

Exhibit L:
Springbrook District Development Agreement
Transportation Findings

Memorandum

October 7, 2022

Project# 27308

To: Doug Rux & Kaaren Hoffman, City of Newberg
Ana Bozich & Mike Robinson, Pahlisch Homes
Mimi Doukas, AKS Forestry & Engineering

From: Julia Kuhn, Wade Scarbrough and Chris Brehmer

RE: Springbrook District Development Agreement Transportation Findings

This memorandum summarizes a number of transportation-related considerations regarding the Springbrook District Development Agreement and the proposed Collina residential neighborhood. This memorandum includes the following elements:

- Summary of compliance with the 2007 transportation-related Master Plan Conditions of Approval
- 2021 findings related to the timing of the College Street/East Hancock (OR 99W) intersection changes
- 2021 findings related to the redesignation of the commercial property and intersection changes at the College Street/Mountainview Drive intersection
- Need for intersection and/or roadway changes at the following locations as part of the Collina Subdivision:
 - Villa Road/Mountainview Drive intersection
 - Foothills Drive/N College Street intersection
 - Traffic Circle at the N Center Street/E Henry Road intersection
 - Proportionate Share Contributions to N Springbrook Road/N Haworth Avenue future traffic signal
 - Mountainview Drive in the vicinity of Hess Creek
 - Residential Access along Villa Road
- Timing and need for future Transportation Studies

2007 Transportation-Related Master Plan Conditions of Approval

The Springbrook Master Plan was adopted through City Ordinance No. 2007-2678. The Ordinance identifies seven specific conditions related to off-site transportation mitigation measures as well as the construction of new roadways and frontage improvements along and within the Master Plan site. Lancaster Engineering provided a Traffic Impact Study and a “phasing memo” to accompany the Master Plan (herein referred to as the “2007 traffic study”) that outlined the mitigation needs and the potential timing of improvements. This information formed the basis of the conditions of approval.

Table 1 provides a summary of the seven Master Plan transportation-related conditions of approval and their completion status.

Table 1. Adopted Master Plan Transportation Conditions of Approval

Condition of Approval	Completed?	2022 Considerations
Construct a southbound right-turn lane at the College Street/E Hancock Street (OR 99W) intersection	No	ODOT and City reviewed in detail in 2021 and concluded that implementation will not be required until 50 percent of original Master Plan density is achieved. Additional details provided below.
Construction of N Springbrook Road/N Haworth Avenue traffic signal	No	Proportionate share fee contributions will be required as part of Collina subdivision. Additional details provided below.
Construction of a northbound right-turn lane at N College Street/E Mountainview Drive	No	Per the Master Plan, the need for this right-turn will be evaluated when development is proposed in southeast corner of the intersection.
N College Street frontage construction (east side) from N Crestview Drive to N Mountainview Drive	No	Master Plan identified need for these frontage improvements when adjacent lands in southeast quadrant of College Street/Mountainview Drive intersection are proposed.
Construction of a traffic signal at E Villa Road/E Mountainview Drive intersection	No	Volume-based warrants are not met with Collina subdivision. Additional details provided below.
Construction of a traffic signal at N Aspen Way/E Mountainview Drive intersection	No	Master Plan identified the need for this signal when lands adjacent to this intersection are constructed and occupied. Signal warrants will be evaluated when these lands are proposed for development.
Extension of Crestview Drive and associated intersection changes	Under Construction	Under construction by other development in the area. No mitigation need associated with Master Plan.
Mountainview Drive (Villa Way to Aspen Way)	No	Development of Collina subdivision will include construction of a pedestrian and bicycle bridge to north of Mountainview Drive across Hess Creek. Further details provided below.

College Street/East Hancock Street Intersection

In May 2021, we submitted a memo to the City and ODOT entitled "Proposed Master Plan Modifications and Transportation Implications" (herein referred to as the "May 2021 memo") on behalf of Austen Way West, LLC related to changes to the Springbrook Master Plan. The May 2021 memo is enclosed in Appendix A and addressed the need for a southbound right-turn lane at the College Street/East Hancock Street (OR 99W) intersection. As noted in the May 2021 memo, the Springbrook Traffic Impact Study conducted by Lancaster Engineering in 2007 concluded that this right-turn lane would be needed in 2013 if the land uses contemplated in the Master Plan were fully developed and if the Newberg-Dundee Bypass were not constructed. The 2007 TIS also concluded that the southbound right-turn lane may not be needed in the year 2025 to support full Master Plan development if the Newberg-Dundee Bypass is constructed¹.

¹ We note that the Newberg-Dundee Bypass was not constructed when the 2007 TIS was completed so the analyses completed at that time relied on travel demand forecasts to estimate the effects of the Bypass on downtown Newberg traffic.

The 2007 TIS further recommended that the need for the southbound right-turn lane should be evaluated when the land uses identified in the Springbrook Master Plan were within one year of achieving 50 percent occupancy. The 2007 TIS considered the following land uses as “full buildout” of the Master Plan: 1,167 single family units, 264 townhomes, a 110-unit resort hotel, 342,000 square feet of retail, and 667,000 square feet of office. To date, only the 85-room Allison Hotel and associated Jory Restaurant have been constructed. As discussed in the May 2021 memo, the two land uses constructed to date represent less than 5 percent of those analyzed as part of the Master Plan. In addition, more than 900 weekday AM and PM trips remain for additional development prior to triggering the need to re-evaluate whether a southbound right-turn lane is triggered.

Based on the analyses presented in the May 2021 memo, we requested that ODOT make a finding that the need to further evaluate this right-turn lane is not currently needed (recognizing further evaluation will be triggered when the 50 percent threshold is reached). ODOT provided concurrence with these findings on May 13, 2021. Accordingly, the need for and timing of a southbound right-turn lane at the College Street/E Hancock Street intersection is included in the list of future studies discussed at the end of this report.

Commercial Property Redesignation

The Springbrook Master Plan identifies the future development of the commercial property located southeast of the N College Street/E Mountainview Drive intersection. In response to changed market conditions, the project team is proposing to redesignate this property to develop multi-family residential homes in lieu of the previously designated commercial zoning. Our May 2021 memo evaluated the potential transportation implications associated with the proposed redesignation consistent with the Transportation Planning Rule (TPR) requirements. As discussed in the May 2021 memo, potential development under the property consistent with the proposed redesignation would result in fewer weekday daily, AM and PM peak hour trips compared to the existing designation.

As shown in the May 2021 memo, the “reasonable worst-case” development scenarios evaluated for the proposed redesignation were based on a comparison of the trips associated with the land uses in the 2007 Master Plan for this property (i.e., 156,816 square feet of shopping center and 102 apartments on the eastern portion) versus a potential scenario with 185 apartments and 101 townhomes. The May 2021 memo concluded that development of the property with the residential redesignation in-place would generate 3,982 fewer daily trips, 47 fewer weekday AM peak hour trips and 364 fewer weekday PM peak hour trips than the 2007 Master Plan land uses. Based on this reduction and per the TPR and Oregon Highway Plan (OHP) Policy 1F.5, we concluded that there is no significant impact associated with the redesignation from commercial to residential zoning.

Based on the May 2021 memo, ODOT concluded that, if the property were developed, the proposed redesignation would result in significantly fewer weekday daily, AM and PM peak hour trips compared to the existing designation. Accordingly, three findings were made 1) there are “no significant affects” associated with the proposed redesignation change 2) the provisions of both Oregon’s Transportation Planning Rule (TPR) and Oregon Highway Plan Policy 1F.5 are satisfied and 3) no off-site intersection analyses are triggered by the redesignation. These findings were agreed to and accepted by ODOT on May 13, 2021 (email included in Appendix B).

Based on the May 2021 finding from ODOT, we recommend that the Development Agreement include a “trip cap” that allows for flexibility in the ultimate residential unit mix proposed but still remains consistent with the ODOT findings that equates to the following:

- Future development of the redesignated commercial property shall be limited to land uses that result in no more than 1,960 daily trips, 142 weekday AM, and 181 weekday PM peak hour trips.

Collina Subdivision Street and Intersection Changes

Pahlisch Homes is proposing to construct 405 homes within the areas titled Hess Creek A, B and C of the Master Plan (also shown as Phases II, IV and V). The Master Plan identified the construction of between 271 and 407 single family homes within these three areas (i.e., within 20 percent plus/minus of 339 homes). The 405 homes proposed within the Collina Subdivision remains consistent with the Master Plan so no new intersection capacity analyses is needed at this time. Instead, this memo addresses the potential timing of the following transportation changes identified in the Master Plan:

- A potential traffic signal or roundabout at the N Villa Road/E Mountainview Drive intersection
- A potential traffic signal at the E Foothills Drive/N College Street intersection
- Changes to the E Mountainview Drive cross-section in the vicinity of Hess Creek
- The proposed traffic circle at E Henry Road/N Center Street
- Proportionate share contributions to the N Springbrook Road/N Haworth Avenue future traffic signal

Each of these is discussed in further detail below.

TRIP GENERATION OF COLLINA SUBDIVISION

For reference purposes, Table 3 shows the estimated trip generation for the homes proposed in the Collina Subdivision using average rates obtained from the *Trip Generation Manual, 11th Edition* (note that use of the fitted curve equations provided in the *Trip Generation Manual* result in fewer daily and peak hour trips).

Table 3. Estimated Trip Generation for Collina Subdivision

Land Use	ITE Code	Size	Total Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total Trips	In	Out	Total Trips	In	Out
Single Family Homes	210	405 homes	3,820	284	74	210	381	240	141

As part of the analyses contained within the May 2021 memo, ODOT provided travel demand modeling information that indicates that the Collina Subdivision homes would distribute to the transportation system as follows:

- Mountainview Drive to the east = 38 percent
- Villa Road to the south = 24 percent
- College Street/Foothills to the northwest = 15 percent
- College Street to the southwest = 23 percent

This estimated trip distribution helps to inform the need for the off-site mitigation measures discussed below.

N VILLA ROAD/E MOUNTAINVIEW DRIVE INTERSECTION

The need to install a traffic signal at this intersection was identified to occur prior to Phase XVI of the Master Plan. As noted above, only the Jory Hotel and Allison Hotel have been constructed to date so the Master Plan contemplates signalization after several additional phases of development would occur.

To identify whether a traffic signal is warranted at this time as part of the Collina Subdivision (and well prior to Phase XVI), we collected traffic counts at the intersection in January 2022 when local schools were in-session and no inclement weather was present. We used these counts and the estimated trip distribution provided by ODOT shown above to assess the need for a signal.

The *Manual on Uniform Traffic Control Devices* (MUTCD) identifies nine warrants for traffic signal installation. Volume-based warrants #1 (Eight Hour) and #2 (Four Hour) were evaluated based on the projected 2024 traffic volumes at both intersections. Weekday daily 24-hour volumes were estimated based on the peak hour and typical volume profiles along similar roadway facilities. This assessment found that installation of traffic signal is not projected to be warranted under today's conditions assuming full occupancy of the 405 homes. Appendix C includes all of the traffic signal warrants.

We do note that the year 2035 traffic volumes included in the City's Transportation System Plan (TSP) indicate that a signal would be warranted after the homes are developed and prior to the year 2035. A sensitivity analyses revealed that an additional 30 percent increase beyond those volumes forecast under today's conditions with buildout of the Collina subdivision would need to occur before MUTCD signal warrants are met at this intersection. Based on these analyses, we conclude that two-way stop-control is appropriate to accommodate the Collina Subdivision and the need for the signal should be reviewed within one year of Phase XVI development, consistent with the Master Plan.

N COLLEGE STREET/E FOOTHILLS DRIVE

Although not identified as one of the conditions of approval in the Master Plan, City staff inquired as to whether a traffic signal is warranted at the N College Street/E Foothills Drive intersection given that the City's TSP identifies the need for a traffic signal or a roundabout at this intersection by the year 2035. Based on traffic volumes conducted in January 2022 and using the estimated trip distribution discussed above, our preliminary analyses indicate that this intersection would not warrant signalization based on volume warrants under today's conditions plus the anticipated site trips associated with the Collina Subdivision.

We note that the future traffic volumes included in the City's TSP indicate nearly double the volume measured in 2022 on most approaches. A sensitivity analyses revealed that an additional 40 percent increase beyond those volumes forecast under today's conditions with buildout of the Collina Subdivision would need to occur before MUTCD signal warrants are met at this intersection.

TRAFFIC CIRCLE AT N CENTER STREET/E HENRY ROAD

We understand that the City has identified the need for a traffic circle with a 50-foot landscaped island at the N Center Street/E Henry Road intersection to be constructed as part of the Collina neighborhood. A traffic circle at this location can be beneficial in serving as a traffic calming device both on the south side of Tom Gail Park and for existing and future residents along E Henry Road and can also serve as a “gateway” into the new neighborhood.

In reviewing the proposed street layout for the Collina neighborhood, we also evaluated the potential for maintaining providing two-way stop-control at the intersection as well as for installing a compact roundabout at the intersection. Our review revealed:

- The construction of a compact roundabout would require significant realignment and reconstruction of the pathway in the park and would require the acquisition of right-of-way from the park. The skew angle of the existing north leg of N Center Street at the intersection and the existing driveway locations on E Henry Road further complicate the design of the roundabout. To meet roundabout guidelines, the intersection would need to be shifted about 40 feet to the east, which results in the park impacts.
- Given the anticipated local street volumes in this area, two-way stop-control would function acceptably but would not achieve the traffic calming objectives desired by the City.
- Construction of a traffic circle would achieve the traffic calming objectives, could be constructed mostly within the property owned by Pahlisch and minimize the amount of property acquisition from the park, would still enable truck, bus and emergency vehicle movements that are expected along two local streets, and would function acceptably using stop-control on either the east-west or the north-south approaches.

Based on the review, we conclude that the traffic circle proposed would meet the City's objectives, minimize impacts to the park, and would function acceptably at this location.

N SPRINGBROOK ROAD/E HAWORTH AVENUE

Per the Master Plan conditions of approval, the Collina Subdivision will be required to make proportionate share improvements to the N Springbrook Road/E Haworth Avenue intersection signalization and left-turn lanes on E Haworth Avenue. The City's TSP identifies the need for these improvements as “Project 109” and City staff has indicated that the proportional share contributions will be based on “*the most significant a.m. or p.m. proportional volume contribution. The trips referenced in the formula will come from the traffic study required for the development and calculated as (Cost in the TSP for improvements) x (Trips directly related to the development) / (Total trips through the intersection).*”

The ODOT modeling indicates that 15 percent of the trips from project homes would travel through this intersection. This would result in 42 weekday AM trips and 57 weekday PM trips, based on the trip generation shown in Table 3.

The most recent traffic counts at this intersection were conducted in 2017. If one were to use these counts as the basis of the calculation identified by the City in their email, the potential contribution to this intersection could be calculated as follows:

- Cost of Signal per City TSP Project 109 = \$400,000 for signal and left-turn lanes
- Total AM Volumes entering intersection in 2017 = 1,049 vehicles
- Total PM Volumes entering intersection in 2017 = 1,573 vehicles

- Contribution of AM Volumes / Total Entering Volume = $42 / (1,049 + 42) = 3.85$ percent
- Contribution of PM Volumes / Total Entering Volume = $57 / (1,573 + 57) = 3.50$ percent
- Most significant impact is in AM peak = $\$400,000 \times 3.85$ percent = approximately \$15,400

Given that traffic volumes have increased since 2017, the use of these counts should provide a reasonable, and potentially high, indication of proportionate sharing obligations. We anticipate that the above proportional share calculations will be reviewed by City staff at the time of site plan approval to account for other "approved in-process developments" and any updated traffic count information obtained by the City.

E MOUNTAINVIEW DRIVE FRONTAGE IMPROVEMENTS AND CROSSING OF HESS CREEK

Based on discussions with City staff during the past two years related to the Master Plan Conditions of Approval and the TSP's noted changes along E Mountainview Drive, the Collina Subdivision will be required to construct minor arterial half-street improvements along the site frontage west of the Hess Creek and a pedestrian and bicycle bridge across the Creek further north of the street.

To help inform the discussions regarding the construction of a bridge for people walking and riding bikes to the north of the street across Hess Creek, we reviewed the roadway crash history to understand if there were any documented safety deficiencies along Mountainview Drive. The analyses presented in the TSP do not identify a safety deficiency based on crash records but rather prioritize improvement needs to provide for walking and cycling. Accordingly, the TSP identifies the need to upgrade Mountainview Drive to minor arterial standards to include facilities for pedestrians, cyclists and motorists.

As part of this review, we obtained reported crash data on E Mountainview Drive from N College Street to N Aspen Way provided by ODOT for the period from 2013 – 2017 (which was the most current information available when the discussions began with staff). Only four crashes were reported over the five-year period, including:

- One turning movement crash at the N Herman Street/E Mountainview Drive intersection in 2015
- One fixed object crash 20 feet east of N Villa Road in 2015; this involved a single vehicle crash under dark, wet conditions
- One read end crash at the E Mountainview Drive/N Villa Road intersection in 2016
- One head-on collision 103 feet west of Aspen Way in 2017; this crash occurred on a clear, dry day

We also obtained crash data for the period from January 2018 – December 2020 from ODOT in this same segment and found that four additional crashes occurred but none near Hess Creek. The crashes included:

- One turning movement crash at the N Herman Street/E Mountainview Drive intersection in 2018
- One fixed object crash 300 feet east of the N Center Street/E Mountainview Drive intersection in 2018; this involved a single vehicle crash under clear, dry conditions
- One read-end crash 30 feet west of the N Center Street/E Mountainview Drive intersection in 2020
- One fixed object crash 260 feet east of N Esther Street in 2019; this involved a this involved a single vehicle crash under clear, dry conditions

None of the reported crashes between January 2013 and December 2020 involved pedestrians or cyclists and none occurred within or near the roadway "dip" at Hess Creek. Based on our review of the crash history, we concluded that no patterns appear amongst the recorded crashes in terms of location or type.

Based on the crash data and additional information provided by AKS staff related to construction feasibility for the Hess Creek crossing, City staff agreed to the maintaining the existing roadway cross section across Hess Creek and that the development of the Collina Subdivision homes would be responsible for constructing a pedestrian and bicycle bridge across the creek instead.

RESIDENTIAL ACCESSES ALONG N VILLA ROAD

In prior discussions with City Staff, additional information regarding the proposed driveways serving the homes to the north of E Henry Road along N Villa Road within the Collina neighborhood was requested. Per the City's TSP, N Villa Road is classified as a major collector street and would require 150 feet of spacing between private access points. Although the northern portion of N Villa Road within the new neighborhood does not meet this spacing, we note the following:

- Table 4 within the City's TSP identifies a number of design treatments that are appropriate for collector streets and can be incorporated into the design and construction of N Villa Road to "create safe slow streets without significantly affecting vehicle capacity" and balance the need for safety and mobility.
- We are unaware of any published safety data that correlates the 150 feet spacing along major collectors to documented crash rates in the City nor at the regional or statewide level.
- There are a number of major collector streets with residential driveways that do not meet the desired spacing standard within the City (one example is E Haworth) and the City's TSP does not identify any safety-related deficiencies due to driveway spacing within neighborhoods.
- N Villa Road will terminate at the north end of the Collina neighborhood upon buildout of Collina; the property between Collina and N Aspen Way is not under the control of Pahlisch and no right-of-way is available; for this reason, the volumes on N Villa Road to the north of E Henry Road will only be generated by the neighborhood for the foreseeable future.

Based on the above, we conclude that N Villa Road can be designed to enable travel by people walking, riding bikes and driving within the neighborhood while still meeting Pahlisch's objectives for residential driveways on the northern segment of the street.

Future Transportation Studies

As noted above, there are a number of transportation studies that may be needed in the future to support site plan applications associated with the Master Plan land use development that occur after the Collina Subdivision. These may studies include:

- The need to construct a southbound right-turn lane at the College Street/East Hancock Street intersection – the Master Plan identified the need to evaluate whether this right-turn would be required at a level of land use development associated with 50 percent of the trips included in the Master Plan. Table 4 identifies the remaining trips that would be available prior to triggering the need to re-evaluate this change.
- Construction of a northbound right-turn lane at N College Street/E Mountainview Drive – per the Master Plan the need for this right-turn lane should be evaluated when development is proposed in the southeast quadrant at this intersection; at this point, only the redesignation is being requested and no accompanying subdivision application is being filed.
- Construction of frontage improvements on N College Street from E Crestview Drive to E Mountainview Drive – the specific details of these improvements will also be evaluated when development is proposed in the southeast quadrant at this intersection; as noted above, only the

redesignation is being requested at this point and no accompanying subdivision application is being filed.

- The potential need for installing a traffic signal at E Mountainview Drive/N Villa Road should be re-evaluated within one year of occupancy of Phase XVI of the Master Plan.
- The City should continue to monitor the need for a traffic signal at the N College Street/E Foothills Drive intersection. The traffic volumes are not anticipated to warrant signalization for several years.

Table 4. Trips Remaining Prior to Reaching 50 percent Buildout of Master Plan

Land Use	Size	Total Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
			Total Trips	In	Out	Total Trips	In	Out
Master Plan Trips								
Net New Trips at Buildout		24,354	1,969	1,141	828	2,566	1,128	1,438
50% Threshold per Condition of Approval		12,177	985	571	414	1,283	564	719
Land Uses Approved/Constructed to-Date								
Jory Restaurant	6,000 sq ft	504	4	2	2	47	31	16
Allison Hotel	85 rooms	356	26	19	7	36	15	21
Collina Subdivision	405 Homes	3,820	284	74	210	381	240	141
Total trips to Date		4,680	314	95	219	464	286	178
Percent of Trips to date		38%	32%	17%	53%	36%	51%	25%
Remaining Trips before Triggering Study (i.e., 50 percent Buildout)		7,497	671	476	195	819	278	541

Please let us know if you have any questions as you are reviewing our materials.

Appendix A
May 2021 Memo

MEMORANDUM

Date: May 5, 2021

Project #: 24375

To: Doug Rux & Kaaren Hofmann, City of Newberg
Dan Fricke, ODOT Region 2
Steve Abel, Attorney
Mimi Doukas, AKS Engineering & Forestry

From: Chris Brehmer & Julia Kuhn

Project: Springbrook Master Plan

Subject: Proposed Master Plan Modifications and Transportation Implications

The Aspen Way West LLC (the Austin Family/Applicant) is proposing modifications to the Springbrook Master Plan to respond to changing market conditions. At the same time, the Applicant seeks confirmation related to the timing of one of the Master Plan conditions of approval. This memorandum provides a brief overview of two proposed changes and documents corresponding transportation implications.

We request the Oregon Department of Transportation (ODOT) review and confirm our findings and conclusions related to two topics:

- The proposed redesignation of the commercial property located southeast of the N College Street/E Mountainview Drive intersection; and,
- Timing of potential changes at the N College Street/E Hancock Street intersection.

Proposed Commercial Property Redesignation

As discussed in the attached memorandum, the Springbrook Master Plan identifies the future development of the commercial property located southeast of the N College Street/E Mountainview Drive intersection. The Applicant is proposing to redesignate all this property to develop multi-family residential development in lieu of the previously considered land uses. The attached memorandum concludes that, if the property were developed, the proposed redesignation would result in significantly fewer weekday daily, AM and PM peak hour trips compared to the existing designation. Accordingly, three findings can be made including 1) there are “no significant affects” associated with the proposed redesignation change 2) the provisions of both Oregon’s Transportation Planning Rule (TPR) and Oregon Highway Plan Policy 1F.5 are satisfied and 3) no off-site intersection analyses are triggered by the redesignation. Based on these findings, we conclude that no additional transportation analyses should be required by ODOT or the City to support the redesignation.

Timing of Potential Changes to the N College Street/E Hancock Street Intersection

In support of the Master Plan, the *Springbrook Traffic Impact Study* conducted by Lancaster Engineering in 2007 (herein referred to as the “2007 TIS”) identified the potential need for a separate southbound right-turn lane at the N College Street/E Hancock intersection in conjunction with Master Plan buildout. The 2007 TIS concludes that this southbound right-turn lane would be needed in 2013 if the land uses contemplated in the Master Plan were fully developed and if the Newberg-Dundee Bypass were not constructed. The 2007 TIS further concludes that this right-turn lane may not be needed in the year 2025 to support full Master Plan development if the Newberg-Dundee Bypass¹ is constructed. The 2007 TIS further notes that:

“To determine the optimum timing for construction of this improvement, it is recommended that additional analysis be undertaken at this intersection when Springbrook (referring to the Master Plan) is within one year of 50% completion.”

Per the Trip Generation Summary from the 2007 TIS, full buildout of the Master Plan was assumed to include 1,167 single family units, 264 townhomes, a 110-unit resort hotel, 342,000 square feet of retail, and 667,000 square feet of office. The trip generation table from the 2007 TIS is shown in Table 1 below.

Table 1. Trip Generation from the Springbrook 2007 TIS

Land Use	Size	Total Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
			Total Trips	In	Out	Total Trips	In	Out
Single Family Homes	1,167 homes	9,968	826	207	619	978	616	362
Townhomes/Condos	264 homes	1,464	112	19	93	133	89	44
Resort Hotel	110 rooms	460	34	24	10	46	20	26
Retail	342,000 sq ft	15,102	615	375	240	1,409	676	733
Office	667,000 sq ft	5,752	856	753	103	826	140	686
Total trips		32,746	2,443	1,378	1,065	3,392	1,541	1,851
<i>Less 12 percent internal excluding resort hotel</i>		3,874	290	145	145	404	202	202
<i>Less retail pass-by</i>		4,518	184	92	92	422	211	211
Net New Trips		24,354	1,969	1,141	828	2,566	1,128	1,438

¹ In 2007, the Bypass was assumed to extend from Rex Hill to McDougall’s Corner. ODOT is currently designing the section from Rex Hill to OR 219 and is also reviewing conceptual designs to extend the Bypass from the south end of Dundee to McDougall’s Corner.

Only the 85-room Allison Hotel² and associated Jory Restaurant have been constructed to date. Table 2 compares the uses constructed to date versus the trips still available prior to triggering the need to evaluate the potential addition of the southbound right-turn lane at the N College Street/E Hancock Street intersection. Note that no internalization was assumed between the exiting hotel and restaurant.

Table 2. Current Development Comparison

Land Use	Size	Total Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
			Total Trips	In	Out	Total Trips	In	Out
Master Plan (from Table 1)								
Net New Trips at Buildout		24,354	1,969	1,141	828	2,566	1,128	1,438
50% Threshold per Condition of Approval		12,177	985	571	414	1,283	564	719
Land Uses Constructed to-Date								
Quality Restaurant	6,000 sq. ft.	504	4	2	2	47	31	16
Resort Hotel	85 rooms	356	26	19	7	36	15	21
Total trips to Date		860	30	21	9	83	46	37
Percent of Trips to date		4%	2%	2%	1%	3%	4%	3%
Remaining Trips before Triggering Study (i.e., 50 percent Buildout)		11,317	955	550	405	1,200	518	682

As shown, the land uses constructed to date represent less than 5 percent of those analyzed as part of the Master Plan. In addition, more than 900 weekday AM and PM trips remain for additional development prior to triggering the need to re-evaluate whether a southbound right-turn lane is triggered. Accordingly, we conclude that no further analyses are needed at this time and request that ODOT make a finding that the need to further evaluate this right-turn lane is not needed now (recognizing further evaluation will be triggered when the 50 percent threshold is reached).

² The Allison Hotel was constructed to have 85 rooms, which is 25 fewer rooms than evaluated in the 2007 TIS.

Conclusions

Based on the analysis and findings presented, the Applicant requests ODOT's concurrence on the following to support the proposed Master Plan amendments:

- As documented in the attached memo, future development of the property to the southeast of the N College Street/E Mountainview Drive intersection consistent with the redesignation to residential would result in fewer weekday, AM and PM peak hour trips as compared to the existing commercial designation. As such, there are no significant affects associated with the proposed redesignation according to the provisions of the Transportation Planning Rule and the provisions of the Oregon Highway Plan Policy 1F.5. Further, no off-site intersection analyses are required as part of the review of the proposed redesignation because the proposed change is considered a "small increase" pursuant to OHP Policy 1F.5 (the change is actually a significant decrease in trips, thereby satisfying the policy as well).
- The land uses constructed to date represent vehicular trips equivalent to less than 5 percent of the trip-making analyzed in the Master Plan. More than 900 weekday AM and PM trips remain for additional development prior to triggering the need to re-evaluate whether a southbound right-turn lane is triggered. Accordingly, no further analyses are needed at this time. The need to evaluate a potential southbound right-turn lane addition at the N College Street/E Hancock Street intersection will be assessed when the 50 percent master plan development threshold is reached.

Please let us know if you have any questions about the information contained herein.

MEMORANDUM

Date: May 5, 2021

Project #: 24375

To: Doug Rux & Kaaren Hofmann, City of Newberg
Dan Fricke, ODOT Region 2
Steve Abel, Attorney
Mimi Doukas, AKS Engineering & Forestry

From: Chris Brehmer & Julia Kuhn

Project: Springbrook Master Plan

Subject: West Commercial Area Redesignation Analyses

The Springbrook Master Plan identifies the future development of the commercial property located southeast of the N College Street/E Mountainview Drive intersection. In response to changed market conditions, the project team is proposing to redesignate this property to develop multi-family residential development in lieu of the previously designated commercial zoning. As discussed in this memorandum, development under the property consistent with the proposed redesignation would result in fewer weekday daily, AM and PM peak hour trips compared to the existing designation. Accordingly, we conclude that there are “no significant affects” associated with the redesignation and the provisions of both Oregon’s Transportation Planning Rule (TPR) and Oregon Highway Plan (OHP) Policy 1F.5 are satisfied and no off-site intersection analyses are triggered by the redesignation. The remainder of this memo presents the findings of our analyses.

Potential Development Scenarios

To understand the potential transportation implications of the desired redesignation consistent with the TPR requirements, we performed a comparison of “reasonable worse-case” development under the existing commercial designation versus that associated with the proposed residential designation. This comparison is based on information provided by AKS Engineering & Forestry staff as well as review of the following:

- As part of the Springbrook Traffic Impact Study performed by Lancaster in 2007, the commercial parcel was analyzed to include 156,816 square feet of shopping center on the west portion of the property and 102 apartments on the eastern portion of the property; and,
- With the redesignation in-place, the property could be developed to include 185 apartments (western portion) and 101 townhomes (eastern portion).

Based on the above assumptions, we calculated the potential trip generation associated with development of the property based on the rates included in the *Trip Generation Manual* (10th Edition, as published by the Institute of Transportation Engineers). This comparison is shown in Table 1.

Table 1. Comparison of Estimated Trips for Redesignation

Land Use	ITE Code	Size	Total Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total Trips	In	Out	Total Trips	In	Out
<i>Proposed Designation</i>									
Townhomes (modeled as Single Family)	210	101	954	75	19	56	100	63	37
Apartments	221	185	1,006	67	17	50	81	49	32
Total Proposed			1,960	142	36	106	181	112	69
<i>Existing Designation</i>									
Apartments	221	102	554	37	10	27	45	27	18
Retail	820	156,816	8,164	230	143	87	758	364	394
<i>Less 34% Pass-by</i>			2,776	78	48	30	258	124	134
Retail Net New			5,388	152	95	57	500	240	260
Total Existing			5,942	189	105	84	545	267	278
<i>Proposed - Existing Designations</i>									
Change in Net New Trips			-3,982	-47	-69	22	-364	-155	-209

As shown in Table 1, development of the property with the residential redesignation in-place would generate significantly fewer trips than the existing designation as well as that analyzed as part of the Master Plan. Based on this reduction, the compliance of the redesignation with both the TPR and OHP Policy 1F.5 are discussed below.

Oregon Transportation Planning Rule Considerations

Two sections of the TPR (as documented in OAR 660-012-0060) apply to amendments to acknowledged land use designations. Per OAR 660-012-0060(1) and (2), the first step in assessing an amendment’s potential transportation impact is to compare the trip generation potential of the site assuming a “reasonable worst-case” development scenario under the existing and proposed designation. If the trip generation potential increases under the proposed designation, additional analysis is required to assess whether the redesignation will “significantly affect” the transportation system. Conversely, if the trip generation under the proposed designation is *equal to or less than* that under the existing designation, no additional analysis is necessary to conclude that the proposal does not “significantly affect” the transportation system.

As shown in Table 1, the redesignation of the property to enable residential uses only would result in a reduction in trips on a daily basis as well as during both the weekday AM and weekday PM peak hours. As such, no significant affects would occur as a result of the proposed amendment per the TPR.

Summary of Applicable Oregon Administrative Rule Criteria

OAR Section 660-12-0060 of the TPR sets forth the relative criteria for evaluating plan and land use regulation amendments. Table 2 summarizes the criteria in Section 660-012-0060 and the applicability to the proposed redesignation of the 11-acre area.

Table 2. Summary of Criteria in OAR 660-012-0060

Section	Criteria	Applicable?
1	Describes how to determine if a proposed land use action results in a significant effect.	Yes
2	Describes measures for complying with Criteria #1 where a significant effect is determined.	No
3	Describes measures for complying with Criteria #1 and #2 without assuring that the allowed land uses are consistent with the function, capacity and performance standards of the facility.	No
4	Determinations under Criteria #1, #2, and #3 are coordinated with other local agencies.	Yes
5	Indicates that the presence of a transportation facility shall not be the basis for an exception to allow development on rural lands.	No
6	Indicates that local agencies should credit developments that provide a reduction in trips.	No
7	Outlines requirements for a local street plan, access management plan, or future street plan.	No
8	Defines a mixed-use, pedestrian-friendly neighborhood.	No
9	A significant effect may not occur if the rezone is identified on the City’s Comprehensive Plan and assumed in the adopted Transportation System Plan.	No
10	Agencies may consider measures other than vehicular capacity if within an identified multimodal mixed-use area (MMA).	No
11	Allows agencies to override the finding of a significant effect if the application meets the balancing test.	No

As shown in Table 2, there are eleven criteria that apply to Plan and Land Use Regulation Amendments. Of these, Criteria 1 and 4 are applicable to the proposed land use action. These criteria are provided below in italics with our response shown in standard font.

OAR 660-12-0060(1) If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:

- (a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);*
- (b) Change standards implementing a functional classification system; or*
- (c) Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic*

generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.

(A) Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;

(B) Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or

(C) Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.

Response: As shown in Table 1, the proposed redesignation would result in a decrease of daily, weekday AM and weekday PM peak hour trips. Further, no changes to the City's functional street classification designations or standards are warranted by the change in designation.

OAR 660-12-0060 (4) Determinations under sections (1)–(3) of this rule shall be coordinated with affected transportation facility and service providers and other affected local governments.

(a) In determining whether an amendment has a significant effect on an existing or planned transportation facility under subsection (1)(c) of this rule, local governments shall rely on existing transportation facilities and services and on the planned transportation facilities, improvements and services set forth in subsections (b) and (c) below.

(b) Outside of interstate interchange areas, the following are considered planned facilities, improvements and services:

(A) Transportation facilities, improvements or services that are funded for construction or implementation in the Statewide Transportation Improvement Program or a locally or regionally adopted transportation improvement program or capital improvement plan or program of a transportation service provider.

(B) Transportation facilities, improvements or services that are authorized in a local transportation system plan and for which a funding plan or mechanism is in place or approved. These include, but are not limited to, transportation facilities, improvements or services for which: transportation systems development charge revenues are being collected; a local improvement district or reimbursement district has been established or will be established prior to development; a development agreement has been adopted; or conditions of approval to fund the improvement have been adopted.

(C) Transportation facilities, improvements or services in a metropolitan planning organization (MPO) area that are part of the area's federally-approved, financially constrained regional transportation system plan.

(D) Improvements to state highways that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when ODOT provides a written statement that the improvements are reasonably likely to be provided by the end of the planning period.

(E) Improvements to regional and local roads, streets or other transportation facilities or services that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when the local government(s) or transportation service provider(s) responsible for the facility, improvement or service provides a written statement that the facility, improvement or service is reasonably likely to be provided by the end of the planning period.

Response: The proposed amendment has been coordinated with the City and Oregon Department of Transportation. As such, this criterion is met.

Oregon Highway Plan Policy 1F.5

In addition to meeting the requirements with the TPR, we also reviewed the redesignation related to OHP Policy 1F.5. Per this policy, the following thresholds have been established by ODOT for determining what constitutes a “significant” affect:

If an amendment subject to OAR 660-012-0060 increases the volume to capacity ratio further, or degrades the performance of a facility so that it does not meet an adopted mobility target at the planning horizon, it will significantly affect the facility unless it falls within the thresholds listed below for a small increase in traffic. The threshold for a small increase in traffic between the existing plan and the proposed amendment is defined in terms of the increase in total average daily trip volumes as follows:

- *Any proposed amendment that does not increase the average daily trips by more than 400.*
- *Any proposed amendment that increases the average daily trips by more than 400 but less than 1001 for state facilities where:*
 - *The annual average daily traffic is less than 5,000 for a two-lane highway*
 - *The annual average daily traffic is less than 15,000 for a three-lane highway*
 - *The annual average daily traffic is less than 10,000 for a four-lane highway*
 - *The annual average daily traffic is less than 25,000 for a five-lane highway*
- *If the increase in traffic between the existing plan and the proposed amendment is more than 1000 average daily trips, then it is not considered a small increase in traffic and the amendment causes further degradation of the facility and would be subject to existing processes for resolution.*

As shown in Table 1, the redesignation would result in a reduction of 3,982 daily vehicular trips when compared to potential development under the existing designation. As such, the amendment would result in a difference in vehicular trips far below any of the thresholds used by ODOT for determining

what constitutes a “small increase” (i.e., rather than increasing daily trips by up to 400 as allowed by OHP Policy 1F.5, the redesignation results in reduction of almost 4,000 daily trips). Based on the thresholds established in OHP Policy 1F.5 for determining significance, we conclude that the proposed redesignation does not trigger the need for any further analyses to demonstrate there are no affects associated with the amendment.

Conclusions

Based on the above, we conclude that there are no significant affects associated with the proposed redesignation according to the provisions of the Transportation Planning Rule and Oregon Highway Plan Policy 1F.5. We conclude that no off-site intersection analyses are required as part of the review of the proposed redesignation.

Please let us know if you have any questions about the information contained herein.

Appendix B
ODOT E-mail

Julia Kuhn

From: Julia Kuhn
Sent: Thursday, May 13, 2021 1:49 PM
To: FRICKE Daniel L; Doug Rux
Cc: FERBER Arielle; UPTON Dorothy J; Chris Brehmer; Steve Abel
Subject: RE: checking in on Springbrook Master Plan

Thank you so much for the collaboration on this project. We appreciate your thoughtful comments.

Julia Kuhn
Senior Principal Engineer

[Kittelson & Associates, Inc.](#)
Transportation Engineering / Planning
851 SW 6th Avenue, Suite 600
Portland OR 97204
503.535.7409 (direct)
503.701.4346 (cell)

From: FRICKE Daniel L <Daniel.L.FRICK@odot.state.or.us>
Sent: Thursday, May 13, 2021 1:43 PM
To: Doug Rux <Doug.Rux@newbergoregon.gov>; Julia Kuhn <jkuhn@kittelson.com>
Cc: FERBER Arielle <Arielle.FERBER@odot.state.or.us>; UPTON Dorothy J <dorothy.j.upton@odot.state.or.us>
Subject: FW: checking in on Springbrook Master Plan

Doug/Julia –

Region Traffic has completed review of the subject memos for the Springbrook Master Plan. Comments are below. Also, as a land use TPR matter, I concur with the findings and conclusions that the proposed amendment will not have a significant effect. Let me know if you need anything else.

Dan

Dan Fricke, Senior Transportation Planner
ODOT Region 2
455 Airport Road SE, Building B
Salem, OR 97301-5395
Ph: 503-986-2663 C: 503-507-0391
E-mail: daniel.l.fricke@odot.state.or.us

From: FERBER Arielle <Arielle.FERBER@odot.state.or.us>
Sent: Thursday, May 13, 2021 1:32 PM
To: FRICKE Daniel L <Daniel.L.FRICK@odot.state.or.us>
Cc: UPTON Dorothy J <Dorothy.J.UPTON@odot.state.or.us>
Subject: FW: checking in on Springbrook Master Plan

Dan,

Region Traffic has completed our review of the submitted memos for the Springbrook Master Plan development in Newberg, OR. Region Traffic has no comments and concurs with the conclusions of both memos.

Please let me know if I can help with anything else.

Thanks!

Arielle Ferber, P.E.

Traffic Analysis Engineer
ODOT Region 2
455 Airport Rd. SE, Bldg. A, Salem, OR 97031
(503) 986-2857

From: Julia Kuhn <jkuhn@kittelton.com>
Sent: Thursday, May 6, 2021 6:45 AM
To: Doug Rux <Doug.Rux@newbergoregon.gov>; FRICKE Daniel L <Daniel.L.FRICKE@odot.state.or.us>; UPTON Dorothy J <Dorothy.J.UPTON@odot.state.or.us>; FERBER Arielle <Arielle.FERBER@odot.state.or.us>
Cc: Chris Brehmer <CBREHMER@kittelton.com>; Steve Abel <steveabel.consulting@gmail.com>; Mimi Doukas <MimiD@aks-eng.com>; Kaaren Hofmann <kaaren.hofmann@newbergoregon.gov>; steveabel20@gmail.com
Subject: RE: checking in on Springbrook Master Plan

This message was sent from outside the organization. Treat attachments, links and requests with caution. Be conscious of the information you share if you respond.

Good Morning All-

As a follow-up to our meeting a few weeks ago, we have put together the enclosed two memos to hopefully simplify the request that the Applicant is making at this time. As you'll see, there are two items which we would like your review and concurrence on:

1. The redesignation of the commercial property will not have a significant impact on ODOT facilities as defined in both the TPR and in OHP Policy 1F.5.
2. The review of whether a southbound right-turn lane at College/Hancock is to be deferred to 50 percent master plan buildout (per the master plan) and we are only at 5 percent at this time so will revisit this issue in the future.

We look forward to your review. Please let me know if you think another meeting would be helpful as I'd be happy to set one up.

Julia

Julia Kuhn
Senior Principal Engineer

[Kittelton & Associates, Inc.](#)
Transportation Engineering / Planning
851 SW 6th Avenue, Suite 600
Portland OR 97204
503.535.7409 (direct)
503.701.4346 (cell)

Appendix C
Signal Warrant Worksheets



KITTELSON & ASSOCIATES, INC.

Project #: 27308
Project Name: springbrook
Analyst: jak
Date: 9/19/2022
File: H:\27\27308 - Springbrook District\excel\[signal warrant mountainview at villa with collina.xls]Data Input
Intersection: mountainview/villa
Scenario: 2022 with Collina

Analysis Traffic Volumes

Hour	Major Street		Minor Street			
	Begin	End	EB	WB	NB	SB
4:30 PM	5:30 PM		239	461	132	88
2nd Highest Hour			226	436	125	83
3rd Highest Hour			223	430	123	82
4th Highest Hour			214	412	118	79
5th Highest Hour			210	406	116	77
6th Highest Hour			210	406	116	77
7th Highest Hour			201	387	111	74
8th Highest Hour			198	381	109	73
9th Highest Hour			191	369	106	70
10th Highest Hour			178	344	99	66
11th Highest Hour			172	332	95	63
12th Highest Hour			169	326	93	62
13th Highest Hour			163	313	90	60
14th Highest Hour			140	270	77	52
15th Highest Hour			112	215	62	41
16th Highest Hour			105	203	58	39
17th Highest Hour			73	141	40	27
18th Highest Hour			61	117	33	22
19th Highest Hour			32	61	18	12
20th Highest Hour			22	43	12	8
21st Highest Hour			19	37	11	7
22nd Highest Hour			13	25	7	5
23rd Highest Hour			6	12	4	2
24th Highest Hour			6	12	4	2

Warrant Summary

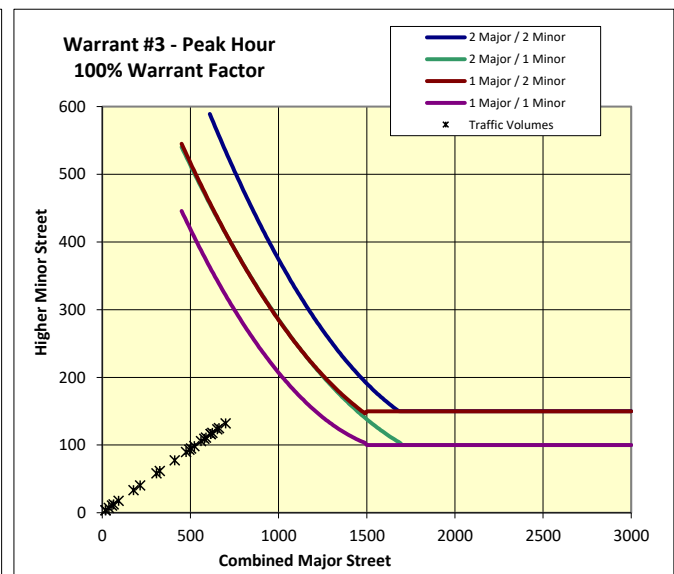
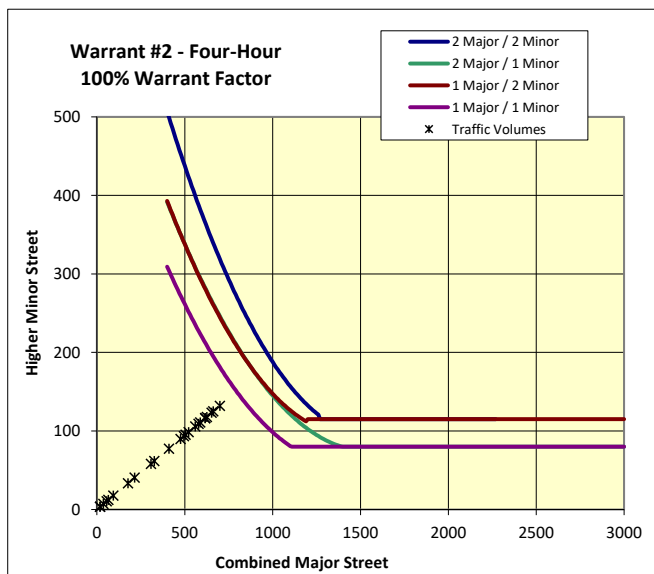
Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-
#9	Intersection Near a Grade Crossing	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	89%
Major Street: 8th-Highest Hour / Peak Hour	83%
Minor Street: 4th-Highest Hour / Peak Hour	89%
Minor Street: 8th-Highest Hour / Peak Hour	83%

Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	500	150	0	No	No
	B	750	75	0	No	No
80%	A	400	120	3	No	No
	B	600	60	6	No	No
70%	A	350	105	9	Yes	Yes
	B	525	53	9	Yes	Yes
56%	A	280	84	13	Yes	Yes
	B	420	42	13	Yes	Yes



Signal Warrant Assessment

Based on 2009 Edition of the MUTCD

Project #: 27308
 Project Name: springbrook
 Analyst: jak
 Date: 9/19/2022
 Intersection: mountainview/villa
 Scenario: 2022 * 30 percent with Collina

Volume Adjustment Factor = 1.0
 North-South Approach = Minor
 East-West Approach = Major
 Major Street Thru Lanes = 1
 Minor Street Thru Lanes = 1
 Speed > 40 mph? No
 Population < 10,000? No
 Warrant Factor 100%
 Peak Hour or Daily Count? Peak Hour

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Highest	Yes	Yes
#2	Four-Hour	Yes	Yes
#3	Peak Hour	Yes	No

Select Type Of Major Street Approach From Dropdown Menu

Urban Minor Arterial

Select Type Of Minor Street Approach From Dropdown Menu

Urban Minor Arterial

Note: traffic volume profile for weekday (if weekend is desired, tab "vol profile" needs to be adjusted)

Hour		Major Street		Minor Street		Major St.	Minor St.
Begin	End	EB	WB	NB	SB	Adj. Factor	Adj. Factor
4:30 PM	5:30 PM	311	599	172	88	1.00	1.00
2nd Highest Hour		294	567	162	83	0.95	0.95
3rd Highest Hour		290	559	160	82	0.93	0.93
4th Highest Hour		278	535	153	79	0.89	0.89
5th Highest Hour		273	527	151	77	0.88	0.88
6th Highest Hour		273	527	151	77	0.88	0.88
7th Highest Hour		261	503	144	74	0.84	0.84
8th Highest Hour		257	495	142	73	0.83	0.83
9th Highest Hour		249	479	137	70	0.80	0.80
10th Highest Hour		232	447	128	66	0.75	0.75
11th Highest Hour		224	431	124	63	0.72	0.72
12th Highest Hour		220	424	121	62	0.71	0.71
13th Highest Hour		211	408	117	60	0.68	0.68
14th Highest Hour		182	352	101	52	0.59	0.59
15th Highest Hour		145	280	80	41	0.47	0.47
16th Highest Hour		137	264	76	39	0.44	0.44
17th Highest Hour		95	184	53	27	0.31	0.31
18th Highest Hour		79	152	43	22	0.25	0.25
19th Highest Hour		41	80	23	12	0.13	0.13
20th Highest Hour		29	56	16	8	0.09	0.09
21st Highest Hour		25	48	14	7	0.08	0.08
22nd Highest Hour		17	32	9	5	0.05	0.05
23rd Highest Hour		8	16	5	2	0.03	0.03
24th Highest Hour		8	16	5	2	0.03	0.03

Data Input



KITTELSON & ASSOCIATES, INC.

Analysis Traffic Volumes

Hour	Major Street		Minor Street			
	Begin	End	NB	SB	EB	WB
4:30 PM	5:30 PM		163	339	13	70
2nd Highest Hour			154	321	12	66
3rd Highest Hour			152	316	12	65
4th Highest Hour			146	303	12	63
5th Highest Hour			143	298	11	62
6th Highest Hour			143	298	11	62
7th Highest Hour			137	285	11	59
8th Highest Hour			135	280	11	58
9th Highest Hour			130	271	10	56
10th Highest Hour			122	253	10	52
11th Highest Hour			117	244	9	50
12th Highest Hour			115	240	9	49
13th Highest Hour			111	231	9	48
14th Highest Hour			96	199	8	41
15th Highest Hour			76	158	6	33
16th Highest Hour			72	149	6	31
17th Highest Hour			50	104	4	21
18th Highest Hour			41	86	3	18
19th Highest Hour			22	45	2	9
20th Highest Hour			15	32	1	7
21st Highest Hour			13	27	1	6
22nd Highest Hour			9	18	1	4
23rd Highest Hour			4	9	0	2
24th Highest Hour			4	9	0	2

Project #: 27308
Project Name: springbrook
Analyst: jak
Date: 9/21/2022
File: H:\2\1\2\308 - Springbrook District\excel\signal warrant foothills at college collina plus growth.xls\Data Input
Intersection: college/foothills
Scenario: 2022 with Collina

Warrant Summary

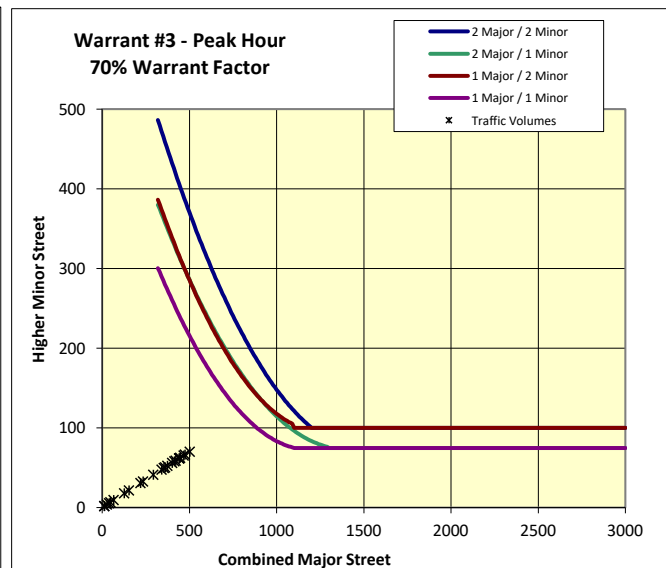
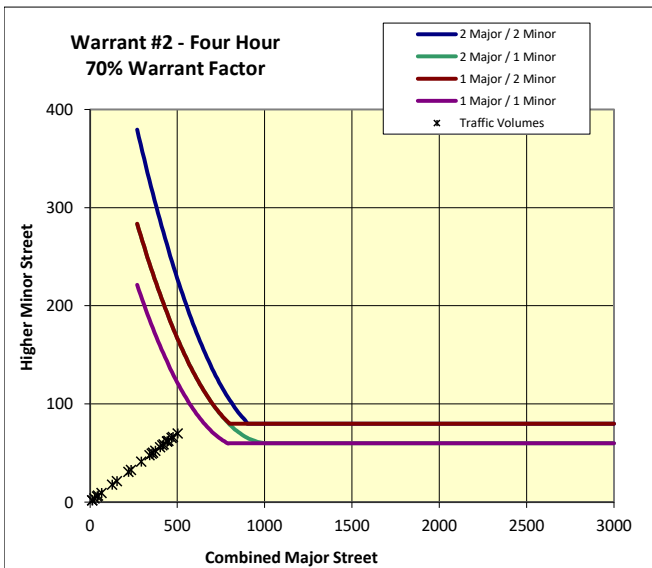
Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-
#9	Intersection Near a Grade Crossing	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	Yes
Population < 10,000?	No
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	89%
Major Street: 8th-Highest Hour / Peak Hour	83%
Minor Street: 4th-Highest Hour / Peak Hour	89%
Minor Street: 8th-Highest Hour / Peak Hour	83%

Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	500	150	0	No	No
	B	750	75	0	No	No
80%	A	400	120	0	No	No
	B	600	60	0	No	No
70%	A	350	105	0	No	No
	B	525	53	0	No	No
56%	A	280	84	0	No	No
	B	420	42	7	No	No





KITTELSON & ASSOCIATES, INC.

Project #: 27308
Project Name: springbrook
Analyst: jak
Date: 9/21/2022
File: H:\2\1\2\308 - Springbrook District\excel\signal warrant foothills at college collina plus growth.xls\Data Input
Intersection: college/foothills
Scenario: 2022 with Collina plus growth

Analysis Traffic Volumes

Hour	Major Street		Minor Street			
	Begin	End	NB	SB	EB	WB
4:30 PM	5:30 PM		228	475	13	98
2nd Highest Hour			216	449	12	93
3rd Highest Hour			213	443	12	91
4th Highest Hour			204	424	12	88
5th Highest Hour			201	418	11	86
6th Highest Hour			201	418	11	86
7th Highest Hour			192	399	11	82
8th Highest Hour			189	392	11	81
9th Highest Hour			183	380	10	78
10th Highest Hour			170	354	10	73
11th Highest Hour			164	342	9	71
12th Highest Hour			161	335	9	69
13th Highest Hour			155	323	9	67
14th Highest Hour			134	278	8	57
15th Highest Hour			106	221	6	46
16th Highest Hour			100	209	6	43
17th Highest Hour			70	146	4	30
18th Highest Hour			58	120	3	25
19th Highest Hour			30	63	2	13
20th Highest Hour			21	44	1	9
21st Highest Hour			18	38	1	8
22nd Highest Hour			12	25	1	5
23rd Highest Hour			6	13	0	3
24th Highest Hour			6	13	0	3

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-
#9	Intersection Near a Grade Crossing	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	Yes
Population < 10,000?	No
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	89%
Major Street: 8th-Highest Hour / Peak Hour	83%
Minor Street: 4th-Highest Hour / Peak Hour	89%
Minor Street: 8th-Highest Hour / Peak Hour	83%

Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	500	150	0	No	No
	B	750	75	0	No	
80%	A	400	120	0	No	No
	B	600	60	6	No	
70%	A	350	105	0	No	Yes
	B	525	53	10	Yes	
56%	A	280	84	6	No	Yes
	B	420	42	13	Yes	

