KITTELSON & ASSOCIATES

851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

MEMORANDUM

Date: May 4, 2022 Project #: 24369/26747/26748

To: Tom Schauer, AICP, & Heather Richards, PCED, City of McMinnville

Cc: Josh Anderson, PE, PTOE, & Andrew Mortenson, David Evans and Associates, Inc.
Dan Fricke & Arielle Ferber, PE, ODOT Region 2
Ken Friday & Mark Lago, Yamhill County
Michael Strahs, Kimco Realty
Alan Roodhouse, RPS Development Company
Stewart Kircher & Dan Bansen, DRS Land LLC
Bryan Hays & Fee Stubblefield, The Springs Living
Ken Sandblast, Westlake Consultants, Inc.

EXPIRES: 12/31/2023

From: Kristine Connolly, PE, Marc Butorac, PE, PTOE, PMP, & Alec Kauffman

Project: Three Mile Lane Comprehensive Plan Map Amendments/Zone Changes CPA 2-20/ZC 3-20, CPA 1-21/ZC 2-21, & CPA 2-21/ZC 3-21

Subject: Three Mile Lane Area Plan Sensitivity Analysis

This sensitivity analysis was prepared in response to the David Evans and Associates (DEA) March 2, 2022 third-party review comments on the three Traffic Impact Analyses (TIAs) and supplemental memoranda submitted to the City by Kittelson & Associates, Inc. (Kittelson), as well as the outcome of the March 17, 2022 meeting between Kittelson, City of McMinnville, Oregon Department of Transportation (ODOT) and Yamhill County staff (see Appendix A for documentation of the scope of the sensitivity analysis developed in coordination with City staff). This sensitivity analysis evaluates the combined impact of all three zone changes (the December 2020 Three Mile Lane Rezone TIA [Kimco McMinnville LLC] the November 2021 Three Mile Lane – East Rezone TIA [The Springs Living] and Three Mile Lane – West Rezone TIA [DRS Land LLC]) using updated background traffic assumptions to be consistent with the analysis performed for the Three Mile Lane Area Plan (3MLAP). The mitigation identified through this sensitivity analysis is generally consistent with the previously proposed mitigation for Transportation Planning Rule (TPR) compliance (cited in the January 31, 2022 *Supplemental Transportation Information* memorandum, see Appendix B).

This sensitivity analysis makes the following modifications to the background traffic volume assumptions in the three TIAs and January 31, 2022 *Supplemental Transportation Information* memorandum:

- Horizon year 2041 for consistency with the traffic volumes for the 3MLAP analysis. *It should be noted that OAR 660-012 only requires a 15-year future horizon (2036) given that the adopted TSP presently has a future forecast year less than 15 years from today.*
- An overall 1.0% annual growth rate.
- No opening year mitigation has been completed.
- Includes the future roundabout at OR-18/Lafayette Highway identified as "reasonably likely to be provided by the end of the planning period" in the Yamhill County Transportation System Plan (TSP) and confirmed by ODOT's March 3, 2022 email in the 2041 background conditions (see Appendix C).
- Includes northerly and southerly OR-18 collector/frontage roads identified as "reasonably likely to be provided by the end of the planning period" per OAR 660-0012-0060(4)(b)(D) by the City of McMinnville in the 2041 background conditions (see Appendix C).

It should be noted that the applicants associated with the three zone change applications have agreed to be conditioned with the same mitigation package to support the cumulative impacts of all three zone changes. The applicants will utilize a private third-party cost sharing agreement to address the conditions and share costs proportionally amongst parties.

This document identifies two types of conditions, required and voluntary mitigations. Required mitigation address the impacts of the zone change in compliance with TPR. Voluntary mitigations are not needed for TPR compliance, but the City of McMinnville has requested these improvements and the developers may be willing to provide them as a condition of approval.

SENSITIVITY ANALYSIS

Year 2041 Background Traffic Volumes and Conditions

DEA provided future year 2041 background traffic volumes used in the 3MLAP analysis at the following study intersections (see Appendix D):

- NE Three Mile Lane/NE 1st Street
- SE Norton Lane/NE Cumulus Avenue
- OR-18/SE Norton Lane
- SE Norton Lane/SE Stratus Avenue (not previously analyzed in the TIAs)
- OR-18/NE Cumulus Avenue
- OR-18/SE Armory Way
- OR-18/SE Loop Road

- OR-18/SE Cruickshank Road

These volumes include traffic projected to be generated by the existing industrial zoning of land within the City's urban growth boundary (UGB). However, the 3MLAP analysis did not assume completion of the northerly and southerly OR-18 collector/frontage roads identified by the City. Trips were re-assigned within the study area to account for these "reasonably likely" roadway facilities. These adjustments are documented in Appendix E.

For TIA study intersections not included in the 3MLAP analysis, a growth factor of 1.0% was applied to the seasonally adjusted traffic counts to develop year 2041 background traffic volumes. Volumes at these intersections were compared to the nearest study intersection included in the 3MLAP analysis, and through volumes were balanced manually for consistency. These adjustments apply to the following intersections:

- NE 3rd Street/NE Johnson Street
- NE Three Mile Lane/SE Nehemiah Lane – NE Cumulus Avenue – NE Pacific Street
- OR-18/Lafayette Highway
- OR-18/Ash Road

To account for the closure of OR-18/Ash Road with completion of the planned roundabout at OR-18/Lafayette Highway, turning movements at Ash Road were re-assigned to the roundabout. This adjustment is documented in Appendix E.

In reviewing the volumes originating and destined south of OR-18 in the vicinity of the subject zone changes, it was found that build-out of the industrial land subject to the zone change (under a reasonable worst-case scenario) could result in higher volumes than were included in the 3MLAP analysis. Additional industrial trips were assigned to the network to account for this potential delta in traffic at the Norton and Cumulus intersections with OR-18. This adjustment is documented in Appendix E.

Appendix F includes the resulting year 2041 background traffic volumes used in this sensitivity analysis.

Year 2041 Background Traffic Operations

Table 1 summarizes the year 2041 background traffic operations for the weekday PM peak hour. Appendix G includes the 2041 background conditions intersection operations analysis worksheets.

Table 1. Estimated 2041 Background Traffic Operations for Weekday PM Peak Hour

	Study Intersection	Mobility Target (V/C)[1]	CM	V/C
1	NE 3rd Street/NE Johnson Street	0.90	-	0.86
2	NE Three Mile Lane/NE 1st Street	0.90	WB	**1.40[2]**
3	NE Three Mile Lane/SE Nehemiah Lane – NE Cumulus Avenue – NE Pacific Street	0.90	EB	**1.27[2]**
4	SE Norton Lane/NE Cumulus Avenue	0.90	EB	0.48
5	OR-18/SE Norton Lane	0.80	-	0.80
6	OR-18/NE Cumulus Avenue	0.80	-	**0.98**
7	OR-18/SE Armory Way	major approaches = 0.80 minor approaches = 0.95	NB	0.29
8	OR-18/SE Loop Road	major approaches = 0.80 minor approaches = 0.90	SB	0.39
9	OR-18/SE Cruickshank Road	major approaches = 0.70 minor approaches = 0.75	NB	**1.64**
10	OR-18/Lafayette Highway	major approaches = 0.70 minor approaches = 0.75	EB	0.53
11	OR-18/Ash Road	major approaches = 0.70 minor approaches = 0.80	Closed	
12	SE Norton Lane/SE Stratus Avenue	0.90	WB	0.36

WB= Westbound, SB = Southbound, EB = Eastbound, NB = Northbound, L = Left, T = Through, R = Right
V/C= Intersection volume-to-capacity ratio (signalized) / Critical lane group volume-to-capacity ratio (unsignalized)
CM= Critical Movement
[1]Mobility targets at Intersections #5 through #11 provided by ODOT based on Table 6 in the OHP (Reference 1) and the functional classification and location of each section of roadway.
[2]Results from Sidra 8 analysis are reported in verification of Vistro analysis. Both Sidra and Vistro results are included in Appendix G.

As shown in Table 1, the following intersections are expected to exceed the applicable performance requirement in 2041 under the background condition:

- NE Three Mile Lane/NE 1st Street
- Three Mile Lane/SE Nehemiah Lane – NE Cumulus Avenue – NE Pacific Street
- OR-18/NE Cumulus Avenue
- OR-18/SE Cruickshank Road

Year 2041 Total Traffic Volumes

Year 2041 total traffic volumes were developed by adding the difference in site-generated trips between the existing and proposed zoning of each of the three proposed rezones (as shown in Table 2) to the year 2041 background traffic volumes. Appendix H includes the net new trip assignment, which was assigned consistent with the trip assignment in the TIAs.

Table 2. Cumulative Trip Generation

	Land Use	ITE Code	Size	Daily Trips	PM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out
Kimco McMinnville LLC	**Existing M-2 General Industrial Zone Reasonable Worst-Case Development Scenario**						
	Medical-Dental Office Building (10 acres at 25%)	720	108,900 SF	4,096	371	104	267
	Industrial Park (23.5 acres at 40%)	130	409,464 SF	1,954	164	34	130
	Net New Trips			6,050	535	138	397
	Proposed C-3 General Commercial Zone Reasonable Worst-Case Development Scenario						
	Shopping Center (33.5 acres at 25%)	820	364,815 SF	11,867	1,203	578	625
	Less Pass-by Trips (34%)			*(4,035)*	*(408)*	*(204)*	*(204)*
	Net New Trips			7,832	795	374	421
	Difference = Proposed – Existing			**1,782**	**260**	**236**	**24**
The Springs Living	**Existing M-2 General Industrial Zone Reasonable Worst-Case Development Scenario**						
	Medical-Dental Office Building (8.0 acres at 25%)	720	87,120 SF	3,260	297	83	214
	Net New Trips			3,260	297	83	214
	Proposed C-3 General Commercial Zone Reasonable Worst-Case Development Scenario						
	Shopping Center (8.0 acres at 25%)	820	87,120 SF	2,834	287	138	149
	Less Pass-by Trips (34%)			(964)	(98)	(49)	(49)
	Net New Trips			1,870	189	89	100
	Difference = Proposed – Existing			**-1,390**	-108	6	-114
DRS Land LLC	**Existing M-L General Industrial Zone Reasonable Worst-Case Development Scenario**						
	Medical-Dental Office Building (6 acres at 25%)	720	65,340 SF	2,423	224	63	161
	Industrial Park (15.11 acres at 40%)	130	263,277 SF	887	105	22	83
	Net New Trips			3,310	329	85	244
	Proposed C-3 General Commercial Zone Reasonable Worst-Case Development Scenario						
	Shopping Center (21.11 acres at 25%)	820	229,888 SF	7,478	758	364	394
	Less Pass-by Trips (34%)			*(2,543)*	*(258)*	*(129)*	*(129)*
	Net New Trips			4,935	500	235	265
	Difference = Proposed – Existing			**1,625**	**171**	**150**	**21**
Combined	**Existing Industrial Zone Reasonable Worst-Case Development Scenario**			**12,620**	**1,161**	**306**	**855**
	Proposed Commercial Zone Reasonable Worst-Case Development Scenario			**14,637**	**1,484**	**698**	**786**
	Difference = Proposed - Existing			**2,017**	**323**	**392**	**-69**

Year 2041 Total Traffic Operations

Table 3 summarizes the year 2041 total traffic operations for the weekday PM peak hour. Appendix I includes the 2041 total conditions intersection operations analysis worksheets.

Table 3. Estimated 2041 Total Traffic Operations for Weekday PM Peak Hour

	Study Intersection	Mobility Target (V/C)[1]	CM	V/C
1	NE 3rd Street/NE Johnson Street	0.90	-	**0.93**
2	NE Three Mile Lane/NE 1st Street	0.90	EB	**1.83**[2]
3	NE Three Mile Lane/SE Nehemiah Lane – NE Cumulus Avenue – NE Pacific Street	0.90	EB	**1.14**[3]
4	SE Norton Lane/NE Cumulus Avenue	0.90	EB	0.50
5	OR-18/SE Norton Lane	0.80	-	0.79[4]
6	OR-18/NE Cumulus Avenue	0.80	-	**1.33**
7	OR-18/SE Armory Way	major approaches = 0.80 minor approaches = 0.95	NB	0.31
8	OR-18/SE Loop Road	major approaches = 0.80 minor approaches = 0.90	SB	0.48
9	OR-18/SE Cruickshank Road	major approaches = 0.70 minor approaches = 0.75	NB	**1.63**[5]
10	OR-18/Lafayette Highway	major approaches = 0.70 minor approaches = 0.75	WB	0.54
11	OR-18/Ash Road	major approaches = 0.70 minor approaches = 0.80	Closed	
12	SE Norton Lane/SE Stratus Avenue	0.90	WB	0.54

WB= Westbound, SB = Southbound, EB = Eastbound, NB = Northbound, L = Left, T = Through, R = Right
V/C= Intersection volume-to-capacity ratio (signalized) / Critical lane group volume-to-capacity ratio (unsignalized)
CM= Critical Movement
[1]Mobility targets at Intersections #5 through #11 provided by ODOT based on Table 6 in the OHP (Reference 1) and the functional classification and location of each section of roadway.
[2]Results from Sidra 8 analysis are reported in verification of Vistro analysis. Both Sidra and Vistro results are included in Appendix I. Under 2041 total traffic conditions in Vistro, the delay for the critical westbound left-turn movement is so high that it is not reported. It can be assumed that with higher delay, the true V/C under 2041 total traffic conditions is also higher if Vistro were capable of reporting it. Sidra 8 was used to verify this assumption.
[3]Results from Sidra 8 analysis are reported in verification of Vistro analysis. Both Sidra and Vistro results are included in Appendix I. Under 2041 total traffic conditions in Vistro, the rezone from industrial to commercial site use increases inbound (southbound) and decreases outbound (northbound) flow from the site through Intersection #3, resulting in improved capacity for the critical eastbound left-turn movement compared to 2041 background traffic conditions. Sidra 8 was used to verify this condition.
[4]Pass-by trips associated with the rezone form industrial to commercial site use decrease eastbound and westbound through volumes on OR-18, resulting in improved capacity compared to 2041 background traffic conditions.
[5]The rezone from industrial to commercial site use increases inbound (westbound) and decreases outbound (eastbound) flow from the site through Intersection #9, resulting in improved capacity for the critical northbound left-turn movement compared to 2041 background traffic conditions.

As shown in Table 3, the four intersections that do not satisfy applicable review agency mobility targets under year 2041 background conditions experience additional delay with the proposed rezones. Additionally, the NE 3rd Street/NE Johnson Street intersection does not satisfy applicable review agency mobility targets under year 2041 total conditions.

Year 2041 Total Traffic Mitigations

Table 4 provides a comparison of 2041 horizon year background and total traffic operations for the weekday PM peak hour.

Table 4. Comparison of 2041 Background and Total Traffic Operations for Weekday PM Peak Hour

	Study Intersection	Mobility Target (V/C)[1]	2041 Background		2041 Total		V/C Change
			CM	V/C	CM	V/C	> 0.03?
1	NE 3rd Street/NE Johnson Street	0.90	-	0.86	-	**0.93**	**Yes**
2	NE Three Mile Lane/NE 1st Street	0.90	WBL	**1.40**[2]	EB	**1.83**[2]	**Yes**
3	NE Three Mile Lane/SE Nehemiah Lane – NE Cumulus Avenue – NE Pacific Street	0.90	EB	**1.27**[3]	EB	**1.14**[3]	No
4	SE Norton Lane/NE Cumulus Avenue	0.90	EB	0.48	EB	0.50	No
5	OR-18/SE Norton Lane	0.80	-	0.80	-	0.79[4]	No
6	OR-18/NE Cumulus Avenue	0.80	-	**0.98**	-	**1.33**	**Yes**
7	OR-18/SE Armory Way	major approaches = 0.80 minor approaches = 0.95	NB	0.29	NB	0.31	No
8	OR-18/SE Loop Road	major approaches = 0.80 minor approaches = 0.90	SB	0.39	SB	0.48	No
9	OR-18/SE Cruickshank Road	major approaches = 0.70 minor approaches = 0.75	NB	**1.64**	NB	**1.63**[5]	No
10	OR-18/Lafayette Highway	major approaches = 0.70 minor approaches = 0.75	EB	0.53	WB	0.54	No
11	OR-18/Ash Road	major approaches = 0.70 minor approaches = 0.80	Closed				
12	SE Norton Lane/NE Stratus Avenue	0.90	WB	0.36	WB	0.54	Yes

WB= Westbound, SB = Southbound, EB = Eastbound, NB = Northbound, L = Left, T = Through, R = Right
V/C= Intersection volume-to-capacity ratio (signalized) / Critical lane group volume-to-capacity ratio (unsignalized)
CM= Critical Movement
[1]Mobility targets at Intersections #5 through #11 provided by ODOT based on Table 6 in the OHP (Reference 1) and the functional classification and location of each section of roadway.
[2]Results from Sidra 8 analysis are reported in verification of Vistro analysis. Both Sidra and Vistro results are included in Appendix G and Appendix I. Under 2041 total traffic conditions in Vistro, the delay for the critical westbound left-turn movement is so high that it is not reported. It can be assumed that with higher delay, the true V/C under 2041 total traffic conditions is also higher if Vistro were capable of reporting it. Sidra 8 was used to verify this assumption.
[3]Results from Sidra 8 analysis are reported in verification of Vistro analysis. Both Sidra and Vistro results are included in Appendix G and Appendix I. Under 2041 total traffic conditions in Vistro, the rezone from industrial to commercial site use increases inbound (southbound) and decreases outbound (northbound) flow from the site through Intersection #3, resulting in improved capacity for the critical eastbound left-turn movement compared to 2041 background traffic conditions. Sidra 8 was used to verify this condition.
[4]Pass-by trips associated with the rezone form industrial to commercial site use decrease eastbound and westbound through volumes on OR-18, resulting in improved capacity compared to 2041 background traffic conditions.
[5]The rezone from industrial to commercial site use increases inbound (westbound) and decreases outbound (eastbound) flow from the site through Intersection #9, resulting in slightly improved capacity for the critical northbound left-turn movement compared to 2041 background traffic conditions.

As demonstrated in Table 4, the change in volume-to-capacity ratio at the following three intersections between 2041 background and 2041 total traffic conditions is greater than or equal to +0.03 V/C, and therefore considered to be a significant impact per the guidance provided in the May 25, 2011, Oregon Highway Plan – Policy Intent Statements memorandum from ODOT (see Appendix J):

- NE 3rd Street/NE Johnson Street

- NE Three Mile Lane/NE 1st Street
- OR-18/NE Cumulus Avenue

While OR-18/SE Norton Lane does not require mitigation to satisfy applicable review agency mobility targets, queues on the minor approaches exceed available storage. Mitigation is required to prevent queueing through the northerly and southerly frontage road connections with Norton Lane.

The following mitigation measures are recommended to address the impacts of proposed rezones:

- NE 3rd Street/NE Johnson Street
    - Restripe existing pavement to include an exclusive northbound left-turn lane. *Note that the TIAs did not recommend mitigation at this intersection.*
- NE Three Mile Lane/NE 1st Street
    - Consistent with TIAs, install a traffic signal. *Note that the right-turn lane identified in the TIAs is not required to address TPR impacts.*
- OR-18/SE Norton Lane
    - Consistent with the TIAs, modify the existing signal to redevelop the southbound shared through/right-turn lane into an exclusive southbound right-turn lane. Redevelop the second northbound exit lane into an exclusive southbound left-turn lane (allowing the northbound and southbound left-turns to run concurrently with protected phasing). Add right-turn overlaps to all exclusive right-turn lanes (southbound, eastbound, and westbound). Optimize signal timing to reduce queues on the minor approaches.
- OR-18/NE Cumulus Avenue
    - Consistent with the TIAs, modify the existing traffic signal and construct an exclusive eastbound right-turn lane, northbound left-turn lane and northbound right-turn lane. Add protected/permissive left-turn phasing and right-turn overlaps on all approaches. *Note that the second northbound left-turn lane identified in the TIAs is not required.*

Appendix K includes the mitigated year 2041 total conditions intersection operations analysis worksheets. Table 5 summarizes the improved 95th percentile queues at OR-18/SE Norton Lane with the recommended mitigation measures.

Table 5. Comparison of 2041 Background, Total and Mitigated Total Traffic 95th Percentile Queues at OR-18/SE Norton Lane for Weekday PM Peak Hour

Study Intersection		Movement	Available Queue Storage (feet)	2041 Background		2041 Total		2041 Total with Mitigation	
				95th Percentile Queue (feet)	Queue Storage Adequate?	95th Percentile Queue (feet)	Queue Storage Adequate?	95th Percentile Queue (feet)	Queue Storage Adequate?
5	OR-18/SE Norton Lane	NBL	210' (dual)	270'	**No**	325'	**No**	204'	Yes
		NBTR	Continuous	183'	Yes	210'	Yes	205'	Yes
		SBL	120'	156'	**No**	197'	**No**	118'	Yes
		SBT	Continuous	144'	Yes	154'	Yes	10'	Yes
		SBR	New	-	Yes	-	Yes	77'	Yes
		EBL	150'	46'	Yes	58'	Yes	28'	Yes
		EBT	Continuous	557'	Yes	748'	Yes	500'	Yes
		EBR	100'	47'	Yes	122'	**No**	27'	Yes
		WBL	150'	79'	Yes	121'	Yes	61'	Yes
		WBT	Continuous	907'	Yes	815'	Yes	690'	Yes
		WBR	175'	21'	Yes	26'	Yes	9'	Yes

Where: EB = eastbound, WB – westbound, NB = northbound, SB = southbound, L = left-turn, T = through, R = right-turn
[1]Measured between the crosswalks at OR-18 and SE Stratus Avenue

As shown in Table 5, all 95th percentile queues during year 2041 total traffic conditions would be accommodated by the available storage with the recommended mitigation measures.

Table 6 details the 2041 total traffic operations for the weekday PM peak hour with the recommended mitigation measures.

Table 6. Comparison of 2041 Background, Total and Mitigated Total Traffic Operations for Weekday PM Peak Hour

	Study Intersection	Mobility Target (V/C)[1]	2041 Background		2041 Total		2041 Total with Mitigation	
			CM	V/C	CM	V/C	CM	V/C
1	NE 3rd Street/NE Johnson Street	0.90	-	0.86	-	**0.93**	-	0.85
2	NE Three Mile Lane/NE 1st Street	0.90	WB	**1.40**	EB	**1.83**	-	**1.05**[2]
3	NE Three Mile Lane/SE Nehemiah Lane – NE Cumulus Avenue – NE Pacific Street	0.90	EB	**1.27**	EB	**1.14**		
4	SE Norton Lane/NE Cumulus Avenue	0.90	EB	0.48	EB	0.50		
5	OR-18/SE Norton Lane	0.90	-	0.80	-	0.79	-	0.72
6	OR-18/NE Cumulus Avenue	0.80	-	**0.98**	-	**1.33**	-	0.79
7	OR-18/SE Armory Way	major approaches = 0.80 minor approaches = 0.95	NB	0.29	NB	0.31		
8	OR-18/SE Loop Road	major approaches = 0.80 minor approaches = 0.90	SB	0.39	SB	0.48		
9	OR-18/SE Cruickshank Road	major approaches = 0.70 minor approaches = 0.75	NB	**1.64**	NB	**1.63**		
10	OR-18/Lafayette Highway	major approaches = 0.70 minor approaches = 0.75	EB	0.53	WB	0.54		
11	OR-18/Ash Road	major approaches = 0.70 minor approaches = 0.80	Closed					
12	SE Norton Lane/NE Stratus Avenue	0.90	WB	0.36	WB	0.54		

WB= Westbound, SB = Southbound, EB = Eastbound, NB = Northbound, L = Left, T = Through, R = Right
V/C= Intersection volume-to-capacity ratio (signalized) / Critical lane group volume-to-capacity ratio (unsignalized)
CM= Critical Movement
[1]Mobility targets at Intersections #5 through #11 provided by ODOT based on Table 6 in the OHP (Reference 1) and the functional classification and location of each section of roadway.
[2]Mitigation improves V/C at the intersection to be better than the 2041 background traffic conditions

As shown in Table 6, the mitigation required to address TPR impacts at NE Three Mile Lane/NE 1st Street improves the V/C to be better than the 2041 background traffic conditions, but the intersection still does not meet mobility targets. The City and/or ODOT could consider further mitigation to install an eastbound right-turn lane to meet mobility standards in the future (i.e., V/C = 0.85). Appendix L includes the 2041 total conditions intersection operations analysis worksheets with this further mitigation.

Regardless of the proposed rezone and subsequent development, the following two intersections should continue to be monitored by the City and/or ODOT and may require additional mitigation in future years based on Year 2041 conditions. While these locations are projected to require additional mitigation in the future as a function of continued local and regional growth, the proposed zone change has a negligible long-term impact on intersection operations. Therefore, no additional mitigation is required at these intersections to comply with TPR.

- NE Three Mile Lane/SE Nehemiah Lane – NE Cumulus Avenue – NE Pacific Street: Ultimately this intersection will be relocated and signalized as part of the 3MLAP. Mobility standards can be met

with signalization (i.e., V/C = 0.90). Appendix L includes the 2041 total conditions intersection operations analysis worksheets with this further mitigation.

- OR-18/SE Cruickshank Road: Per the January 31, 2022 *Supplemental Transportation Information* memorandum, mobility standards can be met if the northbound left-turn movement is restricted at the time the OR-18/Lafayette Highway roundabout is installed. Furthermore, the restriction of the northbound left-turn movements and reassignment to the Lafayette Highway/OR-18 roundabout shows that this intersection continues to meet mobility targets in 2041 (i.e., critical movement V/C = 0.74). Appendix L includes the 2041 total conditions intersection operations analysis worksheets at the OR-18/Lafayette Highway intersection with this reassignment. The OR-18/SE Cruickshank Road intersection will meet mobility targets if at least 60% of projected 2041 northbound left-turn movements reroute to OR-18/Lafayette Highway. Appendix L includes the 2041 total conditions intersection operations analysis worksheets at OR-18/SE Cruickshank Road with 60% of northbound left-turns removed (i.e., critical movement V/C = 0.72).

Table 7 details the 2041 total traffic operations for the weekday PM peak hour with this further mitigation for consideration by the City and/or ODOT.

Table 7. Comparison of 2041 Background, Total, Mitigated Total, and Further Mitigated Total Traffic Operations for Weekday PM Peak Hour

	Study Intersection	Mobility Target (V/C)[1]	2041 Background		2041 Total		2041 Total with Mitigation		Year 2041 Recommended Mitigation	2041 Total with Further Mitigation		Year 2041 Further Mitigation
			CM	V/C	CM	V/C	CM	V/C		CM	V/C	
1	NE 3rd Street/NE Johnson Street	0.90	-	0.86	-	**0.93**	-	0.85	NBL Turn Lane			
2	NE Three Mile Lane/NE 1st Street	0.90	WB	**1.40**	EB	**1.83**	-	**1.05**	Install Traffic Signal	-	0.85	EBR Turn Lane
3	NE Three Mile Lane/SE Nehemiah Lane – NE Cumulus Avenue – NE Pacific Street	0.90	EB	**1.27**	EB	**1.14**				-	0.90	Install Traffic Signal
4	SE Norton Lane/NE Cumulus Avenue	0.90	EB	0.48	EB	0.50						
5	OR-18/SE Norton Lane	0.90	-	0.80	-	0.79	-	0.72	SBR Turn Lane, Modify Traffic Signal			
6	OR-18/NE Cumulus Avenue	0.80	-	**0.98**	-	**1.33**	-	0.79	EBR Turn Lane, NBL Turn Lane, NBR Turn Lane			
7	OR-18/SE Armory Way	major approaches = 0.80 minor approaches = 0.95	NB	0.29	NB	0.31						
8	OR-18/SE Loop Road	major approaches = 0.80 minor approaches = 0.90	SB	0.39	SB	0.48						
9	OR-18/SE Cruickshank Road	major approaches = 0.70 minor approaches = 0.75	NB	**1.64**	NB	**1.63**				NB	0.72	Reroute of 60% NBL to Lafayette/OR-18 intersection
10	OR-18/Lafayette Highway	major approaches = 0.70 minor approaches = 0.75	EB	0.53	WB	0.54						
11	OR-18/Ash Road	major approaches = 0.70 minor approaches = 0.80	Closed									
12	SE Norton Lane/NE Stratus Avenue	0.90	WB	0.36	WB	0.54						

WB= Westbound, SB = Southbound, EB = Eastbound, NB = Northbound, L = Left, T = Through, R = Right
V/C= Intersection volume-to-capacity ratio (signalized) / Critical lane group volume-to-capacity ratio (unsignalized)
CM= Critical Movement
[1]Mobility targets at Intersections #5 through #11 provided by ODOT based on Table 6 in the OHP (Reference 1) and the functional classification and location of each section of roadway.

As shown in Table 7, with the further mitigation for consideration by the City and/or ODOT, all study intersections would satisfy applicable review agency mobility targets under year 2041 total conditions.

DRAFT CONDITIONS OF APPROVAL

Draft conditions of approval are outlined below. The applicants associated with the three zone change applications have agreed to be conditioned with the same mitigation package to support the cumulative impacts of all three zone changes. The applicants will utilize a private third-party cost sharing agreement to address the conditions and share costs proportionally amongst parties.

Required mitigation address the impacts of the zone change in compliance with TPR. Voluntary mitigations are not needed to for TPR compliance, but the City of McMinnville has requested these improvements and the developers may be willing to provide them as a condition of approval.

Conditions of Approval to Address TPR Impacts

- Prior to occupancy, install a northbound left-turn lane (pavement restriping) at the NE 3rd Street/NE Johnson Street intersection.
- Prior to occupancy, install a traffic signal at the NE Three Mile Lane/NE 1st Street intersection.
- Prior to occupancy, install a southbound right-turn lane (pavement restriping), modify the traffic signal, and update the signal timing and phasing at the OR-18/SE Norton Lane intersection.
- Prior to occupancy, install a northbound left-turn lane, northbound right-turn lane, eastbound right-turn lane, modify the traffic signal, and update the signal phasing at the OR-18/NE Cumulus Avenue intersection.

Voluntary Conditions

- Prior to occupancy, construct a partial northerly frontage road on City-owned property to the west of SE Loop Road.
- Prior to occupancy, install northbound and southbound left-turn pockets *or* contribute a fee-in-lieu payment toward future relocation and signalization of the NE Three Mile Lane/SE Nehemiah Lane – NE Cumulus Avenue – NE Pacific Street intersection.
- Prior to occupancy, contribute a fee-in-lieu payment toward the planned $8,000,000 multilane roundabout at OR-18/Lafayette Highway. To provide a level of understanding and expectations between the applicant and the City, County and ODOT, the proposed proportional share contribution to the roundabout is estimated to cost approximately $307,000 in 2022 dollars.

We trust that we adequately provided the supplemental analysis. Please contact us if you have any questions and/or comments at kconnolly@kittelson.com or 503.535.7448.

Appendix A Scope Documentation

KITTELSON & ASSOCIATES

851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

MEMORANDUM

Date:	March 15, 2022	Project #: 24369/26747/26748
To:	Tom Schauer, AICP, & Heather Richards, PCED, City of McMinnville	
Cc:	Josh Anderson, PE, PTOE, & Andrew Mortenson, David Evans and Associates, Inc. Dan Fricke & Arielle Ferber, PE, ODOT Region 2 Ken Friday & Mark Lago, Yamhill County Michael Strahs, Kimco Realty Alan Roodhouse, RPS Development Company Stewart Kircher & Dan Bansen, DRS Land LLC Bryan Hays & Fee Stubblefield, The Springs Living Ken Sandblast, Westlake Consultants, Inc.	
From:	Kristine Connolly, PE, Marc Butorac, PE, PTOE, PMP, & Alec Kauffman	
Project:	Three Mile Lane Comprehensive Plan Map Amendments/Zone Changes CPA 2-20/ZC 3-20, CPA 1-21/ZC 2-21, & CPA 2-21/ZC 3-21	
Subject:	Response to David Evans and Associates (DEA) Third-Party Review Comments	

This memorandum was prepared in response to the David Evans and Associates (DEA) March 2, 2022 third-party review comments on the three Traffic Impact Analyses (TIAs) and supplemental memoranda submitted to the City by Kittelson & Associates, Inc (Kittelson). Based on our review of the DEA comments on the TIAs, it is our understanding that the City is now requesting an analysis using updated background traffic assumptions to be consistent with the analysis performed for the Three Mile Lane Area Plan (3MLAP). However, it should be noted that the City and ODOT already approved the background traffic assumptions in the TIAs through the formal scoping process conducted in Spring of 2020 (see Traffic Impact Analysis Scoping Background section below).

The three applicants are willing to prepare a sensitivity analysis of year 2037 background and total conditions using updated background traffic assumptions to confirm the previously proposed mitigation (cited in the January 31, 2022 *Supplemental Transportation Information* memorandum) for Transportation Planning Rule (TPR) compliance is still applicable under the updated 3MLAP assumptions. In order to prepare the sensitivity analysis, we would appreciate clarification on some of the recommendations DEA provided in the March 2, 2022 review comments (see questions and assumptions highlighted in red as part of our Response to the Third-Party Review Comments starting on the next page).

Traffic Impact Analysis Scoping Background

Kittelson met with the City of McMinnville and Oregon Department of Transportation (ODOT) staff on March 3, 2020 at the pre-application meeting for the Kimco application (CPA 2-20/ZC 3-20). A follow-up meeting was held on March 19, 2020 to inform the TIA scoping memorandum submitted by Kittelson dated April 23, 2020. All three TIAs were conducted according to the scope agreed upon through this process. The first TIA for the Kimco application (Three Mile Lane Rezone) was submitted December 18, 2020. ODOT provided comments, which were addressed through the response memorandum dated May 26, 2021. An additional memorandum with clarifications regarding the analysis and proposed mitigations was provided at the request of City of McMinnville dated September 22, 2021. The subsequent TIAs for the Springs Living application (CPA 1-21/ZC 2-21, Three Mile Lane – East Rezone) dated November 11, 2021, and for the DRS Land LLC application (CPA 2-21/ZC 3-21, Three Mile Lane – West Rezone) dated November 16, 2021, were completed according to the same scope and submitted to the City of McMinnville.

Since November 2021, extensive coordination has occurred between Kittelson and the City of McMinnville and ODOT, resulting in the *Supplemental Transportation Information* memorandum (providing draft conditions and findings for the mitigation developed through this extensive coordination, consistent with the City's November 22, 2021 comment letter regarding mitigation for the Kimco application) and *2010 McMinnville Transportation System Plan & 3MLAP Future Forecast Year Considerations* memorandum (explaining the difference between the Three Mile Lane Area Plan and the growth used in the TIAs), both submitted January 31, 2022.

Throughout these discussions and coordination between the parties, the City did not request an analysis using updated background traffic assumptions to be consistent with the analysis performed for the 3MLAP. Kittelson was not aware that the City wanted this analysis until it received DEA's March 2, 2022 third-party review comments.

Response to the Third-Party Review Comments

Italics *text* represent DEA's third-party review comments followed by our response in standard text.

- *The Applicant should coordinate with the City, County, and ODOT to identify a comprehensive list of projects to include in both the 2037 background and total (background plus site traffic) conditions analysis. The list of projects would include transportation infrastructure projects that have a funding source and are reasonably likely to be constructed in the forecast year of 2037.*

  RESPONSE: Based on our research to date and confirmed by ODOT's March 3, 2022 email, the only improvement that can be relied upon in the forecast year of 2037 as "reasonably likely" under the Transportation Planning Rule is the OR-18/Lafayette Highway roundabout that is documented in the adopted 2015 Yamhill County TSP.

If the sensitivity analysis is to assume collector/frontage improvements noted in the third-party review memorandum and/or other improvements in the Highway 18 Corridor Refinement Plan (1996), we would ask for an official letter from the City of McMinnville or an adopted plan that notes these improvements are also "reasonably likely to be provided by the end of the planning period" per OAR 660-0012-0060(4)(b)(D). The approved scoping memorandum states that "these improvements are not funded at this time and conversations with City and ODOT staff have indicated that the identified improvements cannot be relied upon to receive funding within the timeframe of this TIA".

- *The Applicant should use a growth rate of one percent per year to grow traffic counts to current and then future years.*

  RESPONSE: A growth rate of 2.2% was used per the approved April 2020 scoping memorandum:

  > "This annual growth factor was derived from previous studies of the area surrounding the site and the City's EMME 2 model used for the City's TSP, and should thus reflect growth associated with the land use assumptions in the TSP. The City of McMinnville provided information regarding three recently completed land use actions in the vicinity of the study area. These are generally consistent with existing zoning, and therefore should be included in the 2.2% growth rate associated with the land use assumptions in the TSP."

  As trips for the subject parcels under the existing zoning were assigned to the study intersections separately, the background growth rate was reduced by the same total number of trips to provide more precise turning movement projections without double-counting existing zoning trips. This resulted in a background growth rate of 1.7% (if the subject parcels were to remain undeveloped). The addition of the existing zoning trip assignment to the 1.7% background growth results in overall network volumes representative of an overall 2.2% growth rate (averaged across all study intersections).

  As stated early, the applicant is willing to prepare a sensitivity analysis of year 2037 background and total conditions to confirm the previously proposed mitigation (cited in the January 31, 2022 *Supplemental Transportation Information* memorandum) for TPR compliance is still applicable under the updated 3MLAP assumptions. The sensitivity analysis will use the same process outlined in the paragraph above, for an overall 1.0% growth rate (including existing zoning trip assignment).

- *The Applicant should only identify mitigation at locations where the change in zoning would result in a significant impact when comparing the background condition to the total condition. No mitigations should be identified for the background deficiencies.*

RESPONSE: The opening year analysis, while not required for TPR, was conducted consistent with past transportation impact analysis practices throughout Oregon to identify potential mitigation to support near-term site development, which may be more than what is technically required to comply with TPR. Removing near-term mitigation from the year 2037 background traffic analysis would not result in additional mitigation to meet TPR requirements. It may reduce the required mitigation at any intersections where the difference between the background and total condition does not exceed 0.03 V/C, as mitigation would not be required per the Oregon Highway Plan (OHP) Policy 1F.5:

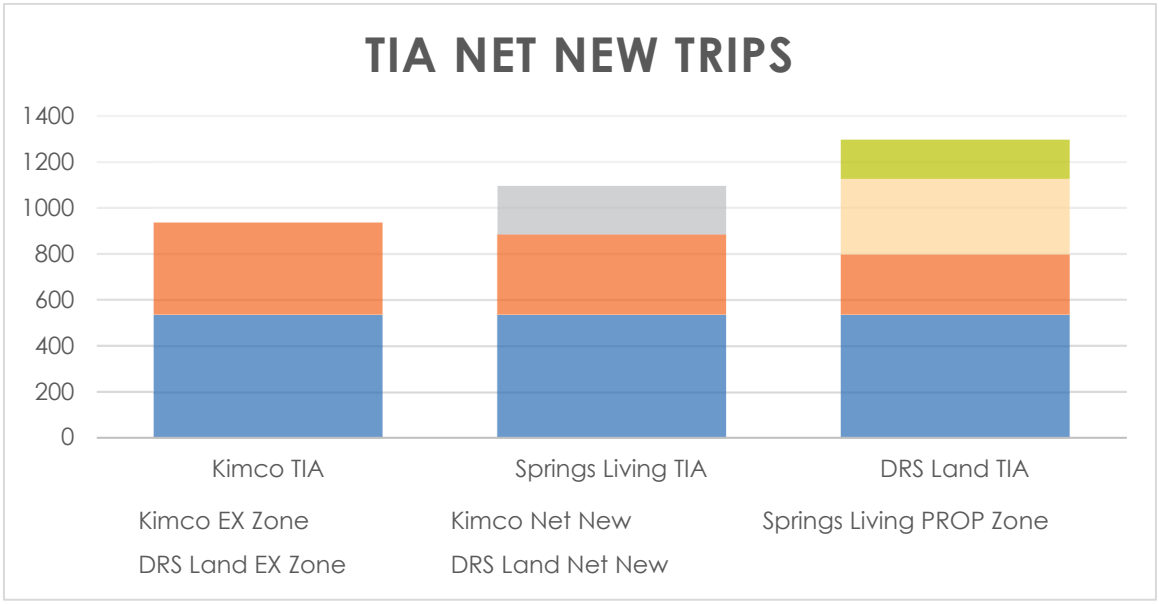
> "In applying OHP mobility targets to analyze mitigation, ODOT recognizes that there are many variables and levels of uncertainty in calculating volume-to-capacity ratios, particularly over a specified planning horizon. After negotiating reasonable levels of mitigation for actions required under OAR 660-012-0060, ODOT considers calculated values for v/c ratios that are within 0.03 of the adopted target in the OHP to be considered in compliance with the target. The adopted mobility target still applies for determining significant affect under OAR 660-012-0060."

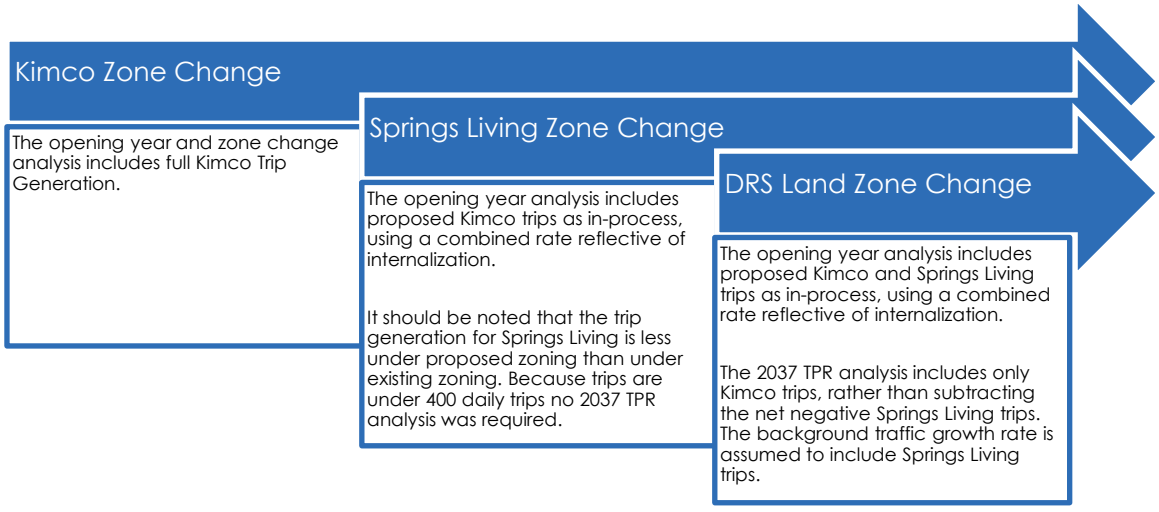
On page 2 the DEA comments state, "if an intersection fails to meet standards in the 2037 total conditions, the applicant should identify mitigation to return the intersection to either the background v/c or the standard, whichever is higher". However, page 4 reads "the TIAs should show the unmitigated deficiency in the background condition, then in the total condition, the deficiency would be worsened, and mitigations should be identified to bring the 2037 operations back to the standard". The former statement is correct and consistent with OAR 660-012-0060 3b, which states that the applicant should "mitigate the impacts of the amendment in a manner that avoids further degradation to the performance of the facility by the time of the development through one or a combination of transportation improvements or measures". If the 2037 background conditions fail to meet the mobility standard then the applicant is only required to provide mitigation to return the intersection to the background V/C. By assuming near-term mitigation is in place under year 2037 background conditions, the "target" V/C for mitigation is lower, potentially resulting in additional intersection improvements provided by the applicants.

To simplify the TPR analysis of the previous presented improvement package, the sensitivity analysis will be conducted with no opening year mitigation to confirm the above reasoning and only assume the "reasonably likely" roundabout improvement at OR-18/Lafayette Highway under 2037 background conditions.

- *The Applicant should either continue with three separate applications and make them fully independent of each other, or the Applicant should withdraw the three applications and submit a single joint application.*

RESPONSE: The Applicants are treating the applications as three separate applications, but we do not believe the three rezones should be analyzed entirely independent of one other. The subject parcels are in close proximity to each other and will result in linked trips (or internal capture) within the three shopping centers which will result in fewer net new trips on OR-18 (compared to developments with no cross-circulation or compatible uses). To reflect this interaction, the three subject parcels were assumed to operate similar to one large shopping center for trip generation purposes. The fitted curve rate for Land Use Code 820 – Shopping Center inherently accounts for this relationship, with a reduced rate as the size of the shopping center increases. The zone changes and subsequent site development were assumed to occur in the order in which the applications were submitted. The trip generation in the Kimco TIA does not include any reduction. However, the Kimco development is included as in-process for the other TIAs and an adjustment for linked/internal trips was assumed. The following graphic helps to illustrate the development order assumed for the TIAs.





Note that the comparison of trip generation between the proposed and existing zoning for the Springs Living site (in the absence of the other two rezones) reflected a minor net trip increase of 28 PM peak hour trips and 353 daily trips, which is considered insignificant per the Oregon Highway Plan (OHP) Policy 1F.5. However, the interaction with the other two shopping centers results in a reduction in net new trips, and therefore trips for the site were conservatively assumed to be included in the background growth rate, and not subtracted from the network for the DRS Land 2037 analysis.

A single joint application would not allow for the intermediary conditions that occur when, for example, the first development is completed prior to the others. Additionally, if the three rezones were analyzed entirely independent of one other the cumulative impacts of the developments would be overlooked. The stacking order in the TIAs was selected to be consistent with standard practice for in-process trip accounting and assignment. We request confirmation from the City on whether the three zone change amendments should be stacked as described above, or each analyzed independently of the others (with no cumulative analysis).

- *For a DR TIA, the Applicant should address this separately within the TIA, and the Applicant should follow typical development review methodology for the opening year analysis including, but not limited to the following:*

    - *Analyze the impact of the full trip generation of the proposed developments (not the difference between existing and proposed zoning).*

      RESPONSE: The opening year 2022 background analysis in the TIA does not assume development under the existing zoning. The opening year analysis assumes the subject parcel remains undeveloped under opening year background conditions, compared to development of the site under the proposed zoning for opening year total conditions. The underlying assumption is that the future proposed development application (2022 total traffic) will be equal to or less than the proposed zoning reasonable worst case trip generation assumption.

    - *Assume a growth rate that is more in alignment with recent historic trends.*

      RESPONSE: See discussion above. Note the proposed sensitivity analysis will assess future year 2037 background and total conditions only.

    - *Only rely on the existing transportation infrastructure to support the development. Planned projects are not to be assumed in the opening year analysis and should only be assumed as mitigation if the Applicant is intending to construct or contribute a proportional cost share to the project.*

      RESPONSE: No planned projects were assumed in the opening year 2022 background analysis. The applicant has proposed a proportional share contribution to the planned roundabout at OR-18/Lafayette Highway as mitigation to ensure "rough proportionality" based on the feedback from the City and ODOT to keep left-turn egress access at Cruikshank Road and Loop Road open in the near-term. Furthermore, the applicant has

voluntarily offered to construct the northerly frontage road west from Loop Road within City controlled property.

- *Analyze an opening year that matches the intended opening year of the proposed development. Year 2022 is not reasonable.*

  RESPONSE: The Kimco TIA was submitted in December of 2020, when the year 2022 opening year would have been appropriate. The subsequent TIAs were conducted consistent with the approved scope for the Kimco TIA. The opening year analysis, while not required for TPR, was conducted to identify potential mitigation (beyond what is technically required to meet TPR) to support near-term site development. The applicants are not seeking development review approval at this time, and therefore the proposed sensitivity analysis will assess future year 2037 background and total conditions only.

- *Any intersections that are identified in the total condition as failing to meet the governing standard in an opening year TIA must be mitigated. The proposed mitigation must fully mitigate that intersection back to the standard. Simply avoiding further degradation is not adequate.*

  RESPONSE: As discussed above, the opening year analysis does fully mitigate the intersection back to operating standards (see the Three Mile Lane – West Rezone TIA, Table 20). The zone change analysis mitigates the intersection to avoid further degradation, if the development causes a significant impact.

Proposed Sensitivity Analysis Approach

As discussed at the outset of this memorandum, the applicants are willing to prepare a supplemental sensitivity analysis of year 2037 background and total conditions using updated background traffic assumptions to confirm the previously proposed mitigation (cited in the January 31, 2022 *Supplemental Transportation Information* memorandum) for TPR compliance is still applicable under the updated 3MLAP assumptions. We respectfully request that the City of McMinnville formally respond to the following question to confirm the fundamental assumptions for the sensitivity analysis:

- Can the 1% growth rate be relied upon if the 3MLAP is adopted? Will the TSP be amended to include this growth rate as part of the 3MLAP?
- Is there formal written documentation that the frontage roads identified in the Highway 18 Corridor Refinement Plan (1996) are "reasonable likely" to be provided by the end of the planning period?
- Does the City concur that the OR-18/Lafayette Highway roundabout is the only "reasonably likely" improvement that can be assumed under the 2037 horizon year?
- Should the three zone change amendments be stacked as proposed, or each analyzed independently of the others (with no cumulative analysis)?
- Does the City concur with the net trip generation assumptions for each of the cumulative analysis in the stacked application approach as documented herein?

We trust that these responses adequately address the third-party review comments, and look forward to the City's responses clarifying the above assumptions. Please contact us if you have any questions and/or comments at kconnolly@kittelson.com or 503.535.7448.

From: Kristine Connolly
Sent: Wednesday, March 23, 2022 8:31 AM
To: Andrew Mortensen <Ajmo@deainc.com>
Cc: Josh Anderson <Josh.Anderson@deainc.com>; Heather Richards <Heather.Richards@mcminnvilleoregon.gov>; Tom Schauer <Tom.Schauer@mcminnvilleoregon.gov>; FERBER Arielle <Arielle.FERBER@odot.oregon.gov>; FRICKE Daniel L <Daniel.L.FRICKE@odot.oregon.gov>; Marc Butorac <MBUTORAC@kittelson.com>; Alec Kauffman <akauffman@kittelson.com>; dana.krawczuk@stoel.com; Mike Connors <mike@hathawaylarson.com>
Subject: RE: KIMCO Re-Zone Application

Thanks Andy – that was a misunderstanding on my part. We can prepare a re-assignment of background trips to account for the frontage roads. As discussed on the call, we would ask the City to provide formal documentation that these are reasonably likely to be provided within our planning horizon.

Thanks!

Kristine Connolly, PE
Senior Engineer

I'm working from home in response to COVID-19, but Kittelson is fully operational and responsive to all projects. Please visit our website for more information, and connect with us before sending hard copy mail.

Kittelson & Associates, Inc.
Transportation Engineering / Planning
503.228.5230 (Portland)
503.535.7448 (direct)
503.329.0199 (cell)

From: Andrew Mortensen <Ajmo@deainc.com>
Sent: Wednesday, March 23, 2022 7:21 AM
To: Kristine Connolly <kconnolly@kittelson.com>
Cc: Josh Anderson <Josh.Anderson@deainc.com>; Heather Richards <Heather.Richards@mcminnvilleoregon.gov>; Tom Schauer <Tom.Schauer@mcminnvilleoregon.gov>; FERBER Arielle <Arielle.FERBER@odot.oregon.gov>; FRICKE Daniel L <Daniel.L.FRICKE@odot.oregon.gov>; Marc Butorac <MBUTORAC@kittelson.com>; Alec Kauffman <akauffman@kittelson.com>; dana.krawczuk@stoel.com; Mike Connors <mike@hathawaylarson.com>
Subject: Re: KIMCO Re-Zone Application

Kristine
For clarity, the 2041 Comp Plan model run and subsequent Synchro intersection analysis do not include the frontage roads in the subject area as identified in the TSP. Others may reply to your remaining assumptions. Andy

Sent from my iPhone

> On Mar 22, 2022, at 9:24 PM, Kristine Connolly <kconnolly@kittelson.com> wrote:
>
> All,
>
> Based on our discussion on Thursday and review of the 2041 volumes provided by DEA, we will conduct a supplemental sensitivity analysis with the following general approach:

- For the PM peak hour background conditions analysis, we will analyze the 2041 future comp plan volumes (Column E) for all overlapping TIA study intersections (with the addition of Stratus Avenue/SE Norton Lane which was not conducted in the TIAs). It is our understanding that these volumes assume full development under the comprehensive plan zoning and all "reasonably likely" planned transportation improvements in the vicinity.
    - For the TIA study intersections not included in the 3MLAP analysis, we will apply a growth factor of 1% to the seasonally adjusted traffic counts to develop year 2041 background volumes. We will compare to the nearest 3MLAP study intersection and balance where appropriate for consistency with the volume projections from the 3MLAP analysis. This applies to the following intersections:
        - NE 3rd Street/NE Johnson Street
        - NE Three Mile Lane/SE Nehemiah Lane – NE Cumulus Avenue – NE Pacific Street
        - OR-18/Lafayette Highway
        - OR-18/Ash Road
    - We will also assume the planned OR-18/Lafayette Highway roundabout under background conditions per the 2015 Yamhill County TSP and 3/3/2022 confirmation e-mail from ODOT. The background analysis will otherwise assume existing transportation facilities. It will not include any development impact mitigation.
- For the PM peak hour total conditions analysis, we will add the net new (proposed zoning minus existing zoning) trip generation for the combined 62.61 acres.
    - The trip assignment will assume connection(s) between Norton and Cumulus south of OR-18.
    - Mitigation will address the combined impacts of the three proposed rezones using the fitted curve equation for land use code 820 - Shopping Center for the combined 62.61 acres, and each development will be subject to the same mitigation.
    - Mitigation will include a proportionate share contribution to the planned OR-18/Lafayette Highway roundabout assumed under background conditions.
    - Mitigation will be developed to return the study intersection v/c to either the background v/c or the mobility standard, whichever is higher, per the Oregon Highway Plan (OHP) Policy Action 1F.5:

> ***Action 1F.5***
>
> For purposes of evaluating amendments to transportation system plans, acknowledged comprehensive plans and land use regulations subject to OAR 660-12-0060, in situations where the volume to capacity ratio or alternative mobility target for a highway segment, intersection or interchange is currently above the mobility targets in Table 6 or Table 7 or those otherwise approved by the Oregon Transportation Commission, or is projected to be above the mobility targets at the planning horizon, and transportation improvements are not planned within the planning horizon to bring performance to the established target, the mobility target is to avoid further degradation. 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.

    Unless the proposed rezones have an insignificant effect, per the same Policy Action.

Please don't hesitate to call if you have any questions regarding this approach.

Thank you,

Kristine Connolly, PE
Senior Engineer

I'm working from home in response to COVID-19, but Kittelson is fully operational and responsive to all projects. Please visit our website for more information, and connect with us before sending hard copy mail.

Kittelson & Associates, Inc.
Transportation Engineering / Planning
503.228.5230 (Portland)
503.535.7448 (direct)
503.329.0199 (cell)

From: Kristine Connolly
Sent: Monday, March 21, 2022 3:45 PM
To: Josh Anderson <Josh.Anderson@deainc.com>; Andrew Mortensen <Ajmo@deainc.com>; Marc Butorac <MBUTORAC@kittelson.com>
Cc: Tom Schauer <tom.schauer@mcminnvilleoregon.gov>; Heather Richards <Heather.Richards@mcminnvilleoregon.gov>; FERBER Arielle <Arielle.FERBER@odot.oregon.gov>; FRICKE Daniel L <Daniel.L.FRICKE@odot.oregon.gov>
Subject: RE: KIMCO Re-Zone Application

Thank you both! We'll review and get back to you tomorrow with a summary of our approach for the sensitivity analysis. We're developing a methodology for adjusting our background volumes at the TIA intersections which were not analyzed in the 3MLAP study (likely a combination of growth rate adjustment and balancing).

Kristine Connolly, PE
Senior Engineer

I'm working from home in response to COVID-19, but Kittelson is fully operational and responsive to all projects. Please visit our website for more information, and connect with us before sending hard copy mail.

Kittelson & Associates, Inc.
Transportation Engineering / Planning
503.228.5230 (Portland)
503.535.7448 (direct)
503.329.0199 (cell)

From: Josh Anderson <Josh.Anderson@deainc.com>
Sent: Monday, March 21, 2022 2:23 PM
To: Andrew Mortensen <Ajmo@deainc.com>; Kristine Connolly <kconnolly@kittelson.com>; Marc Butorac <MBUTORAC@kittelson.com>
Cc: Tom Schauer <tom.schauer@mcminnvilleoregon.gov>; Heather Richards <Heather.Richards@mcminnvilleoregon.gov>; FERBER Arielle <Arielle.FERBER@odot.oregon.gov>; FRICKE Daniel L <Daniel.L.FRICKE@odot.oregon.gov>
Subject: RE: KIMCO Re-Zone Application

See attached for the future year volumes at critical intersections that were used in the 3MLAP analysis.

Let us know if you have any questions.

Josh Anderson, PE, PTOE | Senior Associate, Smart Mobility Team Leader
d: 503.499.0483 or 425.586.9773 | c: 971.235.3544 | Cisco: 10483 | Josh.Anderson@deainc.com

---

From: Andrew Mortensen <Ajmo@deainc.com>
Sent: Friday, March 18, 2022 11:43 AM
To: Kristine Connolly <kconnolly@kittelson.com>; Marc Butorac <MBUTORAC@kittelson.com>
Cc: Josh Anderson <Josh.Anderson@deainc.com>; Tom Schauer <tom.schauer@mcminnvilleoregon.gov>; Heather.Richards@mcminnvilleoregon.gov; FERBER Arielle <Arielle.FERBER@odot.oregon.gov>; FRICKE Daniel L <Daniel.L.FRICKE@odot.oregon.gov>
Subject: KIMCO Re-Zone Application

Hi Kristine

In our meeting yesterday I think I offered to pull together and send you the traffic count data ODOT collected for the 3MLAP (and Model calibration) effort, particularly counts at Norton/Stratus. See all the turn volume data (April 2018) we received from ODOT as part of the 3MLAP study in the attached ZIP file.

The ZIP file also includes an EXCEL Key file that identifies the intersection number/names.

The Norton/Stratus count looks like this:

Transportation Development Division
Transportation System Monitoring Unit
Vehicular Volume

Time settings

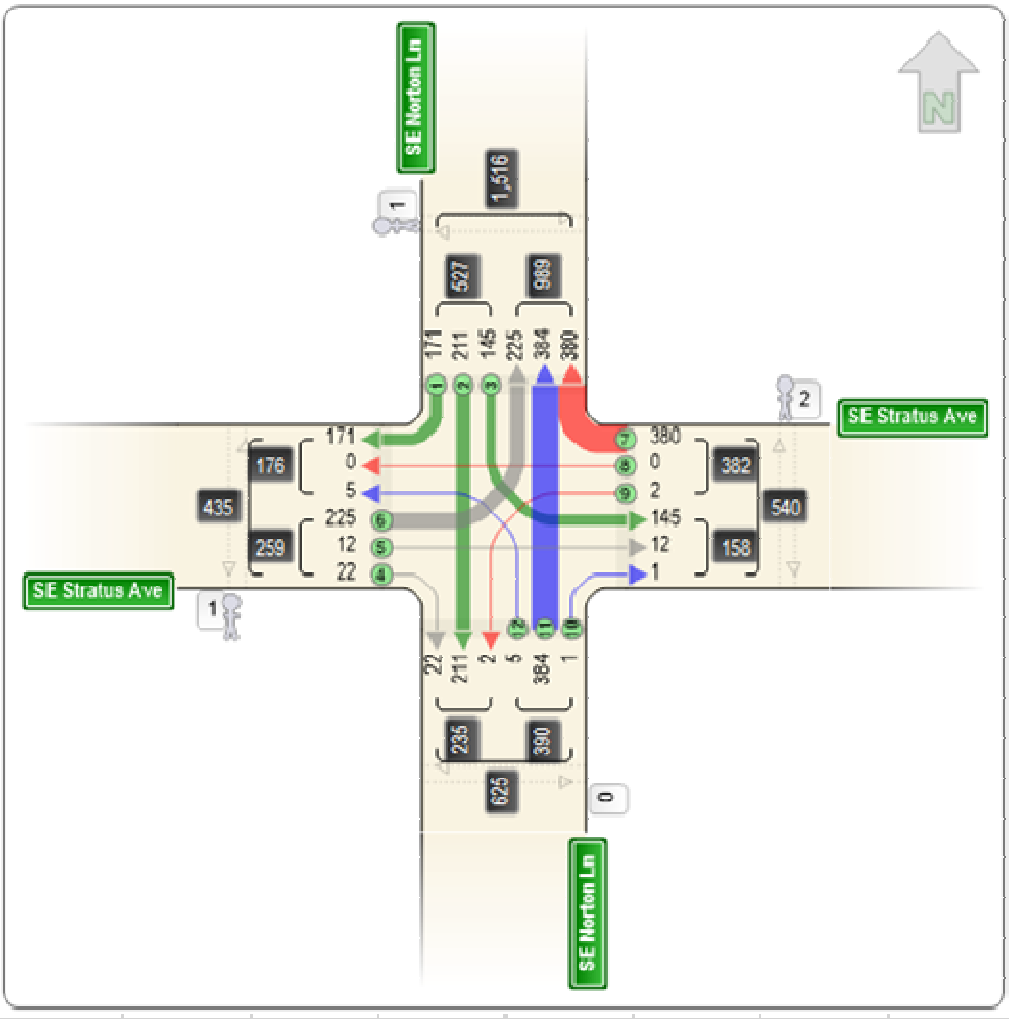
Date: 4/3/2018
Hours: 2:00 PM-6:00 PM
Weather:

Source

Site Number: 48442
Mile Point: 46.70
Street Number: 039
Vehicle Type: Vehicles
Crossing Flow: Pedestrians

Source Description

Location Description: MCMINNVILLE SPUR HIGHWAY NO. 39 E. MCMINNVILLE CONN. NO. 1 at SE Stratus Ave
County: Yamhill
City: McMinnville



In another e-mail we'll export and save the critical intersection turn volume data from ODOT's 2015-2041 model, base year (2015) and two future year scenarios (Comp Plan and Preferred land Use/Transportation Network). I think we offered to facilitate sending that data to you as well.

Let us know if you have any questions.

Andrew

Andrew Mortensen | Associate, Sr. Transportation Planner
David Evans and Associates, Inc. | Smart Mobility
2100 SW River Parkway | Portland, OR 97201 | www.deainc.com
d: 503.499.0424 | c: 503.313.6946 | ajmo@deainc.com

Follow us on LinkedIn | Twitter | Facebook | YouTube

Appendix B Supplemental Transportation Information Memorandum

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

MEMORANDUM

Date: January 31, 2022 Project #: 24369/26747/26748

To: Tom Schauer, AICP, & Heather Richards, PCED, City of McMinnville

Cc: Dan Fricke & Arielle Ferber, PE, ODOT Region 2
Ken Friday & Mark Lago, Yamhill County
Michael Strahs, Kimco Realty
Alan Roodhouse, RPS Development Company
Stewart Kircher & Dan Bansen, DRS Land LLC
Bryan Hays & Fee Stubblefield, The Springs Living
Ken Sandblast, Westlake Consultants, Inc.

From: Kristine Connolly, PE, Marc Butorac, PE, PTOE, PMP, & Alec Kauffman

Project: Three Mile Lane Comprehensive Plan Map Amendments/Zone Changes CPA 2-20/ZC 3-20, CPA 1-21/ZC 2-21, & CPA 2-21/ZC 3-21

Subject: Supplemental Transportation Information

The December 2020 Three Mile Lane Rezone Transportation Impact Analysis (TIA) [Kimco McMinnville LLC] prepared by Kittelson & Associates, Inc. (Kittelson) identified several improvements to mitigate development impacts (near-term) and zone change impacts (long-term) at the study intersections. In addition, Kittelson prepared the November 2021 Three Mile Lane – East Rezone TIA [The Springs Living] and Three Mile Lane – West Rezone TIA [DRS Land LLC] for two neighboring zone change applications. This memorandum provides some modifications to the recommendations in the TIAs, as well as draft transportation conditions of approval and findings for each study intersection, in consideration of the review letter prepared by the City of McMinnville and dated November 22, 2021 (see Appendix A). The conditions of approval for each of the three comprehensive plan map amendments and zone changes should be the same, with a subsequent cost-sharing agreement to be worked out separately between the three property owners. The draft conditions and findings are outlined below and shown in an aerial map in Appendix B. Appendix B also includes a summary table with conceptual cost estimates.

NE Three Mile Lane/NE 1st Street

Condition:

1) Prior to occupancy, install a traffic signal and eastbound right-turn lane at the NE Three Mile Lane/NE 1st Street intersection.

Finding:

A. Per the accepted Transportation Impact Analysis, the intersection of NE Three Mile Lane/NE 1st Street can maintain planned function, capacity and performance and mobility standards under near-term development and will not degrade operations under future year 2037 build conditions when the traffic signal and eastbound right turn lane are installed. As such, the proposed comprehensive plan amendment and zone change meets OAR 660-012-0060(2)(d) and goals of the McMinnville TSP.

NE Three Mile Lane/SE Nehemiah Lane – NE Cumulus Avenue – NE Pacific Street

Recommendations have been updated from the TIAs to include the provision of northbound and southbound left-turn pockets at the NE Three Mile Lane/SE Nehemiah Lane – NE Cumulus Avenue – NE Pacific Street intersection, in place of the initial recommendation in the TIAs to restrict eastbound and westbound left turn movements. Supplemental operations analysis is included in Appendix C. The provision of northbound and southbound left-turn pockets will reduce delay through the intersection until such time as the proposed realigned, signalized intersection in the 3MLAP is implemented. This will prevent out-of-direction travel for the low volumes making the eastbound and westbound left-turn movements.

Condition:

1) Prior to occupancy, install northbound and southbound left-turn pockets at the NE Three Mile Lane/SE Nehemiah Lane – NE Cumulus Avenue – NE Pacific Street intersection.

Finding:

A. Per the accepted Transportation Impact Analysis and supplemental analysis in Appendix C, the intersection of NE Three Mile Lane/SE Nehemiah Lane – NE Cumulus Avenue – NE Pacific Street will not degrade operations under both future year 2037 build conditions and near-term development when the northbound and southbound left-turn pockets are installed. As such, the proposed comprehensive plan amendment and zone change meets OAR 660-012-0060(2)(d) and goals of the McMinnville TSP.

OR-18/SE Norton Lane

Condition:

1) Prior to occupancy, install a southbound right-turn lane, pavement restriping, modify the traffic signal, and update the signal timing and phasing at the OR-18/SE Norton Lane intersection.

Finding:

A. Per the accepted Transportation Impact Analysis, the intersection of OR-18/SE Norton Lane can maintain planned function, capacity and performance and mobility standards under near-term development and will not degrade operations under future year 2037 build conditions when the southbound right-turn lane, pavement restriping, traffic signal modification, and signal timing

and phasing optimization are installed. As such, the proposed comprehensive plan amendment and zone change meets OAR 660-012-0060(2)(d) and goals of the McMinnville TSP.

OR-18/NE Cumulus Avenue

Condition:

1) Prior to occupancy, install dual northbound left-turn lanes, a northbound right-turn lane, an eastbound right-turn lane and signal timing optimization at the OR-18/NE Cumulus Avenue intersection.

Finding:

A. Per the accepted Transportation Impact Analysis, the intersection of OR-18/NE Cumulus Avenue can maintain planned function, capacity and performance and mobility standards under both future year 2037 build conditions and near-term development when the dual northbound left-turn lanes, northbound right-turn lane, eastbound right-turn lane and signal timing optimization are installed. As such, the proposed comprehensive plan amendment and zone change meets OAR 660-012-0060(2)(d) and goals of the McMinnville TSP.

OR-18/SE Loop Road

Recommendations have been updated from the TIAs to include the provision of partial frontage road construction on City-owned property. The restriction of southbound left-turn movements will be delayed until the roundabout at Lafayette Highway/OR-18 is installed. This addition will not impact the operational analysis in the TIAs.

Condition:

1) Prior to occupancy, contribute a fee in-lieu payment to restrict southbound left-turn movement in the future and construct a partial northerly frontage road to the west on City-owned property at the OR-18/SE Loop Road intersection.

Findings:

A. Per the accepted Transportation Impact Analysis, the intersection of OR-18/SE Loop Road can maintain planned function, capacity and performance and mobility standards under both future year 2037 build conditions and near-term development with the southbound left-turn restriction and partial frontage road (the "Improvement") are installed. As such, the proposed comprehensive plan amendment and zone change meets OAR 660-012-0060(2)(d) and goals of the McMinnville TSP.
B. The fee-in-lieu payment to restrict the southbound left-turn movement in the future at the time the Lafayette Highway/OR-18 roundabout is installed complies with OAR 660-12-0060(4)(b)(E). The planned multilane roundabout project at OR-18/Lafayette Highway can be relied upon as the County and ODOT find per the adopted Yamhill County Transportation System Plan that the Improvement is reasonably likely to be provided by 2037, which is the end of the planning period. As such, the Improvement is considered a planned transportation facility pursuant to

OAR 660-12-0060(4)(a), in which case the proposed comprehensive plan amendment and zone change does not have a significant effect on an existing or planned transportation facility and meets OAR 660-012-0060(1)(c) and 4)(a), as well as the goals of the McMinnville TSP.

OR-18/SE Cruickshank Road

Recommendations have been updated from the TIAs to retain the northbound left-turn movement until such time as the planned roundabout at OR-18/Lafayette Highway is constructed. The current planned and funded ODOT improvement project at OR-18/Cruickshank Road will improve safety in the near-term.

Conditions:

1) Prior to occupancy, contribute a fee in-lieu payment to restrict northbound left-turn movement in the future at the OR-18/Cruickshank Road intersection.
2) Prior to occupancy, pay Yamhill County a proportional fee-in-lieu toward the planned $8,000,000 multilane roundabout project at OR-18/Lafayette Highway (which will include closure of OR-18/Ash Road and OR-18/SE Cruickshank Road) equal to the proportion of net new trips out of the total entering volume at the OR-18/Lafayette Highway intersection.

Findings:

A. Per the accepted Transportation Impact Analysis, the intersection of OR-18/SE Cruickshank Road intersection can maintain planned function, capacity and performance and mobility standards under both future year 2037 build conditions and near-term development when the planned construction of the multilane roundabout project at OR-18/Lafayette Highway, closure of OR-18/Ash Road and closure of the northbound left-turn movement at the OR-18/SE Cruickshank Road are completed.
B. The fee-in-lieu payment to restrict the northbound left-turn movement in the future at the time the Lafayette Highway/OR-18 roundabout is installed complies with OAR 660-12-0060(4)(b)(E). The planned multilane roundabout project at OR-18/Lafayette Highway can be relied upon as the County and ODOT find per the adopted Yamhill County Transportation System Plan that the Improvement is reasonably likely to be provided by 2037, which is the end of the planning period. As such, the Improvement is considered a planned transportation facility pursuant to OAR 660-12-0060(4)(a), in which case the proposed comprehensive plan amendment and zone change does not have a significant effect on an existing or planned transportation facility and meets OAR 660-012-0060(1)(c) and 4)(a), as well as the goals of the McMinnville TSP.
C. To provide a level of understanding and expectations between the applicant and the City, County and ODOT, the proposed proportional share contribution to the OR-18/Lafayette Highway roundabout is estimated to cost approximately $424,000 in 2022 dollars.

We trust that these responses clarify the findings and recommendations in the TIA. Please contact us if you have any questions and/or comments at kconnolly@kittelson.com or 503.535.7448.

Appendix A City of McMinnville Letter
November 22, 2021

City of McMinnville

PLANNING

November 22, 2021

Dana Krawczuk
Stoel Rives LLP
760 SW Ninth Avenue, Suite 3000
Portland, OR 97205
via e-mail: dana.krawczuk@stoel.com

RE: Kimco TIA Meeting

Dear Dana:

Per your e-mail of November 9, 2021, we are working to schedule a meeting for the week of November 29 regarding the Kimco transportation analysis and proposed mitigation.

Please also be aware that last week, the land use applications were submitted for the properties to the east and west of the Kimco property, which included submittal of TIAs for those properties. Those applications are in the 30-day completeness review period, and we have not yet completed detailed review and response to the TIAs.

We expect the meeting you requested would include representatives from Kimco, Kittelson, ODOT, City staff, and the City's transportation consultant. We also believe County staff should be invited to the meeting since some of the proposed mitigation relates to areas outside McMinnville's UGB and facilities addressed in the County's TSP. We previously furnished County staff with copies of the TIA and associated correspondence with ODOT. If it is your intent to also include the additional property owners in that same meeting, we can contact them regarding scheduling. Otherwise, we would anticipate scheduling a similar meeting with the other property owners separately. However, a meeting with all three property owners and representatives would be beneficial.

In your November 9, 2021 e-mail, you expressed the continued intent to coordinate with other property owners in a manner that would not unnecessarily delay consideration of the Kimco application. I will follow-up with separate communication regarding timelines for review.

In preparation for a meeting for the week of November 29, City staff and the City's transportation consultant have reviewed the proposed Kimco mitigation and also consulted with ODOT regarding the proposed mitigation. In preparation for that meeting, the following information is provided to facilitate discussion of key issues at the meeting and to provide context of City staff's perspective regarding findings that would need to be made related to transportation Goals and Policies of the City's Comprehensive Plan and the Transportation Planning Rule.

GENERAL BACKGROUND AND REVIEW PRINCIPLES

The City's Transportation System Plan reflects policy decisions about how the City chooses to manage its transportation system in support of Goals and Policies in the Comprehensive Plan relative to issues such as land use, quality of life, and economic development.

As such, City staff has reviewed Kimco's proposal and proposed transportation mitigation with the following considerations in mind:

- Are there any aspects of the proposed transportation mitigation which reflect a policy departure from, or conflict with, the goals and policies of the Comprehensive Plan? If so, City staff will typically recommend that such mitigation will be considered a policy decision to be made at the discretion of the City, and some aspects may require amendment to the City's Transportation System Plan.

- Are there aspects of the proposed mitigation which are consistent with the policy inherent in the Comprehensive Plan and TSP? City staff will generally recommend that Incremental turn lane improvements and operational changes at intersections will generally be considered consistent with the Comprehensive Plan and TSP, except as otherwise indicated in the TSP or corridor plans.

- Is any proposed interim mitigation consistent with Comprehensive Plan and TSP? Interim improvements which do not further contribute to longer term mitigation/improvements will generally be limited to situations where identified in adopted plans or where necessary to address safety and/or operational needs in the interim where an interim adjustment to mobility standards would not be feasible due to safety concerns.

In general, City staff intends to recommend that the following issues or types of mitigation be considered to be policy decisions which may require changes to the Comprehensive Plan and/or TSP.

- Changes that significantly alter or restrict the permitted turn movements at public street intersections on a highway or major arterial reflect a policy choice. If these are not reflected in the TSP, or if there are no projects in the TSP that indicate the intent to restrict such movements, they will typically be considered a departure from intent of the Comprehensive Plan and TSP.

  To the extent there are adopted plans that retain full movements or the City has developed draft plans to retain those movements, staff will consider that to generally be an indication that it is not the intent to restrict such movements.

In light of Comprehensive Plan policies in support of downtown:

- City staff will generally not make recommendations supportive of mitigation that makes it more difficult for McMinnville's residents and the travelling public to get to Downtown McMinnville.

- Left-turn restrictions that direct traffic away from downtown and result in significant out-of-direction travel and/or increased vehicle miles traveled for those trips to downtown are generally not supported by staff.

In light of mitigation that should contribute to the improvement of safety and mobility of transportation facilities within the urban area:

- Generally, City staff finds that diversion of trips from intersections within the UGB or immediately adjacent to the UGB to farther out intersections outside of the urban area generally won't be considered an acceptable solution to addressing mobility and safety issues at intersections within the urban area.

- Instead, that will generally be seen as diverting trips to the outlying rural areas for the turn movements, then redirecting that traffic back to town with through movements instead of solving or addressing any needed intersection operations and movements within the urban area.

- While minor out of direction travel to address access management needs may sometimes be needed, that shouldn't result in significant out of direction travel (of as much as a mile as proposed), but should be accomplished with a well-connected street grid with parallel routes that accommodate the local traffic within the local area on frontage roads and "off-system" facilities, rather than routing the trips to outlying areas with lower traffic volumes and/or including redirecting movements through multiple intersections including "on-system" intersections.

- Where the City has developed a draft Three Mile Lane Area Plan (3MLAP) designed to address congestion and safety at intersections for the urban area, City staff would be supportive of proposed Comprehensive Plan and/or TSP amendments that adopt those draft proposals, and City staff would be supportive of mitigation which provides a proportional share of those improvements. To that end, City staff would also consider interim adjustments to mobility standards associated with proportional contributions to those improvements if they are identified in the Comprehensive Plan and/or TSP as financially constrained projects to be completed by the end of the planning horizon.

- City staff would generally not be supportive of mitigation that conflicts with these proposals or results in substantial interim investments that would be

"discarded" in the long-term without furthering the long-term policies and proposals. However, when there are limited alternatives for needed interim mitigation, the City will consider the short-term public benefit to be achieved through interim mitigation measures that will not substantially contribute to longer-term projects, especially if such interim mitigation is identified in existing or proposed public plans.

The City of McMinnville and Yamhill County have jointly adopted the McMinnville Urban Growth Boundary Management Agreement (UGBMA), Ordinance No. 4146. Key provisions are excerpted below:

SPECIFIC POLICIES

Policy F provides, "The designated PUD area along Three Mile Lane shall be designated for the uses shown on the McMinnville Comprehensive Plan…In addition, the Area shall be developed in accordance with the following principles:

(1) The minimization of entrances on Three Mile Lane;
(2) The development of on-site circulations systems;
(3) The provision of deep setbacks, landscaping, buffer strips, sign controls, and the setting of an adequate setback line from the existing right-of-way line; and
(4) The provision of acceleration and deceleration lanes and left-turn refuges when and where necessary and practicable in accordance with the State Highway Division's improvement project for OR-18."

RECOMMENDATION PROCEDURES

Subsection B provides:

Prior to final action, land use actions within the McMinnville Area of Influence shall be forwarded by the County to the City for review and recommendation. Land use actions shall include, but not be limited to the following:
…
(5) Public Improvement Projects
…
(9) Capital Improvement Programs
(10) Major Transportation Improvements

Subsection E provides:

…Plan text amendments to the Yamhill County Comprehensive Plan that affect and use actions within the Urban Growth Boundary and Area of Influence shall be forwarded to the City for review and recommendation.

> The Area of Influence is "An area of land designated by the City and County that extends outside of the Urban Growth Boundary wherein the County shall give the City an opportunity to participate in land use actions to be taken by the County."

Where mitigation proposed by the applicant affects areas outside with UGB within the area subject to the County's Comprehensive Plan and TSP, per the UGBMA, City staff intends to participate in any decisions that require actions and decision-making by the County consistent with the same principles articulated above.

ANALYSIS OF PROPOSED MITIGATION AND RECOMMENDATIONS REGARDING ALTERNATIVE MITIGATION

Based on the above principles, City staff reviewed the proposed mitigation and provides the following analysis of the issues.

Regarding mobility, safety, and proposed mitigation in areas outside the UGB, the findings will need to address consideration of any comments or requirements specified by the County regarding how the applicant will address mobility standards associated with the proposed mitigation and whether any amendments are proposed to the County TSP.

Note: *The comments below relate to the mitigation proposed by Kimco. Mitigation associated with map amendments, TIAs, and proposed mitigation of other properties requires review.*

City staff generally finds and intends to recommend that the following aspects of the proposed Kimco mitigation to be consistent with policies for interim mitigation identified for the corridor for the planning horizon, subject to approval by ODOT:

- Proposed east to south right turn lane from OR-18 to Cumulus at the current signalized intersection

- Proposed north to west left turn lane from Cumulus to OR-18 at the current signalized intersection.

- Signal operation modifications at Norton Lane and OR-18; however, that shall be subject to a TSP amendment to include the full operation interchange identified in the 3MLAP. Modified operations are dependent on the long-term routing of some trips through the future interchange. Mitigation will also need to include a proportional contribution to the full operation interchange.

City staff generally finds and intends to recommend that the following aspects of the proposed mitigation conflict with the provisions in the TSP for the corridor for the planning horizon. City staff further finds that any such proposal is a policy decision that would require a TSP amendment, which would not be supported by City staff.

- Restriction of through and left-turn movements from side streets at Three Mile Lane at the intersection of Nehemiah/Cumulus/Pacific. Further, City staff finds that this turn lane restriction would provide a full-time restriction on this movement to address an issue that only occurs during a limited peak hour period for a low number of vehicles.

City staff generally supports the following alternative mitigation, subject to necessary analysis to demonstrate that there would be no significant safety issues during an interim period associated with any interim mitigation identified below.

- Amendment to the TSP to include a roundabout or traffic signal at 1st Street and Three Mile Lane, with the specific choice and design to be determined by the City and ODOT at a future time. The applicant's mitigation would be installation of the signal or contribution of a proportional share of a roundabout.

- Amendment to the TSP to include realignment of the intersection at Nehemiah/ Cumulus/ Pacific farther to the north consistent with the proposal in the draft 3MLAP, together with the following:

    - Allowance of interim adjustment to the City's adopted mobility standard, subject to ODOT concurrence for facilities under ODOT jurisdiction.
    - As supported by ODOT, left-turn lane warrant analysis and constructability review together with the following interim improvements if warranted: installation of a left-turn pocket at the intersection of Nehemiah/Pacific/Cumulus and Three Mile Lane. ***See Figure 1.*** While the proposed map amendment is not forecast to have a substantial increase in left turns from 3ML to Pacific, it would contribute to queuing that is occurring behind those left turning vehicles. While that intersection is not striped for separate through lane and left-turn pocket, that is occurring now, where through vehicles will pass left-turning vehicles until the left-turning queue backs up and blocks the portion of the lane which is wide enough for that to occur.

Figure 1. Left-Turn Analysis

- Amendment to the TSP to add the full operation interchange identified in the draft 3MLAP, together with a proportional share toward the interchange.

- In consultation with ODOT, City staff does not support the closure of left turns from Loop Road to the highway at this time. That would divert trips from this location to the intersection of Lafayette Highway and OR-18. ODOT indicated they do not support diversion of those trips until such time as the roundabout improvements have been constructed at Lafayette Highway/OR-18.

City staff further supports inclusion of the north side frontage road in the TSP as needed to support future closure of the Loop Road intersection, also providing access from the current Loop Road intersection to the frontage road system and signalized intersections to west within the UGB.

- Further, ODOT found that the proposed mitigation of closing left turns from Cruickshank Road to OR-18 and diverting those movements to Lafayette Highway and OR-18 would further exacerbate current issues at that location. In addition, ODOT found that the alternate "quad intersection" proposed by the applicant using Ash Road would also exacerbate issues at those locations. ODOT recommended that left turn movements at Cruickshank Lane to OR-18 remain at this time, and that they not be diverted to Lafayette Highway and OR-18 until the roundabout improvements have been constructed at Lafayette Highway/OR-18. Further, ODOT noted that there is a current ODOT project for safety improvements at OR-18 and Cruickshank Road.

  Cruickshank Road is outside McMinnville's UGB. Consistent with ODOT's recommendation, City staff supports retaining left-turn movements at Cruickshank Road onto the highway until the roundabout is constructed at Lafayette Highway and OR-18 provided safety issues are addressed. If this would require interim modification to the mobility standards in the County's TSP, subject to consultation with the County, the City would support that change to the County's TSP, together with a proportional contribution to the future roundabout at Lafayette Highway and OR-18 for the applicant's mitigation. This would require the roundabout improvements to be a fiscally constrained project in the County's TSP.

SUMMARY

Based on the above analysis, some of the mitigation described above would require amendments to the City's TSP, and possibly the County's TSP, and a proportional share of improvements for mitigation projects. The TSP amendments would need to be considered concurrently with the Comprehensive Plan map amendments to make necessary findings related to key transportation issues. The proportional share of mitigation would be attached to the Planned Development conditions.

The timing needed for any TSP amendments concurrent with Comprehensive Plan map amendments necessary for findings should be considered in the scheduling for the hearings.

ADDITIONAL COMMENTS

With amendments to the TSP and proportional mitigation described above, this would also establish the framework needed to facilitate shared mitigation or cumulative proportional contributions toward mitigation associated with the Kimco property, and

any additional map amendments for other properties, toward those projects that would be added to the TSP.

Please contact me if you have any questions in advance of the meeting.

Sincerely,

Tom Schauer
Senior Planner

cc: Heather Richards, Planning Director
Kristine Connolly, Kittelson and Associates
Andrew Mortensen, David Evans And Associates
Dorothy Upton, ODOT
Arielle Farber, ODOT
Daniel Fricke, ODOT

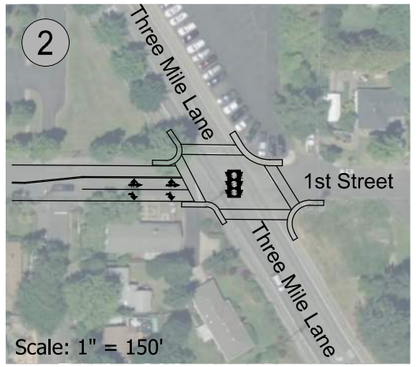
Appendix B Recommended Conditions of Approval Map and Table

Table 1. Recommended Conditions of Approval Summary Table – WORKING DISCUSSION DRAFT 012622

Study Intersection		Traffic Control	Jurisdiction	Recommended Conditions of Approval	Total Improvement Cost Estimate	Kimco – 33.5 Acres	East (Springs Living) – 8.0 Acres	West (DRS Land) – 21.11 Acres	Sum of Development Contributions
2	NE Three Mile Lane/NE 1st Street	Two Way Stop Control	City of McMinnville	Install traffic signal with EBR turn lane	$600,000	$321,000	$76,800	$202,200	$600,000
3	NE Three Mile Lane/SE Nehemiah Lane – NE Cumulus Avenue – NE Pacific Street	Two Way Stop Control	ODOT, City of McMinnville	Install NB and SB Left-turn pockets	$200,000	$107,000	$25,600	$67,400	$200,000
5	OR-18/SE Norton Lane	Signalized	ODOT, City of McMinnville	Signal timing optimization, Add SBR turn lane, Shift SBL Turn Lane East, Overlap all Right Turn Lanes	$750,000	$401,250	$96,000	$252,750	$750,000
6	OR-18/NE Cumulus Avenue	Signalized	ODOT, City of McMinnville	Add dual NBL turn lanes, NBR turn lane, EBR turn lane, signal timing optimization	$500,000	$267,500	$64,000	$168,500	$500,000
8	OR-18/SE Loop Road	Two Way Stop Control	ODOT, City of McMinnville	Fee in lieu payment to restrict SBL Build Segment of Frontage Roadway on City owned property	$100,000 $300,000	$53,500 $160,500	$12,800 $38,350	$33,700 $101,150	$100,000 $300,000
9	OR-18/SE Cruickshank Road	Two Way Stop Control	ODOT, City of McMinnville	Fee in lieu payment to restrict NBL Proportionate Share toward construction of Multilane Roundabout at OR-18/Lafayette Highway and closure of OR-18/Ash Road (calculated as net new trips/TEV)	$100,000 $8,000,000	$53,500 $256,000	$12,800 N/A	$33,700 $168,000	$100,000 $424,000
10	OR-18/Lafayette Highway	Two Way Stop Control	ODOT, Yamhill County						
11	OR-18/Ash Road	Two Way Stop Control	ODOT, Yamhill County						
					TOTAL	$1,620,250	$326,350	$1,027,400	$2,974,000

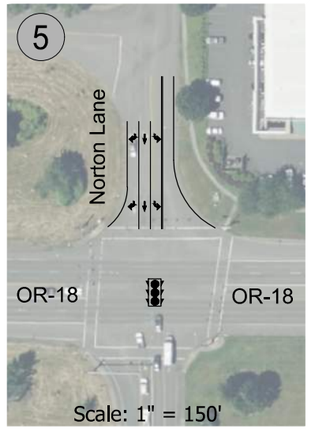
Three Mile Lane/OR-18 Conditions Summary

Preliminary Design Subject to Change
Date: 1/25/2022

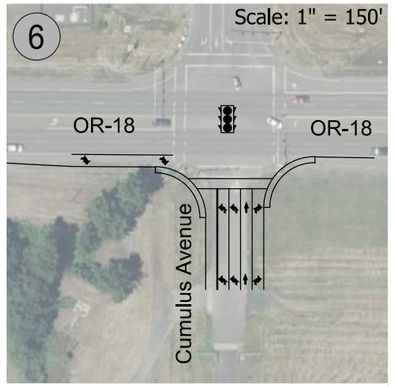


Three Mile Lane/1st Street
Install a traffic signal and eastbound right turn lane.

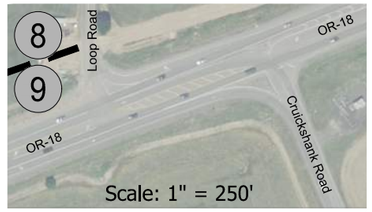
Three Mile Lane/Nehemiah Lane - Cumulus Avenue - Pacific Street
Install northbound and southbound left-turn pockets.



OR-18/Norton Lane
Install a southbound right-turn lane, pavement restriping, traffic signal modification and update signal timing and phasing.



OR-18/Cumulus Avenue
Install dual northbound left-turn lanes, a northbound right-turn lane, an eastbound right-turn lane and update signal timing and phasing.



OR-18/Loop Road and OR-18/Cruickshank Road

- Contribute a fee in lieu payment to restrict southbound left-turn movements at OR-18/Loop Road and northbound left-turn movements at OR-18/Cruickshank Road in the future at the time the OR-18/Lafayette Highway roundabout is installed.
- Construct a partial northerly frontage road to the west on City owned property.

1st Street
Three Mile Lane
Nehemiah Lane
OR-18
Norton Lane
Cumulus Avenue
OR-18
Loop Road
OR-18
Cruickshank Road
Lafayette Highway

OR-18/Lafayette Highway and Ash Road
Pay a proportional fee in lieu toward the planned multilane roundabout project at OR-18/Lafayette Highway (which will include closure of OR-18/Ash Road and OR-18/Cruickshank Road).

- (##) - Study Intersection Number (From original TIAs)
- - New Traffic Signal
- - Existing Traffic Signal
- - New Roundabout

KITTELSON & ASSOCIATES
PHONE: (503) 329-0199 CONTACT: Kristine Connolly

Please Note:
These drawings are conceptual and do not depict the final design

Three Mile Lane Rezones
McMinnville, OR

Appendix C Supplemental Traffic Operations Worksheets

Intersection Level Of Service Report
Intersection 3: NE Three Mile Ln/SE Nehemiah Ln

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.130

Intersection Setup

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Base Volume Input [veh/h]	1	693	2	151	885	7	2	0	0	6	0	184
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	693	2	151	885	7	2	0	0	6	0	184
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	188	1	41	240	2	1	0	0	2	0	50
Total Analysis Volume [veh/h]	1	753	2	164	962	8	2	0	0	7	0	200
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	2	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.19	0.01	0.00	0.13	0.00	0.00	0.20	0.00	0.49
d_M, Delay for Movement [s/veh]	10.02	0.00	0.00	10.20	0.00	0.00	10000.	10000.	10000.	128.99	107.03	36.09
Movement LOS	B	A	A	B	A	A	F	F	F	F	F	E
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.71	0.00	0.00	1.00	1.00	1.00	4.68	4.68	4.68
95th-Percentile Queue Length [ft/ln]	0.10	0.00	0.00	17.64	0.00	0.00	25.00	25.00	25.00	116.92	116.92	116.92
d_A, Approach Delay [s/veh]	0.01			1.48			10000.00			39.23		
Approach LOS	A			A			F			E		
d_I, Intersection Delay [s/veh]	14.20											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 3: NE Three Mile Ln/SE Nehemiah Ln

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.164

Intersection Setup

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Base Volume Input [veh/h]	1	693	2	151	885	7	2	0	0	6	0	184
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	693	2	151	885	7	2	0	0	6	0	184
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	188	1	41	240	2	1	0	0	2	0	50
Total Analysis Volume [veh/h]	1	753	2	164	962	8	2	0	0	7	0	200
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	2	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.19	0.01	0.00	0.16	0.00	0.00	0.25	0.00	0.49
d_M, Delay for Movement [s/veh]	10.02	0.00	0.00	10.20	0.00	0.00	10000.	10000.	10000.	162.16	144.12	42.57
Movement LOS	B	A	A	B	A	A	F	F	F	F	F	E
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.71	0.71	0.71	1.00	1.00	1.00	5.32	5.32	5.32
95th-Percentile Queue Length [ft/ln]	0.10	0.10	0.10	17.64	17.64	17.64	25.00	25.00	25.00	133.09	133.09	133.09
d_A, Approach Delay [s/veh]	0.01			1.48			10000.00			46.61		
Approach LOS	A			A			F			E		
d_I, Intersection Delay [s/veh]	14.93											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 3: NE Three Mile Ln/SE Nehemiah Ln

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.227

Intersection Setup

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Base Volume Input [veh/h]	1	693	2	151	885	7	2	0	0	6	0	184
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Growth Factor	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	64	0	0	31	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	787	2	158	955	7	2	0	0	6	0	192
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	214	1	43	260	2	1	0	0	2	0	52
Total Analysis Volume [veh/h]	1	855	2	172	1038	8	2	0	0	7	0	209
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	2	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.22	0.01	0.00	0.23	0.00	0.00	0.28	0.00	0.58
d_M, Delay for Movement [s/veh]	10.36	0.00	0.00	10.88	0.00	0.00	10000.	10000.	10000.	198.45	164.38	64.76
Movement LOS	B	A	A	B	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.83	0.00	0.00	1.00	1.00	1.00	7.09	7.09	7.09
95th-Percentile Queue Length [ft/ln]	0.11	0.00	0.00	20.87	0.00	0.00	25.00	25.00	25.00	177.26	177.26	177.26
d_A, Approach Delay [s/veh]	0.01			1.54			10000.00			69.10		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	16.04											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 3: NE Three Mile Ln/SE Nehemiah Ln

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.322

Intersection Setup

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Base Volume Input [veh/h]	1	693	2	151	885	7	2	0	0	6	0	184
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Growth Factor	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	64	0	0	31	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	787	2	158	955	7	2	0	0	6	0	192
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	214	1	43	260	2	1	0	0	2	0	52
Total Analysis Volume [veh/h]	1	855	2	172	1038	8	2	0	0	7	0	209
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	2	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.22	0.01	0.00	0.32	0.00	0.00	0.40	0.00	0.58
d_M, Delay for Movement [s/veh]	10.36	0.00	0.00	10.88	0.00	0.00	10000.	10000.	10000.	288.48	264.68	94.94
Movement LOS	B	A	A	B	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.83	0.83	0.83	1.00	1.00	1.00	8.70	8.70	8.70
95th-Percentile Queue Length [ft/ln]	0.11	0.11	0.11	20.87	20.87	20.87	25.00	25.00	25.00	217.56	217.56	217.56
d_A, Approach Delay [s/veh]	0.01			1.54			10000.00			101.22		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	19.07											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 3: NE Three Mile Ln/SE Nehemiah Ln

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.269

Intersection Setup

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Base Volume Input [veh/h]	1	693	2	151	885	7	2	0	0	6	0	184
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Growth Factor	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	33	0	0	17	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	64	0	0	31	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	820	2	158	972	7	2	0	0	6	0	192
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	223	1	43	264	2	1	0	0	2	0	52
Total Analysis Volume [veh/h]	1	891	2	172	1057	8	2	0	0	7	0	209
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	2	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.23	0.01	0.00	0.27	0.00	0.00	0.31	0.00	0.61
d_M, Delay for Movement [s/veh]	10.45	0.00	0.00	11.12	0.00	0.00	10000.	10000.	10000.	226.91	188.39	78.92
Movement LOS	B	A	A	B	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.87	0.00	0.00	1.00	1.00	1.00	7.89	7.89	7.89
95th-Percentile Queue Length [ft/ln]	0.11	0.00	0.00	21.70	0.00	0.00	25.00	25.00	25.00	197.19	197.19	197.19
d_A, Approach Delay [s/veh]	0.01			1.55			10000.00			83.72		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	17.03											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 3: NE Three Mile Ln/SE Nehemiah Ln

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.396

Intersection Setup

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Base Volume Input [veh/h]	1	693	2	151	885	7	2	0	0	6	0	184
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Growth Factor	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	33	0	0	17	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	64	0	0	31	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	820	2	158	972	7	2	0	0	6	0	192
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	223	1	43	264	2	1	0	0	2	0	52
Total Analysis Volume [veh/h]	1	891	2	172	1057	8	2	0	0	7	0	209
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	2	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.23	0.01	0.00	0.40	0.00	0.00	0.45	0.00	0.61
d_M, Delay for Movement [s/veh]	10.45	0.00	0.00	11.12	0.00	0.00	10000.	10000.	10000.	345.96	321.03	123.26
Movement LOS	B	A	A	B	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.87	0.87	0.87	1.00	1.00	1.00	9.85	9.85	9.85
95th-Percentile Queue Length [ft/ln]	0.11	0.11	0.11	21.70	21.70	21.70	25.00	25.00	25.00	246.28	246.28	246.28
d_A, Approach Delay [s/veh]	0.01			1.55			10000.00			130.47		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	21.33											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 3: NE Three Mile Ln/SE Nehemiah Ln

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	4.856

Intersection Setup

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Base Volume Input [veh/h]	1	693	2	151	885	7	2	0	0	6	0	184
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Growth Factor	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	60	0	0	-32	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	54	0	0	26	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	983	3	189	1104	9	3	0	0	8	0	231
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	267	1	51	300	2	1	0	0	2	0	63
Total Analysis Volume [veh/h]	1	1068	3	205	1200	10	3	0	0	9	0	251
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	2	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.31	0.01	0.00	4.86	0.00	0.00	0.83	0.00	0.93
d_M, Delay for Movement [s/veh]	11.18	0.00	0.00	13.05	0.00	0.00	10000.	5992.5	5765.5	731.09	641.85	410.97
Movement LOS	B	A	A	B	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	0.01	0.00	0.00	1.35	0.00	0.00	1.23	1.23	1.23	19.15	19.15	19.15
95th-Percentile Queue Length [ft/ln]	0.13	0.00	0.00	33.67	0.00	0.00	30.72	30.72	30.72	478.87	478.87	478.87
d_A, Approach Delay [s/veh]	0.01			1.89			10000.00			422.06		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	51.79											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 3: NE Three Mile Ln/SE Nehemiah Ln

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	29.020

Intersection Setup

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Base Volume Input [veh/h]	1	693	2	151	885	7	2	0	0	6	0	184
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Growth Factor	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	60	0	0	-32	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	54	0	0	26	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	983	3	189	1104	9	3	0	0	8	0	231
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	267	1	51	300	2	1	0	0	2	0	63
Total Analysis Volume [veh/h]	1	1068	3	205	1200	10	3	0	0	9	0	251
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	2	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.31	0.01	0.00	29.02	0.00	0.00	4.98	0.00	0.93
d_M, Delay for Movement [s/veh]	11.18	0.00	0.00	13.05	0.00	0.00	10000.	10000.	10000.	4302.3	6911.5	2322.8
Movement LOS	B	A	A	B	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	1.35	1.35	1.35	1.26	1.26	1.26	30.23	30.23	30.23
95th-Percentile Queue Length [ft/ln]	0.13	0.13	0.13	33.67	33.67	33.67	31.43	31.43	31.43	755.69	755.69	755.69
d_A, Approach Delay [s/veh]	0.01			1.89			10000.00			2391.39		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	237.98											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 3: NE Three Mile Ln/SE Nehemiah Ln

Control Type:	Two-way stop	Delay (sec / veh):	8,417.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	3.357

Intersection Setup

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Base Volume Input [veh/h]	1	693	2	151	885	7	2	0	0	6	0	184
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Growth Factor	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	33	0	0	17	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	54	0	0	26	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	956	3	189	1153	9	3	0	0	8	0	231
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	260	1	51	313	2	1	0	0	2	0	63
Total Analysis Volume [veh/h]	1	1039	3	205	1253	10	3	0	0	9	0	251
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	2	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.31	0.01	0.00	3.36	0.00	0.00	0.86	0.00	0.89
d_M, Delay for Movement [s/veh]	11.47	0.00	0.00	12.77	0.00	0.00	8417.9	4640.2	4406.8	741.59	647.54	408.53
Movement LOS	B	A	A	B	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	0.01	0.00	0.00	1.30	0.00	0.00	1.22	1.22	1.22	19.12	19.12	19.12
95th-Percentile Queue Length [ft/ln]	0.13	0.00	0.00	32.52	0.00	0.00	30.46	30.46	30.46	477.99	477.99	477.99
d_A, Approach Delay [s/veh]	0.01			1.78			8417.92			420.06		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	49.42											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 3: NE Three Mile Ln/SE Nehemiah Ln

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.894

V/C does not include EBL and WBL

Intersection Setup

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Base Volume Input [veh/h]	1	693	2	151	885	7	2	0	0	6	0	184
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Growth Factor	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540	1.2540
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	33	0	0	17	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	54	0	0	26	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	956	3	189	1153	9	3	0	0	8	0	231
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	260	1	51	313	2	1	0	0	2	0	63
Total Analysis Volume [veh/h]	1	1039	3	205	1253	10	3	0	0	9	0	251
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	2	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

Delay too high for Vistro to report V/C

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.31	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.89
d_M, Delay for Movement [s/veh]	11.47	0.00	0.00	12.77	0.00	0.00	10000.	10000.	10000.	10000.	10000.	10000.
Movement LOS	B	A	A	B	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	1.30	1.30	1.30	1.26	1.26	1.26	35.26	35.26	35.26
95th-Percentile Queue Length [ft/ln]	0.13	0.13	0.13	32.52	32.52	32.52	31.62	31.62	31.62	881.62	881.62	881.62
d_A, Approach Delay [s/veh]	0.01			1.78			10000.00			10000.00		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	949.04											
Intersection LOS	F											

Appendix C Planned Improvement Documentation

Kristine Connolly

From: Marc Butorac
Sent: Thursday, March 3, 2022 9:01 AM
To: FRICKE Daniel L
Cc: Tom Schauer; Ajmo@deainc.com; FERBER Arielle; Kristine Connolly
Subject: RE: Status of Future OR 18?Lafayette Highway Roundabout

Thanks for the formal clarification

From: FRICKE Daniel L <Daniel.L.FRICKE@odot.oregon.gov>
Sent: Thursday, March 3, 2022 8:11 AM
To: Marc Butorac <MBUTORAC@kittelson.com>
Cc: Tom Schauer <Tom.Schauer@mcminnvilleoregon.gov>; Ajmo@deainc.com; FERBER Arielle <Arielle.FERBER@odot.oregon.gov>
Subject: Status of Future OR 18?Lafayette Highway Roundabout

Marc –
You have asked for information from ODOT regarding the status of a future roundabout at the intersection of OR 18 and Lafayette Highway, especially as it relates to benefits/impacts from the three proposed zone changes on Three Mile Lane in McMinnville. The following information is provided.

The Yamhill County Transportation System Plan (TSP) states in Section 10 – Recommended Transportation System Improvements under "ODOT Projects" on pages 94-95:

> *The following priority projects are considered to be "reasonably likely" by ODOT to be funded based on the estimated 20-year funding amount for state highways in unincorporated Yamhill County:*
> - *OR 18 – Ash Road to OR 154/Lafayette Highway – Close Ash Road north and south of OR 18, install multilane roundabout at the OR 18/OR 154/Lafayette Highway intersection . . .*

Based on the above, The OR 18/Lafayette Highway roundabout should be considered a planned improvement and included in the future year base case system that is assumed for any analysis of traffic impacts from the proposed zone changes in the City of McMinnville. The roundabout should not be considered as mitigation for project-related impacts. ODOT stands by the "reasonably likely" statement in the Yamhill County TSP. No specific funding is currently identified for the project, but it is being considered for funding in the 2024-2027 Statewide Transportation Improvement Program (STIP).

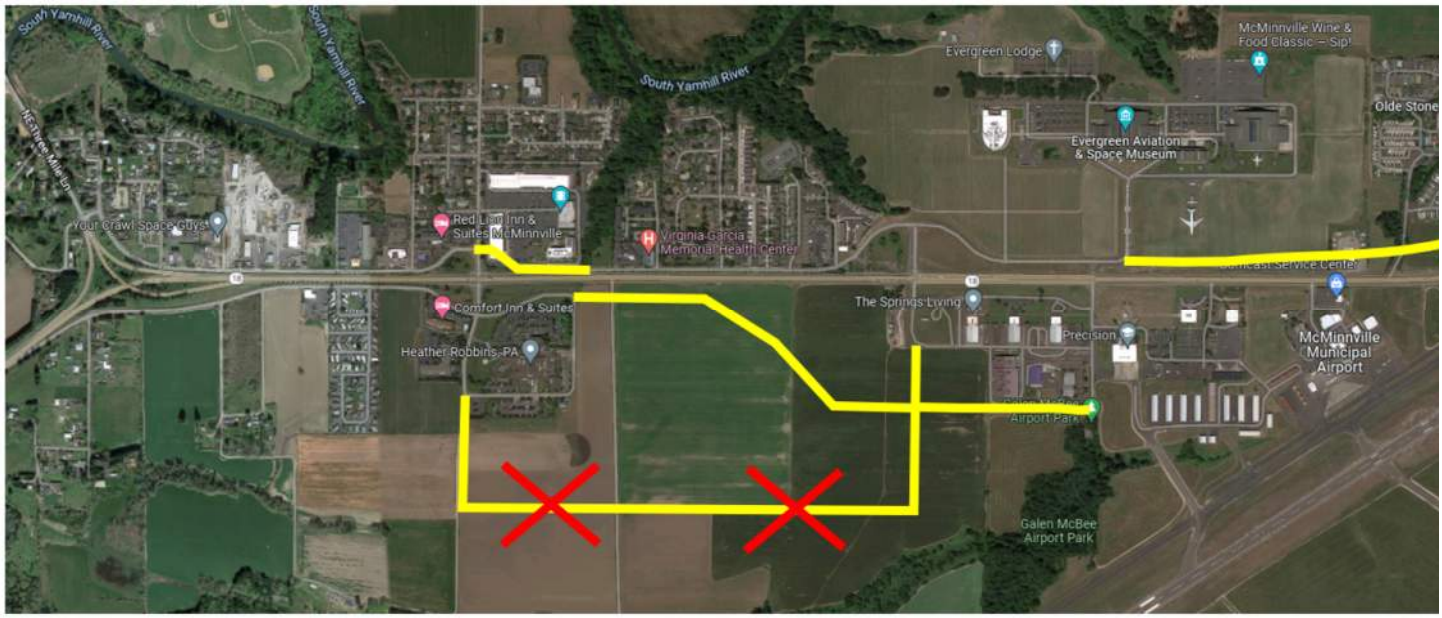
Contact me if you need anything else.
Dan

Dan Fricke, Senior Transportation Planner
ODOT Region 2 Tech Center
455 Airport Road SE, Building A
Salem, OR 97301-5397
Ph: 503-507-0391
E-mail: daniel.l.fricke@odot.oregon.gov

Kristine Connolly

From: Kristine Connolly
Sent: Tuesday, April 5, 2022 8:24 AM
To: Heather Richards; Andrew Mortensen
Cc: Josh Anderson; Tom Schauer; FERBER Arielle; FRICKE Daniel L; Marc Butorac; Alec Kauffman; dana.krawczuk@stoel.com; Mike Connors
Subject: RE: KIMCO Re-Zone Application

Thanks Heather – I believe we are now all on the same page with regard to the "reasonably likely" frontage road improvements. We are re-assigning the background trips to account for these connections (minus the southern frontage road option south of OR 18):



We look forward to the formal letter when you are able to send it.

Thanks!

Kristine Connolly, PE
Senior Engineer

I'm working from home in response to COVID-19, but Kittelson is fully operational and responsive to all projects. Please visit our website for more information, and connect with us before sending hard copy mail.

Kittelson & Associates, Inc.
Transportation Engineering / Planning
503.228.5230 (Portland)
503.535.7448 (direct)
503.329.0199 (cell)

From: Heather Richards <Heather.Richards@mcminnvilleoregon.gov>
Sent: Thursday, March 31, 2022 11:58 AM

To: Kristine Connolly <kconnolly@kittelson.com>; Andrew Mortensen <Ajmo@deainc.com>
Cc: Josh Anderson <Josh.Anderson@deainc.com>; Tom Schauer <Tom.Schauer@mcminnvilleoregon.gov>; FERBER Arielle <Arielle.FERBER@odot.oregon.gov>; FRICKE Daniel L <Daniel.L.FRICKE@odot.oregon.gov>; Marc Butorac <MBUTORAC@kittelson.com>; Alec Kauffman <akauffman@kittelson.com>; dana.krawczuk@stoel.com; Mike Connors <mike@hathawaylarson.com>
Subject: RE: KIMCO Re-Zone Application

Hi Everyone,

The southside frontage road is an either/or scenario, not both. SDC methodology assigns funds to the development of one collector road system on the south side. Please assume the one that is closest to OR 18 as the southern route is not fully within the UGB. That was proposed before the UGB was challenged into the court of appeals.

We will get you a formal letter today.

Have a great day!

Heather

City of McMinnville
PLANNING

Heather Richards, PCED
Planning Director
City of McMinnville
231 NE Fifth Street
McMinnville, OR 97128

503-474-5107 (phone)
541-604-4152 (cell)

Heather.Richards@mcminnvilleoregon.gov
www.mcminnvilleoregon.gov

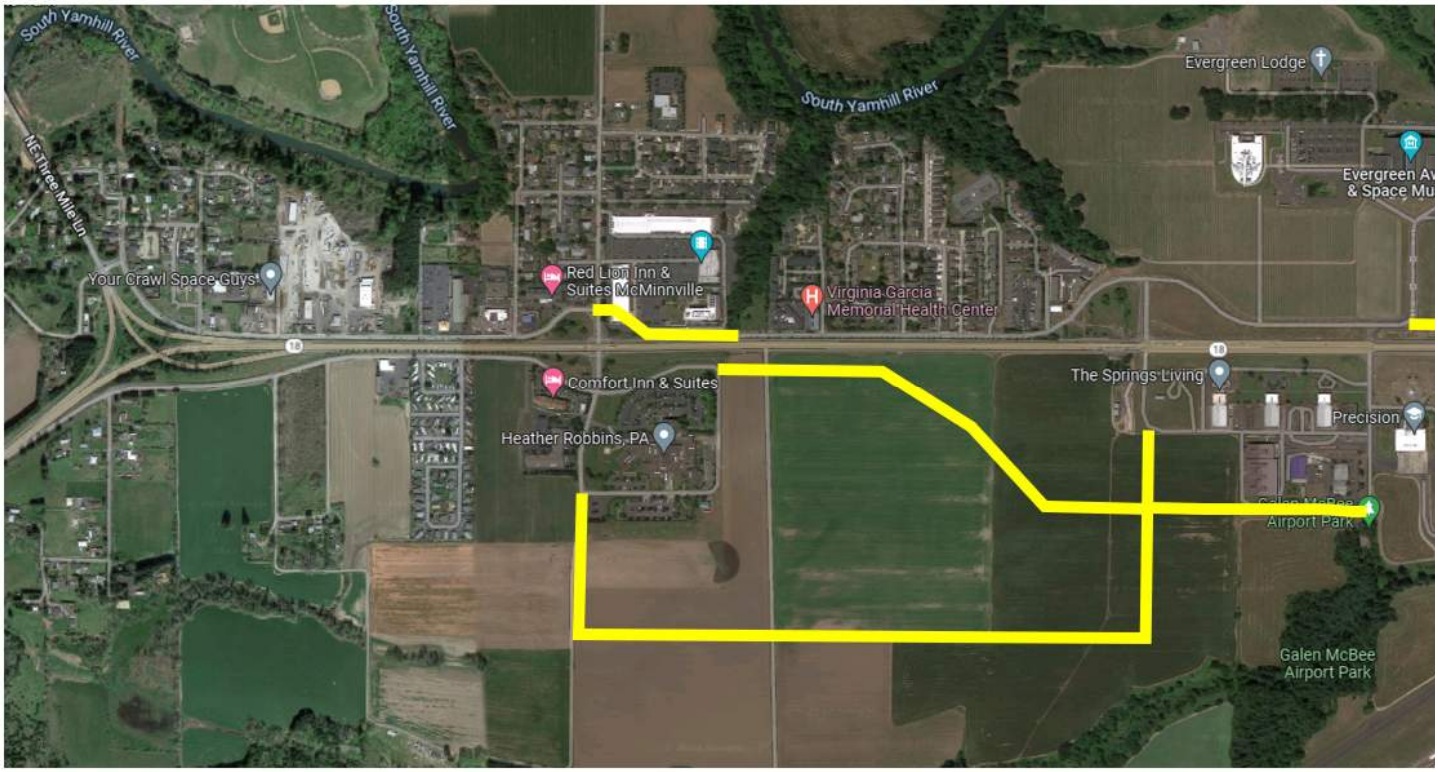
From: Kristine Connolly <kconnolly@kittelson.com>
Sent: Monday, March 28, 2022 2:47 PM
To: Andrew Mortensen <Ajmo@deainc.com>
Cc: Josh Anderson <Josh.Anderson@deainc.com>; Heather Richards <Heather.Richards@mcminnvilleoregon.gov>; Tom Schauer <Tom.Schauer@mcminnvilleoregon.gov>; FERBER Arielle <Arielle.FERBER@odot.oregon.gov>; FRICKE Daniel L <Daniel.L.FRICKE@odot.oregon.gov>; Marc Butorac <MBUTORAC@kittelson.com>; Alec Kauffman

<akauffman@kittelson.com>; dana.krawczuk@stoel.com; Mike Connors <mike@hathawaylarson.com>
Subject: RE: KIMCO Re-Zone Application

This message originated outside of the City of McMinnville.

Heather/Andy –

The following graphic presents our understanding of the frontage roads to be incorporated in the background conditions analysis (locations approximate):



Could you please confirm whether this graphic accounts for all sections of frontage road the City deems "reasonably likely" to be provided by 2041? Please also follow up with formal documentation when you get a chance.

Thanks!

Kristine Connolly, PE
Senior Engineer

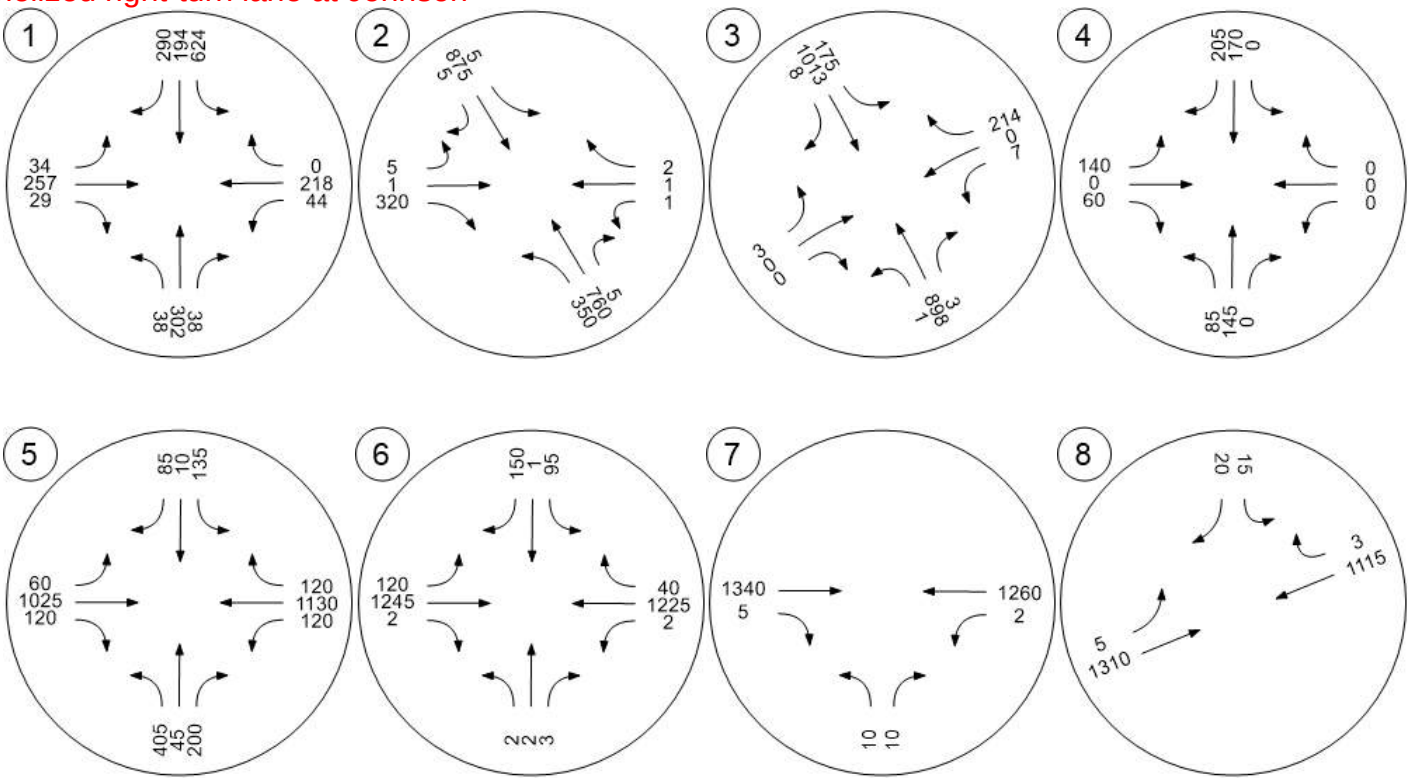
I'm working from home in response to COVID-19, but Kittelson is fully operational and responsive to all projects. Please visit our website for more information, and connect with us before sending hard copy mail.

Kittelson & Associates, Inc.
Transportation Engineering / Planning
503.228.5230 (Portland)
503.535.7448 (direct)
503.329.0199 (cell)

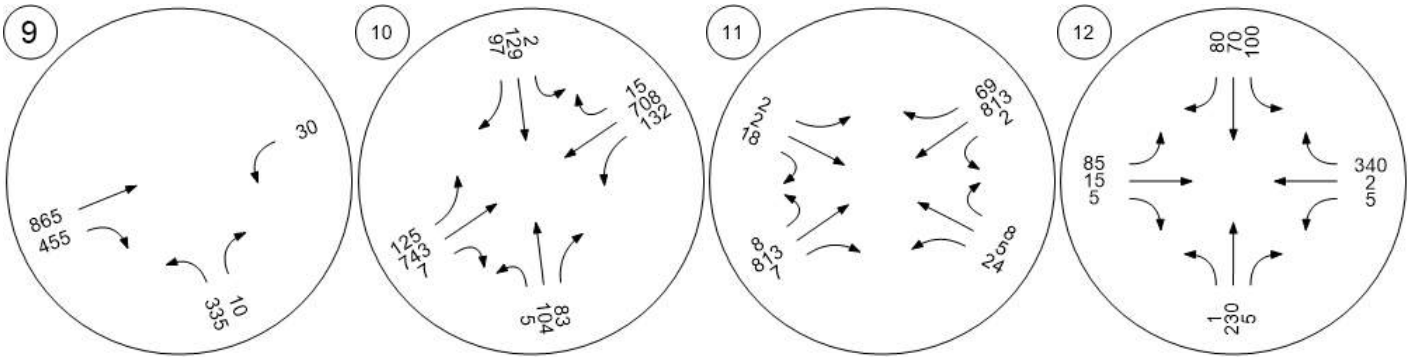
Appendix D Base Volumes from DEA

Base Volumes

Westbound right-turn volumes were omitted from analysis due to the presence of the channelized right-turn lane at Johnson



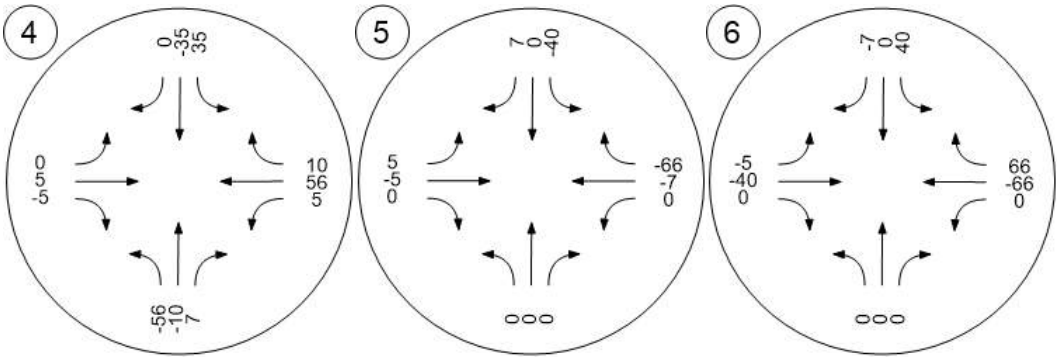
Base Volumes



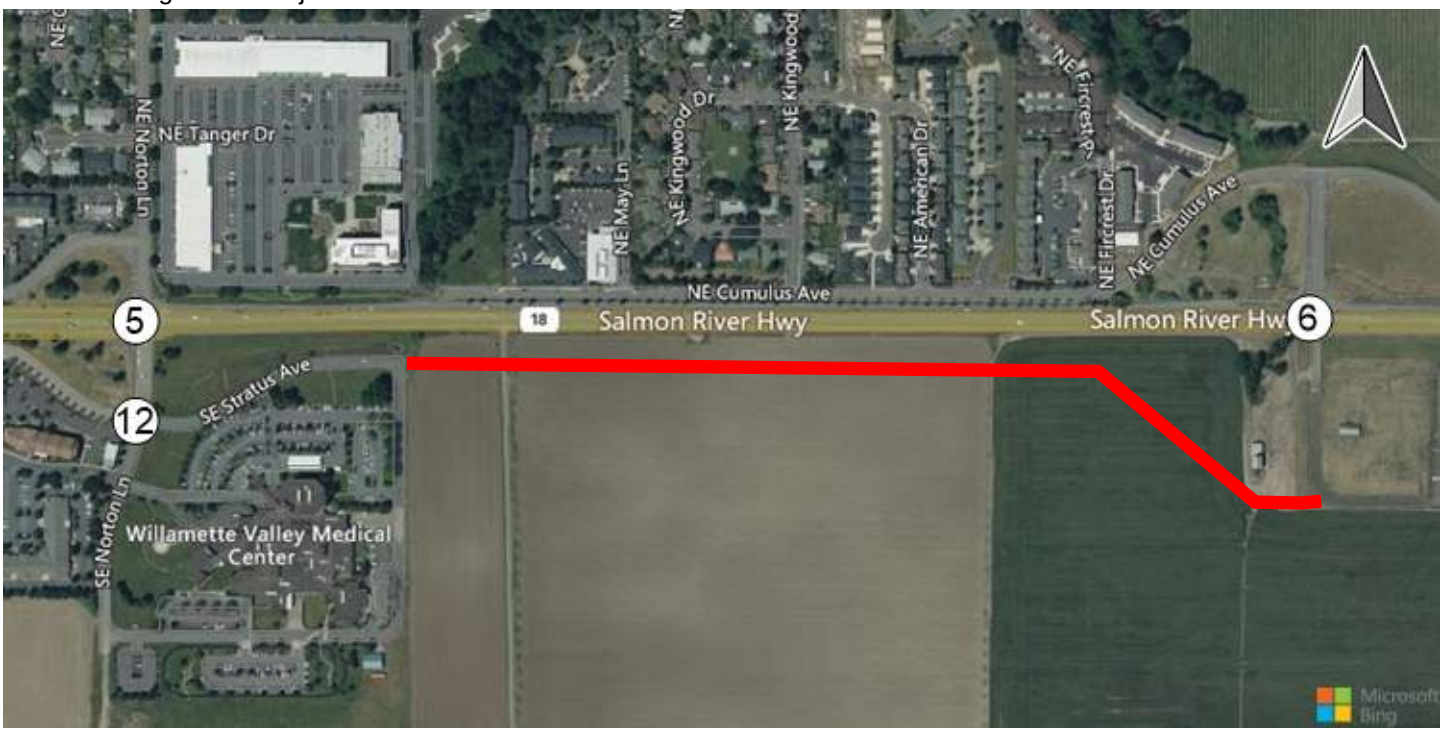
The westbound through lane/volumes were omitted from the Vistro analysis as the lane is channelized and does not conflict with other movements at Cruickshank

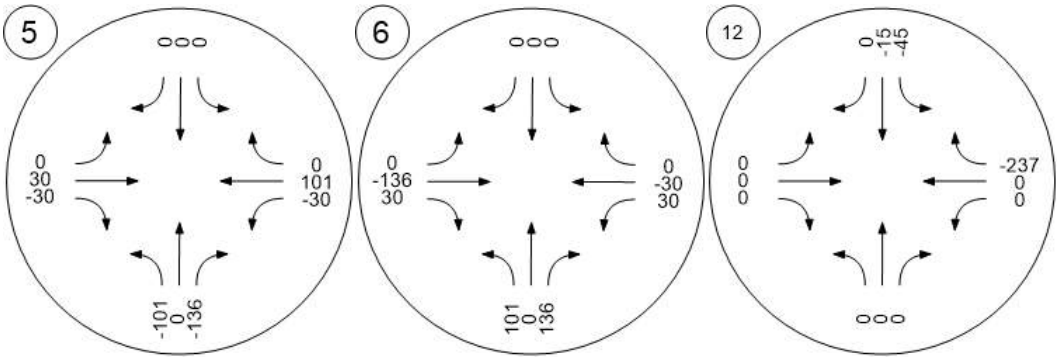
Appendix E Base Volume Adjustments

North Frontage Road Adjustments

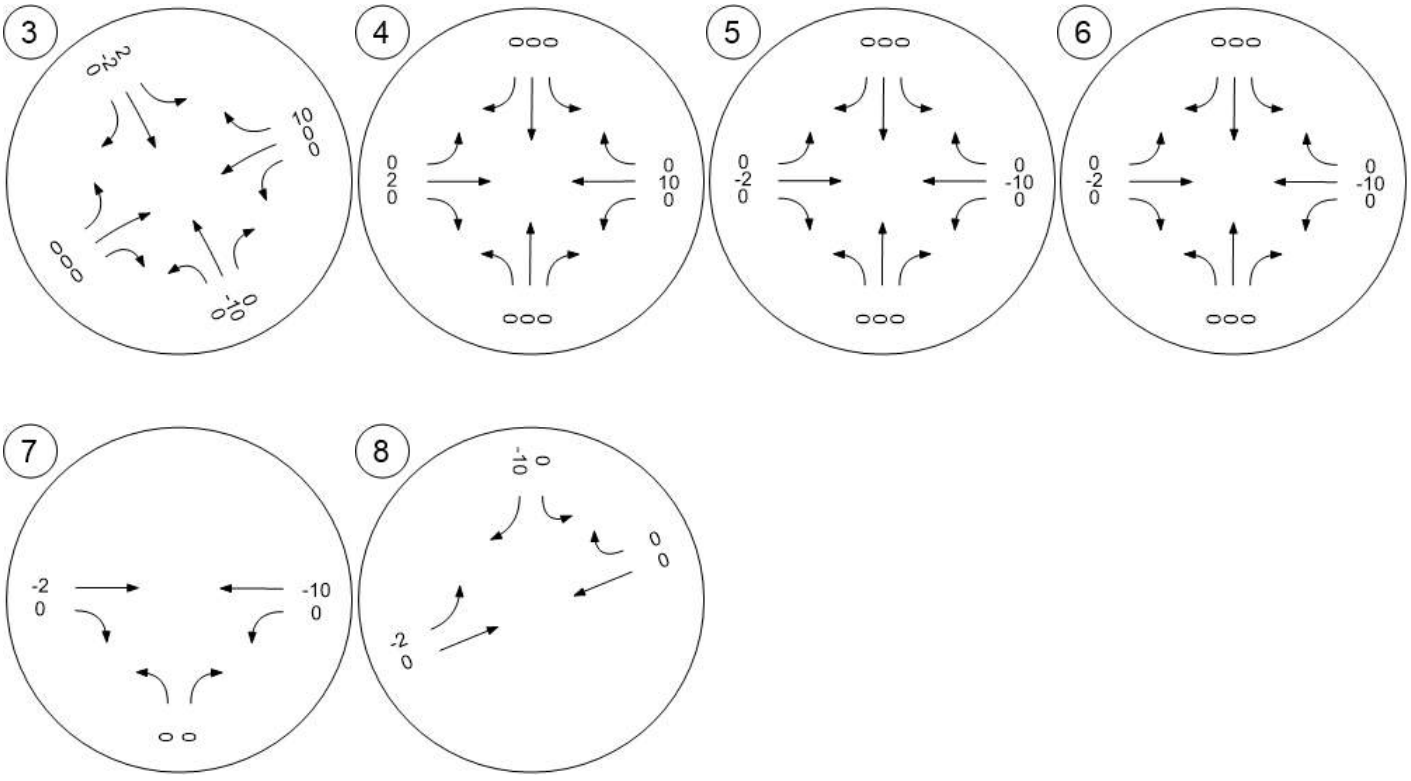


South Frontage Road Adjustments

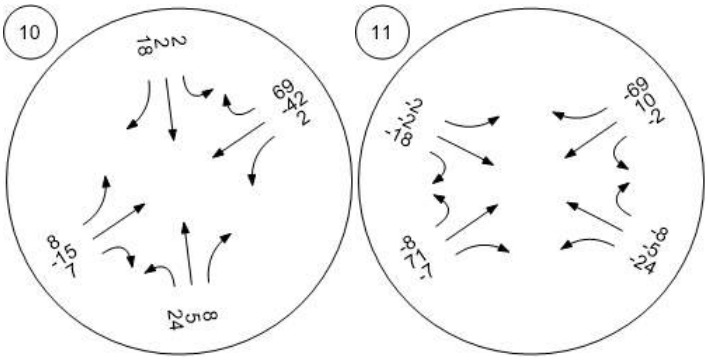




Loop Frontage Road Adjustments

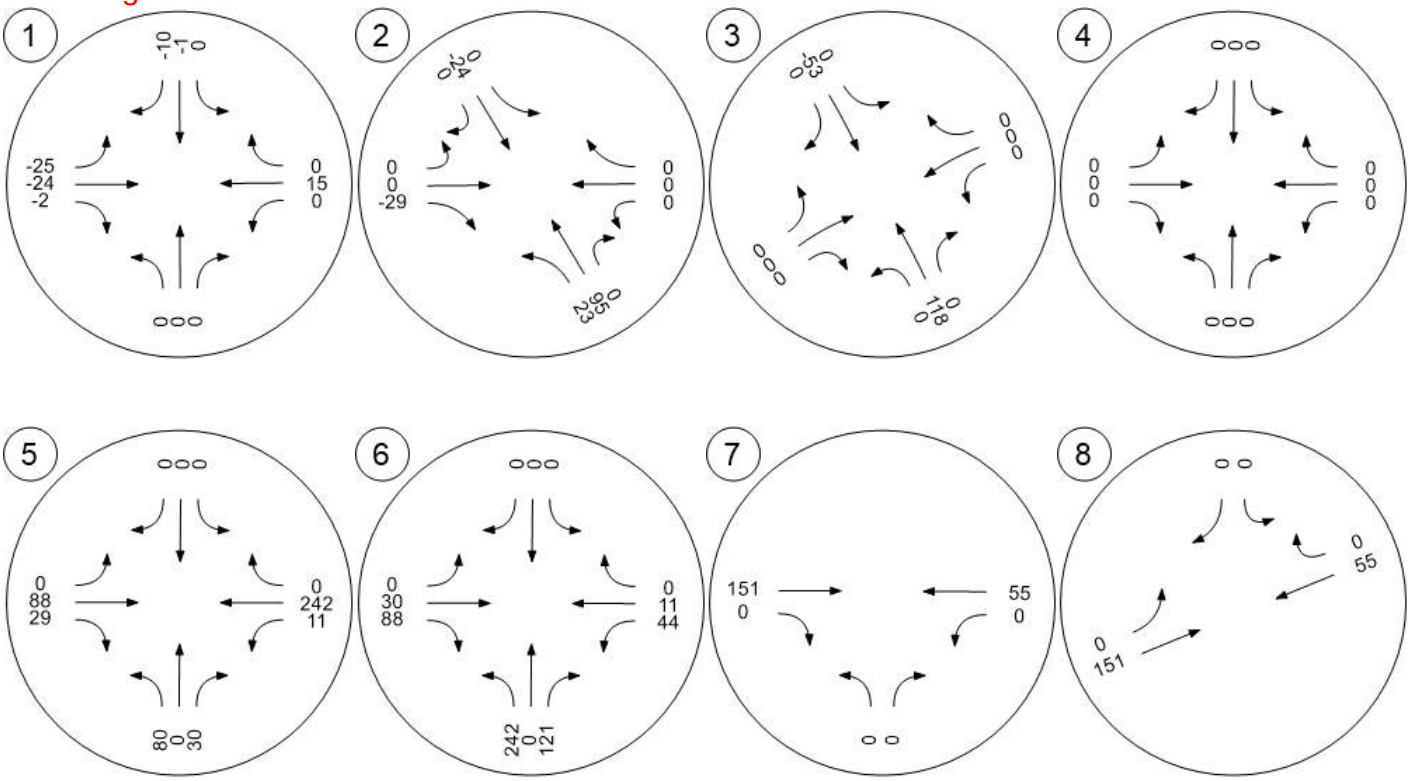


Ash Road Closure Adjustments

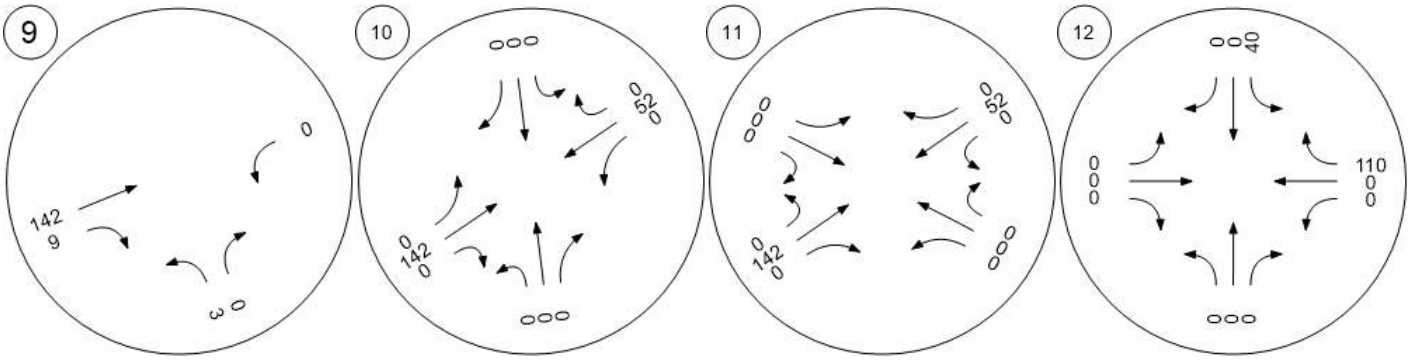


Existing Zone Trips

Westbound right-turn volumes were omitted from analysis due to the presence of the channelized right-turn lane at Johnson



Existing Zone Trips

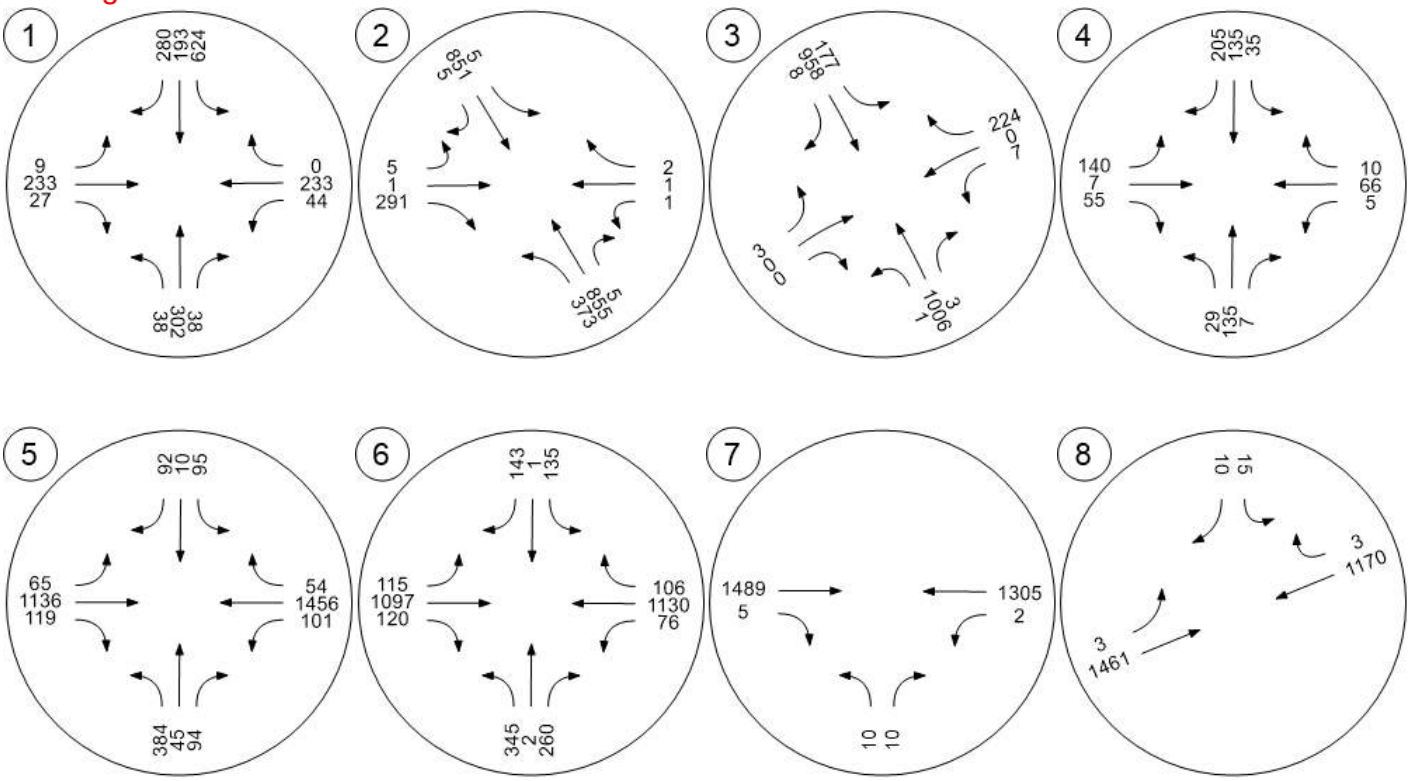


The westbound through lane/volumes were omitted from the Vistro analysis as the lane is channelized and does not conflict with other movements at Cruickshank

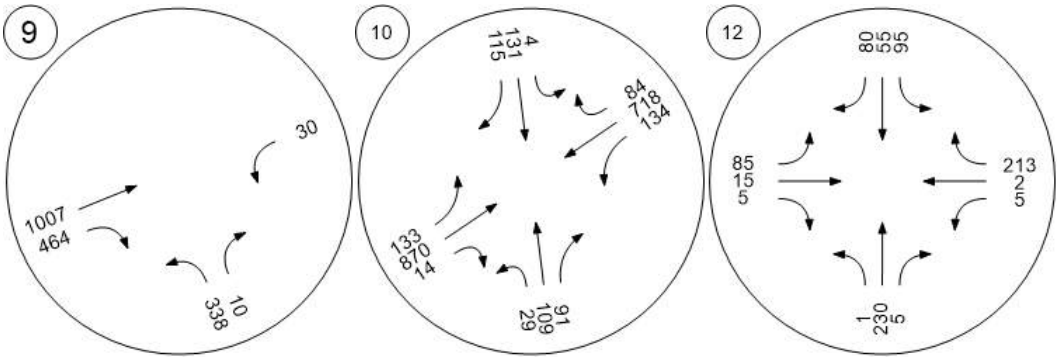
Appendix F Year 2041 Background Traffic Volumes

Traffic Volume - Future Total Volume

Westbound right-turn volumes were omitted from analysis due to the presence of the channelized right-turn lane at Johnson



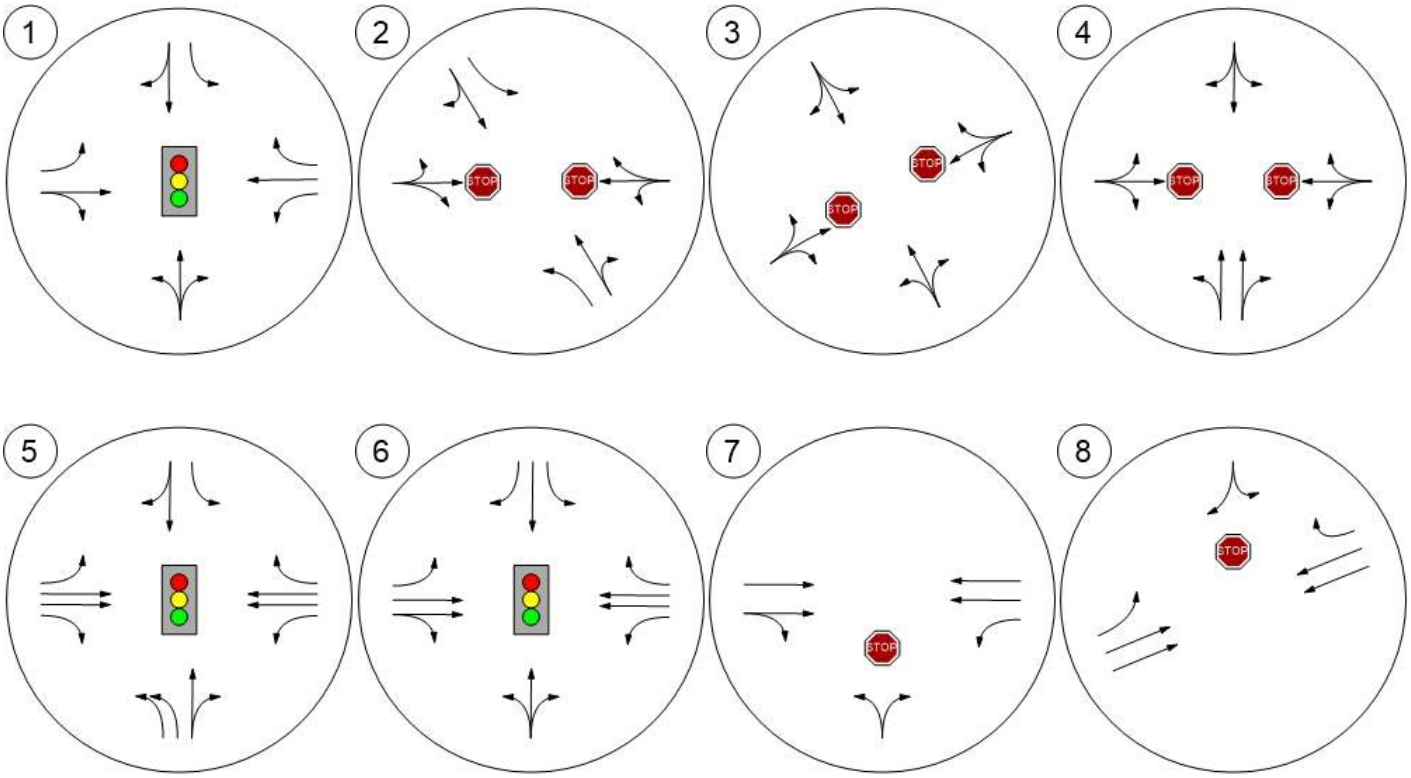
Traffic Volume - Future Total Volume



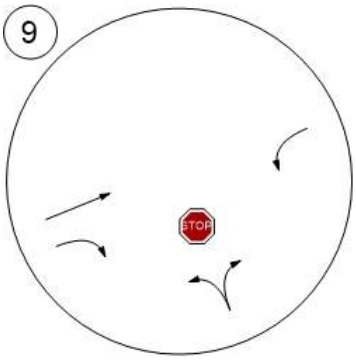
The westbound through lane/volumes were omitted from the Vistro analysis as the lane is channelized and does not conflict with other movements at Cruickshank

Appendix G Year 2041 Background Traffic Operations Worksheets

Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



The westbound through lane/volumes were omitted from the Vistro analysis as the lane is channelized and does not conflict with other movements at Cruickshank

Intersection Level Of Service Report
Intersection 1: NE Johnson St/NE 3rd St

Control Type:	Signalized	Delay (sec / veh):	74.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.859

Intersection Setup

Name	NE Johnson St			NE Johnson St			NE 3rd St			NE 3rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	200.00	100.00	100.00	225.00	100.00	100.00	120.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NE Johnson St			NE Johnson St			NE 3rd St			NE 3rd St		
Base Volume Input [veh/h]	38	302	38	624	193	280	9	233	27	44	233	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	302	38	624	193	280	9	233	27	44	233	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	76	10	156	48	70	2	58	7	11	58	0
Total Analysis Volume [veh/h]	38	302	38	624	193	280	9	233	27	44	233	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permis	Overla	Permis	Protect	Overla	Permis	ProtPer	Overla	Permis	ProtPer	Overla	Unsign
Signal Group	8	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups		8			4			2			6	
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	8	8	0	7	7	0	3	5	0	3	5	0
Maximum Green [s]	30	30	0	40	55	0	20	30	0	20	30	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	21	21	0	36	57	0	12	21	0	12	21	0
Vehicle Extension [s]	4.0	4.0	0.0	3.5	4.3	0.0	2.5	3.0	0.0	2.5	3.0	0.0
Walk [s]	7	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	10	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No		No	No		No	No		No	No	
Maximum Recall		No		No	No		No	No		No	No	
Pedestrian Recall		No		No	No		No	No		No	No	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	40	74	1	21	13	33
g / C, Green / Cycle	0.25	0.33	0.62	0.01	0.17	0.11	0.28
(v / s)_i Volume / Saturation Flow Rate	0.28	0.39	0.31	0.01	0.16	0.03	0.14
s, saturation flow rate [veh/h]	1333	1603	1524	1603	1653	1603	1683
c, Capacity [veh/h]	366	534	940	11	288	60	465
d1, Uniform Delay [s]	41.57	33.32	5.09	59.37	45.02	46.94	31.45
k, delay calibration	0.50	0.50	0.27	0.08	0.38	0.11	0.12
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	55.71	94.27	1.05	68.38	27.02	15.73	0.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.03	1.17	0.50	0.83	0.90	0.73	0.50
d, Delay for Lane Group [s/veh]	97.28	127.59	6.15	127.74	72.04	62.67	32.40
Lane Group LOS	F	F	A	F	E	E	C
Critical Lane Group	Yes	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	16.31	28.11	2.81	0.48	9.31	1.42	5.03
50th-Percentile Queue Length [ft/ln]	407.79	702.79	70.36	11.98	232.84	35.62	125.81
95th-Percentile Queue Length [veh/ln]	23.38	40.57	5.07	0.86	14.32	2.56	8.71
95th-Percentile Queue Length [ft/ln]	584.40	1014.36	126.65	21.56	357.97	64.12	217.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	97.28	97.28	97.28	127.59	6.15	6.15	127.74	72.04	72.04	62.67	32.40	0.00
Movement LOS	F	F	F	F	A	A	F	E	E	E	C	
d_A, Approach Delay [s/veh]	97.28			75.22			73.91			37.20		
Approach LOS	F			E			E			D		
d_I, Intersection Delay [s/veh]	73.96											
Intersection LOS	E											
Intersection V/C	0.859											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.51	49.51	49.51	49.51
l_p,int, Pedestrian LOS Score for Intersection	2.042	2.412	2.275	2.431
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	283	883	283	283
d_b, Bicycle Delay [s]	44.21	18.71	44.21	44.21
l_b,int, Bicycle LOS Score for Intersection	2.183	3.370	2.003	2.017
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	7	8	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: NE Three Mile Ln/SE 1st St

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.962

Intersection Setup

Name	NE Three Mile Ln			NE 3rd St			SE 1st St			SE 1st St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	NE Three Mile Ln			NE 3rd St			SE 1st St			SE 1st St		
Base Volume Input [veh/h]	373	855	5	5	851	5	5	1	291	1	1	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	0.00	20.00	2.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	373	855	5	5	851	5	5	1	291	1	1	2
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	230	1	1	229	1	1	0	78	0	0	1
Total Analysis Volume [veh/h]	401	919	5	5	915	5	5	1	313	1	1	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.54	0.01	0.00	0.01	0.01	0.00	0.62	0.09	0.95	2.96	0.09	0.01
d_M, Delay for Movement [s/veh]	15.41	0.00	0.00	10.41	0.00	0.00	787.95	684.77	353.85	10000.	2814.8	2483.9
Movement LOS	C	A	A	B	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	3.28	0.00	0.00	0.02	0.00	0.00	21.42	21.42	21.42	1.40	1.40	1.40
95th-Percentile Queue Length [ft/ln]	81.92	0.00	0.00	0.56	0.00	0.00	535.62	535.62	535.62	35.12	35.12	35.12
d_A, Approach Delay [s/veh]	4.66			0.06			361.69			4445.68		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	54.18											
Intersection LOS	F											

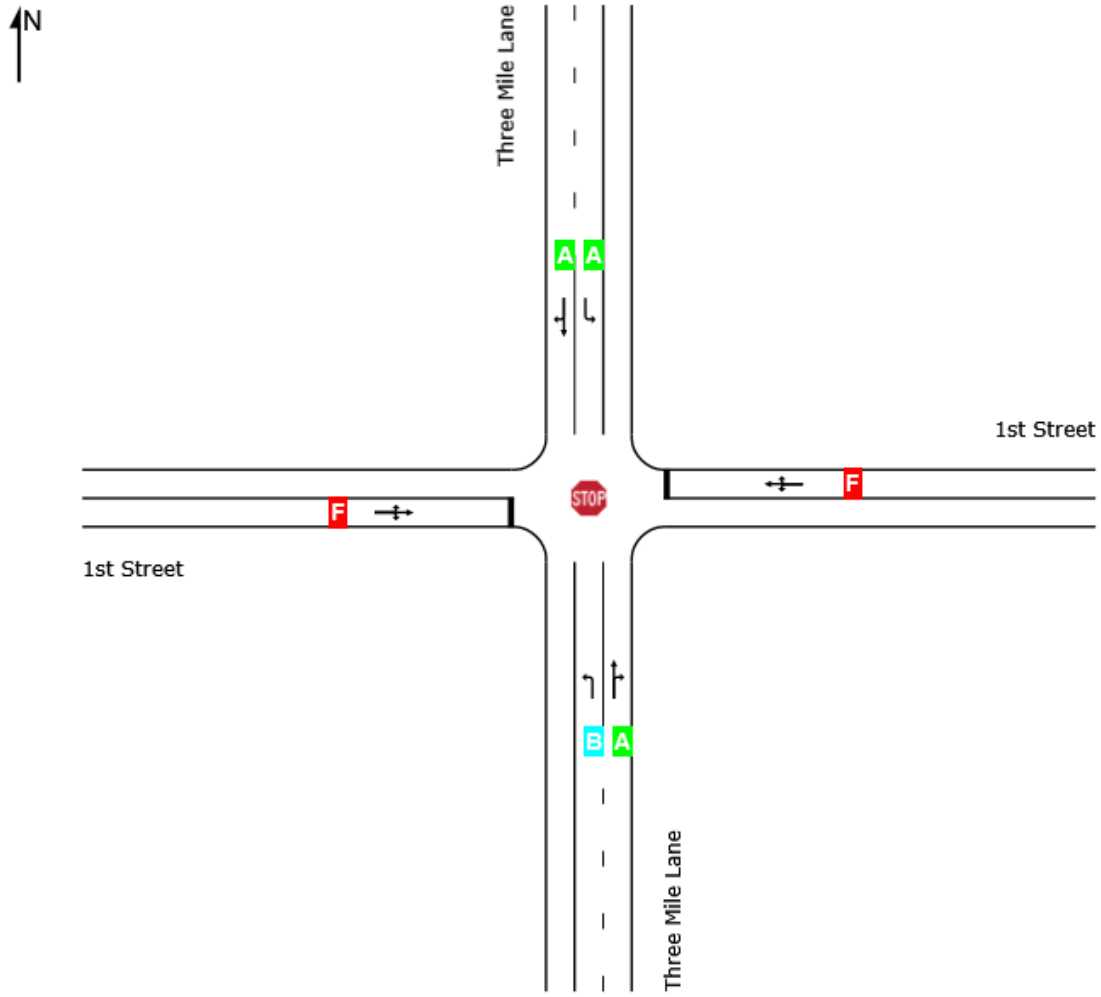
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 102 [BK 2041 - 1st & Three Mile]

New Site
Site Category: (None)
Stop (Two-Way)

	Approaches				Intersection
	South	East	North	West	
LOS	NA	F	NA	F	NA



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 102 [BK 2041 - 1st & Three Mile]

New Site
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Three Mile Lane												
3	L2	401	1.0	0.542	13.2	LOS B	4.4	110.9	0.75	0.99	1.51	28.7
8	T1	919	2.0	0.539	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	39.8
18	R2	5	0.0	0.539	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	38.4
Approach		1326	1.7	0.542	4.1	NA	4.4	110.9	0.23	0.30	0.46	35.6
East: 1st Street												
1	L2	1	0.0	0.115	289.5	LOS F	0.3	7.8	0.96	0.96	0.96	12.5
6	T1	1	0.0	0.115	104.0	LOS F	0.3	7.8	0.96	0.96	0.96	12.5
16	R2	2	0.0	0.115	30.3	LOS D	0.3	7.8	0.96	0.96	0.96	12.5
Approach		4	0.0	0.115	113.5	LOS F	0.3	7.8	0.96	0.96	0.96	12.5
North: Three Mile Lane												
7	L2	5	20.0	0.009	5.8	LOS A	0.0	0.9	0.58	0.44	0.58	31.1
4	T1	915	2.0	0.537	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	39.8
14	R2	5	0.0	0.537	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	38.4
Approach		926	2.1	0.537	0.1	NA	0.0	0.9	0.00	0.00	0.00	39.7
West: 1st Street												
5	L2	5	0.0	1.403	387.2	LOS F	39.2	987.2	1.00	2.81	7.49	7.1
2	T1	1	0.0	1.403	317.3	LOS F	39.2	987.2	1.00	2.81	7.49	7.2
12	R2	313	1.0	1.403	243.6	LOS F	39.2	987.2	1.00	2.81	7.49	7.2
Approach		319	1.0	1.403	246.3	LOS F	39.2	987.2	1.00	2.81	7.49	7.2
All Vehicles		2575	1.7	1.403	32.8	NA	39.2	987.2	0.24	0.51	1.17	24.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection Level Of Service Report
Intersection 3: NE Three Mile Ln/SE Nehemiah Ln

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	6.823

Intersection Setup

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Base Volume Input [veh/h]	1	1006	3	177	958	8	3	0	0	7	0	224
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	1006	3	177	958	8	3	0	0	7	0	224
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	273	1	48	260	2	1	0	0	2	0	61
Total Analysis Volume [veh/h]	1	1093	3	192	1041	9	3	0	0	8	0	243
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	2	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.30	0.01	0.00	6.82	0.00	0.00	1.03	0.00	0.93
d_M, Delay for Movement [s/veh]	10.38	0.00	0.00	13.07	0.00	0.00	10000.	8198.6	7742.2	955.57	961.61	504.06
Movement LOS	B	A	A	B	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	1.27	1.27	1.27	1.24	1.24	1.24	20.09	20.09	20.09
95th-Percentile Queue Length [ft/ln]	0.11	0.11	0.11	31.65	31.65	31.65	30.94	30.94	30.94	502.21	502.21	502.21
d_A, Approach Delay [s/veh]	0.01			2.02			10000.00			518.45		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	62.73											
Intersection LOS	F											

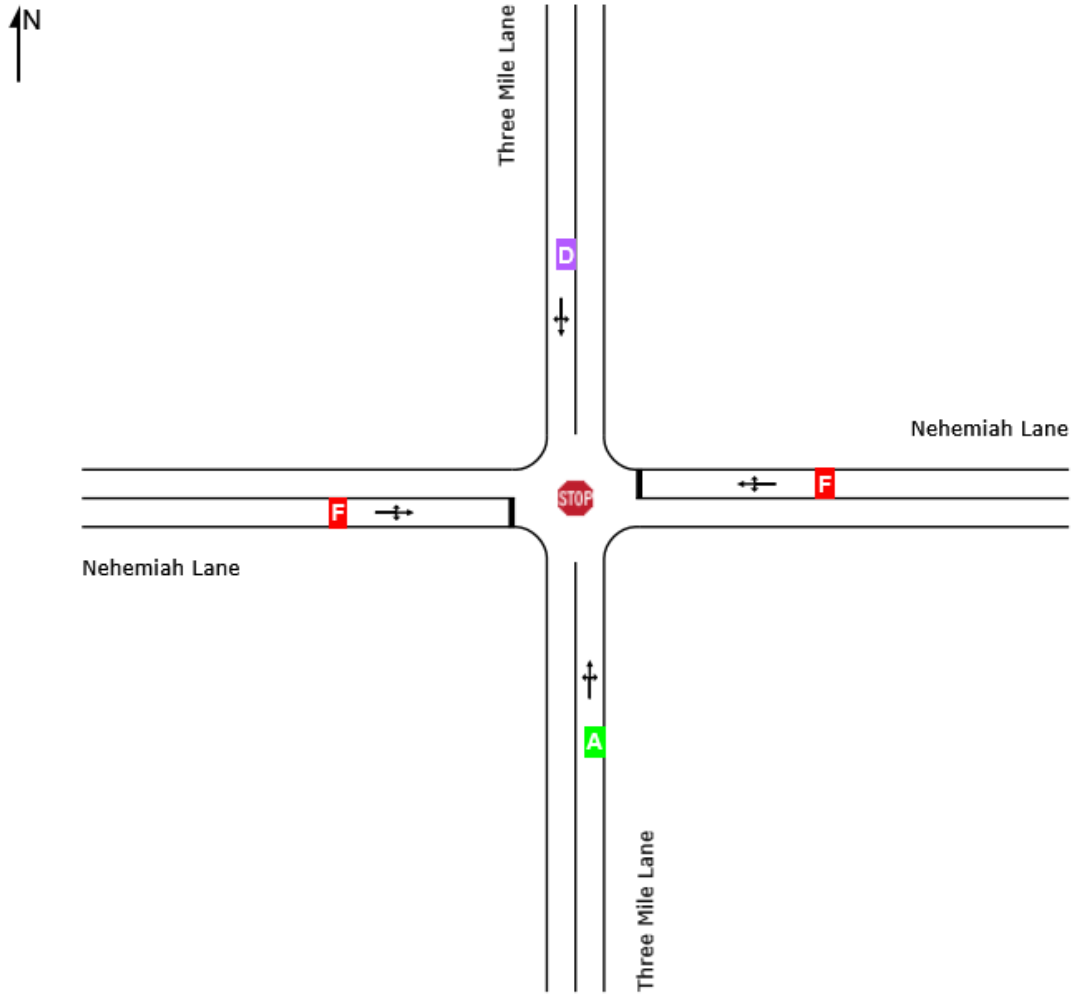
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 102 [BK 2041 - Nehemiah & Three Mile]

New Site
Site Category: (None)
Stop (Two-Way)

	Approaches				Intersection
	South	East	North	West	
LOS	NA	F	NA	F	NA



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 102 [BK 2041 - Nehemiah & Three Mile]

New Site
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Three Mile Lane												
3	L2	1	0.0	0.641	12.3	LOS B	0.1	2.7	0.01	0.00	0.01	34.1
8	T1	1093	2.0	0.641	6.9	LOS A	0.1	2.7	0.01	0.00	0.01	35.5
18	R2	3	0.0	0.641	8.7	LOS A	0.1	2.7	0.01	0.00	0.01	34.4
Approach		1098	2.0	0.641	6.9	NA	0.1	2.7	0.01	0.00	0.01	35.5
East: Nehemiah Lane												
1	L2	8	0.0	1.272	326.0	LOS F	25.7	648.5	1.00	2.42	6.35	8.3
6	T1	1	0.0	1.272	284.4	LOS F	25.7	648.5	1.00	2.42	6.35	8.3
16	R2	243	1.0	1.272	199.1	LOS F	25.7	648.5	1.00	2.42	6.35	8.3
Approach		252	1.0	1.272	203.3	LOS F	25.7	648.5	1.00	2.42	6.35	8.3
North: Three Mile Lane												
7	L2	192	2.0	0.923	30.6	LOS D	29.3	743.2	1.00	0.27	3.55	25.6
4	T1	1041	2.0	0.923	26.8	LOS D	29.3	743.2	1.00	0.27	3.55	26.4
14	R2	9	0.0	0.923	30.5	LOS D	29.3	743.2	1.00	0.27	3.55	25.8
Approach		1242	2.0	0.923	27.4	NA	29.3	743.2	1.00	0.27	3.55	26.3
West: Nehemiah Lane												
5	L2	3	0.0	0.226	256.1	LOS F	0.6	15.3	0.98	0.99	1.02	8.6
2	T1	1	0.0	0.226	143.0	LOS F	0.6	15.3	0.98	0.99	1.02	8.6
12	R2	1	0.0	0.226	57.1	LOS F	0.6	15.3	0.98	0.99	1.02	8.6
Approach		5	0.0	0.226	193.7	LOS F	0.6	15.3	0.98	0.99	1.02	8.6
All Vehicles		2598	1.9	1.272	36.2	NA	29.3	743.2	0.58	0.37	2.32	23.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection Level Of Service Report
Intersection 4: NE Cumulus Ave/ NE Norton Ln

Control Type:	Two-way stop	Delay (sec / veh):	19.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.391

Intersection Setup

Name	NE Norton Ln			NE Norton Ln			NE Cumulus Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	NE Norton Ln			NE Norton Ln			NE Cumulus Ave					
Base Volume Input [veh/h]	29	135	7	35	135	205	140	7	55	5	66	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	3.00	2.00	2.00	3.00	1.00	0.00	2.00	10.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	135	7	35	135	205	140	7	55	5	66	10
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	36	2	9	36	54	37	2	14	1	17	3
Total Analysis Volume [veh/h]	31	142	7	37	142	216	147	7	58	5	69	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	No
Storage Area [veh]	0	0	2	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.03	0.00	0.00	0.39	0.02	0.07	0.01	0.19	0.01
d_M, Delay for Movement [s/veh]	8.14	0.00	0.00	7.58	0.00	0.00	19.26	18.19	14.13	14.83	17.09	11.03
Movement LOS	A	A	A	A	A	A	C	C	B	B	C	B
95th-Percentile Queue Length [veh/ln]	0.08	0.04	0.00	0.08	0.08	0.08	1.96	1.96	1.96	0.78	0.78	0.78
95th-Percentile Queue Length [ft/ln]	2.03	1.01	0.00	1.99	1.99	1.99	49.10	49.10	49.10	19.43	19.43	19.43
d_A, Approach Delay [s/veh]	1.40			0.71			17.82			16.17		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	6.52											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 5: NE Norton Ln/NE Three Mile Ln

Control Type:	Signalized	Delay (sec / veh):	47.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.795

Intersection Setup

Name	NE Norton Ln			NE Norton Ln			NE Three Mile Ln			NE Three Mile Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NE Norton Ln			NE Norton Ln			NE Three Mile Ln			NE Three Mile Ln		
Base Volume Input [veh/h]	384	45	94	95	10	92	65	1136	119	101	1456	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	11.00	2.00	3.00	0.00	2.00	2.00	3.00	5.00	4.00	3.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	60	0	0	27
Total Hourly Volume [veh/h]	384	45	94	95	10	92	65	1136	59	101	1456	27
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	102	12	25	25	3	24	17	302	16	27	387	7
Total Analysis Volume [veh/h]	409	48	100	101	11	98	69	1209	63	107	1549	29
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protect	Overla	Permis	Protect	Overla	Permis	ProtPer	Permis	Permis	ProtPer	Permis	Permis
Signal Group	3	4	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups		3,4			4,7							
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	20	60	0	20	60	0
Amber [s]	4.5	4.5	0.0	4.5	4.5	0.0	4.5	5.0	0.0	4.5	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	2.5	2.5	0.0	2.5	2.5	0.0	2.5	5.2	0.0	2.5	5.2	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	31	0	0	34	0	0	36	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	3.5	0.0	3.5	3.5	0.0	3.5	4.0	0.0	3.5	4.0	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	127	127	127	127	127	127	127	127	127	127
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	0.00	3.50	0.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	19	30	10	21	70	58	58	70	60	60
g / C, Green / Cycle	0.15	0.23	0.08	0.16	0.55	0.46	0.46	0.55	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.13	0.11	0.06	0.07	0.15	0.38	0.05	0.19	0.49	0.02
s, saturation flow rate [veh/h]	3138	1395	1590	1476	451	3179	1396	572	3179	1408
c, Capacity [veh/h]	477	327	129	242	188	1457	640	257	1498	663
d1, Uniform Delay [s]	52.68	41.74	57.40	48.06	28.48	30.16	19.57	23.81	33.68	18.19
k, delay calibration	0.08	0.08	0.08	0.08	0.26	0.26	0.26	0.50	0.26	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.47	0.73	7.39	0.97	2.80	2.96	0.16	4.93	26.26	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.45	0.78	0.45	0.37	0.83	0.10	0.42	1.03	0.04
d, Delay for Lane Group [s/veh]	56.15	42.47	64.79	49.03	31.28	33.12	19.73	28.73	59.95	18.25
Lane Group LOS	E	D	E	D	C	C	B	C	F	B
Critical Lane Group	Yes	No	Yes	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.60	4.07	3.46	3.20	1.03	15.76	1.05	1.76	26.84	0.46
50th-Percentile Queue Length [ft/ln]	165.04	101.71	86.40	80.08	25.82	394.01	26.33	44.06	671.04	11.47
95th-Percentile Queue Length [veh/ln]	10.82	7.32	6.22	5.77	1.86	22.27	1.90	3.17	36.27	0.83
95th-Percentile Queue Length [ft/ln]	270.38	183.08	155.53	144.15	46.47	556.77	47.40	79.30	906.86	20.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.15	42.47	42.47	64.79	49.03	49.03	31.28	33.12	19.73	28.73	59.95	18.25
Movement LOS	E	D	D	E	D	D	C	C	B	C	F	B
d_A, Approach Delay [s/veh]	52.51			56.61			32.40			57.25		
Approach LOS	D			E			C			E		
d_I, Intersection Delay [s/veh]	47.73											
Intersection LOS	D											
Intersection V/C	0.795											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.07	53.07	53.07	53.07
l_p,int, Pedestrian LOS Score for Intersection	2.414	2.289	3.397	3.269
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1030	1069	943	943
d_b, Bicycle Delay [s]	14.96	13.77	17.75	17.75
l_b,int, Bicycle LOS Score for Intersection	2.479	1.906	2.715	2.972
Bicycle LOS	B	A	B	C

Sequence

Ring 1	1	2	3	4	7	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Cumulus Ave/NE Three Mile Ln

Control Type:	Signalized	Delay (sec / veh):	85.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.978

Intersection Setup

Name	Cumulus Ave			Cumulus Ave			NE Three Mile Ln			NE Three Mile Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	125.00	100.00	125.00	125.00	100.00	100.00	125.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cumulus Ave			Cumulus Ave			NE Three Mile Ln			NE Three Mile Ln		
Base Volume Input [veh/h]	345	2	260	135	1	143	115	1097	120	76	1130	106
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	3.00	0.00	4.00	6.00	3.00	0.00	0.00	3.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	72	0	0	0	0	0	53
Total Hourly Volume [veh/h]	345	2	260	135	1	71	115	1097	120	76	1130	53
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	1	68	35	0	18	30	286	31	20	294	14
Total Analysis Volume [veh/h]	359	2	271	141	1	74	120	1143	125	79	1177	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permis	Permis	Permis	Permis	Permis	Overla	ProtPer	Permis	Permis	ProtPer	Permis	Permis
Signal Group	0	8	0	0	4	5	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	5	5	10	0	5	10	0
Maximum Green [s]	0	20	0	0	30	20	20	60	0	20	60	0
Amber [s]	0.0	4.5	0.0	0.0	4.5	4.5	4.5	5.0	0.0	4.5	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	4.0	0.0	2.5	4.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	15	0	0	25	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.5	0.0	0.0	3.5	3.5	3.5	4.0	0.0	3.5	4.0	0.0
Minimum Recall		No			No	No	No	Yes		No	Yes	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	79	79	79	79	79	79	79	79	79	79
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	3.50	0.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	20	20	20	30	47	37	37	47	37	37
g / C, Green / Cycle	0.25	0.25	0.25	0.39	0.60	0.48	0.48	0.60	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.52	0.14	0.00	0.05	0.19	0.39	0.39	0.13	0.37	0.04
s, saturation flow rate [veh/h]	1223	987	1710	1408	616	1669	1613	598	3179	1454
c, Capacity [veh/h]	383	92	435	543	371	796	769	360	1488	680
d1, Uniform Delay [s]	32.02	26.08	21.88	15.66	12.20	17.50	17.56	11.93	17.67	11.56
k, delay calibration	0.50	0.08	0.08	0.08	0.15	0.15	0.15	0.08	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	304.47	251.65	0.00	0.08	0.71	2.83	3.02	0.22	1.39	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.65	1.54	0.00	0.14	0.32	0.81	0.81	0.22	0.79	0.08
d, Delay for Lane Group [s/veh]	336.49	277.73	21.88	15.75	12.91	20.32	20.58	12.16	19.06	11.64
Lane Group LOS	F	F	C	B	B	C	C	B	B	B
Critical Lane Group	Yes	No	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	39.62	7.86	0.01	0.83	0.84	9.56	9.36	0.51	8.45	0.51
50th-Percentile Queue Length [ft/ln]	990.57	196.56	0.34	20.86	20.91	238.89	233.95	12.74	211.15	12.81
95th-Percentile Queue Length [veh/ln]	62.36	14.15	0.02	1.50	1.51	14.63	14.37	0.92	13.21	0.92
95th-Percentile Queue Length [ft/ln]	1558.89	353.80	0.61	37.54	37.64	365.63	359.37	22.93	330.30	23.07

Movement, Approach, & Intersection Results

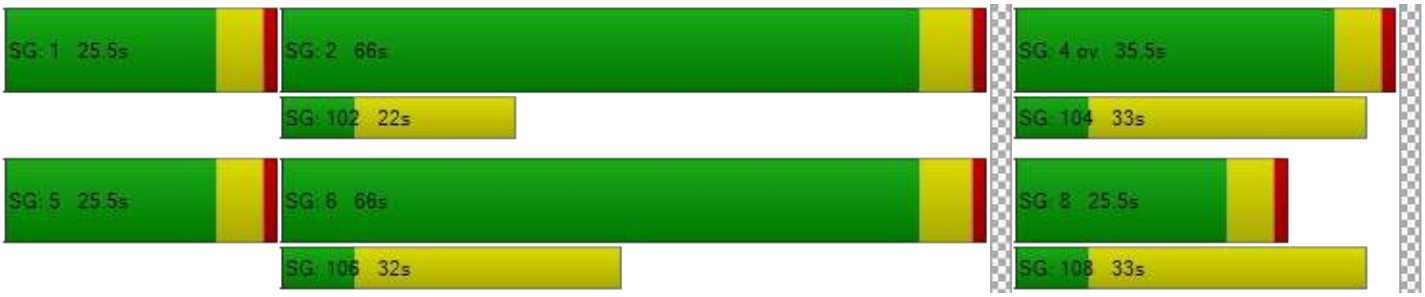
d_M, Delay for Movement [s/veh]	336.49	336.49	336.49	277.73	21.88	15.75	12.91	20.44	20.58	12.16	19.06	11.64
Movement LOS	F	F	F	F	C	B	B	C	C	B	B	B
d_A, Approach Delay [s/veh]	336.49			186.79			19.80			18.33		
Approach LOS	F			F			B			B		
d_I, Intersection Delay [s/veh]	85.85											
Intersection LOS	F											
Intersection V/C	0.978											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.05	29.05	29.05	29.05
l_p,int, Pedestrian LOS Score for Intersection	2.172	2.436	3.402	3.196
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	509	764	1527	1527
d_b, Bicycle Delay [s]	21.83	15.01	2.19	2.19
l_b,int, Bicycle LOS Score for Intersection	2.602	2.035	2.705	2.685
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: NE Three Mile Ln/SE Armory Way

Control Type:	Two-way stop	Delay (sec / veh):	119.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.263

Intersection Setup

Name	SE Armory Way		NE Three Mile Ln		NE Three Mile Ln	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		55.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	SE Armory Way		NE Three Mile Ln		NE Three Mile Ln	
Base Volume Input [veh/h]	10	10	1489	5	2	1305
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	3.00	0.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	10	1489	5	2	1305
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	3	384	1	1	336
Total Analysis Volume [veh/h]	10	10	1535	5	2	1345
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.26	0.03	0.02	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	119.84	35.64	0.00	0.00	13.27	0.00
Movement LOS	F	E	A	A	B	A
95th-Percentile Queue Length [veh/ln]	1.05	1.05	0.00	0.00	0.01	0.00
95th-Percentile Queue Length [ft/ln]	26.30	26.30	0.00	0.00	0.34	0.00
d_A, Approach Delay [s/veh]	77.74		0.00		0.02	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	0.54					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 8: NE Three Mile Ln/SE Loop Rd

Control Type:	Two-way stop	Delay (sec / veh):	125.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.368

Intersection Setup

Name	SE Loop Rd		NE Three Mile Ln		NE Three Mile Ln	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	150.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	SE Loop Rd		NE Three Mile Ln		NE Three Mile Ln	
Base Volume Input [veh/h]	15	10	3	1461	1170	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	27.00	11.00	14.00	2.00	3.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	10	3	1461	1170	3
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	3	1	377	302	1
Total Analysis Volume [veh/h]	15	10	3	1506	1206	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.37	0.02	0.01	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	125.82	46.05	12.08	0.00	0.00	0.00
Movement LOS	F	E	B	A	A	A
95th-Percentile Queue Length [veh/ln]	1.48	1.48	0.02	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	37.02	37.02	0.44	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	93.92		0.02		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	0.87					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 9: NE Three Mile Ln/SE Cruickshank Rd

Control Type:	Two-way stop	Delay (sec / veh):	346.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.603

Intersection Setup

Name	SE Cruickshank Rd		NE Three Mile Ln		OR 18	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	SE Cruickshank Rd		NE Three Mile Ln		OR 18	
Base Volume Input [veh/h]	338	10	1007	464	30	844
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	10.00	3.00	4.00	0.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	338	10	1007	464	30	844
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	3	262	121	8	220
Total Analysis Volume [veh/h]	352	10	1049	483	31	879
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

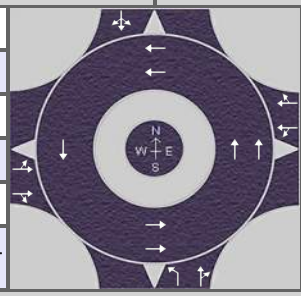
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.60	0.04	0.01	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	346.52	343.64	0.00	0.00	10.62	0.00
Movement LOS	F	F	A	A	B	
95th-Percentile Queue Length [veh/ln]	23.45	23.45	0.00	0.00	0.15	0.00
95th-Percentile Queue Length [ft/ln]	586.28	586.28	0.00	0.00	3.63	0.00
d_A, Approach Delay [s/veh]	346.44		0.00		10.62	
Approach LOS	F		A		B	
d_I, Intersection Delay [s/veh]	65.32					
Intersection LOS	F					

HCS7 Roundabouts Report

General Information

Analyst	AMK
Agency or Co.	PN 26748
Date Performed	4/12/2022
Analysis Year	2041
Time Analyzed	Background PM Peak Hour
Project Description	Three Mile Lane Sensitivity A...



Site Information

Intersection	Lafayette Hwy/OR-18
E/W Street Name	OR-18
N/S Street Name	Lafayette Hwy
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.94
Jurisdiction	ODOT

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	2	0	0	0	2	0	0	1	1	0	0	0	1	0
Lane Assignment	LT		TR		LT		TR		L		TR				LTR	
Volume (V), veh/h	0	133	870	14	0	134	718	84	0	29	109	91	0	4	131	115
Percent Heavy Vehicles, %	0	6	1	0	0	2	1	0	0	0	1	2	0	0	0	0
Flow Rate (v_{PCE}), pc/h	0	150	935	15	0	145	771	89	0	31	117	99	0	4	139	122
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				2				2				2			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.5436	4.5436		4.6453	4.3276		4.6453	4.3276			4.3276	
Follow-Up Headway (s)	2.5352	2.5352		2.6667	2.5352		2.6667	2.5352			2.5352	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	517	583		472	533		31	216			265	
Entry Volume, veh/h	509	574		467	527		31	213			265	
Circulating Flow (v_c), pc/h	288			298			1089			947		
Exiting Flow (v_{ex}), pc/h	1038			924			356			299		
Capacity (c_{pce}), pc/h	1093	1093		1026	1102		496	563			635	
Capacity (c), veh/h	1075	1075		1016	1091		489	556			635	
v/c Ratio (x)	0.47	0.53		0.46	0.48		0.06	0.38			0.42	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	8.7	9.8		8.8	8.8		8.2	12.4			11.8	
Lane LOS	A	A		A	A		A	B			B	
95% Queue, veh	2.6	3.3		2.5	2.7		0.2	1.8			2.1	
Approach Delay, s/veh	9.3			8.8			11.8			11.8		
Approach LOS	A			A			B			B		
Intersection Delay, s/veh | LOS	9.6						A					

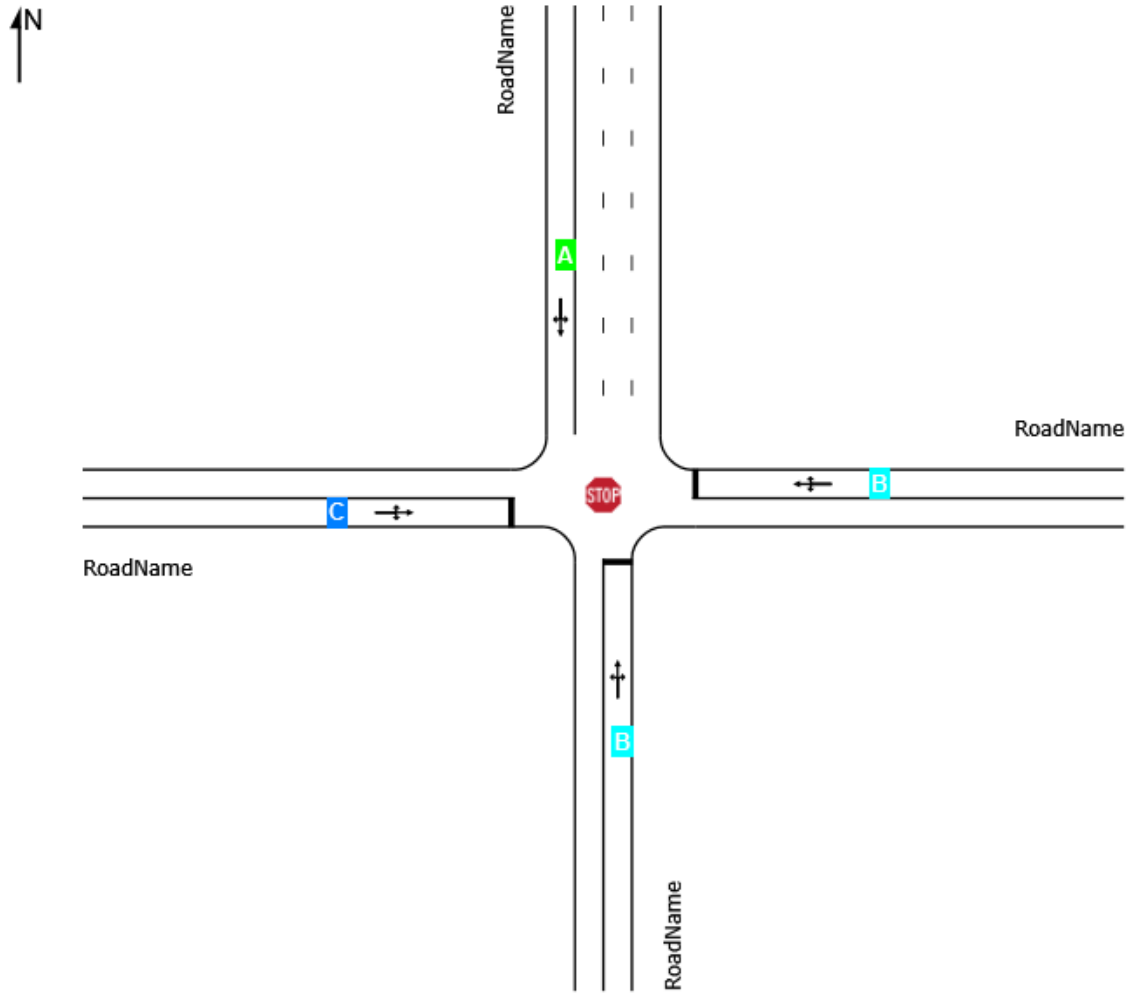
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 112 [BK 2041 - Norton Lane & Stratus Ave]

New Site
Site Category: (None)
Stop (Two-Way)

	Approaches				Intersection
	South	East	North	West	
LOS	B	B	NA	C	NA



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 112 [BK 2041 - Norton Lane & Stratus Ave]

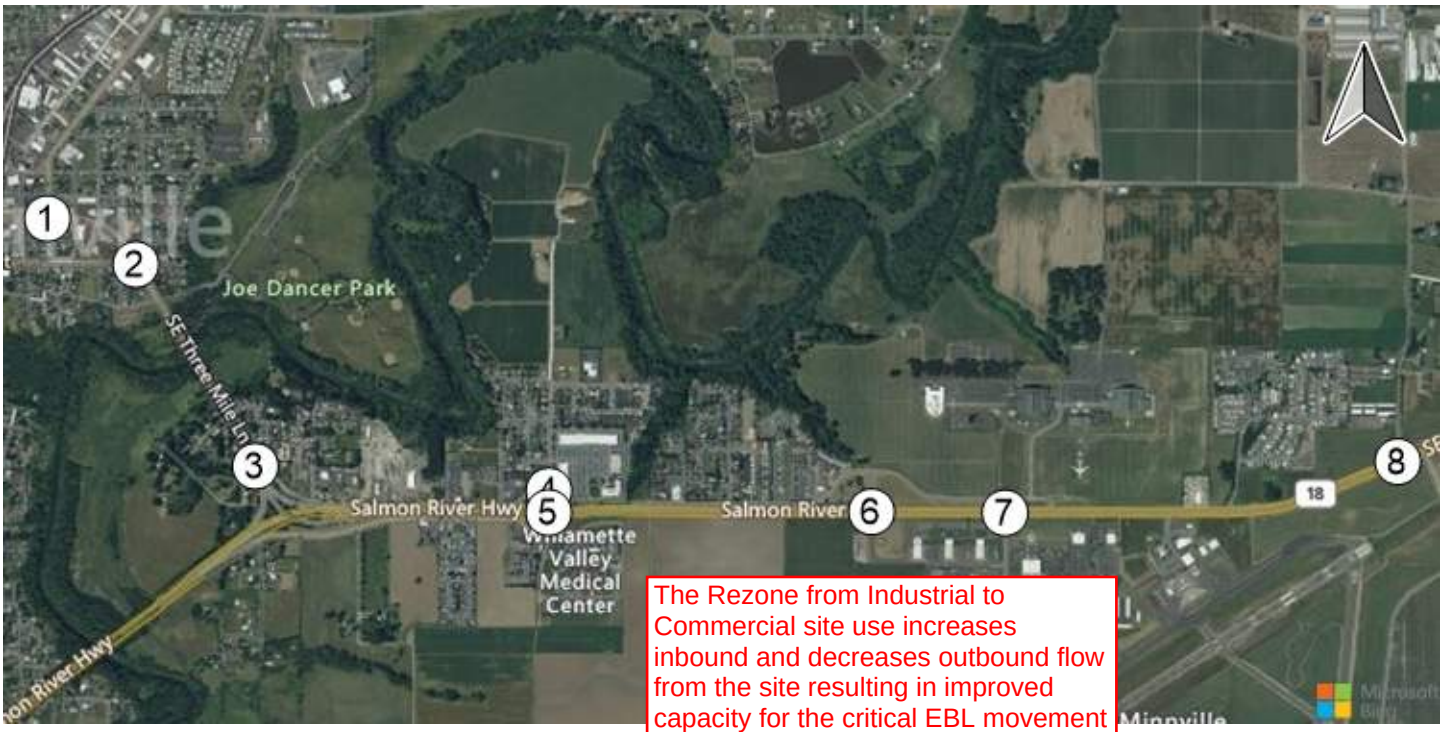
New Site
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: RoadName												
3	L2	1	0.0	0.349	11.5	LOS B	1.7	42.2	0.34	0.21	0.34	28.9
8	T1	284	2.0	0.349	11.6	LOS B	1.7	42.2	0.34	0.21	0.34	28.9
18	R2	6	0.0	0.349	11.2	LOS B	1.7	42.2	0.34	0.21	0.34	29.1
Approach		291	1.9	0.349	11.6	LOS B	1.7	42.2	0.34	0.21	0.34	28.9
East: RoadName												
1	L2	6	0.0	0.361	14.1	LOS B	2.5	62.2	0.55	0.51	0.69	28.6
6	T1	2	0.0	0.361	12.9	LOS B	2.5	62.2	0.55	0.51	0.69	28.8
16	R2	263	0.0	0.361	12.4	LOS B	2.5	62.2	0.55	0.51	0.69	28.8
Approach		272	0.0	0.361	12.5	LOS B	2.5	62.2	0.55	0.51	0.69	28.8
North: RoadName												
7	L2	117	0.0	0.178	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	35.9
4	T1	68	2.0	0.178	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	36.9
14	R2	99	2.0	0.178	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	35.6
Approach		284	1.2	0.178	0.0	NA	0.0	0.0	0.00	0.00	0.00	36.0
West: RoadName												
5	L2	105	12.0	0.359	21.4	LOS C	1.9	50.5	0.66	0.72	0.92	25.7
2	T1	19	0.0	0.359	17.3	LOS C	1.9	50.5	0.66	0.72	0.92	26.2
12	R2	6	0.0	0.359	14.1	LOS B	1.9	50.5	0.66	0.72	0.92	26.2
Approach		130	9.7	0.359	20.5	LOS C	1.9	50.5	0.66	0.72	0.92	25.8
All Vehicles		977	2.2	0.361	9.6	NA	2.5	62.2	0.34	0.30	0.41	30.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

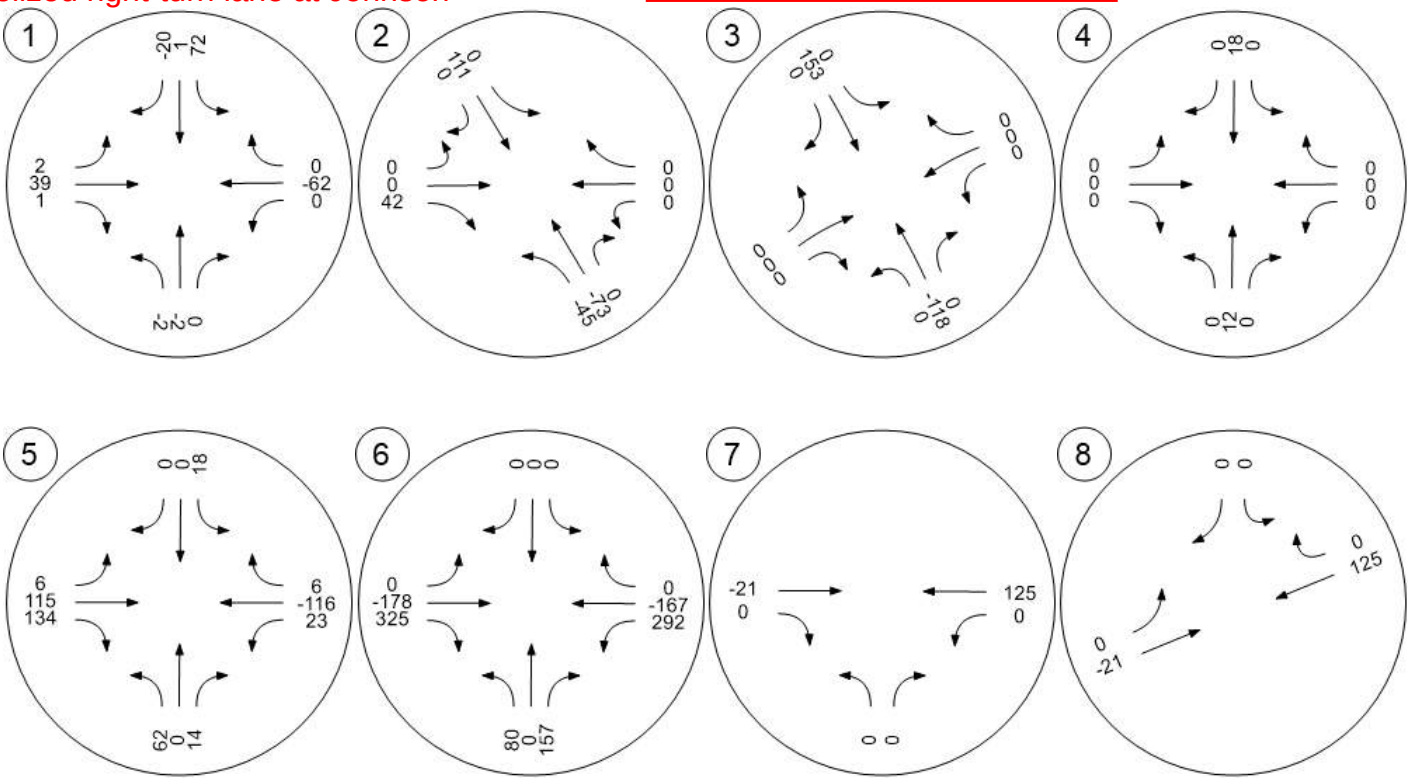
Appendix H Net New Site Trip Assignment

Traffic Volume - Net New Site Trips



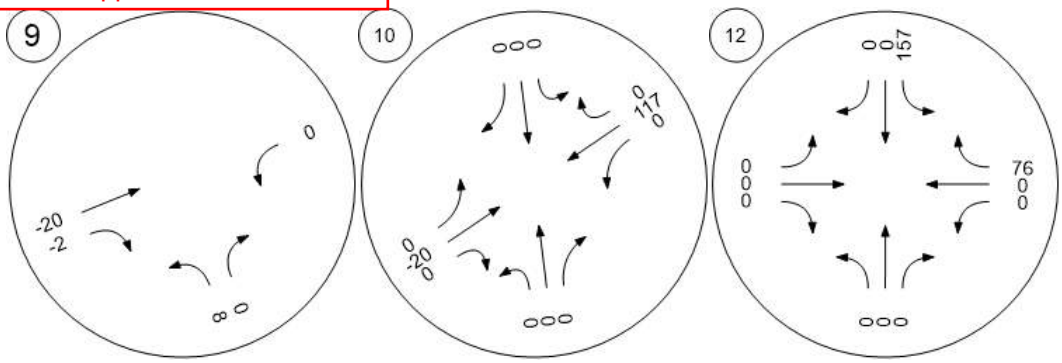
The Rezone from Industrial to Commercial site use increases inbound and decreases outbound flow from the site resulting in improved capacity for the critical EBL movement compared to background 2041, see 2041 Total Conditions operations analysis worksheets in Appendix I

Westbound right-turn volumes were omitted from analysis due to the presence of the channelized right-turn lane at Johnson



Traffic Volume - Net New Site Trips

The Rezone from Industrial to Commercial site use increases inbound and decreases outbound flow from the site resulting in improved capacity for the critical NBL movement compared to background 2041, see 2041 Total Conditions operations analysis worksheets in Appendix I

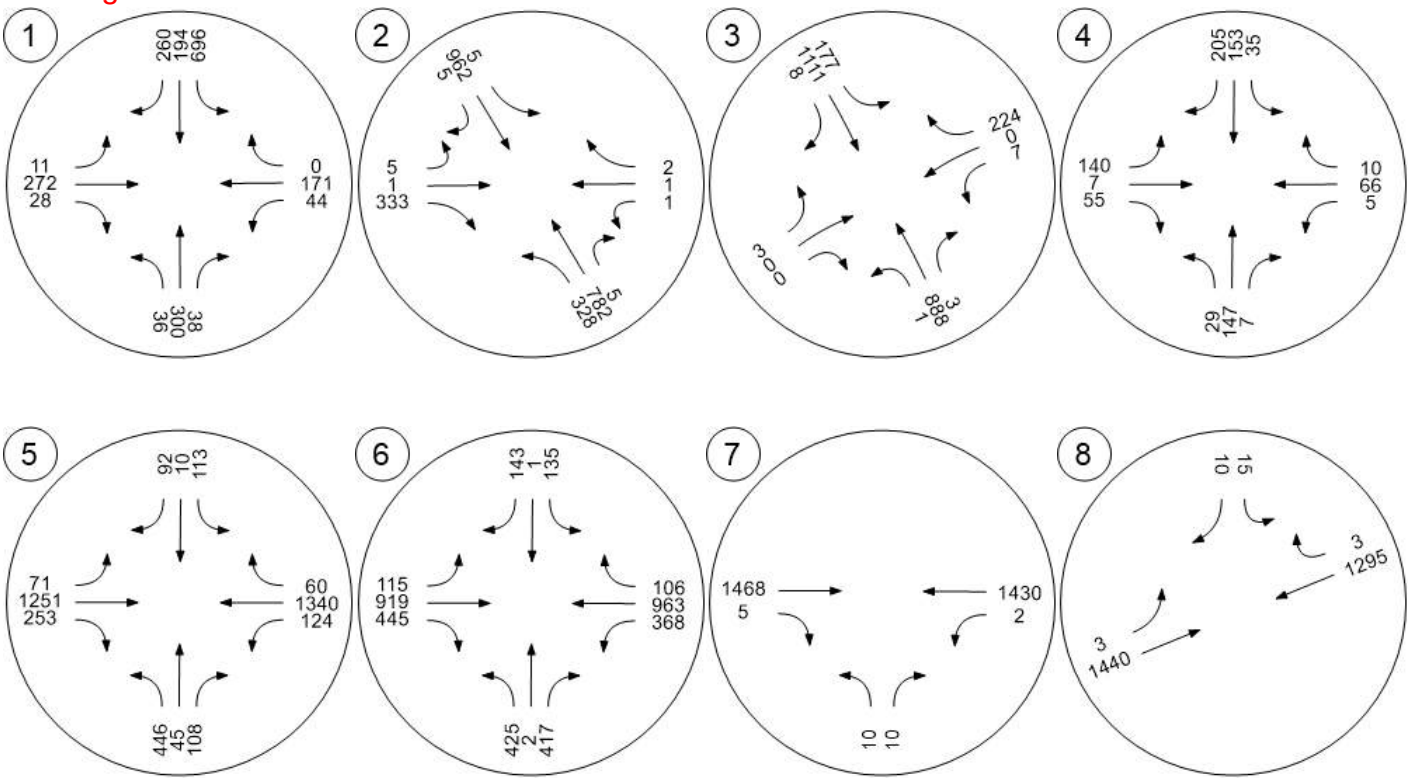


The westbound through lane/volumes were omitted from the Vistro analysis as the lane is channelized and does not conflict with other movements at Cruickshank

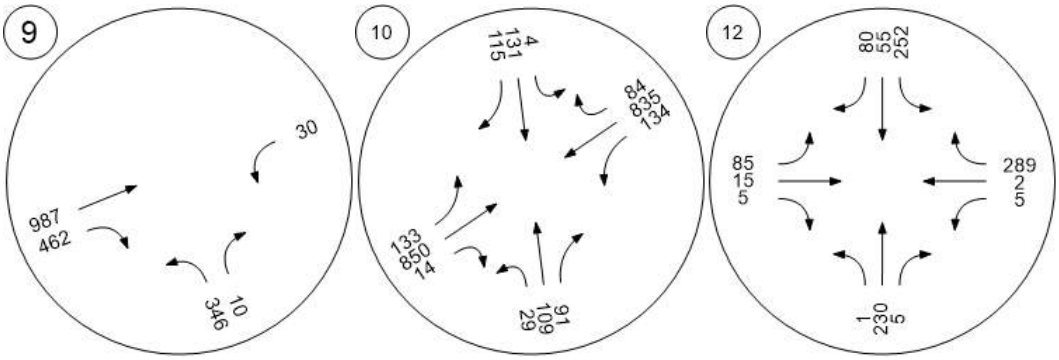
Appendix I Year 2041 Total Traffic Operations Worksheets

Traffic Volume - Future Total Volume

Westbound right-turn volumes were omitted from analysis due to the presence of the channelized right-turn lane at Johnson



Traffic Volume - Future Total Volume



The westbound through lane/volumes were omitted from the Vistro analysis as the lane is channelized and does not conflict with other movements at Cruickshank

Intersection Level Of Service Report
Intersection 1: NE Johnson St/NE 3rd St

Control Type:	Signalized	Delay (sec / veh):	106.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.933

Intersection Setup

Name	NE Johnson St			NE Johnson St			NE 3rd St			NE 3rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	200.00	100.00	100.00	225.00	100.00	100.00	120.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NE Johnson St			NE Johnson St			NE 3rd St			NE 3rd St		
Base Volume Input [veh/h]	38	302	38	624	193	280	9	233	27	44	233	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	-2	-2	0	72	1	-20	2	39	1	0	-62	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	300	38	696	194	260	11	272	28	44	171	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	75	10	174	49	65	3	68	7	11	43	0
Total Analysis Volume [veh/h]	36	300	38	696	194	260	11	272	28	44	171	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permis	Overla	Permis	Protect	Overla	Permis	ProtPer	Overla	Permis	ProtPer	Overla	Unsign
Signal Group	8	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups		8			4			2			6	
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	8	8	0	7	7	0	3	5	0	3	5	0
Maximum Green [s]	30	30	0	40	55	0	20	30	0	20	30	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	21	21	0	36	57	0	12	21	0	12	21	0
Vehicle Extension [s]	4.0	4.0	0.0	3.5	4.3	0.0	2.5	3.0	0.0	2.5	3.0	0.0
Walk [s]	7	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	10	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No		No	No		No	No		No	No	
Maximum Recall		No		No	No		No	No		No	No	
Pedestrian Recall		No		No	No		No	No		No	No	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	L	C	L	C
C, Cycle Length [s]	124	124	124	124	124	124	124
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	40	74	1	24	13	37
g / C, Green / Cycle	0.24	0.32	0.60	0.01	0.20	0.11	0.30
(v / s)_i Volume / Saturation Flow Rate	0.29	0.43	0.30	0.01	0.18	0.03	0.10
s, saturation flow rate [veh/h]	1302	1603	1529	1603	1656	1603	1683
c, Capacity [veh/h]	348	519	915	13	326	58	498
d1, Uniform Delay [s]	43.41	35.10	6.23	61.05	44.59	48.57	28.96
k, delay calibration	0.50	0.50	0.27	0.08	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	69.67	166.15	1.02	69.16	33.02	17.70	0.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.07	1.34	0.50	0.87	0.92	0.75	0.34
d, Delay for Lane Group [s/veh]	113.08	201.25	7.25	130.20	77.60	66.28	29.37
Lane Group LOS	F	F	A	F	E	E	C
Critical Lane Group	Yes	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	17.23	38.26	3.18	0.59	11.48	1.49	3.48
50th-Percentile Queue Length [ft/ln]	430.80	956.48	79.61	14.70	287.00	37.28	87.03
95th-Percentile Queue Length [veh/ln]	25.06	57.21	5.73	1.06	17.04	2.68	6.27
95th-Percentile Queue Length [ft/ln]	626.39	1430.36	143.29	26.46	425.92	67.11	156.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	113.08	113.08	113.08	201.25	7.25	7.25	130.20	77.60	77.60	66.28	29.37	0.00
Movement LOS	F	F	F	F	A	A	F	E	E	E	C	
d_A, Approach Delay [s/veh]	113.08			124.67			79.46			36.92		
Approach LOS	F			F			E			D		
d_I, Intersection Delay [s/veh]	106.49											
Intersection LOS	F											
Intersection V/C	0.933											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.28	51.28	51.28	51.28
l_p,int, Pedestrian LOS Score for Intersection	2.042	2.430	2.259	2.444
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	275	858	275	275
d_b, Bicycle Delay [s]	45.96	20.16	45.96	45.96
l_b,int, Bicycle LOS Score for Intersection	2.177	3.457	2.073	1.914
Bicycle LOS	B	C	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	7	8	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: NE Three Mile Ln/SE 1st St

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.085

V/C Excludes Critical Movement: WBL

Intersection Setup

Name	NE Three Mile Ln			NE 3rd St			SE 1st St			SE 1st St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	NE Three Mile Ln			NE 3rd St			SE 1st St			SE 1st St		
Base Volume Input [veh/h]	373	855	5	5	851	5	5	1	291	1	1	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	0.00	20.00	2.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	-45	-73	0	0	111	0	0	0	42	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	328	782	5	5	962	5	5	1	333	1	1	2
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	210	1	1	259	1	1	0	90	0	0	1
Total Analysis Volume [veh/h]	353	841	5	5	1034	5	5	1	358	1	1	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.53	0.01	0.00	0.01	0.01	0.00	0.55	0.08	1.27	0.00	0.08	0.01
d_M, Delay for Movement [s/veh]	16.23	0.00	0.00	10.04	0.00	0.00	840.81	751.74	459.37	10000.	10000.	10000.
Movement LOS	C	A	A	B	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	3.11	0.00	0.00	0.02	0.00	0.00	26.68	26.68	26.68	1.50	1.50	1.50
95th-Percentile Queue Length [ft/ln]	77.63	0.00	0.00	0.53	0.00	0.00	666.89	666.89	666.89	37.50	37.50	37.50
d_A, Approach Delay [s/veh]	4.78			0.05			465.41			10000.00		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	82.42											
Intersection LOS	F											

Delay is too high for Vistro to report the V/C

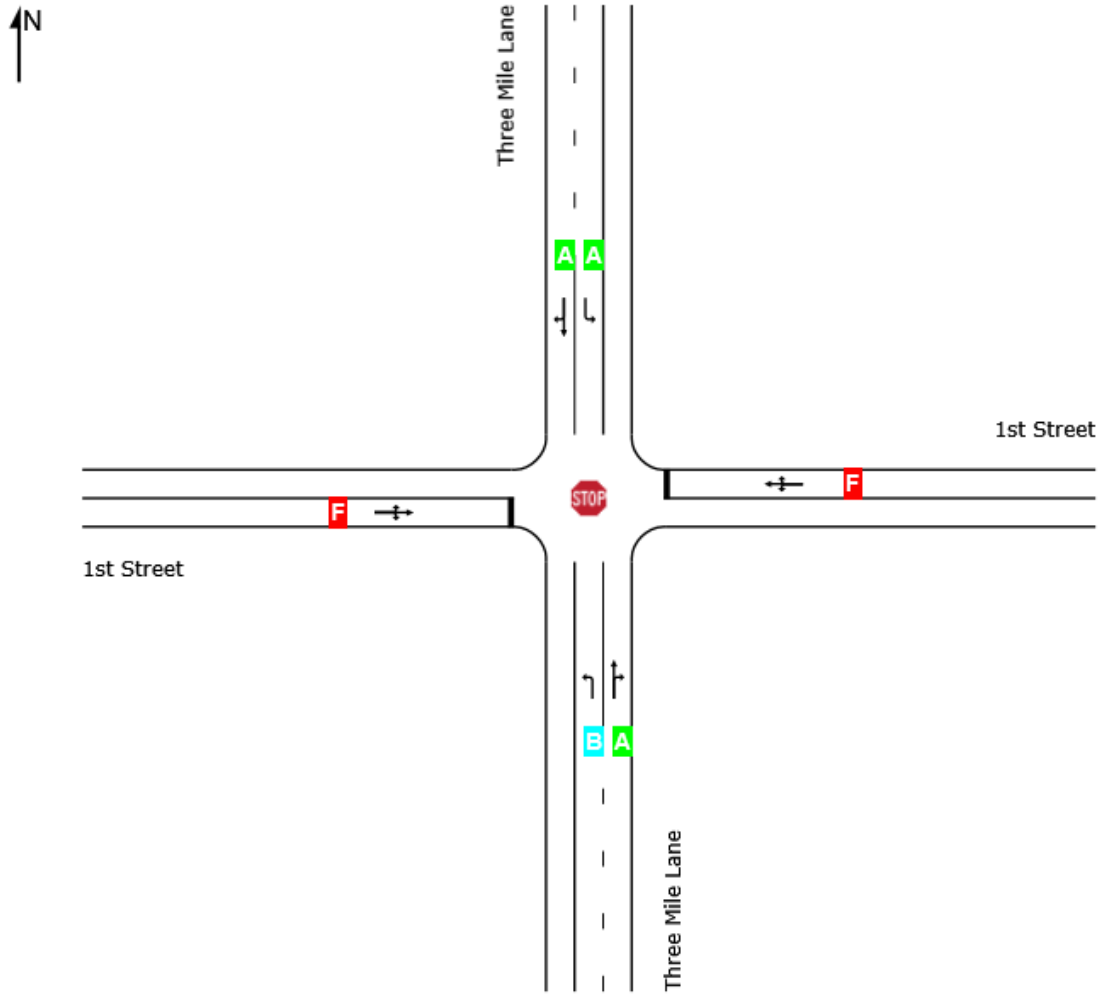
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 102 [TT 2041 - 1st & Three Mile]

New Site
Site Category: (None)
Stop (Two-Way)

	Approaches				Intersection
	South	East	North	West	
LOS	NA	F	NA	F	NA



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 102 [TT 2041 - 1st & Three Mile]

New Site
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Three Mile Lane												
3	L2	353	1.0	0.529	13.9	LOS B	3.8	96.4	0.75	0.97	1.45	28.4
8	T1	841	2.0	0.494	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	39.8
18	R2	5	0.0	0.494	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	38.4
Approach		1199	1.7	0.529	4.2	NA	3.8	96.4	0.22	0.28	0.43	35.6
East: 1st Street												
1	L2	1	0.0	0.120	309.6	LOS F	0.3	8.1	0.96	0.96	0.96	12.2
6	T1	1	0.0	0.120	104.0	LOS F	0.3	8.1	0.96	0.96	0.96	12.2
16	R2	2	0.0	0.120	29.8	LOS D	0.3	8.1	0.96	0.96	0.96	12.2
Approach		4	0.0	0.120	118.3	LOS F	0.3	8.1	0.96	0.96	0.96	12.2
North: Three Mile Lane												
7	L2	5	20.0	0.008	5.4	LOS A	0.0	0.8	0.56	0.41	0.56	31.3
4	T1	1034	2.0	0.607	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	39.8
14	R2	5	0.0	0.607	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	38.3
Approach		1045	2.1	0.607	0.2	NA	0.0	0.8	0.00	0.00	0.00	39.7
West: 1st Street												
5	L2	5	0.0	1.828	568.7	LOS F	62.1	1563.5	1.00	3.28	9.44	4.5
2	T1	1	0.0	1.828	499.8	LOS F	62.1	1563.5	1.00	3.28	9.44	4.5
12	R2	358	1.0	1.828	429.7	LOS F	62.1	1563.5	1.00	3.28	9.44	4.5
Approach		365	1.0	1.828	432.0	LOS F	62.1	1563.5	1.00	3.28	9.44	4.5
All Vehicles		2613	1.7	1.828	62.4	NA	62.1	1563.5	0.24	0.59	1.52	18.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection Level Of Service Report
Intersection 3: NE Three Mile Ln/SE Nehemiah Ln

Control Type:	Two-way stop	Delay (sec / veh):	8,063.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	3.220

Intersection Setup

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Base Volume Input [veh/h]	1	1006	3	177	958	8	3	0	0	7	0	224
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	-118	0	0	153	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	888	3	177	1111	8	3	0	0	7	0	224
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	241	1	48	302	2	1	0	0	2	0	61
Total Analysis Volume [veh/h]	1	965	3	192	1208	9	3	0	0	8	0	243
Pedestrian Volume [ped/h]	0			0			0			0		

The Rezone from Industrial to Commercial site use increases inbound and decreases outbound flow from the site resulting in improved capacity for the critical EBL movement compared to 2041 background conditions

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	2	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.27	0.01	0.00	3.22	0.00	0.00	1.51	0.00	0.78
d_M, Delay for Movement [s/veh]	11.22	0.00	0.00	11.92	0.00	0.00	8063.3	5029.4	4215.6	1323.0	1475.8	653.77
Movement LOS	B	A	A	B	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	1.09	1.09	1.09	1.22	1.22	1.22	22.00	22.00	22.00
95th-Percentile Queue Length [ft/ln]	0.13	0.13	0.13	27.25	27.25	27.25	30.41	30.41	30.41	549.90	549.90	549.90
d_A, Approach Delay [s/veh]	0.01			1.62			8063.35			675.10		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	74.45											
Intersection LOS	F											

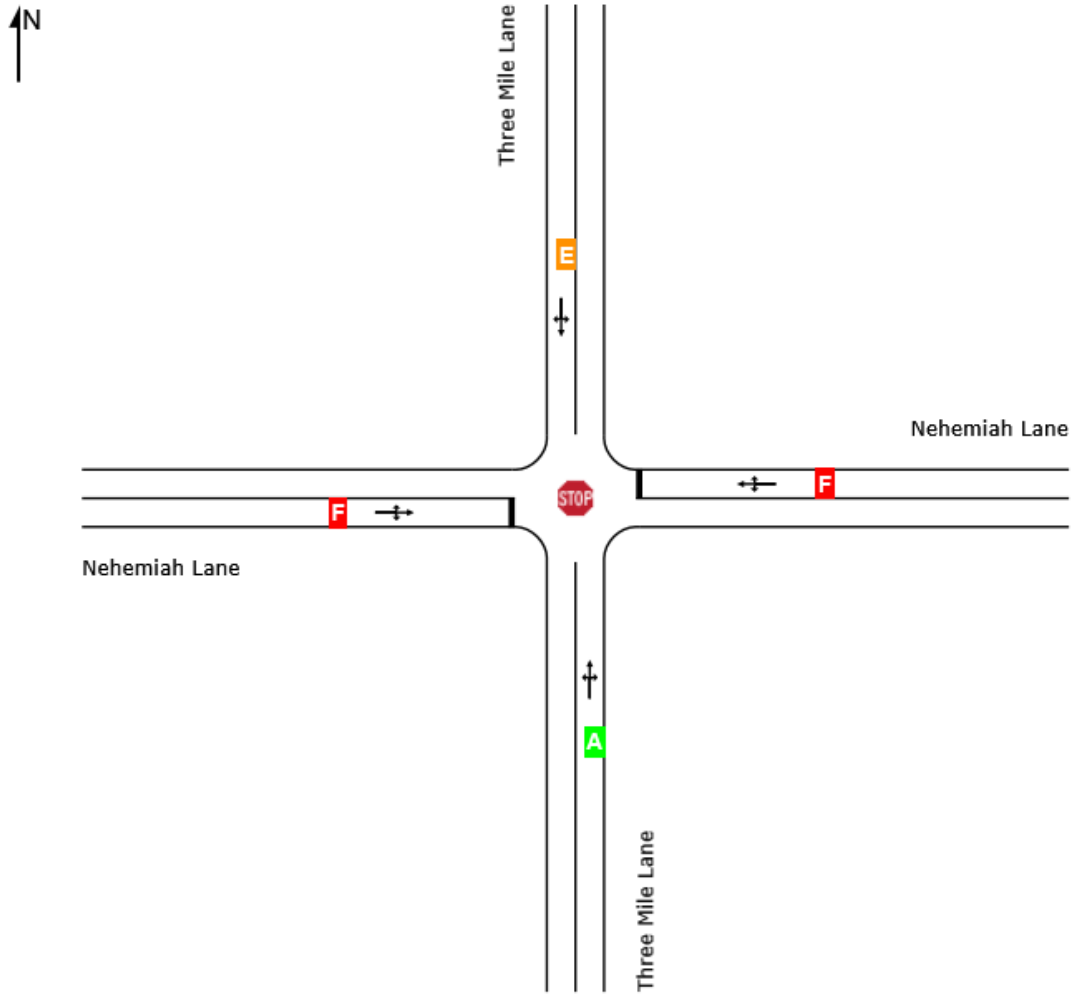
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 102 [TT 2041 - Nehemiah & Three Mile]

New Site
Site Category: (None)
Stop (Two-Way)

	Approaches				Intersection
	South	East	North	West	
LOS	NA	F	NA	F	NA



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 102 [TT 2041 - Nehemiah & Three Mile]

New Site
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Three Mile Lane												
3	L2	1	0.0	0.567	11.8	LOS B	0.1	2.5	0.01	0.00	0.01	34.8
8	T1	965	2.0	0.567	5.6	LOS A	0.1	2.5	0.01	0.00	0.01	36.3
18	R2	3	0.0	0.567	7.9	LOS A	0.1	2.5	0.01	0.00	0.01	35.1
Approach		970	2.0	0.567	5.6	NA	0.1	2.5	0.01	0.00	0.01	36.3
East: Nehemiah Lane												
1	L2	8	0.0	1.143	284.4	LOS F	20.4	513.1	1.00	2.23	5.48	10.3
6	T1	1	0.0	1.143	239.4	LOS F	20.4	513.1	1.00	2.23	5.48	10.3
16	R2	243	1.0	1.143	146.2	LOS F	20.4	513.1	1.00	2.23	5.48	10.3
Approach		252	1.0	1.143	150.8	LOS F	20.4	513.1	1.00	2.23	5.48	10.3
North: Three Mile Lane												
7	L2	192	2.0	0.988	40.9	LOS E	42.1	1069.3	1.00	0.28	4.40	22.9
4	T1	1208	2.0	0.988	37.2	LOS E	42.1	1069.3	1.00	0.28	4.40	23.5
14	R2	9	0.0	0.988	40.8	LOS E	42.1	1069.3	1.00	0.28	4.40	23.0
Approach		1409	2.0	0.988	37.7	NA	42.1	1069.3	1.00	0.28	4.40	23.4
West: Nehemiah Lane												
5	L2	3	0.0	0.241	275.8	LOS F	0.7	16.3	0.98	0.99	1.03	8.1
2	T1	1	0.0	0.241	154.4	LOS F	0.7	16.3	0.98	0.99	1.03	8.1
12	R2	1	0.0	0.241	66.0	LOS F	0.7	16.3	0.98	0.99	1.03	8.1
Approach		5	0.0	0.241	209.6	LOS F	0.7	16.3	0.98	0.99	1.03	8.1
All Vehicles		2636	1.9	1.143	37.1	NA	42.1	1069.3	0.63	0.37	2.88	23.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection Level Of Service Report
Intersection 4: NE Cumulus Ave/ NE Norton Ln

Control Type:	Two-way stop	Delay (sec / veh):	20.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.411

Intersection Setup

Name	NE Norton Ln			NE Norton Ln			NE Cumulus Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	NE Norton Ln			NE Norton Ln			NE Cumulus Ave					
Base Volume Input [veh/h]	29	135	7	35	135	205	140	7	55	5	66	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	3.00	2.00	2.00	3.00	1.00	0.00	2.00	10.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	12	0	0	18	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	147	7	35	153	205	140	7	55	5	66	10
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	39	2	9	40	54	37	2	14	1	17	3
Total Analysis Volume [veh/h]	31	155	7	37	161	216	147	7	58	5	69	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	No
Storage Area [veh]	0	0	2	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.03	0.00	0.00	0.41	0.02	0.07	0.01	0.20	0.01
d_M, Delay for Movement [s/veh]	8.20	0.00	0.00	7.61	0.00	0.00	20.42	19.24	14.87	15.37	17.76	11.29
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.08	0.04	0.00	0.08	0.08	0.08	2.12	2.12	2.12	0.82	0.82	0.82
95th-Percentile Queue Length [ft/ln]	2.06	1.03	0.00	2.01	2.01	2.01	53.07	53.07	53.07	20.45	20.45	20.45
d_A, Approach Delay [s/veh]	1.32			0.68			18.86			16.78		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	6.59											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 5: NE Norton Ln/NE Three Mile Ln

Control Type:	Signalized	Delay (sec / veh):	48.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.789

Intersection Setup

Name	NE Norton Ln			NE Norton Ln			NE Three Mile Ln			NE Three Mile Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NE Norton Ln			NE Norton Ln			NE Three Mile Ln			NE Three Mile Ln		
Base Volume Input [veh/h]	384	45	94	95	10	92	65	1136	119	101	1456	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	11.00	2.00	3.00	0.00	2.00	2.00	3.00	5.00	4.00	3.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	62	0	14	18	0	0	6	115	134	23	-116	6
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	127	0	0	30
Total Hourly Volume [veh/h]	446	45	108	113	10	92	71	1251	126	124	1340	30
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	119	12	29	30	3	24	19	333	34	33	356	8
Total Analysis Volume [veh/h]	474	48	115	120	11	98	76	1331	134	132	1426	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protect	Overla	Permis	Protect	Overla	Permis	ProtPer	Permis	Permis	ProtPer	Permis	Permis
Signal Group	3	4	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups		3,4			4,7							
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	20	60	0	20	60	0
Amber [s]	4.5	4.5	0.0	4.5	4.5	0.0	4.5	5.0	0.0	4.5	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	2.5	2.5	0.0	2.5	2.5	0.0	2.5	5.2	0.0	2.5	5.2	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	31	0	0	34	0	0	36	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	3.5	0.0	3.5	3.5	0.0	3.5	4.0	0.0	3.5	4.0	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	0.00	3.50	0.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	23	34	13	23	73	60	60	73	63	63
g / C, Green / Cycle	0.17	0.25	0.09	0.17	0.54	0.44	0.44	0.54	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.15	0.12	0.08	0.07	0.16	0.42	0.10	0.24	0.45	0.02
s, saturation flow rate [veh/h]	3138	1389	1590	1476	488	3179	1396	554	3179	1408
c, Capacity [veh/h]	535	344	146	249	187	1391	611	223	1456	645
d1, Uniform Delay [s]	55.39	43.85	60.96	50.97	30.47	37.18	23.90	29.69	36.40	20.54
k, delay calibration	0.08	0.08	0.08	0.08	0.26	0.26	0.26	0.50	0.26	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.90	0.76	8.22	0.90	3.31	9.73	0.42	10.97	12.66	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.47	0.82	0.44	0.41	0.96	0.22	0.59	0.98	0.05
d, Delay for Lane Group [s/veh]	59.29	44.61	69.18	51.87	33.78	46.90	24.33	40.66	49.05	20.61
Lane Group LOS	E	D	E	D	C	D	C	D	D	C
Critical Lane Group	Yes	No	Yes	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.27	4.81	4.43	3.43	1.29	22.18	2.70	2.70	24.50	0.57
50th-Percentile Queue Length [ft/ln]	206.66	120.24	110.71	85.78	32.24	554.57	67.50	67.46	612.44	14.22
95th-Percentile Queue Length [veh/ln]	12.98	8.41	7.88	6.18	2.32	29.91	4.86	4.86	32.61	1.02
95th-Percentile Queue Length [ft/ln]	324.53	210.16	196.99	154.41	58.03	747.67	121.51	121.43	815.37	25.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.29	44.61	44.61	69.18	51.87	51.87	33.78	46.90	24.33	40.66	49.05	20.61
Movement LOS	E	D	D	E	D	D	C	D	C	D	D	C
d_A, Approach Delay [s/veh]	55.54			60.94			44.29			47.78		
Approach LOS	E			E			D			D		
d_I, Intersection Delay [s/veh]	48.43											
Intersection LOS	D											
Intersection V/C	0.789											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	57.68	57.68	57.68	57.68
l_p,int, Pedestrian LOS Score for Intersection	2.490	2.303	3.547	3.292
Crosswalk LOS	B	B	D	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	960	997	879	879
d_b, Bicycle Delay [s]	18.45	17.18	21.42	21.42
l_b,int, Bicycle LOS Score for Intersection	2.611	1.937	2.936	2.896
Bicycle LOS	B	A	C	C

Sequence

Ring 1	1	2	3	4	7	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Cumulus Ave/NE Three Mile Ln

Control Type:	Signalized	Delay (sec / veh):	274.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.330

Intersection Setup

Name	Cumulus Ave			Cumulus Ave			NE Three Mile Ln			NE Three Mile Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	125.00	100.00	125.00	125.00	100.00	100.00	125.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cumulus Ave			Cumulus Ave			NE Three Mile Ln			NE Three Mile Ln		
Base Volume Input [veh/h]	345	2	260	135	1	143	115	1097	120	76	1130	106
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	3.00	0.00	4.00	6.00	3.00	0.00	0.00	3.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	80	0	157	0	0	0	0	-178	325	292	-167	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	72	0	0	0	0	0	53
Total Hourly Volume [veh/h]	425	2	417	135	1	71	115	919	445	368	963	53
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	111	1	109	35	0	18	30	239	116	96	251	14
Total Analysis Volume [veh/h]	443	2	434	141	1	74	120	957	464	383	1003	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permis	Permis	Permis	Permis	Permis	Overla	ProtPer	Permis	Permis	ProtPer	Permis	Permis
Signal Group	0	8	0	0	4	5	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	5	5	10	0	5	10	0
Maximum Green [s]	0	20	0	0	30	20	20	60	0	20	60	0
Amber [s]	0.0	4.5	0.0	0.0	4.5	4.5	4.5	5.0	0.0	4.5	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	4.0	0.0	2.5	4.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	15	0	0	25	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.5	0.0	0.0	3.5	3.5	3.5	4.0	0.0	3.5	4.0	0.0
Minimum Recall		No			No	No	No	Yes		No	Yes	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	113	113	113	113	113	113	113	113	113	113
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	3.50	0.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	20	20	20	33	82	56	56	82	69	69
g / C, Green / Cycle	0.18	0.18	0.18	0.29	0.72	0.49	0.49	0.72	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.71	0.17	0.00	0.05	0.19	0.44	0.46	0.54	0.32	0.04
s, saturation flow rate [veh/h]	1239	850	1710	1408	624	1669	1491	715	3179	1454
c, Capacity [veh/h]	271	63	308	407	450	824	736	458	1938	886
d1, Uniform Delay [s]	49.15	44.64	38.17	30.30	7.39	26.06	26.87	33.01	12.64	8.99
k, delay calibration	0.50	0.33	0.08	0.08	0.15	0.35	0.37	0.50	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1017.82	581.99	0.00	0.16	0.45	10.61	15.78	16.46	0.31	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	3.24	2.22	0.00	0.18	0.27	0.89	0.93	0.84	0.52	0.06
d, Delay for Lane Group [s/veh]	1066.97	626.63	38.18	30.46	7.84	36.67	42.65	49.47	12.95	9.03
Lane Group LOS	F	F	D	C	A	D	D	D	B	A
Critical Lane Group	Yes	No	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	84.46	11.97	0.02	1.54	0.84	19.71	19.74	5.10	6.98	0.55
50th-Percentile Queue Length [ft/ln]	2111.39	299.19	0.58	38.59	20.90	492.72	493.43	127.41	174.54	13.71
95th-Percentile Queue Length [veh/ln]	131.59	21.54	0.04	2.78	1.50	26.99	27.02	8.80	11.32	0.99
95th-Percentile Queue Length [ft/ln]	3289.63	538.54	1.05	69.47	37.62	674.74	675.58	219.96	282.88	24.68

Movement, Approach, & Intersection Results

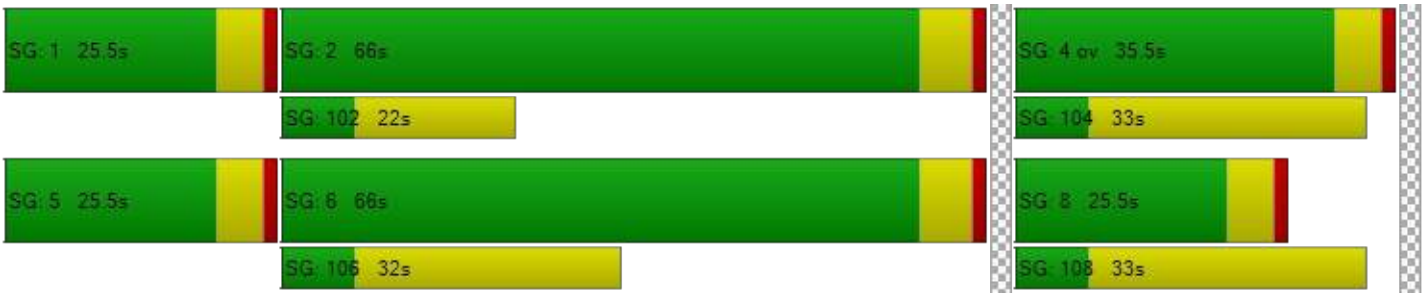
d_M, Delay for Movement [s/veh]	1066.9	1066.9	1066.9	626.63	38.18	30.46	7.84	38.04	42.65	49.47	12.95	9.03
Movement LOS	F	F	F	F	D	C	A	D	D	D	B	A
d_A, Approach Delay [s/veh]	1066.97			419.66			37.08			22.50		
Approach LOS	F			F			D			C		
d_I, Intersection Delay [s/veh]	274.24											
Intersection LOS	F											
Intersection V/C	1.330											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.28	46.28	46.28	46.28
I_p,int, Pedestrian LOS Score for Intersection	2.846	2.478	3.552	3.232
Crosswalk LOS	C	B	D	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	352	529	1057	1057
d_b, Bicycle Delay [s]	38.51	30.71	12.61	12.61
I_b,int, Bicycle LOS Score for Intersection	3.010	2.035	2.831	2.792
Bicycle LOS	C	B	C	C

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: NE Three Mile Ln/SE Armory Way

Control Type:	Two-way stop	Delay (sec / veh):	129.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.281

Intersection Setup

Name	SE Armory Way		NE Three Mile Ln		NE Three Mile Ln	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		55.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	SE Armory Way		NE Three Mile Ln		NE Three Mile Ln	
Base Volume Input [veh/h]	10	10	1489	5	2	1305
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	3.00	0.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	-21	0	0	125
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	10	1468	5	2	1430
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	3	378	1	1	369
Total Analysis Volume [veh/h]	10	10	1513	5	2	1474
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.28	0.03	0.02	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	129.21	38.33	0.00	0.00	13.11	0.00
Movement LOS	F	E	A	A	B	A
95th-Percentile Queue Length [veh/ln]	1.12	1.12	0.00	0.00	0.01	0.00
95th-Percentile Queue Length [ft/ln]	27.95	27.95	0.00	0.00	0.34	0.00
d_A, Approach Delay [s/veh]	83.77		0.00		0.02	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	0.56					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 8: NE Three Mile Ln/SE Loop Rd

Control Type:	Two-way stop	Delay (sec / veh):	164.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.450

Intersection Setup

Name	SE Loop Rd		NE Three Mile Ln		NE Three Mile Ln	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	150.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	SE Loop Rd		NE Three Mile Ln		NE Three Mile Ln	
Base Volume Input [veh/h]	15	10	3	1461	1170	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	27.00	11.00	14.00	2.00	3.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	-21	125	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	10	3	1440	1295	3
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	3	1	371	334	1
Total Analysis Volume [veh/h]	15	10	3	1485	1335	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.45	0.03	0.01	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	164.17	65.66	12.99	0.00	0.00	0.00
Movement LOS	F	F	B	A	A	A
95th-Percentile Queue Length [veh/ln]	1.79	1.79	0.02	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	44.81	44.81	0.50	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	124.77		0.03		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	1.11					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 9: NE Three Mile Ln/SE Cruickshank Rd

Control Type:	Two-way stop	Delay (sec / veh):	339.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.591

Intersection Setup

Name	SE Cruickshank Rd		NE Three Mile Ln		OR 18	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	SE Cruickshank Rd		NE Three Mile Ln		OR 18	
Base Volume Input [veh/h]	338	10	1007	464	30	844
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	10.00	3.00	4.00	0.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	8	0	-20	-2	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	346	10	987	462	30	844
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	3	257	120	8	220
Total Analysis Volume [veh/h]	360	10	1028	481	31	879
Pedestrian Volume [ped/h]	0		0		0	

The Rezone from Industrial to Commercial site use increases inbound and decreases outbound flow from the site resulting in improved capacity for the critical NBL movement compared to 2041 background conditions

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

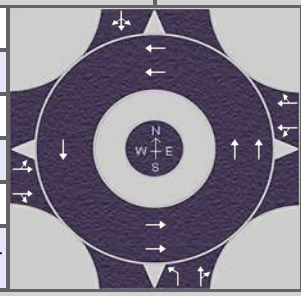
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.59	0.04	0.01	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	339.58	336.80	0.00	0.00	10.52	0.00
Movement LOS	F	F	A	A	B	
95th-Percentile Queue Length [veh/ln]	23.69	23.69	0.00	0.00	0.14	0.00
95th-Percentile Queue Length [ft/ln]	592.16	592.16	0.00	0.00	3.56	0.00
d_A, Approach Delay [s/veh]	339.50		0.00		10.52	
Approach LOS	F		A		B	
d_I, Intersection Delay [s/veh]	65.94					
Intersection LOS	F					

HCS7 Roundabouts Report

General Information

Analyst	AMK
Agency or Co.	PN 26748
Date Performed	4/12/2022
Analysis Year	2041
Time Analyzed	Total PM Peak Hour
Project Description	Three Mile Lane Sensitivity A...



Site Information

Intersection	Lafayette Hwy/OR-18
E/W Street Name	OR-18
N/S Street Name	Lafayette Hwy
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.94
Jurisdiction	ODOT

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	2	0	0	0	2	0	0	1	1	0	0	0	1	0
Lane Assignment	LT		TR		LT		TR		L		TR				LTR	
Volume (V), veh/h	0	133	850	14	0	134	835	84	0	29	109	91	0	4	131	115
Percent Heavy Vehicles, %	0	6	1	0	0	2	1	0	0	0	1	2	0	0	0	0
Flow Rate (v_{PCE}), pc/h	0	150	913	15	0	145	897	89	0	31	117	99	0	4	139	122
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				2				2				2			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.5436	4.5436		4.6453	4.3276		4.6453	4.3276			4.3276	
Follow-Up Headway (s)	2.5352	2.5352		2.6667	2.5352		2.6667	2.5352			2.5352	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	507	571		532	599		31	216			265	
Entry Volume, veh/h	498	562		526	593		31	213			265	
Circulating Flow (v_c), pc/h	288			298			1067			1073		
Exiting Flow (v_{ex}), pc/h	1016			1050			356			299		
Capacity (c_{pce}), pc/h	1093	1093		1026	1102		506	573			570	
Capacity (c), veh/h	1075	1075		1016	1091		499	566			570	
v/c Ratio (x)	0.46	0.52		0.52	0.54		0.06	0.38			0.46	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	8.5	9.6		9.9	9.9		8.0	12.0			14.0	
Lane LOS	A	A		A	A		A	B			B	
95% Queue, veh	2.5	3.1		3.1	3.4		0.2	1.7			2.4	
Approach Delay, s/veh	9.1			9.9			11.5			14.0		
Approach LOS	A			A			B			B		
Intersection Delay, s/veh | LOS	10.1						B					

MOVEMENT SUMMARY

Site: 112 [TT 2041 - Norton Lane & Stratus Ave]

New Site
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: RoadName												
3	L2	1	0.0	0.438	13.4	LOS B	3.7	94.2	0.55	0.67	0.99	28.0
8	T1	284	2.0	0.438	14.6	LOS B	3.7	94.2	0.55	0.67	0.99	28.0
18	R2	6	0.0	0.438	14.2	LOS B	3.7	94.2	0.55	0.67	0.99	28.1
Approach		291	1.9	0.438	14.6	LOS B	3.7	94.2	0.55	0.67	0.99	28.0
East: RoadName												
1	L2	6	0.0	0.490	18.0	LOS C	5.8	144.4	0.62	0.73	1.14	27.9
6	T1	2	0.0	0.490	16.1	LOS C	5.8	144.4	0.62	0.73	1.14	28.2
16	R2	357	0.0	0.490	14.3	LOS B	5.8	144.4	0.62	0.73	1.14	28.1
Approach		365	0.0	0.490	14.4	LOS B	5.8	144.4	0.62	0.73	1.14	28.1
North: RoadName												
7	L2	311	0.0	0.294	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	35.5
4	T1	68	2.0	0.294	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	36.6
14	R2	99	2.0	0.294	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	35.3
Approach		478	0.7	0.294	0.0	NA	0.0	0.0	0.00	0.00	0.00	35.6
West: RoadName												
5	L2	105	12.0	0.540	38.2	LOS E	2.9	79.5	0.79	0.92	1.34	21.8
2	T1	19	0.0	0.540	30.0	LOS D	2.9	79.5	0.79	0.92	1.34	22.1
12	R2	6	0.0	0.540	24.9	LOS C	2.9	79.5	0.79	0.92	1.34	22.1
Approach		130	9.7	0.540	36.4	LOS E	2.9	79.5	0.79	0.92	1.34	21.8
All Vehicles		1264	1.7	0.540	11.2	NA	5.8	144.4	0.39	0.46	0.69	29.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix J Oregon Highway Plan Policy Intent Statements

Oregon
John A. Kitzhaber, MD, Governor

Department of Transportation
Office of the Director
1158 Chemeketa St. NE
Salem, OR 97301-2528

DATE: May 25, 2011

TO: Joint Subcommittee on the TPR and OHP
Mike McArthur, AOC Executive Director
Mike McCauley, LOC Executive Director
ODOT Region Managers

FROM: Matthew L. Garrett
Director

SUBJECT: Oregon Highway Plan - Policy Intent Statements

Introduction

The Oregon Transportation Commission (OTC) and the Land Conservation and Development Commission (LCDC) established a Joint Subcommittee in response to concerns on the Transportation Planning Rule (TPR) and Oregon Highway Plan (OHP) mobility standards. This joint subcommittee held three meetings to gather information on TPR and OHP issues, and to develop recommendations for further work. Transportation Commissioners Mary Olson and David Lohman represent the OTC.

The joint subcommittee heard considerable stakeholder concern that the combination of TPR Section 0060 and OHP mobility standards is leading to unintended consequences. In particular, there are concerns that economic development objectives should be balanced better with transportation performance, but in practice the TPR and OHP may be giving precedence to transportation. Also there are concerns that Section 0060 of the TPR and OHP mobility standards are making it more difficult to increase development intensities, hindering implementation of other statewide planning goals.

The joint subcommittee agreed that, changes to the TPR and OHP are warranted in light of the concerns and it developed recommendations to address several issues in initial phases of this work. The subcommittee also recommended that the tasks be conducted through coordinated processes to ensure that Department of Land Conservation and Development (DLCD) and Oregon Department of Transportation (ODOT) tasks jointly address the issues. The joint subcommittee's final recommendations were presented to the OTC and LCDC in April 2011. Both commissions concurred with the recommendations and directed the two agencies to move forward with the necessary tasks.

Additional information on the joint subcommittee process, including the final recommendations report is available at: http://www.oregon.gov/LCD/Rulemaking_TPR_2011.shtml.

The joint subcommittee recommended that ODOT tasks consider potential exemptions for proposals with small increases in traffic, average trip generation and average case land use assumptions; and to improve current alternate mobility standard processes; and expand mobility standard options. While many of these issues will require in-depth work over the next several months, the work below represents actions we can do right away to make progress on several key tasks. As a result, the department has developed three policy intent statements that seek to clarify its commitment to find flexibility and to provide relief under existing conditions. These are a starting point in our efforts; and it is my expectation that ODOT staff will use this information as it works with communities and development interests from this day forward.

OHP Policy Intent Statements

Alternate Mobility Standards

The development of alternate mobility standards provides one primary area for flexibility in existing OHP policy. While the department will explore ways to streamline the alternate mobility standard development process to make it a more effective tool, it is important that ODOT's intent to work with local governments on these matters is clear to all those involved.

Policy Intent Statement 1:

ODOT affirms its commitment to work collaboratively with local governments to develop alternate mobility standards for state highway facilities through TSP update processes and through the development of ODOT facility plans. Establishment of alternate mobility standards will be based upon mutual agreement about likely funding, transportation system constraints, growth expectations, community values, and commitment to reduce demand on state highways through the use of transportation demand management measures, system and service improvements for alternative modes of travel, and development of more complete and connected local transportation system networks.

"Avoid Further Degradation" (OHP Action 1F.6)

The joint subcommittee heard testimony and criticism that the increase of a single trip is enough to trigger a significant effect determination in some cases, and perhaps more important, the associated analysis and mitigation requirements for a plan amendment. This is most applicable for facilities that are already operating over standard, for which the proposal must be able to at least "avoid further degradation" of the impacted facility. In many cases the mitigation associated with a facility already in a "failing" condition can be very significant and may not be feasible for the development to implement, especially for a small increase in trips. In order to help reduce this concern, the following policy intent statement provides thresholds to define a small increase in traffic. These are for situations for which the operational risk to the transportation facility is small, and the resulting plan amendment is unlikely to cause further degradation of the facility. These thresholds are consistent with proposed changes in ODOT's Access Management Program related to requirements for Traffic Impact Analyses.

Policy Intent Statement 2:

In applying the "Avoid Further Degradation" standard established in OHP Action 1F.6 for state highway facilities already operating above the existing standard when evaluating amendments to transportation system plans, acknowledged comprehensive plans, and land use regulations subject to OAR 660-12-0060, a small increase in traffic does not cause "further degradation" of the facility.

The threshold for a small increase in traffic between the existing plan and the proposed amendment is defined in terms of the increase in 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 follow existing processes for resolution.*

Precision of Volume-to-Capacity Ratios in Analyzing Mitigation

While volume-to-capacity (v/c) ratios provide a high level of precision in traffic analysis, it is difficult to forecast actual traffic conditions and the effects of mitigation, especially over a long period (e.g. 20 years). While the department will not compromise the integrity of the OHP mobility standards in determining a significant affect under the TPR, there are situations for which reasonable levels of mitigation have already been determined and the resulting v/c measure may be within the typical range of uncertainty of fully meeting standards. In these cases, it may be prudent to allow for the plan amendment to proceed with the identified reasonable level of mitigation.

The range provided in Policy Intent Statement 3 allows flexibility within 0.03 in terms of v/c ratios when considering reasonable levels of mitigation. While the impact/scale of a 0.03 v/c ratio change can vary significantly depending on a number of facility characteristics, it typically represents an increase of approximately 750 daily trips on a three-lane highway, and approximately 1,500 daily trips on a five-lane highway that is functioning near current mobility standard levels. In terms of land use types, this increase in the v/c ratio is roughly similar to the traffic impact characteristics of a gas station or fast food restaurant.

Policy Intent Statement 3:

In applying OHP mobility standards to analyze mitigation, ODOT recognizes that there are many variables and levels of uncertainty in calculating volume-to-capacity ratios, particularly over the planning horizon. In applying the standards after negotiating reasonable levels of mitigation for actions required under OAR 660-012-0060, ODOT considers calculated values for volume-to-capacity ratios that are within 0.03 of the adopted standard in the OHP to be considered in compliance with the standard. It is not the intent of the agency to consider variation within modest levels of uncertainty in violation of OHP mobility standards for reasonable mitigation. The specific OHP mobility standard still applies for determining significant affect under OAR 660-012-0060.

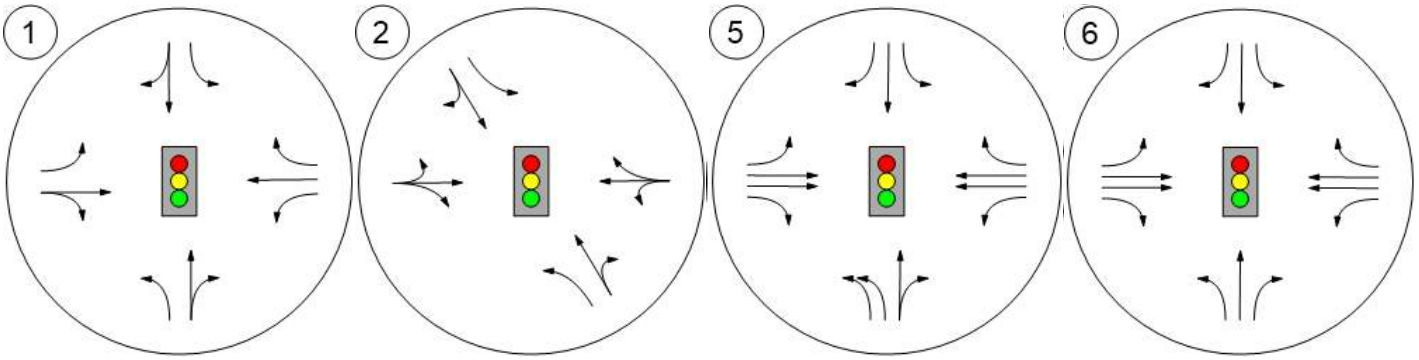
Next Steps

Effective immediately, ODOT will begin carrying out the policy intent statements described above. ODOT will also begin the more significant work to address the full recommendations of the joint subcommittee and applicable legislative direction through a more thorough review of policies, procedures and guidance related to the TPR and OHP mobility standards.

Cc: Jerry Lidz, DLCD Acting Director
Rob Hallyburton, DLCD Planning Services
Matt Crall, DLCD TGM Program
Jerri Bohard, ODOT Director's Office
ODOT Region Planning Managers
Erik Havig, ODOT Planning Section
Michael Rock, ODOT Planning Section
TPR Rulemaking Advisory Committee

Appendix K Year 2041 Total Traffic Operations Worksheets with Mitigation for TPR

Lane Configuration and Traffic Control



Intersection Level Of Service Report
Intersection 1: NE Johnson St/NE 3rd St

Control Type:	Signalized	Delay (sec / veh):	89.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.849

Intersection Setup

Name	NE Johnson St			NE Johnson St			NE 3rd St			NE 3rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	200.00	100.00	100.00	225.00	100.00	100.00	120.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NE Johnson St			NE Johnson St			NE 3rd St			NE 3rd St		
Base Volume Input [veh/h]	38	302	38	624	193	280	9	233	27	44	233	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	-2	-2	0	72	1	-20	2	39	1	0	-62	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	300	38	696	194	260	11	272	28	44	171	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	75	10	174	49	65	3	68	7	11	43	0
Total Analysis Volume [veh/h]	36	300	38	696	194	260	11	272	28	44	171	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permis	Overla	Permis	Protect	Overla	Permis	ProtPer	Overla	Permis	ProtPer	Overla	Unsign
Signal Group	8	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups		8			4			2			6	
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	8	8	0	7	7	0	3	5	0	3	5	0
Maximum Green [s]	30	30	0	40	55	0	20	30	0	20	30	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	21	21	0	36	57	0	12	21	0	12	21	0
Vehicle Extension [s]	4.0	4.0	0.0	3.5	4.3	0.0	2.5	3.0	0.0	2.5	3.0	0.0
Walk [s]	7	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	10	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No		No	No		No	No		No	No	
Maximum Recall		No		No	No		No	No		No	No	
Pedestrian Recall		No		No	No		No	No		No	No	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	27	40	71	1	24	13	36
g / C, Green / Cycle	0.23	0.23	0.33	0.59	0.01	0.20	0.11	0.30
(v / s)_i Volume / Saturation Flow Rate	0.04	0.20	0.43	0.30	0.01	0.18	0.03	0.10
s, saturation flow rate [veh/h]	843	1650	1603	1529	1603	1656	1603	1683
c, Capacity [veh/h]	149	371	536	906	13	327	60	502
d1, Uniform Delay [s]	45.60	40.67	33.10	6.38	59.02	43.05	46.76	27.79
k, delay calibration	0.15	0.34	0.50	0.25	0.08	0.49	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.18	21.64	147.42	1.00	59.72	31.83	15.51	0.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.91	1.30	0.50	0.83	0.92	0.73	0.34
d, Delay for Lane Group [s/veh]	46.78	62.32	180.52	7.38	118.74	74.88	62.26	28.19
Lane Group LOS	D	E	F	A	F	E	E	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.99	11.26	36.06	3.19	0.55	11.05	1.42	3.34
50th-Percentile Queue Length [ft/ln]	24.81	281.44	901.54	79.71	13.80	276.25	35.44	83.40
95th-Percentile Queue Length [veh/ln]	1.79	16.76	53.53	5.74	0.99	16.50	2.55	6.01
95th-Percentile Queue Length [ft/ln]	44.66	419.00	1338.27	143.48	24.84	412.54	63.80	150.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.78	62.32	62.32	180.52	7.38	7.38	118.74	74.88	74.88	62.26	28.19	0.00
Movement LOS	D	E	E	F	A	A	F	E	E	E	C	
d_A, Approach Delay [s/veh]	60.82			112.17			76.43			35.17		
Approach LOS	E			F			E			D		
d_I, Intersection Delay [s/veh]	89.30											
Intersection LOS	F											
Intersection V/C	0.849											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.32	49.32	49.32	49.32
l_p,int, Pedestrian LOS Score for Intersection	2.162	2.429	2.258	2.442
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	284	886	284	284
d_b, Bicycle Delay [s]	44.02	18.55	44.02	44.02
l_b,int, Bicycle LOS Score for Intersection	2.177	3.457	2.073	1.914
Bicycle LOS	B	C	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	7	8	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: NE Three Mile Ln/SE 1st St

Control Type:	Signalized	Delay (sec / veh):	152.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.049

Intersection Setup

Name	NE Three Mile Ln			NE 3rd St			SE 1st St			SE 1st St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	NE Three Mile Ln			NE 3rd St			SE 1st St			SE 1st St		
Base Volume Input [veh/h]	373	855	5	5	851	5	5	1	291	1	1	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	0.00	20.00	2.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	-45	-73	0	0	111	0	0	0	42	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	328	782	5	5	962	5	5	1	333	1	1	2
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	210	1	1	259	1	1	0	90	0	0	1
Total Analysis Volume [veh/h]	353	841	5	5	1034	5	5	1	358	1	1	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Overla	Permis	Permis	Permis
Signal Group	0	6	0	0	2	0	0	8	8	0	4	0
Auxiliary Signal Groups									8			
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	5	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	30	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No			No			No	No		No	
Maximum Recall		No			No			No	No		No	
Pedestrian Recall		No			No			No	No		No	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	55	55	55	55	55	55
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	30	17	17
g / C, Green / Cycle	0.55	0.55	0.55	0.55	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.72	0.50	0.01	0.62	0.25	0.00
s, saturation flow rate [veh/h]	489	1681	501	1682	1459	1374
c, Capacity [veh/h]	132	922	152	922	513	502
d1, Uniform Delay [s]	27.36	11.24	25.42	12.36	17.59	13.23
k, delay calibration	0.50	0.39	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	778.61	12.70	0.09	71.14	1.83	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	2.68	0.92	0.03	1.13	0.71	0.01
d, Delay for Lane Group [s/veh]	805.97	23.95	25.50	83.50	19.42	13.23
Lane Group LOS	F	C	C	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	30.04	9.61	0.06	25.83	3.98	0.03
50th-Percentile Queue Length [ft/ln]	751.06	240.28	1.54	645.85	99.58	0.79
95th-Percentile Queue Length [veh/ln]	54.08	14.70	0.11	37.38	7.17	0.06
95th-Percentile Queue Length [ft/ln]	1351.91	367.39	2.77	934.62	179.24	1.42

Movement, Approach, & Intersection Results

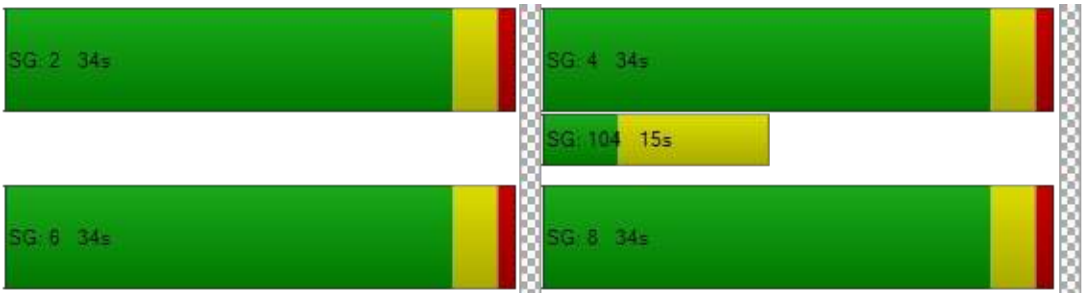
d_M, Delay for Movement [s/veh]	805.97	23.95	23.95	25.50	83.50	83.50	19.42	19.42	19.42	13.23	13.23	13.23
Movement LOS	F	C	C	C	F	F	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	254.18			83.22			19.42			13.23		
Approach LOS	F			F			B			B		
d_I, Intersection Delay [s/veh]	152.73											
Intersection LOS	F											
Intersection V/C	1.049											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	19.06	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.640	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1098	1098	1098	1098
d_b, Bicycle Delay [s]	5.56	5.56	5.56	5.56
I_b,int, Bicycle LOS Score for Intersection	3.538	3.282	2.160	1.566
Bicycle LOS	D	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: NE Norton Ln/NE Three Mile Ln

Control Type:	Signalized	Delay (sec / veh):	46.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.723

Intersection Setup

Name	NE Norton Ln			NE Norton Ln			NE Three Mile Ln			NE Three Mile Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NE Norton Ln			NE Norton Ln			NE Three Mile Ln			NE Three Mile Ln		
Base Volume Input [veh/h]	384	45	94	95	10	92	65	1136	119	101	1456	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	11.00	2.00	3.00	0.00	2.00	2.00	3.00	5.00	4.00	3.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	62	0	14	18	0	0	6	115	134	23	-116	6
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	127	0	0	30
Total Hourly Volume [veh/h]	446	45	108	113	10	92	71	1251	126	124	1340	30
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	119	12	29	30	3	24	19	333	34	33	356	8
Total Analysis Volume [veh/h]	474	48	115	120	11	98	76	1331	134	132	1426	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Overla	ProtPer	Permis	Overla	ProtPer	Permis	Overla
Signal Group	3	8	0	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups						4,5			2,3			6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	10	10	5	10	10
Maximum Green [s]	25	10	0	25	10	10	10	35	35	10	35	35
Amber [s]	4.5	4.5	0.0	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	2.5	2.5	0.0	2.5	2.5	2.5	2.5	5.2	5.2	2.5	5.2	5.2
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	7
Pedestrian Clearance [s]	0	31	0	0	31	31	0	34	34	0	36	36
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	0.0	3.5	3.5	3.5	3.5	4.0	4.0	3.5	4.0	4.0
Minimum Recall	No	No		No	No	No	No	Yes	Yes	No	Yes	Yes
Maximum Recall	No	Yes		No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	No
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	84	84	84	84	84	84	84	84	84	84	84
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	6.00	6.00	5.50	6.00	6.00	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	3.50	3.50	0.00	0.00	4.00	0.00	0.00	4.00	0.00
g_i, Effective Green Time [s]	16	12	8	5	16	46	36	57	46	35	49
g / C, Green / Cycle	0.19	0.15	0.10	0.06	0.19	0.55	0.43	0.68	0.55	0.42	0.59
(v / s)_i Volume / Saturation Flow Rate	0.15	0.12	0.08	0.01	0.07	0.13	0.42	0.10	0.22	0.45	0.02
s, saturation flow rate [veh/h]	3138	1389	1590	1710	1431	596	3179	1396	595	3179	1408
c, Capacity [veh/h]	590	204	153	95	275	313	1352	956	300	1326	823
d1, Uniform Delay [s]	32.59	34.60	37.06	37.69	29.38	16.81	23.85	4.62	17.45	24.45	7.39
k, delay calibration	0.08	0.50	0.08	0.08	0.08	0.26	0.26	0.26	0.50	0.26	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.96	27.07	6.40	0.40	0.58	0.94	14.27	0.16	4.62	41.88	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.80	0.78	0.12	0.36	0.24	0.98	0.14	0.44	1.08	0.04
d, Delay for Lane Group [s/veh]	34.56	61.67	43.45	38.09	29.96	17.75	38.12	4.77	22.07	66.33	7.44
Lane Group LOS	C	E	D	D	C	B	D	A	C	F	A
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.64	4.67	2.63	0.22	1.72	0.62	13.90	0.60	1.37	19.08	0.21
50th-Percentile Queue Length [ft/ln]	115.89	116.69	65.73	5.55	42.99	15.61	347.40	15.01	34.13	476.89	5.24
95th-Percentile Queue Length [veh/ln]	8.17	8.21	4.73	0.40	3.10	1.12	20.01	1.08	2.46	27.59	0.38
95th-Percentile Queue Length [ft/ln]	204.16	205.27	118.32	9.99	77.38	28.09	500.24	27.01	61.44	689.74	9.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.56	61.67	61.67	43.45	38.09	29.96	17.75	38.12	4.77	22.07	66.33	7.44
Movement LOS	C	E	E	D	D	C	B	D	A	C	F	A
d_A, Approach Delay [s/veh]	41.49			37.42			34.22			61.47		
Approach LOS	D			D			C			E		
d_I, Intersection Delay [s/veh]	46.40											
Intersection LOS	D											
Intersection V/C	0.723											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.62	31.62	31.62	31.62
l_p,int, Pedestrian LOS Score for Intersection	2.465	2.424	3.523	3.268
Crosswalk LOS	B	B	D	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	239	239	835	835
d_b, Bicycle Delay [s]	32.49	32.49	14.20	14.20
l_b,int, Bicycle LOS Score for Intersection	2.611	1.937	2.936	2.896
Bicycle LOS	B	A	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Cumulus Ave/NE Three Mile Ln

Control Type:	Signalized	Delay (sec / veh):	26.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.794

Intersection Setup

Name	Cumulus Ave			Cumulus Ave			NE Three Mile Ln			NE Three Mile Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	125.00	100.00	125.00	125.00	100.00	100.00	125.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cumulus Ave			Cumulus Ave			NE Three Mile Ln			NE Three Mile Ln		
Base Volume Input [veh/h]	345	2	260	135	1	143	115	1097	120	76	1130	106
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	3.00	0.00	4.00	6.00	3.00	0.00	0.00	3.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	80	0	157	0	0	0	0	-178	325	292	-167	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	209	0	0	72	0	0	223	0	0	53
Total Hourly Volume [veh/h]	425	2	208	135	1	71	115	919	222	368	963	53
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	111	1	54	35	0	18	30	239	58	96	251	14
Total Analysis Volume [veh/h]	443	2	217	141	1	74	120	957	231	383	1003	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permis	Overla	ProtPer	Permis	Overla	ProtPer	Permis	Overla	ProtPer	Permis	Overla
Signal Group	3	8	8	7	4	5	5	2	2	1	6	6
Auxiliary Signal Groups			1,8			4,5			2,3			6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	10	10	5	10	10
Maximum Green [s]	20	30	30	20	30	20	20	60	60	20	60	60
Amber [s]	3.0	4.5	4.5	3.0	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	2.5	2.5	3.0	2.5	2.5	2.5	4.0	4.0	2.5	4.0	4.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	7
Pedestrian Clearance [s]	0	26	26	0	26	0	0	15	15	0	25	25
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	3.5	3.5	2.0	3.5	3.5	3.5	4.0	4.0	3.5	4.0	4.0
Minimum Recall	No	No	No	No	No	No	No	Yes	Yes	No	Yes	Yes
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	98	98	98	98	98	98	98	98	98	98	98	98
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	5.50	6.00	6.00	4.00	6.00	6.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.50	0.00	0.00	3.50	0.00	0.00	4.00	0.00	0.00	4.00	0.00
g_i, Effective Green Time [s]	28	15	37	28	4	17	58	37	63	58	46	61
g / C, Green / Cycle	0.29	0.16	0.37	0.29	0.04	0.17	0.59	0.38	0.64	0.59	0.47	0.62
(v / s)_i Volume / Saturation Flow Rate	0.29	0.00	0.15	0.10	0.00	0.05	0.18	0.30	0.16	0.43	0.32	0.04
s, saturation flow rate [veh/h]	1554	1710	1454	1389	1710	1408	677	3179	1454	898	3179	1454
c, Capacity [veh/h]	557	270	544	507	76	239	387	1194	933	495	1485	901
d1, Uniform Delay [s]	33.93	34.72	22.50	27.04	44.65	35.57	12.66	27.26	7.46	18.47	20.28	7.34
k, delay calibration	0.50	0.08	0.18	0.08	0.08	0.08	0.15	0.15	0.15	0.50	0.15	0.15
I, Upstream Filtering 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
d2, Incremental Delay [s]	11.16	0.01	0.80	0.22	0.05	0.54	0.64	1.83	0.20	11.21	0.77	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.01	0.40	0.28	0.01	0.31	0.31	0.80	0.25	0.77	0.68	0.06
d, Delay for Lane Group [s/veh]	45.10	34.73	23.30	27.26	44.70	36.11	13.30	29.09	7.66	29.68	21.05	7.38
Lane Group LOS	D	C	C	C	D	D	B	C	A	C	C	A
Critical Lane Group	Yes	No	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	11.69	0.04	3.71	2.56	0.02	1.57	1.13	9.93	1.93	5.64	8.64	0.44
50th-Percentile Queue Length [ft/ln]	292.27	1.01	92.81	64.10	0.60	39.26	28.35	248.28	48.23	141.03	216.10	10.88
95th-Percentile Queue Length [veh/ln]	17.30	0.07	6.68	4.61	0.04	2.83	2.04	15.10	3.47	9.54	13.47	0.78
95th-Percentile Queue Length [ft/ln]	432.46	1.83	167.05	115.37	1.09	70.67	51.03	377.49	86.82	238.41	336.64	19.59

Movement, Approach, & Intersection Results

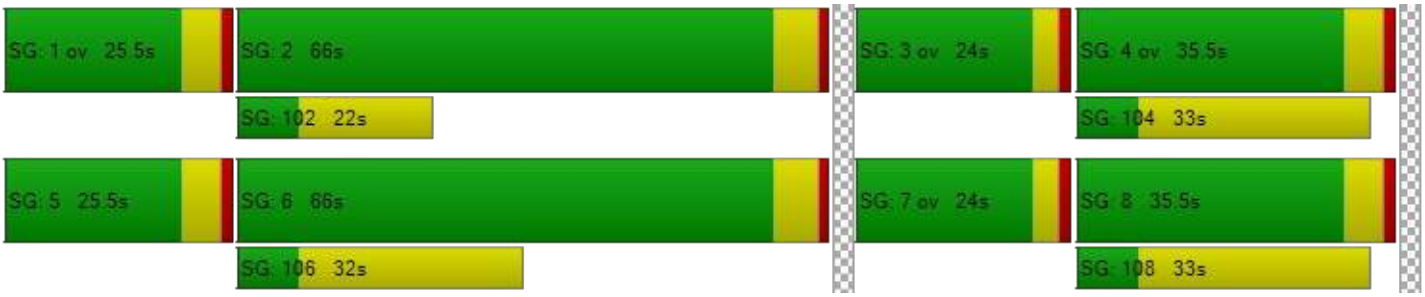
d_M, Delay for Movement [s/veh]	45.10	34.73	23.30	27.26	44.70	36.11	13.30	29.09	7.66	29.68	21.05	7.38
Movement LOS	D	C	C	C	D	D	B	C	A	C	C	A
d_A, Approach Delay [s/veh]	37.92			30.37			23.86			22.82		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	26.40											
Intersection LOS	C											
Intersection V/C	0.794											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	38.46	38.46	38.46	38.46
l_p,int, Pedestrian LOS Score for Intersection	3.064	2.447	3.343	3.058
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	614	614	1229	1229
d_b, Bicycle Delay [s]	23.45	23.45	7.27	7.27
l_b,int, Bicycle LOS Score for Intersection	2.997	2.035	2.823	2.792
Bicycle LOS	C	B	C	C

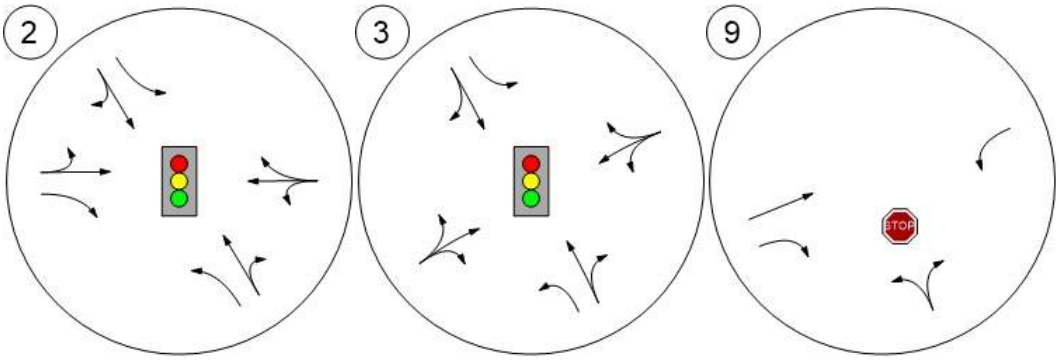
Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix L Year 2041 Total Traffic Operations Worksheets with Mitigation Beyond TPR

Lane Configuration and Traffic Control



Intersection Level Of Service Report
Intersection 2: NE Three Mile Ln/SE 1st St

Control Type:	Signalized	Delay (sec / veh):	43.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.845

Intersection Setup

Name	NE Three Mile Ln			NE 3rd St			SE 1st St			SE 1st St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	NE Three Mile Ln			NE 3rd St			SE 1st St			SE 1st St		
Base Volume Input [veh/h]	373	855	5	5	851	5	5	1	291	1	1	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	0.00	20.00	2.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	-45	-73	0	0	111	0	0	0	42	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	167	0	0	0
Total Hourly Volume [veh/h]	328	782	5	5	962	5	5	1	166	1	1	2
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	210	1	1	259	1	1	0	45	0	0	1
Total Analysis Volume [veh/h]	353	841	5	5	1034	5	5	1	178	1	1	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Overla	Permis	Permis	Permis
Signal Group	1	6	0	0	2	0	0	8	8	0	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	5	5	0	5	0
Maximum Green [s]	24	78	0	0	50	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No			No			No	No		No	
Maximum Recall	No	No			No			No	No		No	
Pedestrian Recall	No	No			No			No	No		No	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C
C, Cycle Length [s]	89	89	89	89	89	89	89
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	70	70	50	50	11	31	11
g / C, Green / Cycle	0.79	0.79	0.56	0.56	0.12	0.35	0.12
(v / s)_i Volume / Saturation Flow Rate	0.45	0.50	0.01	0.62	0.00	0.12	0.00
s, saturation flow rate [veh/h]	782	1681	501	1682	1404	1442	1511
c, Capacity [veh/h]	462	1331	241	943	240	504	230
d1, Uniform Delay [s]	26.64	3.89	20.80	19.57	34.75	21.53	34.72
k, delay calibration	0.50	0.16	0.11	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.44	0.73	0.03	61.17	0.04	0.42	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.64	0.02	1.10	0.02	0.35	0.02
d, Delay for Lane Group [s/veh]	38.08	4.62	20.84	80.74	34.79	21.95	34.75
Lane Group LOS	D	A	C	F	C	C	C
Critical Lane Group	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.39	3.74	0.07	32.62	0.12	2.74	0.08
50th-Percentile Queue Length [ft/ln]	59.70	93.42	1.78	815.43	2.92	68.62	1.94
95th-Percentile Queue Length [veh/ln]	4.30	6.73	0.13	45.33	0.21	4.94	0.14
95th-Percentile Queue Length [ft/ln]	107.46	168.15	3.21	1133.33	5.25	123.52	3.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.08	4.62	4.62	20.84	80.74	80.74	34.79	34.79	21.95	34.75	34.75	34.75
Movement LOS	D	A	A	C	F	F	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	14.47			80.46			22.37			34.75		
Approach LOS	B			F			C			C		
d_I, Intersection Delay [s/veh]	43.44											
Intersection LOS	D											
Intersection V/C	0.845											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	35.96	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.666	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1753	1124	674	674
d_b, Bicycle Delay [s]	0.68	8.55	19.56	19.56
l_b,int, Bicycle LOS Score for Intersection	3.538	3.282	2.139	1.566
Bicycle LOS	D	C	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: NE Three Mile Ln/SE Nehemiah Ln

Control Type:	Signalized	Delay (sec / veh):	53.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.897

Intersection Setup

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	NE Three Mile Ln			NE Three Mile Ln			SE Nehemiah Ln			SE Nehemiah Ln		
Base Volume Input [veh/h]	1	1006	3	177	958	8	3	0	0	7	0	224
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	-118	0	0	153	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	888	3	177	1111	8	3	0	0	7	0	224
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	241	1	48	302	2	1	0	0	2	0	61
Total Analysis Volume [veh/h]	1	965	3	192	1208	9	3	0	0	8	0	243
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permis	Permis	ProtPer	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	10	50	0	10	50	0	0	25	0	0	25	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	58	49	58	54	16	16
g / C, Green / Cycle	0.71	0.59	0.71	0.66	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.00	0.58	0.29	0.72	0.01	0.17
s, saturation flow rate [veh/h]	463	1682	661	1681	429	1456
c, Capacity [veh/h]	179	994	303	1102	172	332
d1, Uniform Delay [s]	21.37	16.19	19.22	14.15	26.71	32.02
k, delay calibration	0.11	0.43	0.11	0.50	0.11	0.13
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	20.80	2.20	60.33	0.04	4.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.97	0.63	1.10	0.02	0.76
d, Delay for Lane Group [s/veh]	21.38	36.99	21.42	74.48	26.75	36.16
Lane Group LOS	C	D	C	F	C	D
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.00	19.40	0.92	32.94	0.05	5.06
50th-Percentile Queue Length [ft/ln]	0.10	485.09	23.04	823.41	1.21	126.54
95th-Percentile Queue Length [veh/ln]	0.01	26.63	1.66	45.99	0.09	8.75
95th-Percentile Queue Length [ft/ln]	0.18	665.69	41.46	1149.74	2.19	218.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.38	36.99	36.99	21.42	74.48	74.48	26.75	26.75	26.75	36.16	36.16	36.16
Movement LOS	C	D	D	C	F	E	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	36.98			67.25			26.75			36.16		
Approach LOS	D			E			C			D		
d_I, Intersection Delay [s/veh]	53.10											
Intersection LOS	D											
Intersection V/C	0.897											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1218	1218	609	609
d_b, Bicycle Delay [s]	6.28	6.28	19.87	19.87
l_b,int, Bicycle LOS Score for Intersection	3.158	3.884	1.565	1.974
Bicycle LOS	C	D	A	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: NE Three Mile Ln/SE Cruickshank Rd

Control Type:	Two-way stop	Delay (sec / veh):	52.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.676

Intersection Setup

Name	SE Cruickshank Rd		NE Three Mile Ln		OR 18	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

60% Reduction

Name	SE Cruickshank Rd		NE Three Mile Ln		OR 18	
Base Volume Input [veh/h]	139	10	1007	464	30	844
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	10.00	3.00	4.00	0.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	8	0	-20	-2	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	147	10	987	462	30	844
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	3	257	120	8	220
Total Analysis Volume [veh/h]	153	10	1028	481	31	879
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

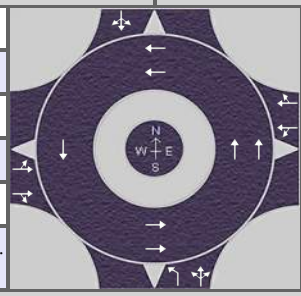
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.68	0.04	0.01	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	52.30	49.52	0.00	0.00	10.52	0.00
Movement LOS	F	E	A	A	B	
95th-Percentile Queue Length [veh/ln]	4.72	4.72	0.00	0.00	0.14	0.00
95th-Percentile Queue Length [ft/ln]	118.08	118.08	0.00	0.00	3.56	0.00
d_A, Approach Delay [s/veh]	52.13		0.00		10.52	
Approach LOS	F		A		B	
d_I, Intersection Delay [s/veh]	5.18					
Intersection LOS	F					

HCS7 Roundabouts Report

General Information

Analyst	AMK
Agency or Co.	PN 26748
Date Performed	4/12/2022
Analysis Year	2041
Time Analyzed	Total PM Peak Hour
Project Description	Three Mile - Cruickshank Rer...



Site Information

Intersection	Lafayette Hwy/OR-18
E/W Street Name	OR-18
N/S Street Name	Lafayette Hwy
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.94
Jurisdiction	ODOT

Volume Adjustments and Site Characteristics

100% of NBL Cruickshank Volume

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	2	0	0	0	2	0	0	1	1	0	0	0	1	0
Lane Assignment	LT		TR		LT		TR		L		LTR				LTR	
Volume (V), veh/h	0	133	850	14	0	134	835	84	0	375	109	91	0	4	131	115
Percent Heavy Vehicles, %	0	6	1	0	0	2	1	0	0	0	1	2	0	0	0	0
Flow Rate (v_{PCE}), pc/h	0	150	913	15	0	145	897	89	0	399	117	99	0	4	139	122
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				2				2				2			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.5436	4.5436		4.6453	4.3276		4.6453	4.3276			4.3276	
Follow-Up Headway (s)	2.5352	2.5352		2.6667	2.5352		2.6667	2.5352			2.5352	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	507	571		532	599		326	289			265	
Entry Volume, veh/h	498	562		526	593		324	288			265	
Circulating Flow (v_c), pc/h	288			666			1067			1441		
Exiting Flow (v_{ex}), pc/h	1016			1418			356			299		
Capacity (c_{pce}), pc/h	1093	1093		732	806		506	573			417	
Capacity (c), veh/h	1075	1075		724	798		503	570			417	
v/c Ratio (x)	0.46	0.52		0.73	0.74		0.64	0.50			0.64	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	8.5	9.6		20.6	20.1		22.4	15.1			25.7	
Lane LOS	A	A		C	C		C	C			D	
95% Queue, veh	2.5	3.1		6.3	6.9		4.5	2.8			4.3	
Approach Delay, s/veh	9.1			20.4			19.0			25.7		
Approach LOS	A			C			C			D		
Intersection Delay, s/veh | LOS	16.6						C					