99.1	0.3
Delay (s)	21.9	19.8	5.6		122.5	2.2
Level of Service	C	B	A		F	A
Approach Delay (s)	21.0		5.6			26.8
Approach LOS	C		A			C

Intersection Summary			
HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	48.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	122	1159	45	97	1427	227	255	212	126	356	133	110
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	450		150	0		175	0		0	225		175
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			28			133			129			112
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		931			440			385			481	
Travel Time (s)		15.9			7.5			10.5			13.1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	5%	2%	10%	3%	0%	1%	1%	11%	1%	2%	1%
Adj. Flow (vph)	124	1183	46	99	1456	232	260	216	129	363	136	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	1183	46	99	1456	232	260	216	129	363	136	112
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	1.0	10.0	10.0	1.0	10.0	10.0	1.0	6.0	6.0	1.0	6.0	6.0
Minimum Split (s)	5.0	35.5	35.5	5.0	35.5	35.5	5.0	30.0	30.0	5.0	30.0	30.0
Total Split (s)	13.0	58.0	58.0	14.0	59.0	59.0	18.0	30.0	30.0	18.0	30.0	30.0
Total Split (%)	10.8%	48.3%	48.3%	11.7%	49.2%	49.2%	15.0%	25.0%	25.0%	15.0%	25.0%	25.0%
Maximum Green (s)	9.0	53.5	53.5	10.0	54.5	54.5	14.0	26.0	26.0	14.0	26.0	26.0
Yellow 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
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.2	4.2	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Minimum Gap (s)	0.5	2.2	2.2	1.0	2.2	2.2	0.5	0.5	0.5	0.5	0.5	0.5
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Flash Dont Walk (s)		26.0	26.0		26.0	26.0		21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	9.0	52.5	52.5	9.5	53.0	53.0	12.4	18.1	18.1	14.1	19.7	19.7
Actuated g/C Ratio	0.08	0.47	0.47	0.09	0.48	0.48	0.11	0.16	0.16	0.13	0.18	0.18
v/c Ratio	0.91	0.77	0.06	0.74	0.92	0.29	0.70	0.74	0.39	0.87	0.43	0.31
Control Delay	110.1	29.0	9.6	81.9	37.8	8.9	59.3	60.2	10.4	70.1	45.8	9.7
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	110.1	29.0	9.6	81.9	37.8	8.9	59.3	60.2	10.4	70.1	45.8	9.7
LOS	F	C	A	F	D	A	E	E	B	E	D	A
Approach Delay		35.7			36.5			49.2			53.6	
Approach LOS		D			D			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 110.7

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

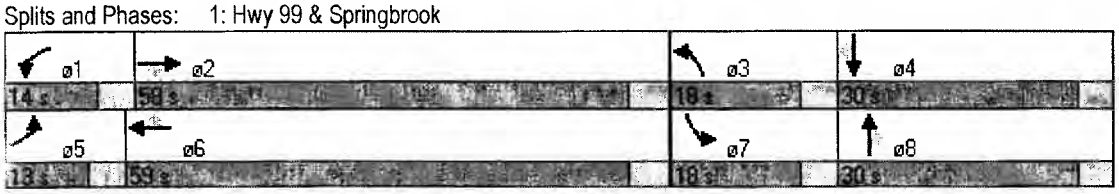
Maximum v/c Ratio: 0.92

Intersection Signal Delay: 40.4 Intersection LOS: D

Intersection Capacity Utilization 85.0% ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Hwy 99 & Springbrook



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	122	1159	45	97	1427	227	255	212	126	356	133	110
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	1.00	0.95	1.00	0.97	1.00	1.00	0.97	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)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
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)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
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)	124	1183	46	99	1456	232	260	216	129	363	136	112
RTOR Reduction (vph)	0	0	15	0	0	69	0	0	108	0	0	92
Lane Group Flow (vph)	124	1183	31	99	1456	163	260	216	21	363	136	20
Heavy Vehicles (%)	3%	5%	2%	10%	3%	0%	1%	1%	11%	1%	2%	1%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4
Actuated Green, G (s)	9.0	52.5	52.5	9.5	53.0	53.0	12.4	18.1	18.1	14.1	19.8	19.8
Effective Green, g (s)	9.0	52.5	52.5	9.5	53.0	53.0	12.4	18.1	18.1	14.1	19.8	19.8
Actuated g/C Ratio	0.08	0.47	0.47	0.09	0.48	0.48	0.11	0.16	0.16	0.13	0.18	0.18
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	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	135	1545	711	133	1590	733	368	291	225	418	316	271
v/s Ratio Prot	c0.07	0.36		0.06	c0.44		0.08	c0.12		c0.11	0.08	
v/s Ratio Perm			0.02			0.11			0.02			0.01
v/c Ratio	0.92	0.77	0.04	0.74	0.92	0.22	0.71	0.74	0.09	0.87	0.43	0.07
Uniform Delay, d1	50.5	24.0	15.6	49.4	26.8	16.8	47.4	44.1	39.3	47.4	40.4	37.8
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	52.5	2.5	0.0	19.1	8.8	0.2	5.4	9.0	0.1	16.8	0.5	0.1
Delay (s)	103.0	26.6	15.7	68.5	35.6	17.1	52.8	53.1	39.4	64.2	41.0	37.9
Level of Service	F	C	B	E	D	B	D	D	D	E	D	D
Approach Delay (s)		33.2			35.0			50.1			54.2	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM Average Control Delay	39.2	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	110.7	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	85.0%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	SEBT	SEBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Volume (vph)	1344	146	0	1851	0	11
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)		200	0		0	0
Storage Lanes		1	0		0	1
Taper Length (ft)		100	100		100	100
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	3226	1515	0	3320	0	1428
Flt Permitted						
Satd. Flow (perm)	3226	1515	0	3320	0	1428
Link Speed (mph)	30			30	30	
Link Distance (ft)	435			490	248	
Travel Time (s)	9.9			11.1	5.6	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	6%	1%	0%	3%	0%	9%
Adj. Flow (vph)	1358	147	0	1870	0	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1358	147	0	1870	0	11
Enter Blocked Intersection	Yes	Yes	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 57.3% ICU Level of Service B

Analysis Period (min) 15

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Volume (veh/h)	1344	146	0	1851	0	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	1358	147	0	1870	0	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	875			490		
pX, platoon unblocked			0.78		0.70	0.78
vC, conflicting volume			1505		2292	679
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1073		560	8
tC, single (s)			4.1		6.8	7.1
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			100		100	99
cM capacity (veh/h)			510		326	814

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	679	679	147	935	935	11
Volume Left	0	0	0	0	0	0
Volume Right	0	0	147	0	0	11
cSH	1700	1700	1700	1700	1700	814
Volume to Capacity	0.40	0.40	0.09	0.55	0.55	0.01
Queue Length 95th (ft)	0	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.5
Lane LOS						A
Approach Delay (s)	0.0			0.0		9.5
Approach LOS						A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	1239	69	189	1537	46	266	20	144	27	18	56
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	200		200	250		75	225		225	50		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
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			0.850			0.850		0.868			0.886	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1710	3257	1500	1676	3320	1530	1693	1540	0	1598	1595	0
Flt Permitted	0.950			0.950			0.708			0.565		
Satd. Flow (perm)	1710	3257	1500	1676	3320	1530	1262	1540	0	950	1595	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			70			19		147			57	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		490			310			315			277	
Travel Time (s)		8.4			5.3			8.6			7.6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	5%	2%	2%	3%	0%	1%	5%	1%	7%	0%	0%
Adj. Flow (vph)	39	1264	70	193	1568	47	271	20	147	28	18	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	1264	70	193	1568	47	271	167	0	28	75	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	24.5	55.0	55.0	24.5	55.0	55.0	33.0	33.0		34.0	34.0	
Total Split (s)	14.5	51.5	51.5	14.5	51.5	51.5	24.0	24.0	0.0	24.0	24.0	0.0
Total Split (%)	16.1%	57.2%	57.2%	16.1%	57.2%	57.2%	26.7%	26.7%	0.0%	26.7%	26.7%	0.0%
Maximum Green (s)	10.5	47.0	47.0	10.5	47.0	47.0	20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	2.8	2.8	0.5	2.8	2.8	2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	5.0	5.0		5.0	5.0	
Recall Mode	None	Min	Min	None	Min	Min	None	None		None	None	
Walk Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		16.0	16.0		17.0	17.0	24.0	24.0		25.0	25.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	6.8	40.3	40.3	10.6	48.2	48.2	20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.08	0.48	0.48	0.13	0.58	0.58	0.24	0.24		0.24	0.24	
v/c Ratio	0.28	0.80	0.09	0.91	0.82	0.05	0.89	0.35		0.12	0.18	
Control Delay	42.9	22.7	3.2	82.2	20.1	6.8	65.8	9.3		29.3	12.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	42.9	22.7	3.2	82.2	20.1	6.8	65.8	9.3		29.3	12.6	
LOS	D	C	A	F	C	A	E	A		C	B	
Approach Delay		22.2			26.4			44.3			17.2	
Approach LOS		C			C			D			B	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 83.5
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 26.7 Intersection LOS: C
Intersection Capacity Utilization 82.3% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 4: Hwy 99 & Brutscher

ø1	ø2	ø4
14.5 s	51.5 s	24 s
ø5	ø6	ø8
14.5 s	51.5 s	24 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	1239	69	189	1537	46	266	20	144	27	18	56
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.89	
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)	1710	3257	1500	1676	3320	1530	1693	1540		1598	1595	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.71	1.00		0.56	1.00	
Satd. Flow (perm)	1710	3257	1500	1676	3320	1530	1262	1540		950	1595	
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)	39	1264	70	193	1568	47	271	20	147	28	18	57
RTOR Reduction (vph)	0	0	35	0	0	8	0	112	0	0	44	0
Lane Group Flow (vph)	39	1264	35	193	1568	39	271	55	0	28	31	0
Heavy Vehicles (%)	0%	5%	2%	2%	3%	0%	1%	5%	1%	7%	0%	0%
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		
Actuated Green, G (s)	4.5	42.0	42.0	10.6	48.1	48.1	20.0	20.0		20.0	20.0	
Effective Green, g (s)	4.5	42.0	42.0	10.6	48.1	48.1	20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.05	0.49	0.49	0.12	0.57	0.57	0.24	0.24		0.24	0.24	
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)	90	1607	740	209	1877	865	297	362		223	375	
v/s Ratio Prot	0.02	0.39		c0.12	c0.47			0.04			0.02	
v/s Ratio Perm			0.02			0.03	c0.21			0.03		
v/c Ratio	0.43	0.79	0.05	0.92	0.84	0.04	0.91	0.15		0.13	0.08	
Uniform Delay, d1	39.1	17.8	11.2	36.8	15.2	8.3	31.7	25.8		25.7	25.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	3.0	0.1	41.0	3.7	0.0	30.5	0.1		0.2	0.1	
Delay (s)	41.0	20.8	11.2	77.9	19.0	8.3	62.2	26.0		25.8	25.5	
Level of Service	D	C	B	E	B	A	E	C		C	C	
Approach Delay (s)		20.9			25.0			48.4			25.6	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	26.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	85.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	253	342	74	0	277
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.976			
Flt Protected						
Satd. Flow (prot)	0	1542	1685	0	0	1698
Flt Permitted						
Satd. Flow (perm)	0	1542	1685	0	0	1698
Link Speed (mph)	30		30			30
Link Distance (ft)	1394		715			385
Travel Time (s)	31.7		16.3			8.8
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	5%	1%	0%	6%
Adj. Flow (vph)	0	261	353	76	0	286
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	261	429	0	0	286
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		24			12
Link Offset(ft)	0		6			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 46.9% ICU Level of Service A
Analysis Period (min) 15

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	253	342	74	0	277
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	261	353	76	0	286
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			715			385
pX, platoon unblocked	0.94					
vC, conflicting volume	676	391			429	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	626	391			429	
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	60			100	
cM capacity (veh/h)	425	660			1141	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	261	429	286
Volume Left	0	0	0
Volume Right	261	76	0
cSH	660	1700	1700
Volume to Capacity	0.40	0.25	0.17
Queue Length 95th (ft)	47	0	0
Control Delay (s)	14.0	0.0	0.0
Lane LOS	B		
Approach Delay (s)	14.0	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

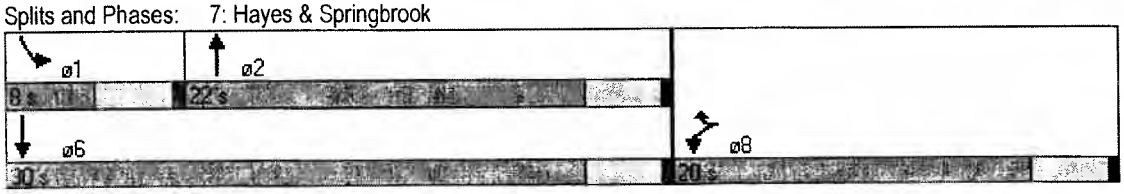
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	56	41	348	23	51	197
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0	0		0	175	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100	100		100	100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.992			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1629	1530	1706	0	1613	1682
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1629	1530	1706	0	1613	1682
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		44	7			
Link Speed (mph)	25		40			25
Link Distance (ft)	1176		606			715
Travel Time (s)	32.1		10.3			19.5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	0%	5%	0%	6%	7%
Adj. Flow (vph)	60	44	370	24	54	210
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	44	394	0	54	210
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		8.0	20.0
Total Split (s)	20.0	20.0	22.0	0.0	8.0	30.0
Total Split (%)	40.0%	40.0%	44.0%	0.0%	16.0%	60.0%
Maximum Green (s)	16.0	16.0	18.0		4.0	26.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	5.0	5.0	5.0			5.0
Flash Dont Walk (s)	11.0	11.0	11.0			11.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	7.1	7.1	31.6		4.0	35.0
Actuated g/C Ratio	0.16	0.16	0.71		0.09	0.78
v/c Ratio	0.23	0.16	0.33		0.37	0.16
Control Delay	17.7	7.3	7.2		26.5	3.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	17.7	7.3	7.2		26.5	3.3
LOS	B	A	A		C	A
Approach Delay	13.3		7.2			8.0
Approach LOS	B		A			A

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 44.6
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.37
Intersection Signal Delay: 8.3 Intersection LOS: A
Intersection Capacity Utilization 37.5% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: Hayes & Springbrook



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	56	41	348	23	51	197
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1629	1530	1705		1613	1682
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1629	1530	1705		1613	1682
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	60	44	370	24	54	210
RTOR Reduction (vph)	0	40	3	0	0	0
Lane Group Flow (vph)	60	4	391	0	54	210
Heavy Vehicles (%)	5%	0%	5%	0%	6%	7%
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						
Actuated Green, G (s)	4.8	4.8	30.0		1.7	35.7
Effective Green, g (s)	4.8	4.8	30.0		1.7	35.7
Actuated g/C Ratio	0.10	0.10	0.62		0.04	0.74
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	161	151	1055		57	1238
v/s Ratio Prot	c0.04	0.00	c0.23		c0.03	0.12
v/s Ratio Perm						
v/c Ratio	0.37	0.03	0.37		0.95	0.17
Uniform Delay, d1	20.4	19.7	4.6		23.4	1.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.5	0.1	1.0		99.1	0.3
Delay (s)	21.9	19.8	5.6		122.5	2.2
Level of Service	C	B	A		F	A
Approach Delay (s)	21.0		5.6			26.8
Approach LOS	C		A			C

Intersection Summary			
HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	48.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

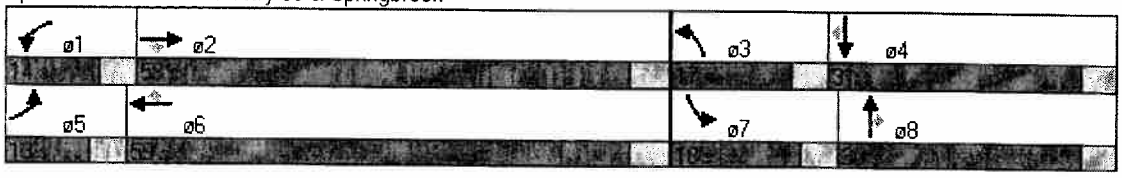
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	121	1174	44	95	1414	224	282	225	127	370	131	109
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	450		150	0		175	0		0	225		175
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.860			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			27			133			130			111
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		931			440			385			481	
Travel Time (s)		15.9			7.5			10.5			13.1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	5%	2%	10%	3%	0%	1%	1%	11%	1%	2%	1%
Adj. Flow (vph)	123	1198	45	97	1443	229	288	230	130	378	134	111
Shared Lane Traffic (%)												
Lane Group Flow (vph)	123	1198	45	97	1443	229	288	230	130	378	134	111
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	1.0	10.0	10.0	1.0	10.0	10.0	1.0	6.0	6.0	1.0	6.0	6.0
Minimum Split (s)	5.0	35.5	35.5	5.0	35.5	35.5	5.0	30.0	30.0	5.0	30.0	30.0
Total Split (s)	13.0	58.0	58.0	14.0	59.0	59.0	17.0	30.0	30.0	18.0	31.0	31.0
Total Split (%)	10.8%	48.3%	48.3%	11.7%	49.2%	49.2%	14.2%	25.0%	25.0%	15.0%	25.8%	25.8%
Maximum Green (s)	9.0	53.5	53.5	10.0	54.5	54.5	13.0	26.0	26.0	14.0	27.0	27.0
Yellow 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
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.2	4.2	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Minimum Gap (s)	0.5	2.2	2.2	1.0	2.2	2.2	0.5	0.5	0.5	0.5	0.5	0.5
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Flash Dont Walk (s)		26.0	26.0		26.0	26.0		21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	9.0	52.2	52.2	9.5	52.7	52.7	12.5	18.8	18.8	14.1	20.4	20.4
Actuated g/C Ratio	0.08	0.47	0.47	0.09	0.47	0.47	0.11	0.17	0.17	0.13	0.18	0.18
v/c Ratio	0.91	0.78	0.06	0.73	0.92	0.29	0.78	0.76	0.38	0.91	0.41	0.30
Control Delay	109.8	30.0	9.9	81.7	38.3	8.9	64.7	61.1	10.1	75.8	44.7	9.4
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	109.8	30.0	9.9	81.7	38.3	8.9	64.7	61.1	10.1	75.8	44.7	9.4
LOS	F	C	A	F	D	A	E	E	B	E	D	A
Approach Delay		36.5			36.9			52.5			57.3	
Approach LOS		D			D			D			E	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 111.2
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 42.0 Intersection LOS: D
Intersection Capacity Utilization 85.7% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Hwy 99 & Springbrook



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	121	1174	44	95	1414	224	282	225	127	370	131	109
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	1.00	0.95	1.00	0.97	1.00	1.00	0.97	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)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
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)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
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)	123	1198	45	97	1443	229	288	230	130	378	134	111
RTOR Reduction (vph)	0	0	14	0	0	70	0	0	108	0	0	91
Lane Group Flow (vph)	123	1198	31	97	1443	159	288	230	22	378	134	20
Heavy Vehicles (%)	3%	5%	2%	10%	3%	0%	1%	1%	11%	1%	2%	1%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4
Actuated Green, G (s)	9.0	52.2	52.2	9.5	52.7	52.7	12.5	18.8	18.8	14.1	20.4	20.4
Effective Green, g (s)	9.0	52.2	52.2	9.5	52.7	52.7	12.5	18.8	18.8	14.1	20.4	20.4
Actuated g/C Ratio	0.08	0.47	0.47	0.09	0.47	0.47	0.11	0.17	0.17	0.13	0.18	0.18
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	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	134	1530	705	133	1575	726	370	302	233	417	324	278
v/s Ratio Prot	c0.07	0.37		0.06	c0.43		0.09	c0.13		c0.12	0.08	
v/s Ratio Perm			0.02			0.10			0.02			0.01
v/c Ratio	0.92	0.78	0.04	0.73	0.92	0.22	0.78	0.76	0.09	0.91	0.41	0.07
Uniform Delay, d1	50.7	24.7	15.9	49.5	27.1	17.1	48.0	44.0	39.0	47.8	40.1	37.5
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	52.6	2.9	0.0	17.0	8.9	0.2	9.4	10.1	0.1	22.6	0.5	0.1
Delay (s)	103.3	27.6	16.0	66.6	36.1	17.4	57.3	54.1	39.1	70.5	40.6	37.6
Level of Service	F	C	B	E	D	B	E	D	D	E	D	D
Approach Delay (s)		34.0			35.3			52.5			58.2	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM Average Control Delay	40.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	111.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Volume (vph)	1332	146	0	1833	0	29
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)		200	0		0	0
Storage Lanes		1	0		0	1
Taper Length (ft)		100	100		100	100
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	3226	1515	0	3320	0	1428
Flt Permitted						
Satd. Flow (perm)	3226	1515	0	3320	0	1428
Link Speed (mph)	30			30	30	
Link Distance (ft)	435			490	248	
Travel Time (s)	9.9			11.1	5.6	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	6%	1%	0%	3%	0%	9%
Adj. Flow (vph)	1345	147	0	1852	0	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1345	147	0	1852	0	29
Enter Blocked Intersection	Yes	Yes	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 56.8% ICU Level of Service B
Analysis Period (min) 15

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Volume (veh/h)	1332	146	0	1833	0	29
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	1345	147	0	1852	0	29
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	875			490		
pX, platoon unblocked			0.78		0.71	0.78
vC, conflicting volume			1493		2271	673
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1064		582	10
tC, single (s)			4.1		6.8	7.1
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			100		100	96
cM capacity (veh/h)			516		320	814

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	673	673	147	926	926	29
Volume Left	0	0	0	0	0	0
Volume Right	0	0	147	0	0	29
cSH	1700	1700	1700	1700	1700	814
Volume to Capacity	0.40	0.40	0.09	0.54	0.54	0.04
Queue Length 95th (ft)	0	0	0	0	0	3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.6
Lane LOS						A
Approach Delay (s)	0.0			0.0		9.6
Approach LOS						A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	1245	69	213	1519	46	266	20	144	27	18	56
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	200		200	250		75	225		225	50		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
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			0.850			0.850		0.868			0.886	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1710	3257	1500	1676	3320	1530	1693	1540	0	1598	1595	0
Flt Permitted	0.950			0.950			0.706			0.564		
Satd. Flow (perm)	1710	3257	1500	1676	3320	1530	1258	1540	0	949	1595	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			70			19		147			60	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		490			310			315			277	
Travel Time (s)		8.4			5.3			8.6			7.6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.93	0.93	0.93
Heavy Vehicles (%)	0%	5%	2%	2%	3%	0%	1%	5%	1%	7%	0%	0%
Adj. Flow (vph)	39	1270	70	217	1550	47	271	20	147	29	19	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	1270	70	217	1550	47	271	167	0	29	79	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	24.5	55.0	55.0	24.5	55.0	55.0	33.0	33.0		34.0	34.0	
Total Split (s)	14.5	51.5	51.5	14.5	51.5	51.5	24.0	24.0	0.0	24.0	24.0	0.0
Total Split (%)	16.1%	57.2%	57.2%	16.1%	57.2%	57.2%	26.7%	26.7%	0.0%	26.7%	26.7%	0.0%
Maximum Green (s)	10.5	47.0	47.0	10.5	47.0	47.0	20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	2.8	2.8	0.5	2.8	2.8	2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	5.0	5.0		5.0	5.0	
Recall Mode	None	Min	Min	None	Min	Min	None	None		None	None	
Walk Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		16.0	16.0		17.0	17.0	24.0	24.0		25.0	25.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	6.8	40.6	40.6	10.6	48.4	48.4	20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.08	0.48	0.48	0.13	0.58	0.58	0.24	0.24		0.24	0.24	
v/c Ratio	0.28	0.80	0.09	1.02	0.81	0.05	0.90	0.35		0.13	0.19	
Control Delay	43.0	22.7	3.2	109.3	19.6	6.8	66.7	9.4		29.4	12.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	43.0	22.7	3.2	109.3	19.6	6.8	66.7	9.4		29.4	12.6	
LOS	D	C	A	F	B	A	E	A		C	B	
Approach Delay		22.3			30.0			44.8			17.1	
Approach LOS		C			C			D			B	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 83.8
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 28.5 Intersection LOS: C
Intersection Capacity Utilization 82.9% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 4: Hwy 99 & Brutscher

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	1245	69	213	1519	46	266	20	144	27	18	56
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.89	
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)	1710	3257	1500	1676	3320	1530	1693	1540		1598	1595	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.71	1.00		0.56	1.00	
Satd. Flow (perm)	1710	3257	1500	1676	3320	1530	1258	1540		949	1595	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.93	0.93	0.93
Adj. Flow (vph)	39	1270	70	217	1550	47	271	20	147	29	19	60
RTOR Reduction (vph)	0	0	35	0	0	8	0	113	0	0	46	0
Lane Group Flow (vph)	39	1270	35	217	1550	39	271	54	0	29	33	0
Heavy Vehicles (%)	0%	5%	2%	2%	3%	0%	1%	5%	1%	7%	0%	0%
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		
Actuated Green, G (s)	4.5	42.3	42.3	10.6	48.4	48.4	20.0	20.0		20.0	20.0	
Effective Green, g (s)	4.5	42.3	42.3	10.6	48.4	48.4	20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.05	0.50	0.50	0.12	0.57	0.57	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)	90	1613	743	208	1882	867	295	361		222	374	
v/s Ratio Prot	0.02	0.39		c0.13	c0.47			0.04			0.02	
v/s Ratio Perm			0.02			0.03	c0.22			0.03		
v/c Ratio	0.43	0.79	0.05	1.04	0.82	0.04	0.92	0.15		0.13	0.09	
Uniform Delay, d1	39.2	17.8	11.1	37.4	15.0	8.2	31.9	26.0		25.8	25.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	3.0	0.1	74.2	3.4	0.0	31.6	0.1		0.2	0.1	
Delay (s)	41.2	20.8	11.2	111.6	18.4	8.3	63.5	26.1		26.0	25.6	
Level of Service	D	C	B	F	B	A	E	C		C	C	
Approach Delay (s)		20.9			29.3			49.3			25.7	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	28.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	85.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	298	338	87	0	272
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.972			
Flt Protected						
Satd. Flow (prot)	0	1542	1679	0	0	1698
Flt Permitted						
Satd. Flow (perm)	0	1542	1679	0	0	1698
Link Speed (mph)	30		30			30
Link Distance (ft)	1394		715			385
Travel Time (s)	31.7		16.3			8.8
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	5%	1%	0%	6%
Adj. Flow (vph)	0	307	348	90	0	280
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	307	438	0	0	280
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		24			12
Link Offset(ft)	0		6			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 50.5%	ICU Level of Service A
Analysis Period (min) 15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	298	338	87	0	272
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	307	348	90	0	280
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			715			385
pX, platoon unblocked	0.94					
vC, conflicting volume	674	393			438	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	625	393			438	
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	53			100	
cM capacity (veh/h)	427	658			1132	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	307	438	280
Volume Left	0	0	0
Volume Right	307	90	0
cSH	658	1700	1700
Volume to Capacity	0.47	0.26	0.16
Queue Length 95th (ft)	62	0	0
Control Delay (s)	15.2	0.0	0.0
Lane LOS	C		
Approach Delay (s)	15.2	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	69	45	360	24	52	196
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0	0		0	175	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100	100		100	100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.991			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1629	1530	1704	0	1613	1682
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1629	1530	1704	0	1613	1682
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		48	8			
Link Speed (mph)	25		40			25
Link Distance (ft)	1176		606			715
Travel Time (s)	32.1		10.3			19.5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	0%	5%	0%	6%	7%
Adj. Flow (vph)	73	48	383	26	55	209
Shared Lane Traffic (%)						
Lane Group Flow (vph)	73	48	409	0	55	209
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		8.0	20.0
Total Split (s)	20.0	20.0	22.0	0.0	8.0	30.0
Total Split (%)	40.0%	40.0%	44.0%	0.0%	16.0%	60.0%
Maximum Green (s)	16.0	16.0	18.0		4.0	26.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	5.0	5.0	5.0			5.0
Flash Dont Walk (s)	11.0	11.0	11.0			11.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	7.4	7.4	31.3		4.0	34.6
Actuated g/C Ratio	0.17	0.17	0.70		0.09	0.78
v/c Ratio	0.27	0.16	0.34		0.38	0.16
Control Delay	17.9	7.1	7.5		26.7	3.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	17.9	7.1	7.5		26.7	3.4
LOS	B	A	A		C	A
Approach Delay	13.6		7.5			8.3
Approach LOS	B		A			A

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 44.5
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.38
Intersection Signal Delay: 8.7 Intersection LOS: A
Intersection Capacity Utilization 38.9% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: Hayes & Springbrook

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	69	45	360	24	52	196
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1629	1530	1705		1613	1682
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1629	1530	1705		1613	1682
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	73	48	383	26	55	209
RTOR Reduction (vph)	0	43	3	0	0	0
Lane Group Flow (vph)	73	5	406	0	55	209
Heavy Vehicles (%)	5%	0%	5%	0%	6%	7%
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						
Actuated Green, G (s)	5.0	5.0	29.7		1.7	35.4
Effective Green, g (s)	5.0	5.0	29.7		1.7	35.4
Actuated g/C Ratio	0.10	0.10	0.61		0.04	0.73
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	168	158	1046		57	1230
v/s Ratio Prot	c0.04	0.00	c0.24		c0.03	0.12
v/s Ratio Perm						
v/c Ratio	0.43	0.03	0.39		0.96	0.17
Uniform Delay, d1	20.4	19.5	4.7		23.3	2.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.8	0.1	1.1		105.7	0.3
Delay (s)	22.2	19.6	5.8		129.0	2.3
Level of Service	C	B	A		F	A
Approach Delay (s)	21.2		5.8			28.7
Approach LOS	C		A			C

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	48.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	1486	56	144	1823	281	315	262	178	442	164	136
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	450		150	0		175	0		0	225		175
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			28			135			139			135
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		931			440			385			481	
Travel Time (s)		15.9			7.5			10.5			13.1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	5%	2%	10%	3%	0%	1%	1%	11%	1%	2%	1%
Adj. Flow (vph)	154	1516	57	147	1860	287	321	267	182	451	167	139
Shared Lane Traffic (%)												
Lane Group Flow (vph)	154	1516	57	147	1860	287	321	267	182	451	167	139
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	1.0	10.0	10.0	1.0	10.0	10.0	1.0	6.0	6.0	1.0	6.0	6.0
Minimum Split (s)	5.0	35.5	35.5	5.0	35.5	35.5	5.0	30.0	30.0	5.0	30.0	30.0
Total Split (s)	13.0	60.0	60.0	15.0	62.0	62.0	15.0	30.0	30.0	15.0	30.0	30.0
Total Split (%)	10.8%	50.0%	50.0%	12.5%	51.7%	51.7%	12.5%	25.0%	25.0%	12.5%	25.0%	25.0%
Maximum Green (s)	9.0	55.5	55.5	11.0	57.5	57.5	11.0	26.0	26.0	11.0	26.0	26.0
Yellow 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
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.2	4.2	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Minimum Gap (s)	0.5	2.2	2.2	1.0	2.2	2.2	0.5	0.5	0.5	0.5	0.5	0.5
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Flash Dont Walk (s)		26.0	26.0		26.0	26.0		21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	9.0	59.8	59.8	11.0	61.8	61.8	11.0	21.7	21.7	11.0	21.7	21.7
Actuated g/C Ratio	0.08	0.50	0.50	0.09	0.52	0.52	0.09	0.18	0.18	0.09	0.18	0.18
v/c Ratio	1.23	0.93	0.07	1.03	1.09	0.34	1.07	0.83	0.50	1.50	0.53	0.36
Control Delay	201.6	40.7	10.6	79.5	70.8	14.6	122.1	68.4	16.9	278.6	49.8	9.9
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	201.6	40.7	10.6	79.5	70.8	14.6	122.1	68.4	16.9	278.6	49.8	9.9
LOS	F	D	B	E	E	B	F	E	B	F	D	A
Approach Delay		54.1			64.3			78.6			178.8	
Approach LOS		D			E			E			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 70.5 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

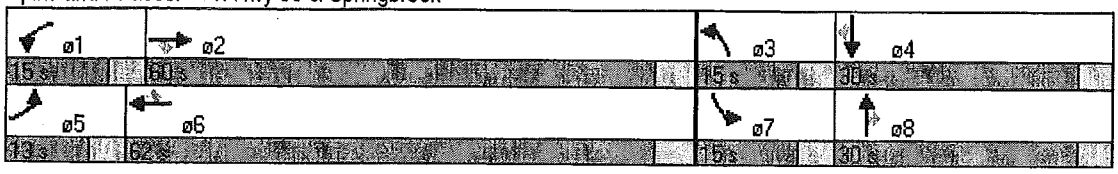
Maximum v/c Ratio: 1.50

Intersection Signal Delay: 78.7 Intersection LOS: E

Intersection Capacity Utilization 103.6% ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 1: Hwy 99 & Springbrook



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	1486	56	144	1823	281	315	262	178	442	164	136
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	1.00	0.95	1.00	0.97	1.00	1.00	0.97	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)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
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)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
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)	154	1516	57	147	1860	287	321	267	182	451	167	139
RTOR Reduction (vph)	0	0	14	0	0	65	0	0	114	0	0	111
Lane Group Flow (vph)	154	1516	43	147	1860	222	321	267	68	451	167	28
Heavy Vehicles (%)	3%	5%	2%	10%	3%	0%	1%	1%	11%	1%	2%	1%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4
Actuated Green, G (s)	9.0	59.8	59.8	11.0	61.8	61.8	11.0	21.7	21.7	11.0	21.7	21.7
Effective Green, g (s)	9.0	59.8	59.8	11.0	61.8	61.8	11.0	21.7	21.7	11.0	21.7	21.7
Actuated g/C Ratio	0.08	0.50	0.50	0.09	0.52	0.52	0.09	0.18	0.18	0.09	0.18	0.18
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	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	125	1623	748	143	1710	788	301	322	249	301	319	274
v/s Ratio Prot	c0.09	0.47		0.09	c0.56		0.10	c0.15		c0.14	0.09	
v/s Ratio Perm			0.03			0.14			0.05			0.02
v/c Ratio	1.23	0.93	0.06	1.03	1.09	0.28	1.07	0.83	0.27	1.50	0.52	0.10
Uniform Delay, d1	55.5	28.2	15.5	54.5	29.1	16.5	54.5	47.4	42.4	54.5	44.5	41.0
Progression Factor	1.00	1.00	1.00	0.91	1.05	1.54	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	155.7	11.4	0.1	30.0	40.6	0.1	70.6	15.5	0.3	241.0	1.0	0.1
Delay (s)	211.2	39.6	15.7	79.4	71.2	25.5	125.1	62.9	42.7	295.5	45.5	41.1
Level of Service	F	D	B	E	E	C	F	E	D	F	D	D
Approach Delay (s)		54.1			66.0			84.0			193.6	
Approach LOS		D			E			F			F	

Intersection Summary			
HCM Average Control Delay	82.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1736	181	0	2371	0	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)		200	0		0	0
Storage Lanes		1	0		0	1
Taper Length (ft)		100	100		100	100
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Flt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	3226	1515	0	3320	0	1428
Flt Permitted						
Satd. Flow (perm)	3226	1515	0	3320	0	1428
Link Speed (mph)	30			30	30	
Link Distance (ft)	435			490	248	
Travel Time (s)	9.9			11.1	5.6	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	6%	1%	0%	3%	0%	9%
Adj. Flow (vph)	1754	183	0	2395	0	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1754	183	0	2395	0	14
Enter Blocked Intersection	Yes	Yes	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 72.5% ICU Level of Service C

Analysis Period (min) 15

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Volume (veh/h)	1736	181	0	2371	0	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	1754	183	0	2395	0	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	875			490		
pX, platoon unblocked			0.62		0.62	0.62
vC, conflicting volume			1936		2951	877
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1273		136	0
tC, single (s)			4.1		6.8	7.1
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			100		100	98
cM capacity (veh/h)			340		527	654

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	877	877	183	1197	1197	14
Volume Left	0	0	0	0	0	0
Volume Right	0	0	183	0	0	14
cSH	1700	1700	1700	1700	1700	654
Volume to Capacity	0.52	0.52	0.11	0.70	0.70	0.02
Queue Length 95th (ft)	0	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.6
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.6
Approach LOS						B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

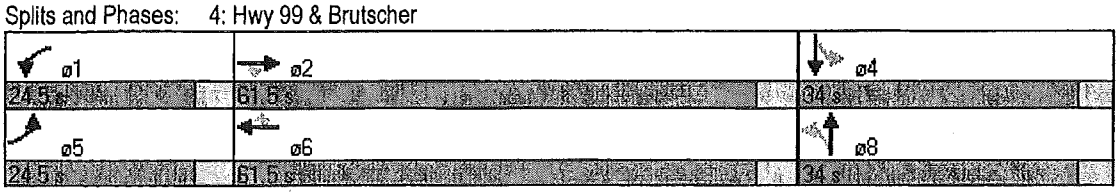
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	1607	84	244	1984	57	328	25	188	33	22	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	200		200	250		75	225		225	50		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
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			0.850			0.860		0.868			0.886	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1710	3257	1500	1676	3320	1530	1693	1540	0	1598	1595	0
Flt Permitted	0.950			0.950			0.678			0.448		
Satd. Flow (perm)	1710	3257	1500	1676	3320	1530	1208	1540	0	754	1595	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			51			12		192			70	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		490			310			315			277	
Travel Time (s)		8.4			5.3			8.6			7.6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	5%	2%	2%	3%	0%	1%	5%	1%	7%	0%	0%
Adj. Flow (vph)	48	1640	86	249	2024	58	335	26	192	34	22	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	1640	86	249	2024	58	335	218	0	34	92	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	24.5	55.0	55.0	24.5	55.0	55.0	33.0	33.0		34.0	34.0	
Total Split (s)	24.5	61.5	61.5	24.5	61.5	61.5	34.0	34.0	0.0	34.0	34.0	0.0
Total Split (%)	20.4%	51.3%	51.3%	20.4%	51.3%	51.3%	28.3%	28.3%	0.0%	28.3%	28.3%	0.0%
Maximum Green (s)	20.5	57.0	57.0	20.5	57.0	57.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	2.8	2.8	0.5	2.8	2.8	2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	5.0	5.0		5.0	5.0	
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Walk Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		16.0	16.0		17.0	17.0	24.0	24.0		25.0	25.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	8.1	57.8	57.8	19.7	71.1	71.1	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.07	0.48	0.48	0.16	0.59	0.59	0.25	0.25		0.25	0.25	
v/c Ratio	0.42	1.05	0.11	0.91	1.03	0.06	1.11	0.41		0.18	0.20	
Control Delay	46.6	53.1	11.3	84.4	53.5	9.9	126.6	9.9		38.5	13.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	46.6	53.1	11.3	84.4	53.5	9.9	126.6	9.9		38.5	13.4	
LOS	D	D	B	F	D	A	F	A		D	B	
Approach Delay		50.9			55.7			80.6			20.2	
Approach LOS		D			E			F			C	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 81.5 (68%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 55.9 Intersection LOS: E
Intersection Capacity Utilization 99.9% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 4: Hwy 99 & Brutscher



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	1607	84	244	1984	57	328	25	188	33	22	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.89	
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)	1710	3257	1500	1676	3320	1530	1693	1539		1598	1595	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.68	1.00		0.45	1.00	
Satd. Flow (perm)	1710	3257	1500	1676	3320	1530	1208	1539		753	1595	
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)	48	1640	86	249	2024	58	335	26	192	34	22	70
RTOR Reduction (vph)	0	0	26	0	0	5	0	144	0	0	53	0
Lane Group Flow (vph)	48	1640	60	249	2024	53	335	74	0	34	40	0
Heavy Vehicles (%)	0%	5%	2%	2%	3%	0%	1%	5%	1%	7%	0%	0%
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		
Actuated Green, G (s)	7.2	57.8	57.8	19.7	70.3	70.3	30.0	30.0		30.0	30.0	
Effective Green, g (s)	7.2	57.8	57.8	19.7	70.3	70.3	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.06	0.48	0.48	0.16	0.59	0.59	0.25	0.25		0.25	0.25	
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)	103	1569	723	275	1945	896	302	385		188	399	
v/s Ratio Prot	0.03	0.50		c0.15	c0.61			0.05			0.02	
v/s Ratio Perm			0.04			0.03	c0.28			0.05		
v/c Ratio	0.47	1.05	0.08	0.91	1.04	0.06	1.11	0.19		0.18	0.10	
Uniform Delay, d1	54.5	31.1	16.8	49.2	24.8	10.7	45.0	35.5		35.3	34.6	
Progression Factor	0.83	0.85	1.35	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	25.9	0.1	30.4	31.9	0.1	84.4	0.2		0.3	0.1	
Delay (s)	45.6	52.3	22.7	79.6	56.7	10.8	129.4	35.6		35.7	34.7	
Level of Service	D	D	C	E	E	B	F	D		D	C	
Approach Delay (s)		50.7			58.0			92.4			35.0	
Approach LOS		D			E			F			C	

Intersection Summary			
HCM Average Control Delay	58.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	99.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	313	445	92	0	366
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.977			
Flt Protected						
Satd. Flow (prot)	0	1542	1686	0	0	1698
Flt Permitted						
Satd. Flow (perm)	0	1542	1686	0	0	1698
Link Speed (mph)	30		30			30
Link Distance (ft)	1394		715			385
Travel Time (s)	31.7		16.3			8.8
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	5%	1%	0%	6%
Adj. Flow (vph)	0	319	454	94	0	373
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	319	548	0	0	373
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		24			12
Link Offset(ft)	0		6			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 57.7% ICU Level of Service B
Analysis Period (min) 15

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	313	445	92	0	366
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	319	454	94	0	373
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			715			385
pX, platoon unblocked	0.96	0.92			0.92	
vC, conflicting volume	874	501			548	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	666	416			467	
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	46			100	
cM capacity (veh/h)	411	589			1018	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	319	548	373
Volume Left	0	0	0
Volume Right	319	94	0
cSH	589	1700	1700
Volume to Capacity	0.54	0.32	0.22
Queue Length 95th (ft)	81	0	0
Control Delay (s)	18.1	0.0	0.0
Lane LOS	C		
Approach Delay (s)	18.1	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

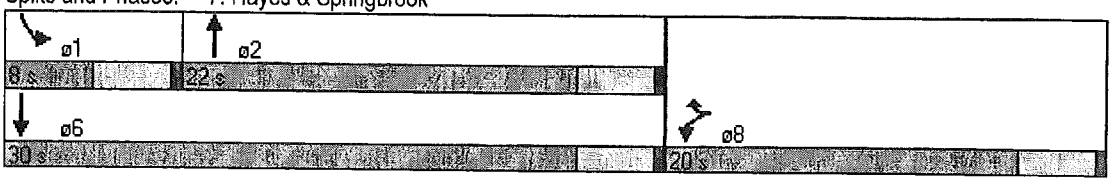
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	70	52	460	30	64	272
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0	0		0	175	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100	100		100	100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.992			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1629	1530	1706	0	1613	1682
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1629	1530	1706	0	1613	1682
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		53	7			
Link Speed (mph)	25		40			25
Link Distance (ft)	1176		606			715
Travel Time (s)	32.1		10.3			19.5
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	5%	0%	5%	0%	6%	7%
Adj. Flow (vph)	71	53	469	31	65	278
Shared Lane Traffic (%)						
Lane Group Flow (vph)	71	53	500	0	65	278
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		8.0	20.0
Total Split (s)	20.0	20.0	22.0	0.0	8.0	30.0
Total Split (%)	40.0%	40.0%	44.0%	0.0%	16.0%	60.0%
Maximum Green (s)	16.0	16.0	18.0		4.0	26.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	5.0	5.0	5.0			5.0
Flash Dont Walk (s)	11.0	11.0	11.0			11.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	7.3	7.3	28.4		4.0	33.3
Actuated g/C Ratio	0.17	0.17	0.66		0.09	0.77
v/c Ratio	0.26	0.17	0.45		0.44	0.21
Control Delay	17.2	6.9	10.4		29.2	3.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	17.2	6.9	10.4		29.2	3.7
LOS	B	A	B		C	A
Approach Delay	12.8		10.4			8.5
Approach LOS	B		B			A

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 43.3
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.45
Intersection Signal Delay: 10.1 Intersection LOS: B
Intersection Capacity Utilization 45.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: Hayes & Springbrook



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	70	52	460	30	64	272
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1629	1530	1705		1613	1682
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1629	1530	1705		1613	1682
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	71	53	469	31	65	278
RTOR Reduction (vph)	0	47	3	0	0	0
Lane Group Flow (vph)	71	6	497	0	65	278
Heavy Vehicles (%)	5%	0%	5%	0%	6%	7%
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						
Actuated Green, G (s)	5.1	5.1	26.9		2.5	33.4
Effective Green, g (s)	5.1	5.1	26.9		2.5	33.4
Actuated g/C Ratio	0.11	0.11	0.58		0.05	0.72
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	179	168	986		87	1208
v/s Ratio Prot	c0.04	0.00	c0.29		c0.04	0.17
v/s Ratio Perm						
v/c Ratio	0.40	0.03	0.50		0.75	0.23
Uniform Delay, d1	19.3	18.5	5.8		21.7	2.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.4	0.1	1.8		29.0	0.4
Delay (s)	20.7	18.6	7.7		50.7	2.7
Level of Service	C	B	A		D	A
Approach Delay (s)	19.8		7.7			11.8
Approach LOS	B		A			B

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	46.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
1: Hwy 99 & Springbrook

3/10/2009

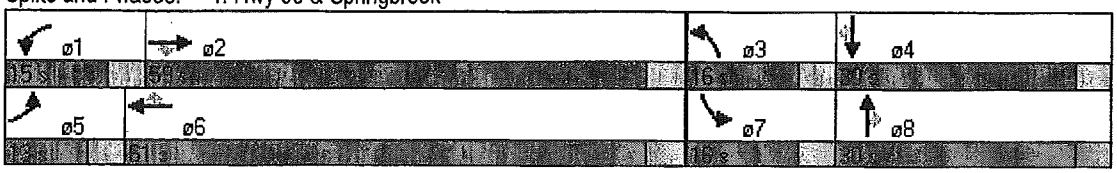
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	1501	55	142	1810	278	342	275	179	464	162	135
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	450		150	0		175	0		0	225		175
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			27			133			138			135
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		931			440			385			481	
Travel Time (s)		15.9			7.5			10.5			13.1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	5%	2%	10%	3%	0%	1%	1%	11%	1%	2%	1%
Adj. Flow (vph)	153	1532	56	145	1847	284	349	281	183	463	165	138
Shared Lane Traffic (%)												
Lane Group Flow (vph)	153	1532	56	145	1847	284	349	281	183	463	165	138
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	1.0	10.0	10.0	1.0	10.0	10.0	1.0	6.0	6.0	1.0	6.0	6.0
Minimum Split (s)	5.0	35.5	35.5	5.0	35.5	35.5	5.0	30.0	30.0	5.0	30.0	30.0
Total Split (s)	13.0	59.0	59.0	15.0	61.0	61.0	16.0	30.0	30.0	16.0	30.0	30.0
Total Split (%)	10.8%	49.2%	49.2%	12.5%	50.8%	50.8%	13.3%	25.0%	25.0%	13.3%	25.0%	25.0%
Maximum Green (s)	9.0	54.5	54.5	11.0	56.5	56.5	12.0	26.0	26.0	12.0	26.0	26.0
Yellow 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
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.2	4.2	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Minimum Gap (s)	0.5	2.2	2.2	1.0	2.2	2.2	0.5	0.5	0.5	0.5	0.5	0.5
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Flash Dont Walk (s)		26.0	26.0		26.0	26.0		21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	9.0	58.1	58.1	11.0	60.1	60.1	12.0	22.4	22.4	12.0	22.4	22.4
Actuated g/C Ratio	0.08	0.48	0.48	0.09	0.50	0.50	0.10	0.19	0.19	0.10	0.19	0.19
v/c Ratio	1.22	0.97	0.08	1.01	1.11	0.34	1.06	0.85	0.50	1.41	0.50	0.35
Control Delay	198.9	47.9	11.2	76.7	81.5	15.1	118.0	69.3	16.9	240.2	48.6	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	198.9	47.9	11.2	76.7	81.5	15.1	118.0	69.3	16.9	240.2	48.6	9.5
LOS	F	D	B	E	F	B	F	E	B	F	D	A
Approach Delay		60.0			72.9			78.4			157.3	
Approach LOS		E			E			E			F	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 70.5 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.41
Intersection Signal Delay: 81.2 Intersection LOS: F
Intersection Capacity Utilization 104.3% ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 1: Hwy 99 & Springbrook



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	1501	55	142	1810	278	342	275	179	454	162	135
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	1.00	0.95	1.00	0.97	1.00	1.00	0.97	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)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
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)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
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)	153	1532	56	145	1847	284	349	281	183	463	165	138
RTOR Reduction (vph)	0	0	14	0	0	66	0	0	112	0	0	110
Lane Group Flow (vph)	153	1532	42	145	1847	218	349	281	71	463	165	28
Heavy Vehicles (%)	3%	5%	2%	10%	3%	0%	1%	1%	11%	1%	2%	1%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4
Actuated Green, G (s)	9.0	58.1	58.1	11.0	60.1	60.1	12.0	22.4	22.4	12.0	22.4	22.4
Effective Green, g (s)	9.0	58.1	58.1	11.0	60.1	60.1	12.0	22.4	22.4	12.0	22.4	22.4
Actuated g/C Ratio	0.08	0.48	0.48	0.09	0.50	0.50	0.10	0.19	0.19	0.10	0.19	0.19
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	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	125	1577	726	143	1663	766	329	333	257	329	329	283
v/s Ratio Prot	c0.09	0.47		0.09	c0.56		0.11	c0.16		c0.14	0.09	
v/s Ratio Perm			0.03			0.14			0.05			0.02
v/c Ratio	1.22	0.97	0.06	1.01	1.11	0.28	1.06	0.84	0.28	1.41	0.50	0.10
Uniform Delay, d1	55.5	30.1	16.4	54.5	30.0	17.4	54.0	47.1	41.8	54.0	43.8	40.4
Progression Factor	1.00	1.00	1.00	0.92	1.04	1.52	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	152.7	16.8	0.2	26.1	50.7	0.1	66.6	17.0	0.3	200.6	0.7	0.1
Delay (s)	208.2	47.0	16.6	76.1	82.0	26.5	120.6	64.1	42.2	254.6	44.5	40.5
Level of Service	F	D	B	E	F	C	F	E	D	F	D	D
Approach Delay (s)		60.2			74.7			83.4			170.8	
Approach LOS		E			E			F			F	

Intersection Summary			
HCM Average Control Delay	84.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	104.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Volume (vph)	1724	181	0	2353	0	32
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)		200	0		0	0
Storage Lanes		1	0		0	1
Taper Length (ft)		100	100		100	100
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	3226	1515	0	3320	0	1428
Flt Permitted						
Satd. Flow (perm)	3226	1515	0	3320	0	1428
Link Speed (mph)	30			30	30	
Link Distance (ft)	435			490	248	
Travel Time (s)	9.9			11.1	5.6	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	6%	1%	0%	3%	0%	9%
Adj. Flow (vph)	1741	183	0	2377	0	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1741	183	0	2377	0	32
Enter Blocked Intersection	Yes	Yes	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 72.0% ICU Level of Service C

Analysis Period (min) 15

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Volume (veh/h)	1724	181	0	2353	0	32
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	1741	183	0	2377	0	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	875			490		
pX, platoon unblocked			0.60		0.63	0.60
vC, conflicting volume			1924		2930	871
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1220		47	0
tC, single (s)			4.1		6.8	7.1
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			100		100	95
cM capacity (veh/h)			350		603	642

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	871	871	183	1188	1188	32
Volume Left	0	0	0	0	0	0
Volume Right	0	0	183	0	0	32
cSH	1700	1700	1700	1700	1700	642
Volume to Capacity	0.51	0.51	0.11	0.70	0.70	0.05
Queue Length 95th (ft)	0	0	0	0	0	4
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.9
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.9
Approach LOS						B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

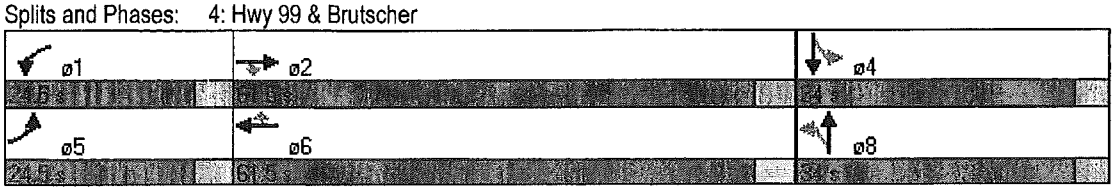
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	1613	84	268	1966	57	328	25	188	33	22	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	200		200	250		75	225		225	50		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
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			0.850			0.850		0.868			0.886	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1710	3257	1500	1676	3320	1530	1693	1540	0	1598	1595	0
Flt Permitted	0.950			0.950			0.678			0.448		
Satd. Flow (perm)	1710	3257	1500	1676	3320	1530	1208	1540	0	754	1595	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			51			13		192			70	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		490			465			315			277	
Travel Time (s)		8.4			7.9			8.6			7.6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	5%	2%	2%	3%	0%	1%	5%	1%	7%	0%	0%
Adj. Flow (vph)	48	1646	86	273	2006	58	335	26	192	34	22	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	1646	86	273	2006	58	335	218	0	34	92	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	24.5	55.0	55.0	24.5	55.0	55.0	33.0	33.0		34.0	34.0	
Total Split (s)	24.5	61.5	61.5	24.5	61.5	61.5	34.0	34.0	0.0	34.0	34.0	0.0
Total Split (%)	20.4%	51.3%	51.3%	20.4%	51.3%	51.3%	28.3%	28.3%	0.0%	28.3%	28.3%	0.0%
Maximum Green (s)	20.5	57.0	57.0	20.5	57.0	57.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	2.8	2.8	0.5	2.8	2.8	2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	5.0	5.0		5.0	5.0	
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Walk Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		16.0	16.0		17.0	17.0	24.0	24.0		25.0	25.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	8.1	57.0	57.0	20.5	71.1	71.1	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.07	0.48	0.48	0.17	0.59	0.59	0.25	0.25		0.25	0.25	
v/c Ratio	0.42	1.06	0.12	0.95	1.02	0.06	1.11	0.41		0.18	0.20	
Control Delay	45.8	61.2	11.7	92.8	50.8	9.8	126.6	9.9		38.5	13.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	45.8	61.2	11.7	92.8	50.8	9.8	126.6	9.9		38.5	13.4	
LOS	D	E	B	F	D	A	F	A		D	B	
Approach Delay		58.4			54.7			80.6			20.2	
Approach LOS		E			D			F			C	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 81.5 (68%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 58.1 Intersection LOS: E
Intersection Capacity Utilization 101.4% ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 4: Hwy 99 & Brutscher



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	1613	84	268	1966	57	328	25	188	33	22	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.89	
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)	1710	3257	1500	1676	3320	1530	1693	1539		1598	1595	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.68	1.00		0.45	1.00	
Satd. Flow (perm)	1710	3257	1500	1676	3320	1530	1208	1539		753	1595	
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)	48	1646	86	273	2006	58	335	26	192	34	22	70
RTOR Reduction (vph)	0	0	27	0	0	5	0	144	0	0	53	0
Lane Group Flow (vph)	48	1646	59	273	2006	53	335	74	0	34	40	0
Heavy Vehicles (%)	0%	5%	2%	2%	3%	0%	1%	5%	1%	7%	0%	0%
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		
Actuated Green, G (s)	7.2	57.0	57.0	20.5	70.3	70.3	30.0	30.0		30.0	30.0	
Effective Green, g (s)	7.2	57.0	57.0	20.5	70.3	70.3	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.06	0.48	0.48	0.17	0.59	0.59	0.25	0.25		0.25	0.25	
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)	103	1547	713	286	1945	896	302	385		188	399	
v/s Ratio Prot	0.03	0.51		c0.16	c0.60			0.05			0.02	
v/s Ratio Perm			0.04			0.03	c0.28			0.05		
v/c Ratio	0.47	1.06	0.08	0.95	1.03	0.06	1.11	0.19		0.18	0.10	
Uniform Delay, d1	54.5	31.5	17.2	49.3	24.8	10.7	45.0	35.5		35.3	34.6	
Progression Factor	0.81	0.88	1.40	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	33.2	0.1	40.6	28.9	0.1	84.4	0.2		0.3	0.1	
Delay (s)	44.7	60.9	24.2	89.9	53.8	10.8	129.4	35.6		35.7	34.7	
Level of Service	D	E	C	F	D	B	F	D		D	C	
Approach Delay (s)		58.7			56.9			92.4			35.0	
Approach LOS		E			E			F			C	

Intersection Summary			
HCM Average Control Delay	61.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	101.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	358	441	105	0	361
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.974			
Flt Protected						
Satd. Flow (prot)	0	1542	1682	0	0	1698
Flt Permitted						
Satd. Flow (perm)	0	1542	1682	0	0	1698
Link Speed (mph)	30		30			30
Link Distance (ft)	1394		715			385
Travel Time (s)	31.7		16.3			8.8
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	5%	1%	0%	6%
Adj. Flow (vph)	0	365	450	107	0	368
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	365	557	0	0	368
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		24			12
Link Offset(ft)	0		6			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 61.3%	ICU Level of Service B
Analysis Period (min) 15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	358	441	105	0	361
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	365	450	107	0	368
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			715			385
pX, platoon unblocked	0.93	0.90			0.90	
vC, conflicting volume	872	504			557	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	644	387			447	
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	38			100	
cM capacity (veh/h)	411	594			1006	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	365	557	368
Volume Left	0	0	0
Volume Right	365	107	0
cSH	594	1700	1700
Volume to Capacity	0.62	0.33	0.22
Queue Length 95th (ft)	105	0	0
Control Delay (s)	20.3	0.0	0.0
Lane LOS	C		
Approach Delay (s)	20.3	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

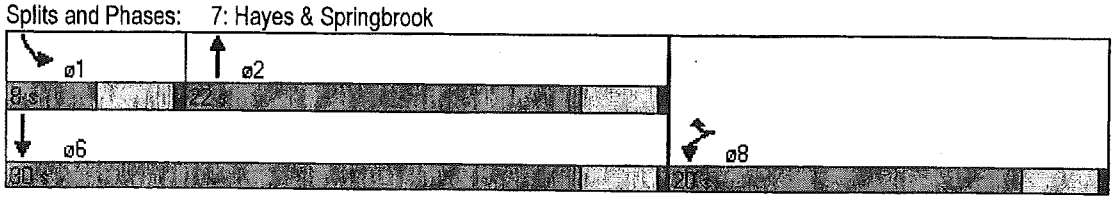
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	81	55	466	30	64	267
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0	0		0	175	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100	100		100	100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.992			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1629	1530	1706	0	1613	1682
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1629	1530	1706	0	1613	1682
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		56	7			
Link Speed (mph)	25		40			25
Link Distance (ft)	1176		606			715
Travel Time (s)	32.1		10.3			19.5
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	5%	0%	5%	0%	6%	7%
Adj. Flow (vph)	83	56	476	31	65	272
Shared Lane Traffic (%)						
Lane Group Flow (vph)	83	56	507	0	65	272
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		8.0	20.0
Total Split (s)	20.0	20.0	22.0	0.0	8.0	30.0
Total Split (%)	40.0%	40.0%	44.0%	0.0%	16.0%	60.0%
Maximum Green (s)	16.0	16.0	18.0		4.0	26.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	5.0	5.0	5.0			5.0
Flash Dont Walk (s)	11.0	11.0	11.0			11.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	7.7	7.7	27.5		4.0	32.6
Actuated g/C Ratio	0.17	0.17	0.60		0.09	0.71
v/c Ratio	0.30	0.18	0.49		0.45	0.23
Control Delay	18.3	6.8	11.6		30.9	4.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	18.3	6.8	11.6		30.9	4.2
LOS	B	A	B		C	A
Approach Delay	13.7		11.6			9.3
Approach LOS	B		B			A

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 45.7
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.49
Intersection Signal Delay: 11.1 Intersection LOS: B
Intersection Capacity Utilization 46.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: Hayes & Springbrook



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	81	55	466	30	64	267
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1629	1530	1705		1613	1682
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1629	1530	1705		1613	1682
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	83	56	476	31	65	272
RTOR Reduction (vph)	0	48	3	0	0	0
Lane Group Flow (vph)	83	8	504	0	65	272
Heavy Vehicles (%)	5%	0%	5%	0%	6%	7%
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						
Actuated Green, G (s)	6.6	6.6	26.7		2.6	33.3
Effective Green, g (s)	6.6	6.6	26.7		2.6	33.3
Actuated g/C Ratio	0.14	0.14	0.56		0.05	0.70
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	224	211	950		88	1169
v/s Ratio Prot	c0.05	0.01	c0.30		c0.04	0.16
v/s Ratio Perm						
v/c Ratio	0.37	0.04	0.53		0.74	0.23
Uniform Delay, d1	18.8	17.9	6.7		22.3	2.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.0	0.1	2.1		27.3	0.5
Delay (s)	19.8	18.0	8.8		49.6	3.1
Level of Service	B	B	A		D	A
Approach Delay (s)	19.1		8.8			12.1
Approach LOS	B		A			B

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	47.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

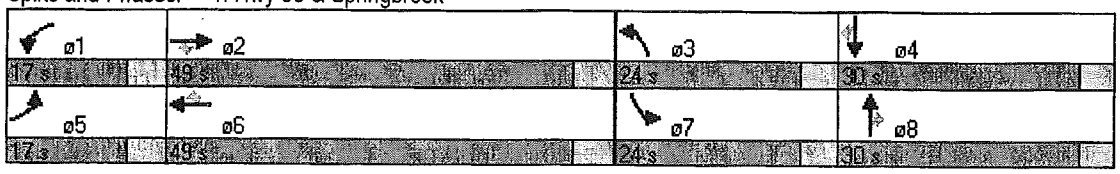
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	929	56	144	1139	281	315	262	178	442	164	136
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	450		150	0		175	0		0	225		175
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			38			179			185			142
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		931			440			385			481	
Travel Time (s)		15.9			7.5			10.5			13.1	
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
Heavy Vehicles (%)	3%	5%	2%	10%	3%	0%	1%	1%	11%	1%	2%	1%
Adj. Flow (vph)	157	968	58	150	1186	293	328	273	185	460	171	142
Shared Lane Traffic (%)												
Lane Group Flow (vph)	157	968	58	150	1186	293	328	273	185	460	171	142
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	1.0	10.0	10.0	1.0	10.0	10.0	1.0	6.0	6.0	1.0	6.0	6.0
Minimum Split (s)	5.0	35.5	35.5	5.0	35.5	35.5	5.0	30.0	30.0	5.0	30.0	30.0
Total Split (s)	17.0	49.0	49.0	17.0	49.0	49.0	24.0	30.0	30.0	24.0	30.0	30.0
Total Split (%)	14.2%	40.8%	40.8%	14.2%	40.8%	40.8%	20.0%	25.0%	25.0%	20.0%	25.0%	25.0%
Maximum Green (s)	13.0	44.5	44.5	13.0	44.5	44.5	20.0	26.0	26.0	20.0	26.0	26.0
Yellow 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
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.2	4.2	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Minimum Gap (s)	0.5	2.2	2.2	1.0	2.2	2.2	0.5	0.5	0.5	0.5	0.5	0.5
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Flash Dont Walk (s)		26.0	26.0		26.0	26.0		21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	12.7	49.4	49.4	12.9	49.6	49.6	16.3	22.0	22.0	19.2	24.9	24.9
Actuated g/C Ratio	0.11	0.41	0.41	0.11	0.41	0.41	0.14	0.18	0.18	0.16	0.21	0.21
v/c Ratio	0.89	0.72	0.09	0.90	0.86	0.40	0.73	0.83	0.46	0.87	0.47	0.33
Control Delay	97.7	34.4	11.6	100.9	41.2	12.0	59.6	68.6	9.5	67.4	45.9	8.5
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	97.7	34.4	11.6	100.9	41.2	12.0	59.6	68.6	9.5	67.4	45.9	8.5
LOS	F	C	B	F	D	B	E	E	A	E	D	A
Approach Delay		41.7			41.4			50.9			51.9	
Approach LOS		D			D			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 70.5 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 45.0 Intersection LOS: D
Intersection Capacity Utilization 83.7% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Hwy 99 & Springbrook



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	929	56	144	1139	281	315	262	178	442	164	136
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	1.00	0.95	1.00	0.97	1.00	1.00	0.97	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)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
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)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
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)	157	968	58	150	1186	293	328	273	185	460	171	142
RTOR Reduction (vph)	0	0	22	0	0	105	0	0	151	0	0	113
Lane Group Flow (vph)	157	968	36	150	1186	188	328	273	34	460	171	29
Heavy Vehicles (%)	3%	5%	2%	10%	3%	0%	1%	1%	11%	1%	2%	1%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4
Actuated Green, G (s)	12.7	49.4	49.4	12.9	49.6	49.6	16.3	22.0	22.0	19.2	24.9	24.9
Effective Green, g (s)	12.7	49.4	49.4	12.9	49.6	49.6	16.3	22.0	22.0	19.2	24.9	24.9
Actuated g/C Ratio	0.11	0.41	0.41	0.11	0.41	0.41	0.14	0.18	0.18	0.16	0.21	0.21
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	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	176	1341	618	167	1372	632	446	327	253	626	366	314
v/s Ratio Prot	0.09	0.30		c0.10	c0.36		0.10	c0.15		c0.14	c0.10	
v/s Ratio Perm			0.02			0.12			0.02			0.02
v/c Ratio	0.89	0.72	0.06	0.90	0.86	0.30	0.74	0.83	0.13	0.87	0.47	0.09
Uniform Delay, d1	53.0	29.5	21.3	52.9	32.1	23.5	49.8	47.2	41.0	49.2	41.7	38.4
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	38.4	3.4	0.2	41.2	7.5	1.2	5.7	16.1	0.1	14.7	0.6	0.1
Delay (s)	91.4	32.9	21.5	94.1	39.6	24.7	55.4	63.4	41.2	63.9	42.3	38.5
Level of Service	F	C	C	F	D	C	E	E	D	E	D	D
Approach Delay (s)		40.1			41.9			54.8			54.5	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	46.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1085	181	0	1482	0	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)		200	0		0	0
Storage Lanes		1	0		0	1
Taper Length (ft)		100	100		100	100
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	3226	1515	0	3320	0	1428
Flt Permitted						
Satd. Flow (perm)	3226	1515	0	3320	0	1428
Link Speed (mph)	30			30	30	
Link Distance (ft)	435			490	248	
Travel Time (s)	9.9			11.1	5.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	6%	1%	0%	3%	0%	9%
Adj. Flow (vph)	1142	191	0	1560	0	15
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1142	191	0	1560	0	15
Enter Blocked Intersection	Yes	Yes	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 46.6%	ICU Level of Service A
Analysis Period (min) 15	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1085	181	0	1482	0	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1142	191	0	1560	0	15
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	875			490		
pX, platoon unblocked			0.90		0.81	0.90
vC, conflicting volume			1333		1922	571
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1149		1113	304
tC, single (s)			4.1		6.8	7.1
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			100		100	98
cM capacity (veh/h)			554		166	605

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	571	571	191	780	780	15
Volume Left	0	0	0	0	0	0
Volume Right	0	0	191	0	0	15
cSH	1700	1700	1700	1700	1700	605
Volume to Capacity	0.34	0.34	0.11	0.46	0.46	0.02
Queue Length 95th (ft)	0	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	11.1
Lane LOS						B
Approach Delay (s)	0.0			0.0		11.1
Approach LOS						B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		

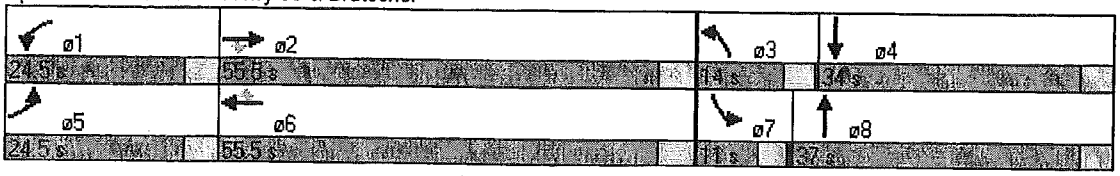
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	1004	84	244	1240	57	328	25	188	33	22	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	200		200	0		75	225		225	50		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
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			0.850			0.850		0.868			0.887	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1710	3257	1500	1676	3320	1530	1693	1540	0	1598	1597	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1710	3257	1500	1676	3320	1530	1693	1540	0	1598	1597	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			67			16		194			71	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		490			465			315			277	
Travel Time (s)		8.4			7.9			8.6			7.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	5%	2%	2%	3%	0%	1%	5%	1%	7%	0%	0%
Adj. Flow (vph)	48	1035	87	252	1278	59	338	26	194	34	23	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	1035	87	252	1278	59	338	220	0	34	94	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	4.0	6.0		4.0	6.0	
Minimum Split (s)	24.5	55.0	55.0	24.5	55.0	55.0	8.0	33.0		8.0	34.0	
Total Split (s)	24.5	55.5	55.5	24.5	55.5	55.5	14.0	37.0	0.0	11.0	34.0	0.0
Total Split (%)	19.1%	43.4%	43.4%	19.1%	43.4%	43.4%	10.9%	28.9%	0.0%	8.6%	26.6%	0.0%
Maximum Green (s)	20.5	51.0	51.0	20.5	51.0	51.0	10.0	33.0		7.0	30.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	3.5	4.0		3.5	4.0	
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0		0.5	0.0	
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	3.0	2.5		3.0	2.5	
Minimum Gap (s)	0.5	2.8	2.8	0.5	2.8	2.8	3.0	2.0		3.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	0.0	5.0		0.0	5.0	
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	0.0	5.0		0.0	5.0	
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		16.0	16.0		17.0	17.0		24.0			25.0	
Pedestrian Calls (#/hr)		0	0		0	0		0			0	
Act Effct Green (s)	8.3	65.7	65.7	20.3	79.5	79.5	17.4	22.5		7.1	8.1	
Actuated g/C Ratio	0.06	0.51	0.51	0.16	0.62	0.62	0.14	0.18		0.06	0.06	
v/c Ratio	0.43	0.62	0.11	0.95	0.62	0.06	1.47	0.51		0.39	0.56	
Control Delay	68.6	23.8	5.2	97.1	16.7	7.6	270.6	15.1		70.9	32.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	68.6	23.8	5.2	97.1	16.7	7.6	270.6	15.1		70.9	32.2	
LOS	E	C	A	F	B	A	F	B		E	C	
Approach Delay		24.2			29.1			169.9			42.5	
Approach LOS		C			C			F			D	

Intersection Summary

Area Type: Other
Cycle Length: 128
Actuated Cycle Length: 128
Offset: 81.5 (64%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.47
Intersection Signal Delay: 50.8 Intersection LOS: D
Intersection Capacity Utilization 82.2% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 4: Hwy 99 & Brutscher



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	1004	84	244	1240	57	328	25	188	33	22	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.89	
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)	1710	3257	1500	1676	3320	1530	1693	1539		1598	1596	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1710	3257	1500	1676	3320	1530	1693	1539		1598	1596	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	48	1035	87	252	1278	59	338	26	194	34	23	71
RTOR Reduction (vph)	0	0	33	0	0	6	0	160	0	0	66	0
Lane Group Flow (vph)	48	1035	54	252	1278	53	338	60	0	34	28	0
Heavy Vehicles (%)	0%	5%	2%	2%	3%	0%	1%	5%	1%	7%	0%	0%
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	7.3	64.1	64.1	20.3	77.1	77.1	17.4	22.5		4.6	9.7	
Effective Green, g (s)	7.3	64.1	64.1	20.3	77.1	77.1	17.4	22.5		4.6	9.7	
Actuated g/C Ratio	0.06	0.50	0.50	0.16	0.60	0.60	0.14	0.18		0.04	0.08	
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	3.0	2.5		3.0	2.5	
Lane Grp Cap (vph)	98	1631	751	266	2000	922	230	271		57	121	
v/s Ratio Prot	0.03	0.32		c0.15	c0.38		c0.20	c0.04		0.02	0.02	
v/s Ratio Perm			0.04			0.03						
v/c Ratio	0.49	0.63	0.07	0.95	0.64	0.06	1.47	0.22		0.60	0.23	
Uniform Delay, d1	58.5	23.4	16.5	53.3	16.5	10.5	55.3	45.2		60.8	55.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	1.9	0.2	40.4	1.6	0.1	233.5	0.3		15.6	0.7	
Delay (s)	60.8	25.3	16.7	93.8	18.0	10.6	288.8	45.5		76.4	56.4	
Level of Service	E	C	B	F	B	B	F	D		E	E	
Approach Delay (s)		26.1			29.8			192.9			61.7	
Approach LOS		C			C			F			E	

Intersection Summary			
HCM Average Control Delay	56.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	128.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	313	445	92	0	366
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.977			
Flt Protected						
Satd. Flow (prot)	0	1542	1686	0	0	1698
Flt Permitted						
Satd. Flow (perm)	0	1542	1686	0	0	1698
Link Speed (mph)	30		30			30
Link Distance (ft)	1394		715			385
Travel Time (s)	31.7		16.3			8.8
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	1%	5%	1%	0%	6%
Adj. Flow (vph)	0	356	506	105	0	416
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	356	611	0	0	416
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		24			12
Link Offset(ft)	0		6			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 57.7% ICU Level of Service B

Analysis Period (min) 15

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	313	445	92	0	366
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	356	506	105	0	416
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			715			385
pX, platoon unblocked	0.87	0.83			0.83	
vC, conflicting volume	974	558			610	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	697	370			432	
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	37			100	
cM capacity (veh/h)	358	565			948	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	356	610	416
Volume Left	0	0	0
Volume Right	356	105	0
cSH	565	1700	1700
Volume to Capacity	0.63	0.36	0.24
Queue Length 95th (ft)	109	0	0
Control Delay (s)	21.6	0.0	0.0
Lane LOS	C		
Approach Delay (s)	21.6	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

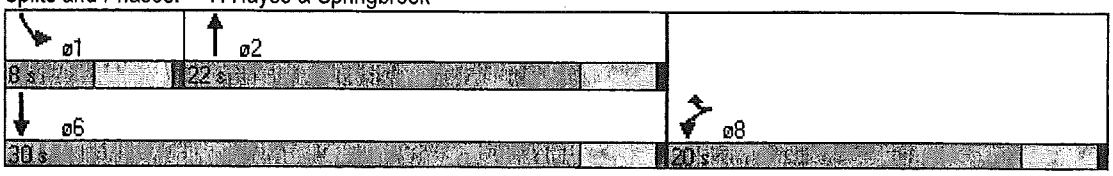
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	70	52	460	30	64	272
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0	0		0	175	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100	100		100	100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.992			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1629	1530	1706	0	1613	1682
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1629	1530	1706	0	1613	1682
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		61	7			
Link Speed (mph)	25		40			25
Link Distance (ft)	1176		606			715
Travel Time (s)	32.1		10.3			19.5
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	5%	0%	5%	0%	6%	7%
Adj. Flow (vph)	82	61	541	35	75	320
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	61	576	0	75	320
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		8.0	20.0
Total Split (s)	20.0	20.0	22.0	0.0	8.0	30.0
Total Split (%)	40.0%	40.0%	44.0%	0.0%	16.0%	60.0%
Maximum Green (s)	16.0	16.0	18.0		4.0	26.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	5.0	5.0	5.0			5.0
Flash Dont Walk (s)	11.0	11.0	11.0			11.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	7.7	7.7	27.5		4.0	32.6
Actuated g/C Ratio	0.17	0.17	0.60		0.09	0.71
v/c Ratio	0.30	0.20	0.56		0.52	0.27
Control Delay	18.3	6.7	13.6		35.5	4.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	18.3	6.7	13.6		35.5	4.4
LOS	B	A	B		D	A
Approach Delay	13.4		13.6			10.3
Approach LOS	B		B			B

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 45.7
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 12.4 Intersection LOS: B
Intersection Capacity Utilization 45.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: Hayes & Springbrook



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	70	52	460	30	64	272
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1629	1530	1705		1613	1682
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1629	1530	1705		1613	1682
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	82	61	541	35	75	320
RTOR Reduction (vph)	0	53	3	0	0	0
Lane Group Flow (vph)	82	8	573	0	75	320
Heavy Vehicles (%)	5%	0%	5%	0%	6%	7%
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						
Actuated Green, G (s)	6.6	6.6	26.6		2.6	33.2
Effective Green, g (s)	6.6	6.6	26.6		2.6	33.2
Actuated g/C Ratio	0.14	0.14	0.56		0.05	0.69
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	225	211	949		88	1168
v/s Ratio Prot	c0.05	0.01	c0.34		c0.05	0.19
v/s Ratio Perm						
v/c Ratio	0.36	0.04	0.60		0.85	0.27
Uniform Delay, d1	18.7	17.9	7.1		22.4	2.8
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.0	0.1	2.8		50.8	0.6
Delay (s)	19.7	17.9	9.9		73.2	3.3
Level of Service	B	B	A		E	A
Approach Delay (s)	18.9		9.9		16.6	
Approach LOS	B		A		B	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	47.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

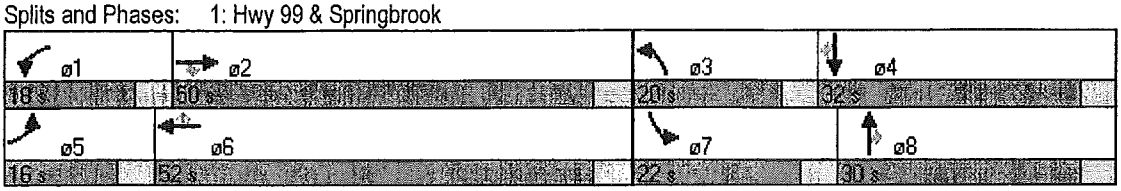
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	938	55	142	1131	278	342	275	179	454	162	135
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	450		150	0		175	0		0	225		175
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			38			186			186			141
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		931			440			385			481	
Travel Time (s)		15.9			7.5			10.5			13.1	
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
Heavy Vehicles (%)	3%	5%	2%	10%	3%	0%	1%	1%	11%	1%	2%	1%
Adj. Flow (vph)	156	977	57	148	1178	290	356	286	186	473	169	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	156	977	57	148	1178	290	356	286	186	473	169	141
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	1.0	10.0	10.0	1.0	10.0	10.0	1.0	6.0	6.0	1.0	6.0	6.0
Minimum Split (s)	5.0	35.5	35.5	5.0	35.5	35.5	5.0	30.0	30.0	5.0	30.0	30.0
Total Split (s)	16.0	50.0	50.0	18.0	52.0	52.0	20.0	30.0	30.0	22.0	32.0	32.0
Total Split (%)	13.3%	41.7%	41.7%	15.0%	43.3%	43.3%	16.7%	25.0%	25.0%	18.3%	26.7%	26.7%
Maximum Green (s)	12.0	45.5	45.5	14.0	47.5	47.5	16.0	26.0	26.0	18.0	28.0	28.0
Yellow 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
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.2	4.2	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Minimum Gap (s)	0.5	2.2	2.2	1.0	2.2	2.2	0.5	0.5	0.5	0.5	0.5	0.5
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Flash Dont Walk (s)		26.0	26.0		26.0	26.0		21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	12.0	49.5	49.5	13.4	50.9	50.9	15.5	22.6	22.6	18.0	25.2	25.2
Actuated g/C Ratio	0.10	0.41	0.41	0.11	0.42	0.42	0.13	0.19	0.19	0.15	0.21	0.21
v/c Ratio	0.94	0.73	0.09	0.85	0.84	0.38	0.84	0.85	0.45	0.96	0.46	0.33
Control Delay	109.7	34.4	11.3	78.5	47.3	19.1	69.3	69.8	9.3	82.5	45.2	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	109.7	34.4	11.3	78.5	47.3	19.1	69.3	69.8	9.3	82.5	45.2	8.2
LOS	F	C	B	E	D	B	E	E	A	F	D	A
Approach Delay		43.2			45.1			56.0			61.1	
Approach LOS		D			D			E			E	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 70.5 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 49.5 Intersection LOS: D
Intersection Capacity Utilization 84.5% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Hwy 99 & Springbrook



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	938	55	142	1131	278	342	275	179	454	162	135
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	1.00	0.95	1.00	0.97	1.00	1.00	0.97	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)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
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)	1660	3257	1500	1555	3320	1530	3285	1782	1378	3285	1765	1515
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)	156	977	57	148	1178	290	356	286	186	473	169	141
RTOR Reduction (vph)	0	0	22	0	0	107	0	0	151	0	0	111
Lane Group Flow (vph)	156	977	35	148	1178	183	356	286	35	473	169	30
Heavy Vehicles (%)	3%	5%	2%	10%	3%	0%	1%	1%	11%	1%	2%	1%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4
Actuated Green, G (s)	12.0	49.4	49.4	13.4	50.8	50.8	15.5	22.7	22.7	18.0	25.2	25.2
Effective Green, g (s)	12.0	49.4	49.4	13.4	50.8	50.8	15.5	22.7	22.7	18.0	25.2	25.2
Actuated g/C Ratio	0.10	0.41	0.41	0.11	0.42	0.42	0.13	0.19	0.19	0.15	0.21	0.21
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	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	166	1341	618	174	1405	648	424	337	261	493	371	318
v/s Ratio Prot	0.09	0.30		c0.10	c0.35		0.11	c0.16		c0.14	0.10	
v/s Ratio Perm			0.02			0.12			0.03			0.02
v/c Ratio	0.94	0.73	0.06	0.85	0.84	0.28	0.84	0.85	0.13	0.96	0.46	0.09
Uniform Delay, d1	53.6	29.7	21.3	52.3	30.9	22.7	51.0	47.0	40.5	50.6	41.4	38.2
Progression Factor	1.00	1.00	1.00	0.97	1.36	2.01	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	51.5	3.5	0.2	21.4	4.0	0.7	13.3	17.3	0.1	30.0	0.5	0.1
Delay (s)	105.1	33.2	21.4	72.2	46.2	46.2	64.3	64.3	40.6	80.6	41.9	38.3
Level of Service	F	C	C	E	D	D	E	E	D	F	D	D
Approach Delay (s)		42.0			48.6			59.0			64.6	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM Average Control Delay	51.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Volume (vph)	1078	181	0	1471	0	32
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)		200	0		0	0
Storage Lanes		1	0		0	1
Taper Length (ft)		100	100		100	100
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	3226	1515	0	3320	0	1428
Flt Permitted						
Satd. Flow (perm)	3226	1515	0	3320	0	1428
Link Speed (mph)	30			30	30	
Link Distance (ft)	435			490	248	
Travel Time (s)	9.9			11.1	5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	1%	0%	3%	0%	9%
Adj. Flow (vph)	1172	197	0	1599	0	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1172	197	0	1599	0	35
Enter Blocked Intersection	Yes	Yes	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 46.3%	ICU Level of Service A
Analysis Period (min) 15	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1078	181	0	1471	0	32
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1172	197	0	1599	0	35
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	875			490		
pX, platoon unblocked			0.95		0.77	0.95
vC, conflicting volume			1368		1971	586
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1286		1393	464
tC, single (s)			4.1		6.8	7.1
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			100		100	93
cM capacity (veh/h)			520		105	501

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	586	586	197	799	799	35
Volume Left	0	0	0	0	0	0
Volume Right	0	0	197	0	0	35
cSH	1700	1700	1700	1700	1700	501
Volume to Capacity	0.34	0.34	0.12	0.47	0.47	0.07
Queue Length 95th (ft)	0	0	0	0	0	6
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	12.7
Lane LOS						B
Approach Delay (s)	0.0			0.0		12.7
Approach LOS						B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

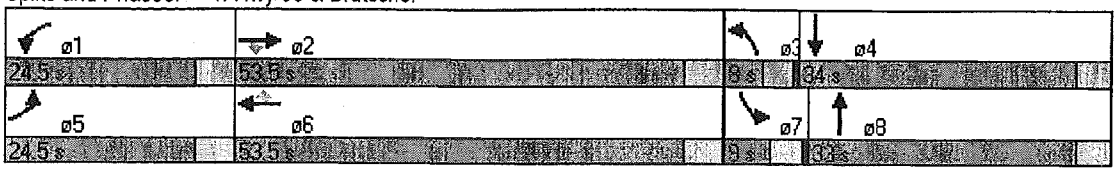
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	1008	84	268	1229	57	328	25	188	33	22	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	200		200	0		75	225		225	50		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
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			0.850			0.850		0.868			0.887	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1710	3257	1500	1676	3320	1530	1693	1540	0	1598	1597	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1710	3257	1500	1676	3320	1530	1693	1540	0	1598	1597	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			18		194			71	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		490			465			315			277	
Travel Time (s)		8.4			7.9			8.6			7.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	5%	2%	2%	3%	0%	1%	5%	1%	7%	0%	0%
Adj. Flow (vph)	48	1039	87	276	1267	59	338	26	194	34	23	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	1039	87	276	1267	59	338	220	0	34	94	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	4.0	6.0		4.0	6.0	
Minimum Split (s)	24.5	55.0	55.0	24.5	55.0	55.0	8.0	33.0		8.0	34.0	
Total Split (s)	24.5	53.5	53.5	24.5	53.5	53.5	8.0	33.0	0.0	9.0	34.0	0.0
Total Split (%)	20.4%	44.6%	44.6%	20.4%	44.6%	44.6%	6.7%	27.5%	0.0%	7.5%	28.3%	0.0%
Maximum Green (s)	20.5	49.0	49.0	20.5	49.0	49.0	4.0	29.0		5.0	30.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	3.5	4.0		3.5	4.0	
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0		0.5	0.0	
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	3.0	2.5		3.0	2.5	
Minimum Gap (s)	0.5	2.8	2.8	0.5	2.8	2.8	3.0	2.0		3.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	0.0	5.0		0.0	5.0	
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	0.0	5.0		0.0	5.0	
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		16.0	16.0		17.0	17.0		24.0			25.0	
Pedestrian Calls (#/hr)		0	0		0	0		0			0	
Act Effct Green (s)	8.1	59.2	59.2	20.5	73.4	73.4	14.1	21.3		6.6	9.7	
Actuated g/C Ratio	0.07	0.49	0.49	0.17	0.61	0.61	0.12	0.18		0.06	0.08	
v/c Ratio	0.42	0.65	0.11	0.97	0.62	0.06	1.70	0.51		0.39	0.48	
Control Delay	75.3	13.7	1.6	94.9	16.4	7.2	366.7	14.5		68.2	25.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	75.3	13.7	1.6	94.9	16.4	7.2	366.7	14.5		68.2	25.6	
LOS	E	B	A	F	B	A	F	B		E	C	
Approach Delay		15.4			29.6			227.8			36.9	
Approach LOS		B			C			F			D	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.70
Intersection Signal Delay: 57.0 Intersection LOS: E
Intersection Capacity Utilization 83.7% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 4: Hwy 99 & Brutscher



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	1008	84	268	1229	57	328	25	188	33	22	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.89	
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)	1710	3257	1500	1676	3320	1530	1693	1539		1598	1596	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1710	3257	1500	1676	3320	1530	1693	1539		1598	1596	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	48	1039	87	276	1267	59	338	26	194	34	23	71
RTOR Reduction (vph)	0	0	38	0	0	7	0	160	0	0	64	0
Lane Group Flow (vph)	48	1039	49	276	1267	52	338	60	0	34	30	0
Heavy Vehicles (%)	0%	5%	2%	2%	3%	0%	1%	5%	1%	7%	0%	0%
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	7.2	57.6	57.6	20.5	70.9	70.9	14.1	21.3		4.1	11.3	
Effective Green, g (s)	7.2	57.6	57.6	20.5	70.9	70.9	14.1	21.3		4.1	11.3	
Actuated g/C Ratio	0.06	0.48	0.48	0.17	0.59	0.59	0.12	0.18		0.03	0.09	
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	3.0	2.5		3.0	2.5	
Lane Grp Cap (vph)	103	1563	720	286	1962	904	199	273		55	150	
v/s Ratio Prot	0.03	0.32		c0.16	c0.38		c0.20	c0.04		0.02	0.02	
v/s Ratio Perm			0.03			0.03						
v/c Ratio	0.47	0.66	0.07	0.97	0.65	0.06	1.70	0.22		0.62	0.20	
Uniform Delay, d1	54.5	23.8	16.8	49.4	16.2	10.4	53.0	42.3		57.2	50.2	
Progression Factor	1.30	0.56	0.32	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	1.4	0.1	43.2	1.7	0.1	335.0	0.3		18.9	0.5	
Delay (s)	71.9	14.7	5.6	92.6	17.9	10.5	387.9	42.6		76.1	50.6	
Level of Service	E	B	A	F	B	B	F	D		E	D	
Approach Delay (s)		16.4			30.5			251.7			57.4	
Approach LOS		B			C			F			E	

Intersection Summary			
HCM Average Control Delay	62.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	358	441	105	0	361
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.974			
Flt Protected						
Satd. Flow (prot)	0	1542	1682	0	0	1698
Flt Permitted						
Satd. Flow (perm)	0	1542	1682	0	0	1698
Link Speed (mph)	30		30			30
Link Distance (ft)	1394		715			385
Travel Time (s)	31.7		16.8			8.8
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	1%	5%	1%	0%	6%
Adj. Flow (vph)	0	407	501	119	0	410
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	407	620	0	0	410
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		24			12
Link Offset(ft)	0		6			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 61.3%	ICU Level of Service B
Analysis Period (min) 15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	358	441	105	0	361
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	407	501	119	0	410
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			715			385
pX, platoon unblocked	0.86	0.82			0.82	
vC, conflicting volume	971	561			620	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	682	359			432	
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	28			100	
cM capacity (veh/h)	361	566			937	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	407	620	410
Volume Left	0	0	0
Volume Right	407	119	0
cSH	566	1700	1700
Volume to Capacity	0.72	0.36	0.24
Queue Length 95th (ft)	148	0	0
Control Delay (s)	25.9	0.0	0.0
Lane LOS	D		
Approach Delay (s)	25.9	0.0	0.0
Approach LOS	D		

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

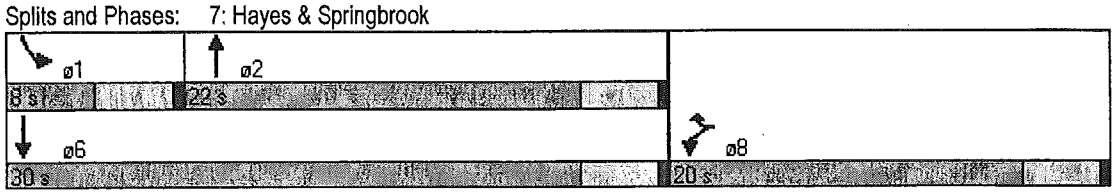
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	81	55	466	30	64	267
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0	0		0	175	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100	100		100	100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.992			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1629	1530	1705	0	1613	1682
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1629	1530	1705	0	1613	1682
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		65	7			
Link Speed (mph)	25		40			25
Link Distance (ft)	1176		606			715
Travel Time (s)	32.1		10.3			19.5
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	5%	0%	5%	0%	6%	7%
Adj. Flow (vph)	95	65	548	35	75	314
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	65	583	0	75	314
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		8.0	20.0
Total Split (s)	20.0	20.0	22.0	0.0	8.0	30.0
Total Split (%)	40.0%	40.0%	44.0%	0.0%	16.0%	60.0%
Maximum Green (s)	16.0	16.0	18.0		4.0	26.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	5.0	5.0	5.0			5.0
Flash Dont Walk (s)	11.0	11.0	11.0			11.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	8.0	8.0	27.1		4.0	32.2
Actuated g/C Ratio	0.18	0.18	0.59		0.09	0.71
v/c Ratio	0.33	0.20	0.57		0.52	0.26
Control Delay	18.5	6.5	14.2		35.9	4.6
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	18.5	6.5	14.2		35.9	4.6
LOS	B	A	B		D	A
Approach Delay	13.6		14.2			10.6
Approach LOS	B		B			B

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 45.6
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.57
Intersection Signal Delay: 12.9 Intersection LOS: B
Intersection Capacity Utilization 46.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: Hayes & Springbrook



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	81	55	466	30	64	267
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1629	1530	1705		1613	1682
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1629	1530	1705		1613	1682
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	95	65	548	35	75	314
RTOR Reduction (vph)	0	56	3	0	0	0
Lane Group Flow (vph)	95	9	580	0	75	314
Heavy Vehicles (%)	5%	0%	5%	0%	6%	7%
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						
Actuated Green, G (s)	6.9	6.9	26.3		2.5	32.8
Effective Green, g (s)	6.9	6.9	26.3		2.5	32.8
Actuated g/C Ratio	0.14	0.14	0.55		0.05	0.69
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	236	221	940		85	1157
v/s Ratio Prot	c0.06	0.01	c0.34		c0.05	0.19
v/s Ratio Perm						
v/c Ratio	0.40	0.04	0.62		0.88	0.27
Uniform Delay, d1	18.5	17.6	7.3		22.5	2.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.1	0.1	3.0		60.1	0.6
Delay (s)	19.7	17.6	10.3		82.6	3.4
Level of Service	B	B	B		F	A
Approach Delay (s)	18.8		10.3			18.7
Approach LOS	B		B			B

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	47.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

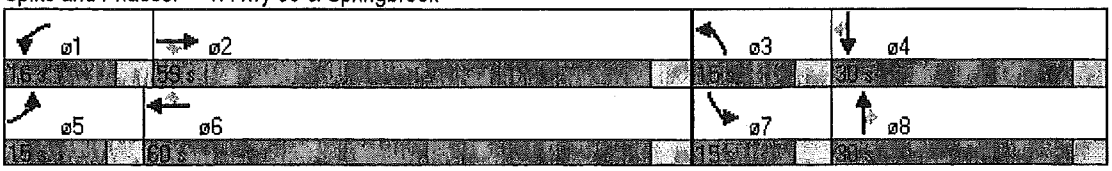
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	135	1095	61	115	1417	155	196	118	95	267	91	113
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	450		150	0		175	0		0	225		175
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1676	3288	1530	1569	3320	1530	3285	1748	1430	3252	1682	1500
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1676	3288	1530	1569	3320	1530	3285	1748	1430	3252	1682	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			41			93			99			118
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		931			440			385			481	
Travel Time (s)		15.9			7.5			10.5			13.1	
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
Heavy Vehicles (%)	2%	4%	0%	9%	3%	0%	1%	3%	7%	2%	7%	2%
Adj. Flow (vph)	141	1141	64	120	1476	161	204	123	99	278	95	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	1141	64	120	1476	161	204	123	99	278	95	118
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	1.0	10.0	10.0	1.0	10.0	10.0	1.0	6.0	6.0	1.0	6.0	6.0
Minimum Split (s)	5.0	35.5	35.5	5.0	35.5	35.5	5.0	30.0	30.0	5.0	30.0	30.0
Total Split (s)	15.0	59.0	59.0	16.0	60.0	60.0	15.0	30.0	30.0	15.0	30.0	30.0
Total Split (%)	12.5%	49.2%	49.2%	13.3%	50.0%	50.0%	12.5%	25.0%	25.0%	12.5%	25.0%	25.0%
Maximum Green (s)	11.0	54.5	54.5	12.0	55.5	55.5	11.0	26.0	26.0	11.0	26.0	26.0
Yellow 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
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.2	4.2	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Minimum Gap (s)	0.5	2.2	2.2	1.0	2.2	2.2	0.5	0.5	0.5	0.5	0.5	0.5
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Flash Dont Walk (s)		26.0	26.0		26.0	26.0		21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	11.0	52.6	52.6	11.2	52.7	52.7	10.1	12.0	12.0	11.1	12.9	12.9
Actuated g/C Ratio	0.11	0.51	0.51	0.11	0.51	0.51	0.10	0.12	0.12	0.11	0.12	0.12
v/c Ratio	0.79	0.68	0.08	0.71	0.87	0.19	0.64	0.61	0.39	0.80	0.45	0.41
Control Delay	76.6	22.3	7.1	68.9	29.7	7.1	55.5	57.1	13.4	64.3	50.3	12.3
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	76.6	22.3	7.1	68.9	29.7	7.1	55.5	57.1	13.4	64.3	50.3	12.3
LOS	E	C	A	E	C	A	E	E	B	E	D	B
Approach Delay		27.2			30.3			46.2			49.1	
Approach LOS		C			C			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 103.4
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 33.3 Intersection LOS: C
Intersection Capacity Utilization 74.4% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Hwy 99 & Springbrook



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	135	1095	61	115	1417	155	196	118	95	267	91	113
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	1.00	0.95	1.00	0.97	1.00	1.00	0.97	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)	1676	3288	1530	1569	3320	1530	3285	1748	1430	3252	1682	1500
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)	1676	3288	1530	1569	3320	1530	3285	1748	1430	3252	1682	1500
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)	141	1141	64	120	1476	161	204	123	99	278	95	118
RTOR Reduction (vph)	0	0	20	0	0	46	0	0	88	0	0	103
Lane Group Flow (vph)	141	1141	44	120	1476	115	204	123	11	278	95	15
Heavy Vehicles (%)	2%	4%	0%	9%	3%	0%	1%	3%	7%	2%	7%	2%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4
Actuated Green, G (s)	11.0	52.6	52.6	11.2	52.8	52.8	10.1	12.0	12.0	11.1	13.0	13.0
Effective Green, g (s)	11.0	52.6	52.6	11.2	52.8	52.8	10.1	12.0	12.0	11.1	13.0	13.0
Actuated g/C Ratio	0.11	0.51	0.51	0.11	0.51	0.51	0.10	0.12	0.12	0.11	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	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	178	1673	778	170	1695	781	321	203	166	349	211	189
v/s Ratio Prot	c0.08	0.35		0.08	c0.44		0.06	c0.07		c0.09	0.06	
v/s Ratio Perm			0.03			0.08			0.01			0.01
v/c Ratio	0.79	0.68	0.06	0.71	0.87	0.15	0.64	0.61	0.07	0.80	0.45	0.08
Uniform Delay, d1	45.1	19.1	12.8	44.5	22.3	13.4	44.9	43.5	40.7	45.0	41.9	39.9
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	20.1	1.3	0.0	11.7	5.4	0.1	3.4	3.9	0.1	11.4	0.9	0.1
Delay (s)	65.2	20.4	12.9	56.2	27.7	13.5	48.2	47.4	40.8	56.4	42.8	40.0
Level of Service	E	C	B	E	C	B	D	D	D	E	D	D
Approach Delay (s)		24.7			28.4			46.3			49.9	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	31.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	103.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1108	189	0	1720	0	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)		200	0		0	0
Storage Lanes		1	0		0	1
Taper Length (ft)		100	100		100	100
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	3257	1500	0	3288	0	1557
Flt Permitted						
Satd. Flow (perm)	3257	1500	0	3288	0	1557
Link Speed (mph)	30			30	30	
Link Distance (ft)	435			490	248	
Travel Time (s)	9.9			11.1	5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	2%	0%	4%	0%	0%
Adj. Flow (vph)	1204	205	0	1870	0	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1204	205	0	1870	0	22
Enter Blocked Intersection	Yes	Yes	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 53.5% ICU Level of Service A
Analysis Period (min) 15

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Volume (veh/h)	1108	189	0	1720	0	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1204	205	0	1870	0	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	875			490		
pX, platoon unblocked			0.83		0.72	0.83
vC, conflicting volume			1410		2139	602
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1089		759	119
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	97
cM capacity (veh/h)			539		250	763

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	602	602	205	935	935	22
Volume Left	0	0	0	0	0	0
Volume Right	0	0	205	0	0	22
cSH	1700	1700	1700	1700	1700	763
Volume to Capacity	0.35	0.35	0.12	0.55	0.55	0.03
Queue Length 95th (ft)	0	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.9
Lane LOS						A
Approach Delay (s)	0.0			0.0		9.9
Approach LOS						A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		

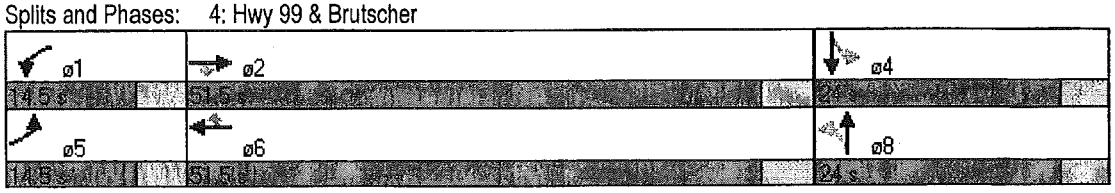
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	1018	46	129	1426	57	186	27	156	29	17	84
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	200		200	0		75	225		225	50		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
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			0.850			0.850		0.872			0.876	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1710	3257	1500	1676	3320	1430	1676	1522	0	1660	1502	0
Flt Permitted	0.950			0.950			0.689			0.517		
Satd. Flow (perm)	1710	3257	1500	1676	3320	1430	1216	1522	0	903	1502	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			47			26		161			87	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		490			586			315			277	
Travel Time (s)		8.4			10.0			8.6			7.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	5%	2%	2%	3%	7%	2%	4%	3%	3%	0%	6%
Adj. Flow (vph)	55	1049	47	133	1470	59	192	28	161	30	18	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	1049	47	133	1470	59	192	189	0	30	105	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	24.5	55.0	55.0	24.5	55.0	55.0	33.0	33.0		34.0	34.0	
Total Split (s)	14.5	51.5	51.5	14.5	51.5	51.5	24.0	24.0	0.0	24.0	24.0	0.0
Total Split (%)	16.1%	57.2%	57.2%	16.1%	57.2%	57.2%	26.7%	26.7%	0.0%	26.7%	26.7%	0.0%
Maximum Green (s)	10.5	47.0	47.0	10.5	47.0	47.0	20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	2.8	2.8	0.5	2.8	2.8	2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	5.0	5.0		5.0	5.0	
Recall Mode	None	Min	Min	None	Min	Min	None	None		None	None	
Walk Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		16.0	16.0		17.0	17.0	24.0	24.0		25.0	25.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	7.5	36.1	36.1	9.5	43.2	43.2	16.1	16.1		16.1	16.1	
Actuated g/C Ratio	0.10	0.48	0.48	0.13	0.58	0.58	0.21	0.21		0.21	0.21	
v/c Ratio	0.32	0.67	0.06	0.63	0.77	0.07	0.73	0.42		0.15	0.27	
Control Delay	41.4	17.3	3.7	50.4	17.8	6.8	48.3	10.7		29.8	11.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	41.4	17.3	3.7	50.4	17.8	6.8	48.3	10.7		29.8	11.5	
LOS	D	B	A	D	B	A	D	B		C	B	
Approach Delay		17.9			20.0			29.6			15.5	
Approach LOS		B			C			C			B	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 75
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 20.2 Intersection LOS: C
Intersection Capacity Utilization 76.0% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 4: Hwy 99 & Brutscher



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	1018	46	129	1426	57	186	27	156	29	17	84
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.88	
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)	1710	3257	1500	1676	3320	1430	1676	1522		1660	1502	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.69	1.00		0.52	1.00	
Satd. Flow (perm)	1710	3257	1500	1676	3320	1430	1216	1522		903	1502	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	55	1049	47	133	1470	59	192	28	161	30	18	87
RTOR Reduction (vph)	0	0	23	0	0	11	0	127	0	0	69	0
Lane Group Flow (vph)	55	1049	24	133	1470	48	192	62	0	30	36	0
Heavy Vehicles (%)	0%	5%	2%	2%	3%	7%	2%	4%	3%	3%	0%	6%
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		
Actuated Green, G (s)	4.6	38.3	38.3	9.5	43.2	43.2	16.1	16.1		16.1	16.1	
Effective Green, g (s)	4.6	38.3	38.3	9.5	43.2	43.2	16.1	16.1		16.1	16.1	
Actuated g/C Ratio	0.06	0.50	0.50	0.12	0.57	0.57	0.21	0.21		0.21	0.21	
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)	103	1633	752	208	1877	809	256	321		190	317	
v/s Ratio Prot	0.03	0.32		c0.08	c0.44			0.04			0.02	
v/s Ratio Perm			0.02			0.03	c0.16			0.03		
v/c Ratio	0.53	0.64	0.03	0.64	0.78	0.06	0.75	0.19		0.16	0.11	
Uniform Delay, d1	34.9	14.0	9.7	31.8	12.9	7.5	28.3	24.8		24.6	24.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	1.1	0.0	5.2	2.5	0.1	11.1	0.2		0.3	0.1	
Delay (s)	38.4	15.2	9.7	37.0	15.5	7.5	39.4	25.0		24.9	24.5	
Level of Service	D	B	A	D	B	A	D	C		C	C	
Approach Delay (s)		16.0			16.9			32.3			24.6	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	76.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	208	195	57	0	258
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.969			
Flt Protected						
Satd. Flow (prot)	0	1542	1672	0	0	1731
Flt Permitted						
Satd. Flow (perm)	0	1542	1672	0	0	1731
Link Speed (mph)	30		30			30
Link Distance (ft)	1394		715			385
Travel Time (s)	31.7		16.3			8.8
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	1%	5%	2%	0%	4%
Adj. Flow (vph)	0	236	222	65	0	293
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	236	287	0	0	293
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		24			12
Link Offset(ft)	0		6			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 34.8% ICU Level of Service A
Analysis Period (min) 15

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	208	195	57	0	258
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	236	222	65	0	293
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			715			385
pX, platoon unblocked	0.97					
vC, conflicting volume	547	254			286	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	517	254			286	
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	70			100	
cM capacity (veh/h)	506	787			1287	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	236	286	293
Volume Left	0	0	0
Volume Right	236	65	0
cSH	787	1700	1700
Volume to Capacity	0.30	0.17	0.17
Queue Length 95th (ft)	32	0	0
Control Delay (s)	11.5	0.0	0.0
Lane LOS	B		
Approach Delay (s)	11.5	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

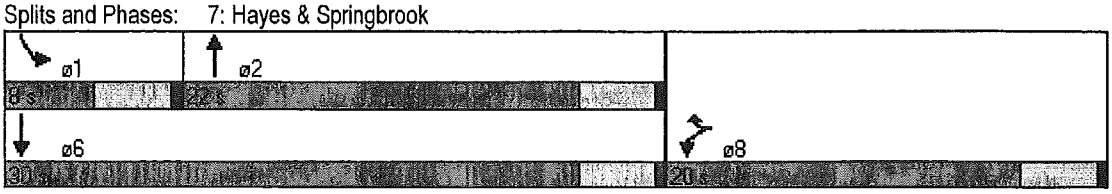
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	31	24	203	11	30	188
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0	0		0	175	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100	100		100	100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.993			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1710	1530	1706	0	1660	1714
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1710	1530	1706	0	1660	1714
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		28	6			
Link Speed (mph)	25		40			25
Link Distance (ft)	1176		606			715
Travel Time (s)	32.1		10.3			19.5
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	0%	5%	0%	3%	5%
Adj. Flow (vph)	36	28	239	13	35	221
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	28	252	0	35	221
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		8.0	20.0
Total Split (s)	20.0	20.0	22.0	0.0	8.0	30.0
Total Split (%)	40.0%	40.0%	44.0%	0.0%	16.0%	60.0%
Maximum Green (s)	16.0	16.0	18.0		4.0	26.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	5.0	5.0	5.0			5.0
Flash Dont Walk (s)	11.0	11.0	11.0			11.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	6.5	6.5	36.1		4.0	37.9
Actuated g/C Ratio	0.14	0.14	0.77		0.09	0.81
v/c Ratio	0.15	0.12	0.19		0.24	0.16
Control Delay	18.3	8.6	4.6		23.9	2.8
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	18.3	8.6	4.6		23.9	2.8
LOS	B	A	A		C	A
Approach Delay	14.1		4.6			5.7
Approach LOS	B		A			A

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 46.8
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.24
Intersection Signal Delay: 6.1 Intersection LOS: A
Intersection Capacity Utilization 28.6% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: Hayes & Springbrook



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	31	24	203	11	30	188
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1710	1530	1707		1660	1714
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1710	1530	1707		1660	1714
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	36	28	239	13	35	221
RTOR Reduction (vph)	0	26	2	0	0	0
Lane Group Flow (vph)	36	2	250	0	35	221
Heavy Vehicles (%)	0%	0%	5%	0%	3%	5%
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						
Actuated Green, G (s)	4.2	4.2	34.4		0.9	39.3
Effective Green, g (s)	4.2	4.2	34.4		0.9	39.3
Actuated g/C Ratio	0.08	0.08	0.67		0.02	0.76
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	139	125	1140		29	1308
v/s Ratio Prot	c0.02	0.00	c0.15		c0.02	0.13
v/s Ratio Perm						
v/c Ratio	0.26	0.02	0.22		1.21	0.17
Uniform Delay, d1	22.2	21.8	3.3		25.3	1.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.0	0.1	0.4		236.0	0.3
Delay (s)	23.2	21.8	3.8		261.3	1.9
Level of Service	C	C	A		F	A
Approach Delay (s)	22.6		3.8			37.4
Approach LOS	C		A			D

Intersection Summary			
HCM Average Control Delay	20.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	51.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

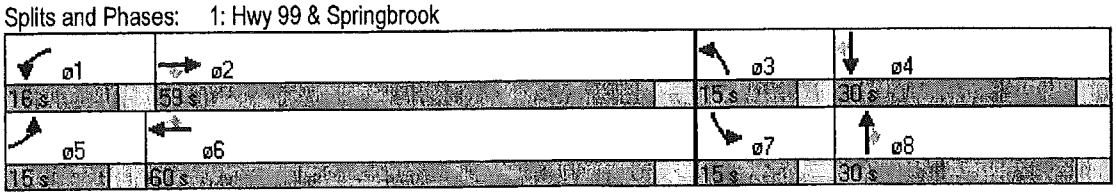
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	1119	62	118	1445	158	199	120	97	272	92	115
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	450		150	0		175	0		0	225		175
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1676	3288	1530	1569	3320	1530	3285	1748	1430	3252	1682	1500
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1676	3288	1530	1569	3320	1530	3285	1748	1430	3252	1682	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			40			93			97			117
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		931			440			385			481	
Travel Time (s)		15.9			7.5			10.5			13.1	
Peak Hour Factor	0.91	0.91	0.91	0.98	0.98	0.98	1.00	1.00	1.00	0.98	0.98	0.98
Heavy Vehicles (%)	2%	4%	0%	9%	3%	0%	1%	3%	7%	2%	7%	2%
Adj. Flow (vph)	151	1230	68	120	1474	161	199	120	97	278	94	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	151	1230	68	120	1474	161	199	120	97	278	94	117
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	1.0	10.0	10.0	1.0	10.0	10.0	1.0	6.0	6.0	1.0	6.0	6.0
Minimum Split (s)	5.0	35.5	35.5	5.0	35.5	35.5	5.0	30.0	30.0	5.0	30.0	30.0
Total Split (s)	15.0	59.0	59.0	16.0	60.0	60.0	15.0	30.0	30.0	15.0	30.0	30.0
Total Split (%)	12.5%	49.2%	49.2%	13.3%	50.0%	50.0%	12.5%	25.0%	25.0%	12.5%	25.0%	25.0%
Maximum Green (s)	11.0	54.5	54.5	12.0	55.5	55.5	11.0	26.0	26.0	11.0	26.0	26.0
Yellow 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
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.2	4.2	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Minimum Gap (s)	0.5	2.2	2.2	1.0	2.2	2.2	0.5	0.5	0.5	0.5	0.5	0.5
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Flash Dont Walk (s)		26.0	26.0		26.0	26.0		21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	11.1	52.5	52.5	11.2	52.6	52.6	10.0	11.8	11.8	11.1	12.9	12.9
Actuated g/C Ratio	0.11	0.51	0.51	0.11	0.51	0.51	0.10	0.11	0.11	0.11	0.13	0.13
v/c Ratio	0.84	0.73	0.09	0.71	0.87	0.19	0.62	0.60	0.39	0.80	0.45	0.40
Control Delay	83.4	23.7	7.6	68.7	29.6	7.0	55.0	56.9	13.5	63.9	50.3	12.4
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	83.4	23.7	7.6	68.7	29.6	7.0	55.0	56.9	13.5	63.9	50.3	12.4
LOS	F	C	A	E	C	A	E	E	B	E	D	B
Approach Delay		29.1			30.2			45.9			49.0	
Approach LOS		C			C			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 103.1
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 33.6 Intersection LOS: C
Intersection Capacity Utilization 75.4% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Hwy 99 & Springbrook



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	1119	62	118	1445	158	199	120	97	272	92	115
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	1.00	0.95	1.00	0.97	1.00	1.00	0.97	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)	1676	3288	1530	1569	3320	1530	3285	1748	1430	3252	1682	1500
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)	1676	3288	1530	1569	3320	1530	3285	1748	1430	3252	1682	1500
Peak-hour factor, PHF	0.91	0.91	0.91	0.98	0.98	0.98	1.00	1.00	1.00	0.98	0.98	0.98
Adj. Flow (vph)	151	1230	68	120	1474	161	199	120	97	278	94	117
RTOR Reduction (vph)	0	0	20	0	0	46	0	0	86	0	0	102
Lane Group Flow (vph)	151	1230	48	120	1474	115	199	120	11	278	94	15
Heavy Vehicles (%)	2%	4%	0%	9%	3%	0%	1%	3%	7%	2%	7%	2%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4
Actuated Green, G (s)	11.1	52.5	52.5	11.2	52.6	52.6	10.0	11.8	11.8	11.1	12.9	12.9
Effective Green, g (s)	11.1	52.5	52.5	11.2	52.6	52.6	10.0	11.8	11.8	11.1	12.9	12.9
Actuated g/C Ratio	0.11	0.51	0.51	0.11	0.51	0.51	0.10	0.11	0.11	0.11	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	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	180	1674	779	170	1694	781	319	200	164	350	210	188
v/s Ratio Prot	c0.09	0.37		0.08	c0.44		0.06	c0.07		c0.09	0.06	
v/s Ratio Perm			0.03			0.08			0.01			0.01
v/c Ratio	0.84	0.73	0.06	0.71	0.87	0.15	0.62	0.60	0.07	0.79	0.45	0.08
Uniform Delay, d1	45.1	19.8	12.8	44.4	22.2	13.4	44.7	43.4	40.7	44.9	41.8	39.8
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	26.8	1.9	0.1	11.7	5.4	0.1	3.1	3.9	0.1	11.2	0.9	0.1
Delay (s)	72.0	21.7	12.9	56.0	27.6	13.5	47.8	47.3	40.8	56.1	42.7	39.9
Level of Service	E	C	B	E	C	B	D	D	D	E	D	D
Approach Delay (s)		26.5			28.3			46.0			49.7	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	32.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	103.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Volume (vph)	1135	192	0	1755	0	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)		200	0		0	0
Storage Lanes		1	0		0	1
Taper Length (ft)		100	100		100	100
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	3257	1500	0	3288	0	1557
Flt Permitted						
Satd. Flow (perm)	3257	1500	0	3288	0	1557
Link Speed (mph)	30			30	30	
Link Distance (ft)	435			490	248	
Travel Time (s)	9.9			11.1	5.6	
Peak Hour Factor	0.98	0.98	0.95	0.95	1.00	1.00
Heavy Vehicles (%)	5%	2%	0%	4%	0%	0%
Adj. Flow (vph)	1158	196	0	1847	0	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1158	196	0	1847	0	20
Enter Blocked Intersection	Yes	Yes	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 54.5% ICU Level of Service A

Analysis Period (min) 15

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Volume (veh/h)	1135	192	0	1755	0	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.95	0.95	1.00	1.00
Hourly flow rate (vph)	1158	196	0	1847	0	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	875			490		
pX, platoon unblocked			0.82		0.71	0.82
vC, conflicting volume			1354		2082	579
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			984		536	34
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	98
cM capacity (veh/h)			580		340	847

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	579	579	196	924	924	20
Volume Left	0	0	0	0	0	0
Volume Right	0	0	196	0	0	20
cSH	1700	1700	1700	1700	1700	847
Volume to Capacity	0.34	0.34	0.12	0.54	0.54	0.02
Queue Length 95th (ft)	0	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.4
Lane LOS						A
Approach Delay (s)	0.0			0.0		9.4
Approach LOS						A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	1037	53	137	1451	58	194	27	162	29	17	85
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	200		200	0		75	225		225	50		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
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			0.850			0.850		0.871			0.875	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1710	3257	1500	1676	3320	1430	1676	1520	0	1660	1500	0
Flt Permitted	0.950			0.950			0.691			0.517		
Satd. Flow (perm)	1710	3257	1500	1676	3320	1430	1219	1520	0	903	1500	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			54			25		162			85	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		490			586			315			277	
Travel Time (s)		8.4			10.0			8.6			7.6	
Peak Hour Factor	0.99	0.99	0.99	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	5%	2%	2%	3%	7%	2%	4%	3%	3%	0%	6%
Adj. Flow (vph)	55	1047	54	143	1511	60	194	27	162	29	17	85
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	1047	54	143	1511	60	194	189	0	29	102	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	24.5	55.0	55.0	24.5	55.0	55.0	33.0	33.0		34.0	34.0	
Total Split (s)	14.5	51.5	51.5	14.5	51.5	51.5	24.0	24.0	0.0	24.0	24.0	0.0
Total Split (%)	16.1%	57.2%	57.2%	16.1%	57.2%	57.2%	26.7%	26.7%	0.0%	26.7%	26.7%	0.0%
Maximum Green (s)	10.5	47.0	47.0	10.5	47.0	47.0	20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	2.8	2.8	0.5	2.8	2.8	2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	5.0	5.0		5.0	5.0	
Recall Mode	None	Min	Min	None	Min	Min	None	None		None	None	
Walk Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		16.0	16.0		17.0	17.0	24.0	24.0		25.0	25.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	7.5	36.1	36.1	9.8	43.5	43.5	16.3	16.3		16.3	16.3	
Actuated g/C Ratio	0.10	0.48	0.48	0.13	0.58	0.58	0.22	0.22		0.22	0.22	
v/c Ratio	0.33	0.67	0.07	0.66	0.79	0.07	0.74	0.42		0.15	0.26	
Control Delay	41.4	17.4	3.5	52.0	18.6	7.0	48.6	10.5		29.7	11.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	41.4	17.4	3.5	52.0	18.6	7.0	48.6	10.5		29.7	11.4	
LOS	D	B	A	D	B	A	D	B		C	B	
Approach Delay		17.9			21.0			29.8			15.5	
Approach LOS		B			C			C			B	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 75.4
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 20.7 Intersection LOS: C
Intersection Capacity Utilization 77.2% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 4: Hwy 99 & Brutscher

ø1	ø2	ø4
14.5 s	51.5 s	24 s
ø5	ø6	ø8
14.5 s	51.5 s	24 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	1037	53	137	1451	58	194	27	162	29	17	85
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.88	
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)	1710	3257	1500	1676	3320	1430	1676	1521		1660	1500	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.69	1.00		0.52	1.00	
Satd. Flow (perm)	1710	3257	1500	1676	3320	1430	1220	1521		903	1500	
Peak-hour factor, PHF	0.99	0.99	0.99	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	1047	54	143	1511	60	194	27	162	29	17	85
RTOR Reduction (vph)	0	0	27	0	0	11	0	128	0	0	67	0
Lane Group Flow (vph)	55	1047	27	143	1511	49	194	61	0	29	35	0
Heavy Vehicles (%)	0%	5%	2%	2%	3%	7%	2%	4%	3%	3%	0%	6%
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		
Actuated Green, G (s)	4.6	38.3	38.3	9.8	43.5	43.5	16.3	16.3		16.3	16.3	
Effective Green, g (s)	4.6	38.3	38.3	9.8	43.5	43.5	16.3	16.3		16.3	16.3	
Actuated g/C Ratio	0.06	0.50	0.50	0.13	0.57	0.57	0.21	0.21		0.21	0.21	
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)	102	1622	747	214	1878	809	259	322		191	318	
v/s Ratio Prot	0.03	0.32		c0.09	c0.46			0.04			0.02	
v/s Ratio Perm			0.02			0.03	c0.16			0.03		
v/c Ratio	0.54	0.65	0.04	0.67	0.80	0.06	0.75	0.19		0.15	0.11	
Uniform Delay, d1	35.1	14.3	9.9	32.0	13.3	7.5	28.4	24.9		24.7	24.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.6	1.2	0.0	6.6	2.9	0.1	10.7	0.2		0.3	0.1	
Delay (s)	38.7	15.4	9.9	38.6	16.3	7.6	39.1	25.1		24.9	24.6	
Level of Service	D	B	A	D	B	A	D	C		C	C	
Approach Delay (s)		16.3			17.8			32.2			24.6	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM Average Control Delay	19.2	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	76.9	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	77.2%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	211	199	58	0	263
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.969			
Flt Protected						
Satd. Flow (prot)	0	1542	1672	0	0	1731
Flt Permitted						
Satd. Flow (perm)	0	1542	1672	0	0	1731
Link Speed (mph)	30		30			30
Link Distance (ft)	1394		715			385
Travel Time (s)	31.7		16.3			8.8
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	5%	2%	0%	4%
Adj. Flow (vph)	0	218	205	60	0	271
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	218	265	0	0	271
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		24			12
Link Offset(ft)	0		6			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 35.2%	ICU Level of Service A
Analysis Period (min) 15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	211	199	58	0	263
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	218	205	60	0	271
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			715			385
pX, platoon unblocked	0.97					
vC, conflicting volume	506	235			265	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	479	235			265	
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	73			100	
cM capacity (veh/h)	534	806			1311	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	218	265	271
Volume Left	0	0	0
Volume Right	218	60	0
cSH	806	1700	1700
Volume to Capacity	0.27	0.16	0.16
Queue Length 95th (ft)	27	0	0
Control Delay (s)	11.1	0.0	0.0
Lane LOS	B		
Approach Delay (s)	11.1	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		

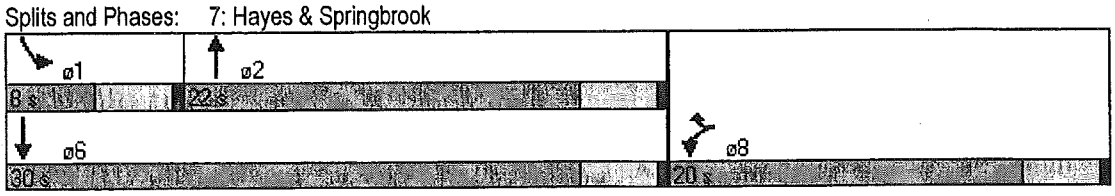
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	32	24	207	12	30	192
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0	0		0	175	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100	100		100	100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.992			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1710	1530	1705	0	1660	1714
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1710	1530	1705	0	1660	1714
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		25	7			
Link Speed (mph)	25		40			25
Link Distance (ft)	1176		606			715
Travel Time (s)	32.1		10.3			19.5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	5%	0%	3%	5%
Adj. Flow (vph)	34	25	218	13	32	202
Shared Lane Traffic (%)						
Lane Group Flow (vph)	34	25	231	0	32	202
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		8.0	20.0
Total Split (s)	20.0	20.0	22.0	0.0	8.0	30.0
Total Split (%)	40.0%	40.0%	44.0%	0.0%	16.0%	60.0%
Maximum Green (s)	16.0	16.0	18.0		4.0	26.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	5.0	5.0	5.0			5.0
Flash Dont Walk (s)	11.0	11.0	11.0			11.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	6.4	6.4	37.0		4.0	38.8
Actuated g/C Ratio	0.14	0.14	0.82		0.09	0.86
v/c Ratio	0.14	0.10	0.16		0.21	0.14
Control Delay	17.4	8.9	4.0		22.3	2.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	17.4	8.9	4.0		22.3	2.3
LOS	B	A	A		C	A
Approach Delay	13.8		4.0			5.0
Approach LOS	B		A			A

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 44.9
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.21
Intersection Signal Delay: 5.6 Intersection LOS: A
Intersection Capacity Utilization 28.9% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: Hayes & Springbrook



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	32	24	207	12	30	192
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1710	1530	1706		1660	1714
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1710	1530	1706		1660	1714
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	34	25	218	13	32	202
RTOR Reduction (vph)	0	24	2	0	0	0
Lane Group Flow (vph)	34	1	229	0	32	202
Heavy Vehicles (%)	0%	0%	5%	0%	3%	5%
Turn Type		Prot			Prot	
Protected Phases	8	8	2		1	6
Permitted Phases						
Actuated Green, G (s)	2.9	2.9	34.6		0.9	39.5
Effective Green, g (s)	2.9	2.9	34.6		0.9	39.5
Actuated g/C Ratio	0.06	0.06	0.69		0.02	0.78
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	98	88	1171		30	1343
v/s Ratio Prot	c0.02	0.00	c0.13		c0.02	0.12
v/s Ratio Perm						
v/c Ratio	0.35	0.02	0.20		1.07	0.15
Uniform Delay, d1	22.8	22.4	2.9		24.7	1.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.1	0.1	0.4		185.4	0.2
Delay (s)	25.0	22.5	3.2		210.1	1.6
Level of Service	C	C	A		F	A
Approach Delay (s)	23.9		3.2		30.1	
Approach LOS	C		A		C	

Intersection Summary			
HCM Average Control Delay	17.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	50.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
1: Hwy 99 & Springbrook

3/11/2009

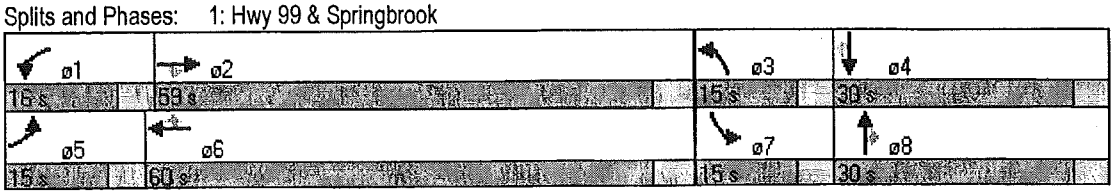
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	1136	61	115	1431	155	229	133	98	287	89	114
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	450		150	0		175	0		0	225		175
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1676	3288	1530	1569	3320	1530	3285	1748	1430	3252	1682	1500
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1676	3288	1530	1569	3320	1530	3285	1748	1430	3252	1682	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			40			92			102			119
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		931			440			385			481	
Travel Time (s)		15.9			7.5			10.5			13.1	
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
Heavy Vehicles (%)	2%	4%	0%	9%	3%	0%	1%	3%	7%	2%	7%	2%
Adj. Flow (vph)	142	1183	64	120	1491	161	239	139	102	299	93	119
Shared Lane Traffic (%)												
Lane Group Flow (vph)	142	1183	64	120	1491	161	239	139	102	299	93	119
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	1.0	10.0	10.0	1.0	10.0	10.0	1.0	6.0	6.0	1.0	6.0	6.0
Minimum Split (s)	5.0	35.5	35.5	5.0	35.5	35.5	5.0	30.0	30.0	5.0	30.0	30.0
Total Split (s)	15.0	59.0	59.0	16.0	60.0	60.0	15.0	30.0	30.0	15.0	30.0	30.0
Total Split (%)	12.5%	49.2%	49.2%	13.3%	50.0%	50.0%	12.5%	25.0%	25.0%	12.5%	25.0%	25.0%
Maximum Green (s)	11.0	54.5	54.5	12.0	55.5	55.5	11.0	26.0	26.0	11.0	26.0	26.0
Yellow 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
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.2	4.2	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Minimum Gap (s)	0.5	2.2	2.2	1.0	2.2	2.2	0.5	0.5	0.5	0.5	0.5	0.5
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Flash Dont Walk (s)		26.0	26.0		26.0	26.0		21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	11.0	53.5	53.5	11.2	53.6	53.6	10.6	13.0	13.0	11.0	13.5	13.5
Actuated g/C Ratio	0.10	0.51	0.51	0.11	0.51	0.51	0.10	0.12	0.12	0.10	0.13	0.13
v/c Ratio	0.81	0.71	0.08	0.72	0.88	0.20	0.72	0.64	0.38	0.88	0.43	0.40
Control Delay	80.3	23.5	7.5	71.2	31.1	7.4	60.3	58.3	12.7	73.9	49.6	12.0
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	80.3	23.5	7.5	71.2	31.1	7.4	60.3	58.3	12.7	73.9	49.6	12.0
LOS	F	C	A	E	C	A	E	E	B	E	D	B
Approach Delay		28.6			31.6			49.6			55.0	
Approach LOS		C			C			D			E	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 105.3
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 35.6 Intersection LOS: D
Intersection Capacity Utilization 79.5% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Hwy 99 & Springbrook



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	1136	61	115	1431	155	229	133	98	287	89	114
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	1.00	0.95	1.00	0.97	1.00	1.00	0.97	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)	1676	3288	1530	1569	3320	1530	3285	1748	1430	3252	1682	1500
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)	1676	3288	1530	1569	3320	1530	3285	1748	1430	3252	1682	1500
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)	142	1183	64	120	1491	161	239	139	102	299	93	119
RTOR Reduction (vph)	0	0	20	0	0	45	0	0	89	0	0	104
Lane Group Flow (vph)	142	1183	44	120	1491	116	239	139	13	299	93	15
Heavy Vehicles (%)	2%	4%	0%	9%	3%	0%	1%	3%	7%	2%	7%	2%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases		2	2		6	6		8	8		4	4
Actuated Green, G (s)	11.1	53.5	53.5	11.2	53.6	53.6	10.6	13.0	13.0	11.1	13.5	13.5
Effective Green, g (s)	11.1	53.5	53.5	11.2	53.6	53.6	10.6	13.0	13.0	11.1	13.5	13.5
Actuated g/C Ratio	0.11	0.51	0.51	0.11	0.51	0.51	0.10	0.12	0.12	0.11	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	2.5	4.2	4.2	2.3	2.3	2.3	2.3	2.3	2.3
Lane Grp Cap (vph)	177	1671	777	167	1690	779	331	216	177	343	216	192
v/s Ratio Prot	c0.08	0.36		0.08	c0.45		0.07	c0.08		c0.09	0.06	
v/s Ratio Perm			0.03			0.08			0.01			0.01
v/c Ratio	0.80	0.71	0.06	0.72	0.88	0.15	0.72	0.64	0.07	0.87	0.43	0.08
Uniform Delay, d1	46.0	19.9	13.1	45.5	23.0	13.7	45.9	43.9	40.8	46.4	42.4	40.4
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	21.6	1.5	0.0	12.9	6.0	0.1	6.8	5.4	0.1	20.5	0.8	0.1
Delay (s)	67.7	21.4	13.2	58.4	29.1	13.9	52.8	49.3	40.9	66.9	43.2	40.5
Level of Service	E	C	B	E	C	B	D	D	D	E	D	D
Approach Delay (s)		25.8			29.7			49.2			56.4	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM Average Control Delay	33.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	105.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Volume (vph)	1121	192	0	1735	0	40
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)		200	0		0	0
Storage Lanes		1	0		0	1
Taper Length (ft)		100	100		100	100
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	3257	1500	0	3288	0	1557
Flt Permitted						
Satd. Flow (perm)	3257	1500	0	3288	0	1557
Link Speed (mph)	30			30	30	
Link Distance (ft)	435			490	248	
Travel Time (s)	9.9			11.1	5.6	
Peak Hour Factor	0.92	0.92	0.92	1.00	0.92	0.92
Heavy Vehicles (%)	5%	2%	0%	4%	0%	0%
Adj. Flow (vph)	1218	209	0	1735	0	43
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1218	209	0	1735	0	43
Enter Blocked Intersection	Yes	Yes	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Volume (veh/h)	1121	192	0	1735	0	40
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	1.00	0.92	0.92
Hourly flow rate (vph)	1218	209	0	1735	0	43
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	875			490		
pX, platoon unblocked			0.83		0.73	0.83
vC, conflicting volume			1427		2086	609
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1101		680	113
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	94
cM capacity (veh/h)			531		283	765

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	609	609	209	868	868	43
Volume Left	0	0	0	0	0	0
Volume Right	0	0	209	0	0	43
cSH	1700	1700	1700	1700	1700	765
Volume to Capacity	0.36	0.36	0.12	0.51	0.51	0.06
Queue Length 95th (ft)	0	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.0
Lane LOS						A
Approach Delay (s)	0.0			0.0		10.0
Approach LOS						A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	1043	53	163	1431	58	194	27	162	29	17	85
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	200		200	0		75	225		225	50		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
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			0.850			0.850		0.872			0.875	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1710	3257	1500	1676	3320	1430	1676	1522	0	1660	1500	0
Flt Permitted	0.950			0.950			0.689			0.503		
Satd. Flow (perm)	1710	3257	1500	1676	3320	1430	1216	1522	0	879	1500	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			55			26		167			88	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		490			586			315			277	
Travel Time (s)		8.4			10.0			8.6			7.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	5%	2%	2%	3%	7%	2%	4%	3%	3%	0%	6%
Adj. Flow (vph)	56	1075	55	168	1475	60	200	28	167	30	18	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	56	1075	55	168	1475	60	200	195	0	30	106	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	24.5	55.0	55.0	24.5	55.0	55.0	33.0	33.0		34.0	34.0	
Total Split (s)	14.5	51.5	51.5	14.5	51.5	51.5	24.0	24.0	0.0	24.0	24.0	0.0
Total Split (%)	16.1%	57.2%	57.2%	16.1%	57.2%	57.2%	26.7%	26.7%	0.0%	26.7%	26.7%	0.0%
Maximum Green (s)	10.5	47.0	47.0	10.5	47.0	47.0	20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Lost Time Adjust (s)	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 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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	4.8	4.8	2.3	4.8	4.8	2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	2.8	2.8	0.5	2.8	2.8	2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	20.0	20.0	3.0	20.0	20.0	5.0	5.0		5.0	5.0	
Recall Mode	None	Min	Min	None	Min	Min	None	None		None	None	
Walk Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		16.0	16.0		17.0	17.0	24.0	24.0		25.0	25.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	7.4	36.4	36.4	10.4	44.3	44.3	16.6	16.6		16.6	16.6	
Actuated g/C Ratio	0.10	0.48	0.48	0.14	0.58	0.58	0.22	0.22		0.22	0.22	
v/c Ratio	0.34	0.69	0.07	0.74	0.77	0.07	0.76	0.42		0.16	0.27	
Control Delay	42.0	18.2	3.5	57.3	18.0	6.9	50.4	10.5		29.8	11.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	42.0	18.2	3.5	57.3	18.0	6.9	50.4	10.5		29.8	11.4	
LOS	D	B	A	E	B	A	D	B		C	B	
Approach Delay		18.7			21.5			30.7			15.5	
Approach LOS		B			C			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 76.5

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

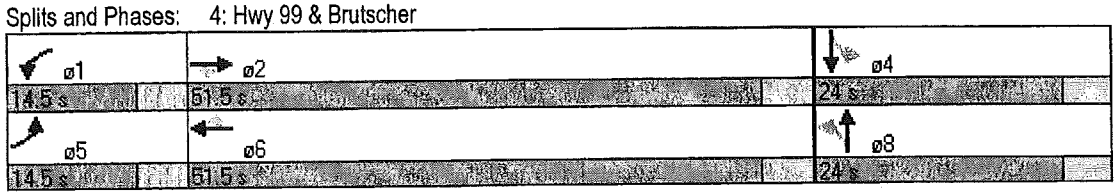
Maximum v/c Ratio: 0.77

Intersection Signal Delay: 21.3 Intersection LOS: C

Intersection Capacity Utilization 76.7% ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 4: Hwy 99 & Brutscher



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	1043	53	163	1431	58	194	27	162	29	17	85
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.88	
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)	1710	3257	1500	1676	3320	1430	1676	1521		1660	1501	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.69	1.00		0.50	1.00	
Satd. Flow (perm)	1710	3257	1500	1676	3320	1430	1215	1521		879	1501	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	56	1075	55	168	1475	60	200	28	167	30	18	88
RTOR Reduction (vph)	0	0	28	0	0	11	0	131	0	0	69	0
Lane Group Flow (vph)	56	1075	27	168	1475	49	200	64	0	30	37	0
Heavy Vehicles (%)	0%	5%	2%	2%	3%	7%	2%	4%	3%	3%	0%	6%
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		
Actuated Green, G (s)	4.6	38.5	38.5	10.4	44.3	44.3	16.6	16.6		16.6	16.6	
Effective Green, g (s)	4.6	38.5	38.5	10.4	44.3	44.3	16.6	16.6		16.6	16.6	
Actuated g/C Ratio	0.06	0.49	0.49	0.13	0.57	0.57	0.21	0.21		0.21	0.21	
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)	101	1608	740	223	1886	812	259	324		187	319	
v/s Ratio Prot	0.03	0.33		c0.10	c0.44			0.04			0.02	
v/s Ratio Perm			0.02			0.03	c0.16			0.03		
v/c Ratio	0.55	0.67	0.04	0.75	0.78	0.06	0.77	0.20		0.16	0.12	
Uniform Delay, d1	35.7	14.9	10.2	32.6	13.1	7.5	28.9	25.2		25.0	24.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	1.4	0.0	12.5	2.5	0.1	12.8	0.2		0.3	0.1	
Delay (s)	40.3	16.3	10.2	45.1	15.6	7.6	41.7	25.4		25.3	24.9	
Level of Service	D	B	B	D	B	A	D	C		C	C	
Approach Delay (s)		17.1			18.2			33.7			25.0	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	19.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	78.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	262	194	74	0	256
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.963			
Flt Protected						
Satd. Flow (prot)	0	1542	1664	0	0	1731
Flt Permitted						
Satd. Flow (perm)	0	1542	1664	0	0	1731
Link Speed (mph)	30		30			30
Link Distance (ft)	1394		715			385
Travel Time (s)	31.7		16.3			8.8
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	1%	5%	2%	0%	4%
Adj. Flow (vph)	0	298	220	84	0	291
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	298	304	0	0	291
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		24			12
Link Offset(ft)	0		6			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 39.3%	ICU Level of Service A
Analysis Period (min) 15	