CITY OF Salem AT YOUR SERVICE

Land Use Application

Planning/Permit Application Center
City Hall / 555 Liberty St. SE / Room 320 / Salem, OR 97301-3513
503-588-6173 * planning@cityofsalem.net
If you need the following translated in Spanish, please call 503-588-6256.
Si usted necesita lo siguiente traducido en español, por favor llame 503-588-6256.

(For office use only)
Permit #: 22 111267 00 LD

Application type

Please describe the type of land use action requested:

MODIFICATION OF PUD CONDITION.

Work site location and information

Street address or location of subject property	255 CORDON ROAD NE, 4800-4900 STATE STREET, AND 4700-4800 AUBU
Total size of subject property	Approximately 122 acres
Assessor tax lot numbers	00200, 00201, 00300, 00400, 00100, 00101, 00199, 00200, 00300, 00400
Existing use structures and/or other improvements on site	Phase 1 initial houses are being constructed; much infrastructure is completed.
Zoning	RS, RM-I, RM-II
Comprehensive Plan Designation	COM, SF, MF
Project description	MODIFICATION OF CONDITION 31 TO ADJUST THE PHASING OF HOUSING DEVELOPMENT AND RELATED PUBLIC STREET IMPROVEMENTS.

People information

	Name	Full Mailing Address	Phone Number and Email address
Applicant	EAST PARK LLC	27375 SW PARKWAY AV WILSONVILLE, OR 97070	(503) 655-7933, jeffb@iecon.us
Agent	JORDAN RAMIS PC	TWO CENTERPOINTE DRIVE, 6TH FLOOR, LAKE OSWEGO, OR 97035	(503) 598-5584, Joseph.Schaefer@jordanramis.co
Paid By			

Project information

Project Valuation for Site Plan Review	
Neighborhood Association	East Lancaster Neighborhood Association
Have you contacted the Neighborhood Association?	⊙ Yes ○ No
Date Neighborhood Association contacted	4/15/2022
Describe contact with the affected Neighborhood Association (The City of Salem recognizes, values, and supports the involvement of residents in land use decisions affecting neighborhoods across the city and strongly encourages anyone requesting approval for any land use proposal to contact the affected neighborhood association(s) as early in the process as possible.)	On May 5, 2022 Joseph Schaefer spoke to ELNA during one of their regular meetings.
Have you contacted Salem-Keizer Transit? planning@cherriots.org	○ Yes ⊙ No
Date Salem-Keizer Transit contacted	
Describe contact with Salem-Keizer Transit	
Type the name and address of the Homeowners Association (If none, type "N/A".)	N/A

Authorization by property owner(s)/applicant

***If the applicant and/or property owner is a Limited Liability Company (LLC), please also provide a list of all members of the LLC with your application.**

Copyright release for government entities: I hereby grant permission to the City of Salem to copy, in whole or part, drawings and all other materials submitted by me, my agents, or representatives. This grant of permission extends to all copies needed for administration of the City's regulatory, administrative, and legal functions, including sharing of information with other governmental entities.

Authorizations: Property owners and contract purchasers are required to authorize the filing of this application and must sign below.

- **All signatures represent that they have full legal capacity to and hereby do authorize the filing of this application and certify that the information and exhibits herewith submitted are true and correct.**
- **I (we) hereby grant consent to the City of Salem and its officers, agents, employees, and/or independent contractors to enter the property identified above to conduct any and all inspections that are considered appropriate by the City to process this application.**
- **I (we) hereby give notice of the following concealed or unconcealed dangerous conditions on the property:**

Electronic signature certification: By attaching an electronic signature (whether typed, graphical or free form) I certify herein that I have read, understood and confirm all the statements listed above and throughout the application form.

Authorized Signature: _____

Print Name: Kiril Ivanov, Member of East Park, LLC **Date:** 5.19.2022

Address (include ZIP): 27375 SW Parkway Ave, Wilsonville, OR 97020

Authorized Signature: _____

Print Name: Joseph Schaefer **Date:** May 27, 2022

Address (include ZIP): Two Centerpointe Drive, 6th Floor, Lake Oswego, OR 97035

(For office use only)		
Received by	Date:	Receipt Number:
Brandon Pike	May 31, 2022	22 111267 00 LD

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Portland, OR 97204
503.248.0313
lancastermobley.com

Memorandum

To: **City of Salem**

Copy: **Jeffrey Bivens, I&E Construction**
Joseph Schaefer, Jordan Ramis

From: **Jennifer Danziger, PE**

Date: **May 25, 2022**

Subject: **East Park PUD - Phasing Analysis**

RENEWS: 12/31/2023

Introduction

This memorandum presents the traffic analysis supporting a proposed modification of Condition 31 of the land use approval for the East Park PUD. Specifically, the analysis examines the timing of construction of the traffic signal at the intersection of Cordon Road NE and Auburn Road NE. It does not propose any change to the signal design. It also considers how changing the timing of other conditioned improvements will affect when the traffic signal is needed.

The East Park site, outlined in yellow in Figure 1, is located west of Cordon Road NE between Auburn Road NE and State Street. The location of the future signal is circled in red. A site plan is attached to this memorandum.

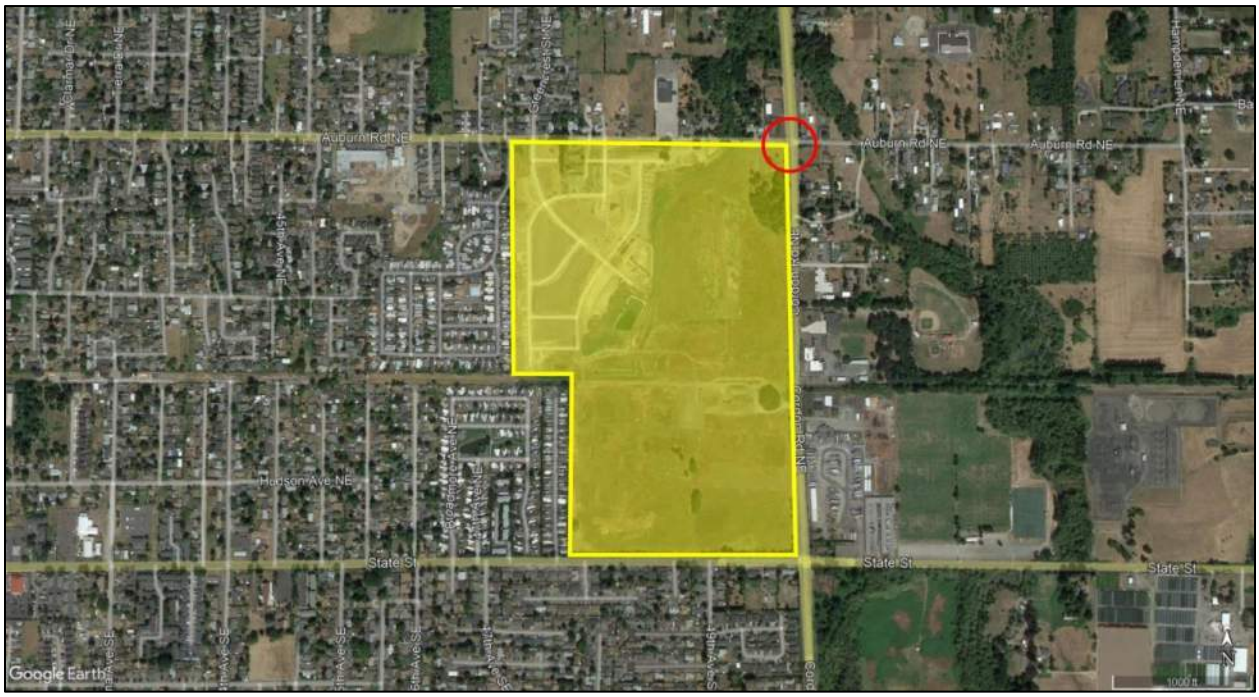


Figure 1: Vicinity Map

Background

The Notice of Decision, dated October 16, 2019, included conditions of approval for the East Park PUD based on six phases of development. The decision addressed a 695-unit PUD (659 single-family homes and 36 multifamily residences) to be completed in six phases. Improvements to the transportation system were conditioned by phase. The conditions did not include development of the southeast corner of the site.

The conditions relevant to the analysis in this memorandum include:

Condition 1 [All phases]: The transportation impacts from the 122-acre site shall be limited to a maximum cumulative total of 14,157 average daily vehicle trips as required by Order No. 10-C-689.

Condition 26 [Phase 1]: Construct Greencrest Street NE within Phase 1 to Collector B standards.

Condition 31 [Phase 2]: Construct a traffic signal at the intersection of Auburn Road NE and Cordon Road NE, and an eastbound-to-southbound right-turn lane, as specified by the TIA and as approved by Marion County Public Works. Convey additional right-of-way to accommodate the improvement, if needed.

Condition 34 [Phase 2]: Construct Greencrest Street NE within Phase 2 to Collector B standards.

Condition 37 [Phase 3]: Construct Greencrest Street NE to State Street to Collector B standards.

Site Trip Generation

The current proposal includes 649 single-family homes and 36 apartments on the portion of the site addressed by the conditions of approval. As shown in the attached site plan, the project will be developed in six phases.

To estimate the number of trips that are projected to be generated by the development, trip rates from the *Trip Generation Manual*[1] were used. Specifically, data from land use code 210, Single-Family Detached Housing, were used to estimate the housing trip generation based on the number of dwelling units (DU).

As shown in Table 1, the total trip generation is estimated at 468 morning peak hour, 628 evening peak hour, and 6,362 daily trips. This trip generation estimate complies with Condition 1. Detailed trip generation calculations are attached to this memorandum.

Table 1: Trip Generation Estimates

ITE Code and Land Use	Intensity		Morning Peak Hour			Evening Peak Hour			Daily Trips
	Size	Units	In	Out	Total	In	Out	Total	
210 - Single-Family Detached Housing	649	DU	118	334	452	382	225	607	6,092
220 - Multifamily Housing (Low-Rise)	36	DU	3	11	14	11	7	18	242
Total Trips			121	347	468	395	233	628	6,362

Table 2 presents the number of housing units and the trip generation by phase of development.

[1] Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition, 2021.

Table 2: Trip Generation by Phase

Phase	Intensity		Morning Peak Hour			Evening Peak Hour			Daily Trips
	Size	Units	In	Out	Total	In	Out	Total	
Phase 1	148	SFDU	27	77	104	88	51	139	1,396
Phase 2	106	SFDU	19	55	74	63	37	100	1,000
Phase 3	106	SFDU	19	55	74	63	37	100	1,000
Phase 4	80	SFDU	15	41	56	47	28	75	754
Phase 5	129	SFDU	23	67	90	76	45	121	1,216
Phase 5	36	MFDU	3	11	14	11	7	18	242
Phase 6	80	SFDU	15	41	56	47	28	75	754
Phase 1			27	77	104	88	51	139	1,396
Cumulative Phases 1-2			46	130	176	149	86	235	2,367
Cumulative Phases 1-3			65	185	250	212	123	335	3,367
Cumulative Phases 1-4			80	226	306	259	151	410	4,121
Cumulative Phases 1-5			103	293	396	335	197	532	5,338
Cumulative Phases 1-6			118	334	452	382	225	607	6,092

Trip Distribution and Assignment

A transportation impact analysis (TIA) was prepared for the Pictsweet Master Plan, a mixed-use development located on the subject site. The trip distribution found on page 29 of this TIA and the detailed trip assignment was used as the basis for the trip distribution presented in this memorandum. This page and the detailed trip assignments from that report are attached for reference.

Two trip distribution patterns were used for the analysis presented. One assignment, shown in Figure 2, shows the trip distribution before Greencrest Street NE is connected southward to State Street, this assignment was only applied to Phases 1 and 2 of the proposed development. The second distribution, shown in Figure 3, was applied to all phases.

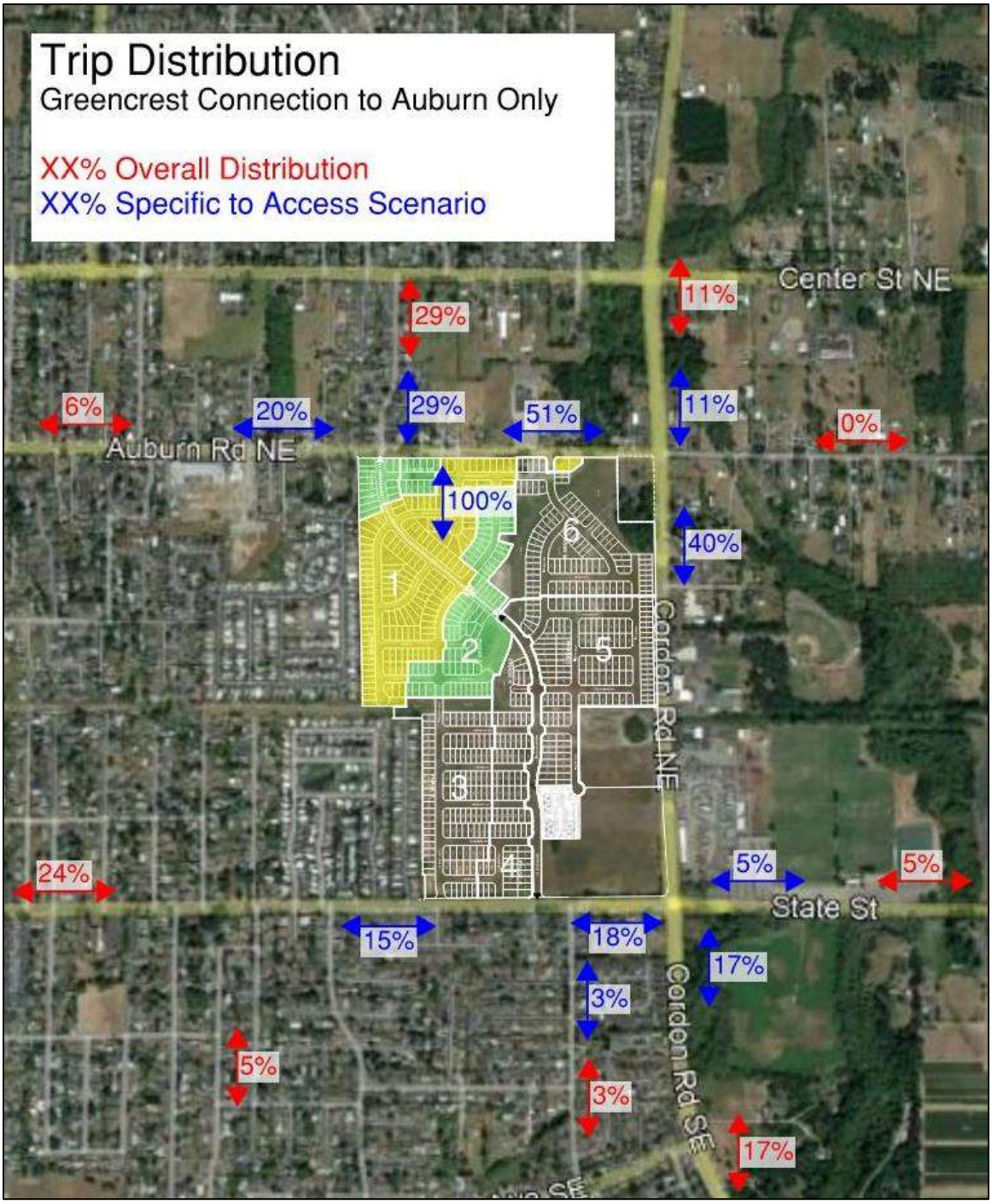


Figure 2: Trip Distribution - Greencrest Street NE Connection to Auburn Road NE Only

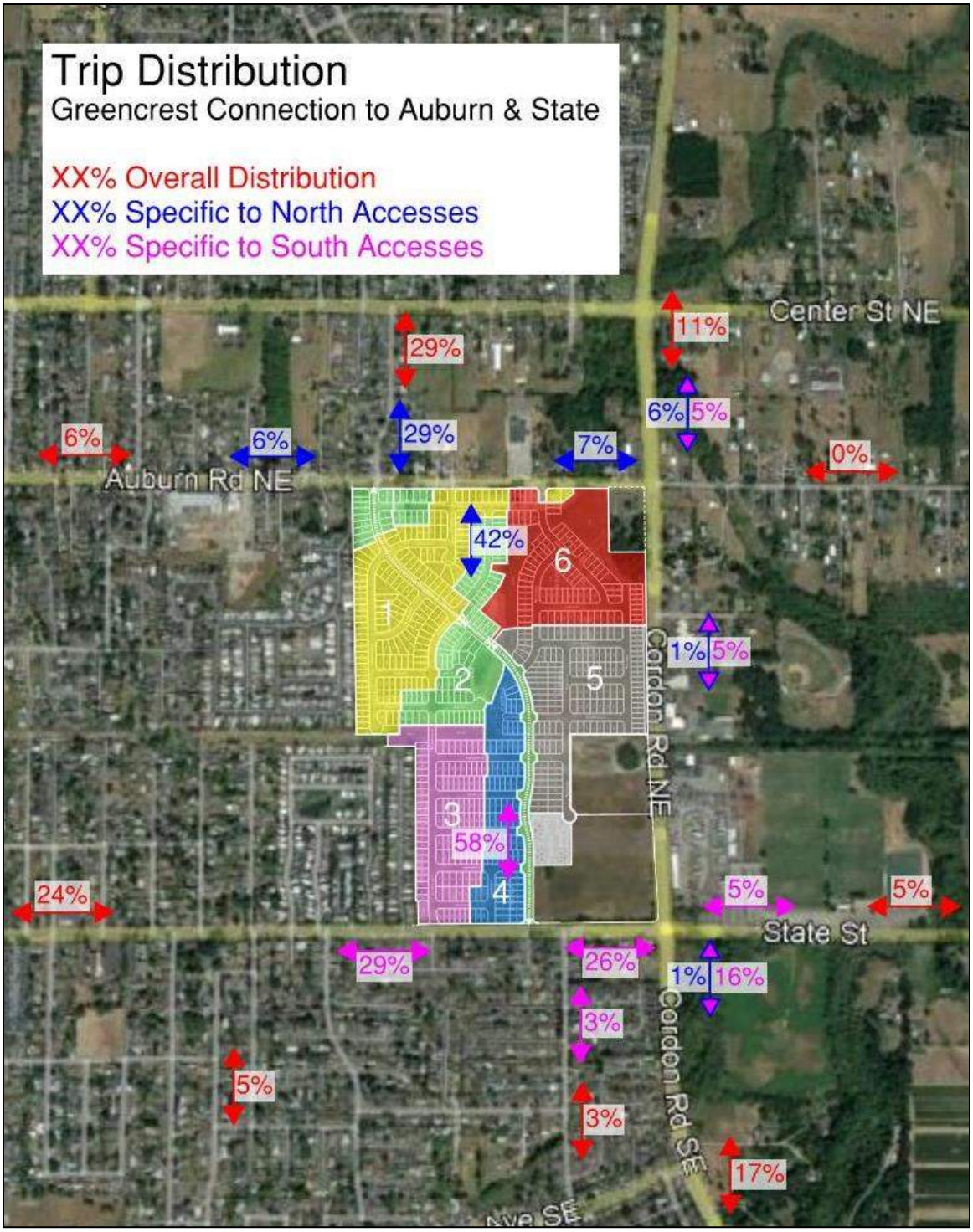
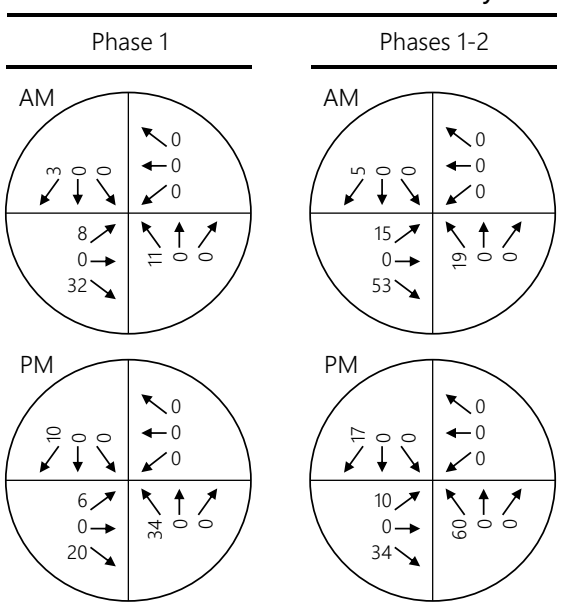


Figure 3: Trip Distribution - Greencrest Street NE Connection to Auburn Road NE & State Street

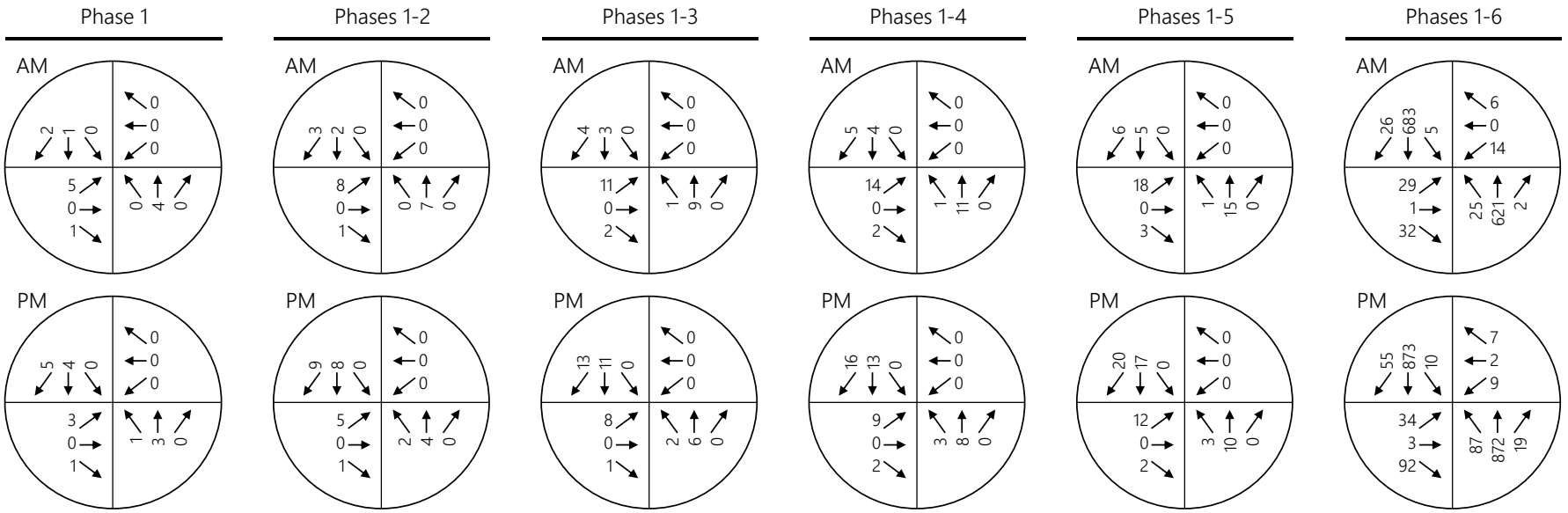
Based on these trip distributions, a trip assignment was developed for the intersection of Cordon Road NE & Auburn Road NE. Figure 4 shows the morning and evening peak hour assignments for Phases 1 and 2 with Greencrest Street NE connected to Auburn Street only and for all phases of development with Greencrest Street NE connected southward to State Street.

Phase	Houses	Apartments
1	148	0
2	106	0
3	106	0
4	80	0
5	129	36
6	80	0
Total	649	36

Greencrest Connection to Auburn Only



Greencrest Connection to Auburn & State



SITE TRIP ASSIGNMENT

CORDON RD NE & AUBURN RD NE

Figure 4

East Park Phasing Analysis

Salem, Oregon

Existing Traffic Volumes

Traffic volume data was collected on Wednesday, March 30, 2022, between the hours of 7:00 and 9:00 AM and 4:00 and 6:00 PM. Data was used from each intersection's respective morning and evening peak hours.

ODOT began COVID-19 traffic monitoring and reporting in mid-March 2020 when statewide closures were mandated by providing a weekly comparison of 2020 and 2021 traffic volumes versus those of the same period in 2019. Overall, statewide traffic volumes are close to pre-COVID-19 levels. ODOT provided summaries of data by corridor, and the data for the I-5 corridor in the Willamette Valley showed that the July 2021 weekday traffic volumes were 8 percent greater than the volumes recorded in July 2019[2]. As a result, a COVID-19 adjustment factor was not applied to the existing 2022 counts.

Buildout Traffic Volumes

To develop the buildout traffic volumes for each phase of the proposed project, the existing traffic volumes were grown by a compounded annual growth rate of 1 percent per year and the traffic from each phase of development was added to the corresponding year of completion. The anticipated schedule for completing development was assumed to be:

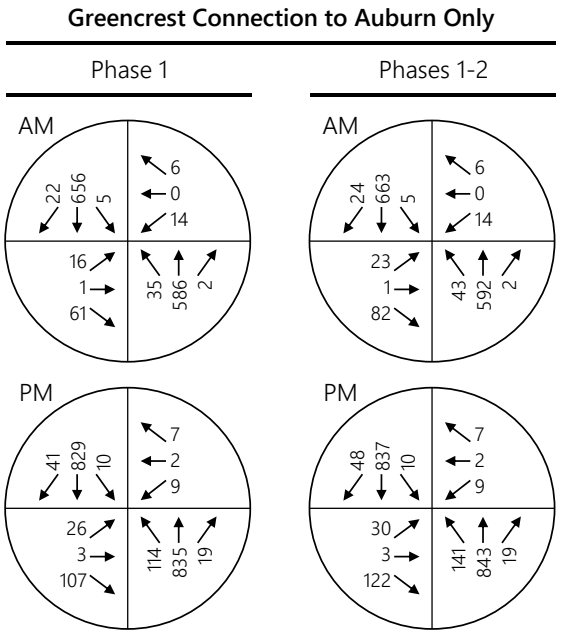
- 2022 – Phase 1
- 2023 – Phase 2 and Phase 3
- 2024 – Phase 4 and Phase 5
- 2025 – Phase 6

Figure 5 shows the morning and evening peak hour traffic volumes for Phases 1 and 2 with Greencrest Street NE connected to Auburn Road NE only and for all phases of development with Greencrest Street NE connected southward to State Street.

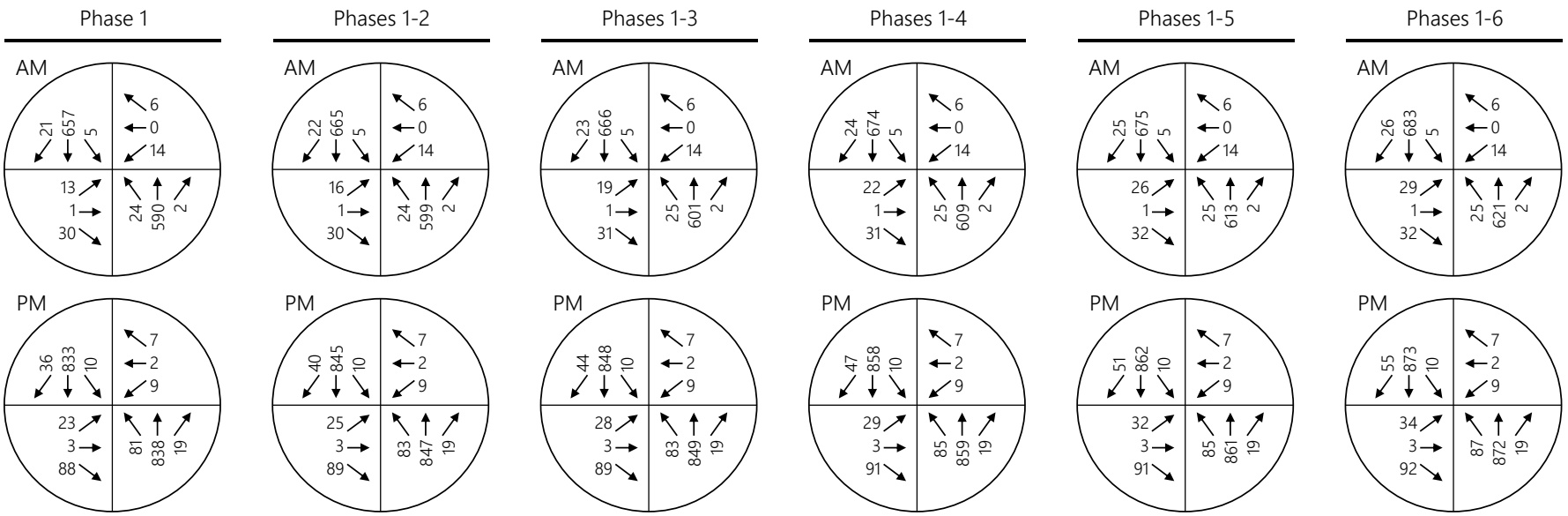
[2] ODOT, Observed Statewide Traffic Volume Patterns: Related to COVID-19 Monitoring Final Report, July 9, 2021, Table 2.

Phase	Houses	Apartments
1	148	0
2	106	0
3	106	0
4	80	0
5	129	36
6	80	0
Total	649	36

Greencrest Connection to Auburn Only



Greencrest Connection to Auburn & State



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TRAFFIC VOLUMES

CORDON RD NE & AUBURN RD NE

Figure 5

East Park Phasing Analysis

Salem, Oregon

Operational Analysis Methodology and Assumptions

The operational analysis at the Cordon Road NE & Auburn Road NE intersection includes the evaluation of capacity, level of service, and queueing. The methodology and assumptions are outlined below.

Intersection Capacity and Level of Service Analysis

An operational analysis was conducted for each study intersections per the signalized and unsignalized intersection analysis methodologies in the *Highway Capacity Manual* (HCM)[3]. Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates little, or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay. The volume-to-capacity (v/c) ratio is a measure that compares the traffic volumes (demand) against the available capacity of an intersection. Tables showing the relationship between delay and LOS are attached to this memorandum.

Analysis Assumptions

City of Salem Administrative Rules Section 6.33 establishes the analysis assumption that "ideal saturation flow rates greater than 1,800 vehicles per hour of green per lane should not be used unless a separate flow rate analysis has been completed." This flow rate was applied to the study intersection.

Performance Standards

Per the City of Salem's *Transportation System Plan Policy 2.5 Capacity Efficient Design and Level of Service (LOS) Standards 2. Peak Travel Periods*, the following performance standards are required by study area intersections:

> c. The City shall allow its existing streets and intersections to function at LOS E (where traffic volumes generally are approaching or at 100 percent of the street's effective capacity) during the morning and evening peak travel hours. However, traffic impacts created by new development, as identified in a traffic impact analysis, must be mitigated to maintain peak hour LOS D or better.

Queuing Analysis

An analysis of projected queuing was conducted for the study intersection. To determine the expected queuing which may form at critical study area movements, a Synchro/SimTraffic simulation was conducted and 95th percentile queue lengths were reported. The 95th percentile queue is a statistical measurement that indicates there is a 5 percent chance that the queue may exceed this length during the analysis period; however, given this is a probability, the 95th percentile queue length may theoretically never be met or observed in the field. Reported queue lengths were rounded to the nearest 25 feet or the approximate length of one vehicle.

[3] Transportation Research Board, *Highway Capacity Manual 6th Edition*, 2016.

Alternatives Analysis

To assess the timing of the conditions of approval at the intersection of Cordon Road NE & Auburn Road NE, three alternative analysis assumptions were evaluated:

1. Scenario1 assesses operations for Phases 1 and 2 with Conditions 26 and 34, which include construction of the northern section of Greencrest Street NE, as well as all phases with the addition of Condition 37, which includes construction of Greencrest Street NE southward to connect with State Street.
2. Scenario 2 assesses the same assumptions as Scenario 1 plus a part of Condition 31, adding the eastbound-to-southbound right-turn lane on Auburn Road NE.
3. Scenario 3 assesses the same assumptions as Scenario 1 plus the full Condition 31, adding both a traffic signal and the eastbound right turn lane on Auburn Road NE.

Scenario 1 Analysis

The results of the Scenario 1 analysis are presented in Table 3, which compares the v/c ratio, LOS, and queues for the eastbound approach of Auburn Road NE at Cordon Road NE. This movement is the critical movement at the intersection while it remains unsignalized. Detailed calculations are attached to this memorandum.

Table 3: Scenario 1 – Operations Analysis Summary

Buildout Condition	Operations					
	Morning – EB Approach			Evening – EB Approach		
	V/C	LOS	Queue (ft)[1]	V/C	LOS	Queue (ft)[1]
Greencrest Street NE Connects to Auburn Road NE Only						
Phase 1	0.28	C	75	1.16	F	650
Cumulative Phases 1-2	0.41	D	125	1.50	F	925
Greencrest Street NE Connects to Auburn Road NE & State Street						
Phase 1	0.18	C	75	0.92	F	450
Cumulative Phases 1-2	0.21	D	75	1.00	F	625
Cumulative Phases 1-3	0.24	D	75	1.11	F	675
Cumulative Phases 1-4	0.27	D	75	1.17	F	875
Cumulative Phases 1-5	0.32	D	100	1.27	F	850
Cumulative Phases 1-6	0.35	E	100	1.40	F	900

Notes:
1. Queues are the average of ten simulations and results are variable between conditions.

As shown in Table 3, with Greencrest Street NE only connected to Auburn Road NE, the eastbound approach of Auburn Road NE at Cordon Road NE will meet the City's performance thresholds during the morning peak hour but is estimated to have a v/c ratio greater than 1.0 with LOS F conditions and long queues with the completion of Phase 1 of East Park. However, this street configuration and traffic control meets the conditions of approval.

Connecting Greencrest Street NE southward to State Street will provide some relief to the eastbound approach by shifting some traffic away from the Cordon Road NE & Auburn Road NE intersection. However, LOS F conditions and long queues will still be present.

Until the signal can be constructed at Cordon Road NE & Auburn Road NE, some of the site traffic may travel south to State Street to avoid the congestion in the eastbound left-turn lane on Auburn Road NE. The analysis presented above does not consider any temporary shift in travel patterns.

Signal Warrant Evaluation

Since the volume forecasts for the Cordon Road NE & Auburn Road NE intersection are limited to peak hours, the MUTCD[4] Warrant 3 – Peak Hour was used to determine whether the signal warrant is met. However, traffic signals are not generally installed on the basis of need for one hour a day. Therefore, a preliminary signal warrant analysis was also conducted using ODOT's worksheet, which is based on MUTCD Warrant 1 and uses the eighth highest hour of an average day to determine whether a warrant is met.

In the ODOT spreadsheet, average daily traffic (ADT) is used for preliminary signal warrant analysis. A conversion factor of 5.65% is applied to the ADT to estimate the eighth highest hour. To estimate ADT, the evening (PM) peak hour volume is multiplied by 10. The ODOT guidance for warrant analysis recommends a right-turn discount for the minor road approach because delays are generally much lower for right-turn movements compared with left-turn or through crossing movements. For this multi-scenario analysis, the right-turn discount was assumed to be 50 percent. This percentage is lower than the calculations that would result from following the ODOT methodology and includes a greater number of right turns in the warrant evaluation.

The results of the warrant analyses are summarized in Table 4. Detailed calculations are attached to this memorandum.

Table 4: Scenario 1 – Signal Warrant Summary

Buildout Condition	ODOT Preliminary MUTCD Warrant 1	Peak Hour MUTCD Warrant 3
Greencrest Street NE Connects to Auburn Road NE Only		
Phase 1	No	Yes
Cumulative Phases 1-2	No	Yes
Greencrest Street NE Connects to Auburn Road NE & State Street		
Phase 1	No	No
Cumulative Phases 1-2	No	No
Cumulative Phases 1-3	No	Yes
Cumulative Phases 1-4	No	Yes
Cumulative Phases 1-5	No	Yes
Cumulative Phases 1-6	No	Yes

[4] Federal Highway Administration, Manual on Uniform Traffic Control Devices (MUTCD), 2009.

As shown in Table 4, none of the forecast conditions are anticipated to meet the preliminary warrants based on the eighth highest hour of the day (MUTCD Warrant 1).

The peak hour analysis shows that without the Greencrest Street NE connection to State Street, the MUTCD Warrant 3 is met with the completion of Phase 1 construction. If Greencrest Street NE is connected to State Street, the MUTCD Warrant 3 is met with the completion of the Phase 3 construction of the single-family homes.

Scenario 2 Analysis

Scenario 2 assesses the same assumptions as Scenario 1 but adds an eastbound right-turn lane on Auburn Road NE. This lane is assumed to be constructed following the completion of Phase 1; therefore, no analysis for Phase 1 alone is presented.

The results of the Scenario 2 analysis are presented in Table 5 which compares the v/c ratio, LOS, and queues for the eastbound left-through lane of Auburn Road NE at Cordon Road NE. This movement is the critical movement at the intersection while it remains unsignalized.

Table 5: Scenario 2 – Operations Analysis Summary

Buildout Condition	Operations[1]					
	Morning – EB Left-Through Lane			Evening – EB Left-Through Lane		
	V/C	LOS	Queue (ft)[2]	V/C	LOS	Queue (ft)[2]
Greencrest Street NE Connects to Auburn Road NE Only						
Cumulative Phases 1-2	0.22	E	75	1.11	F	300
Greencrest Street NE Connects to Auburn Road NE & State Street						
Cumulative Phases 1-2	0.14	E	50	0.73	F	125
Cumulative Phases 1-3	0.17	E	50	0.83	F	200
Cumulative Phases 1-4	0.20	E	50	0.88	F	225
Cumulative Phases 1-5	0.24	E	75	0.99	F	325
Cumulative Phases 1-6	0.27	F	75	1.10	F	350

Notes:
1. Note, conditions for the eastbound left-through movement appear worse than Scenario 1 because the right-turn delay is no longer averaged with the delays for the left-turn and through movements. The delays for the eastbound right-turn movement were LOS B during the morning peak hour and LOS C during the evening peak hour (see attached Synchro reports).
2. Queues are the average of five simulations and results are slightly variable between conditions.

As shown in Table 5, the eastbound left-through lane of Auburn Road NE at Cordon Road NE will have a low v/c ratio and short queues but will not meet the City's LOS D performance threshold during the morning peak hour. However, the intersection is not expected to reach LOS F conditions until the completion of Phase 6.

During the evening peak hour, the eastbound left-through movement is estimated to have a v/c ratio greater than 1.0 with LOS F and long queues with the completion of Phase 2 of East Park if Greencrest Street NE is only connected northward to Auburn Road NE.

Once Greencrest Street NE is connected southward to State Street, evening peak hour operations are anticipated to improve with a v/c ratio of less than 0.9 for conditions through the construction of Phase 4; however, LOS F conditions will still be present for this movement. The 95th percentile queues are estimated at 8 vehicles with the completion of Phase 3 single-family housing and 9 vehicles with the completion of the Phase 4. Average queues are 4 vehicles (100 feet) for both Phase 3 and Phase 4.

Signal Warrant Evaluation

With the Scenario 2 assumption of the eastbound right-turn lane on Auburn Road NE at Cordon Road NE, the right-turn volume was not included in the traffic signal warrant evaluation because right-turn movement delays are generally low. The results of the warrant analyses are summarized in Table 6.

Table 6: Scenario 2 – Signal Warrant Summary

Buildout Condition	ODOT Preliminary MUTCD Warrant 1	Peak Hour MUTCD Warrant 3
Greencrest Street NE Connects to Auburn Road NE Only		
Cumulative Phases 1-2	No	No
Greencrest Street NE Connects to Auburn Road NE & State Street		
Cumulative Phases 1-2	No	No
Cumulative Phases 1-3	No	No
Cumulative Phases 1-4	No	No
Cumulative Phases 1-5	No	No
Cumulative Phases 1-6	No	No

As shown in Table 6, none of the forecast conditions are anticipated to meet either the preliminary warrants based on the eighth highest hour of the day (MUTCD Warrant 1) or the peak hour warrants (MUTCD Warrant 3). Although this preliminary warrant evaluation indicates that forecast volumes do not meet warrants for installation of a traffic signal, other factors may be used to justify a traffic signal, and engineering judgement should always be applied.

Scenario 3 Analysis

Scenario 3 assesses the same assumptions as Scenario 1 but adds both a traffic signal and the eastbound right turn lane on Auburn Road NE. The results of the Scenario 3 analysis are presented in Table 7 which compares the LOS for the overall intersection along with the v/c ratio, LOS, and queues for the eastbound left-through lane of Auburn Road NE at Cordon Road NE.

As shown in Table 7, signalization of the Cordon Road NE & Auburn Road NE intersection will improve the eastbound left-through lane of Auburn Road NE at Cordon Road NE to LOS C conditions during both the morning and evening peak hours with low v/c ratios and short queues under all buildout conditions. The overall intersection operations with the traffic signal are anticipated to be LOS A in the morning and LOS B in the evening.

Table 7: Scenario 3 – Operations Analysis Summary

Buildout Condition	Operations							
	Morning				Evening			
	Overall LOS	EB Left-Through Lane			Overall LOS	EB Left-Through Lane		
		V/C	LOS	Queue (ft)[1]		V/C	LOS	Queue (ft)[1]
Greencrest Street NE Connects to Auburn Road NE Only								
Cumulative Phases 1-2	A	0.09	C	50	B	0.13	C	50
Greencrest Street NE Connects to Auburn Road NE & State Street								
Cumulative Phases 1-2	A	0.07	C	50	B	0.12	C	50
Cumulative Phases 1-3	A	0.08	C	50	B	0.13	C	75
Cumulative Phases 1-4	A	0.09	C	50	B	0.14	C	75
Cumulative Phases 1-5	A	0.11	C	50	B	0.15	C	75
Cumulative Phases 1-6	A	0.13	C	50	B	0.16	C	75

Note: Queues are the average of five simulations and results are slightly variable between conditions.

Conclusions

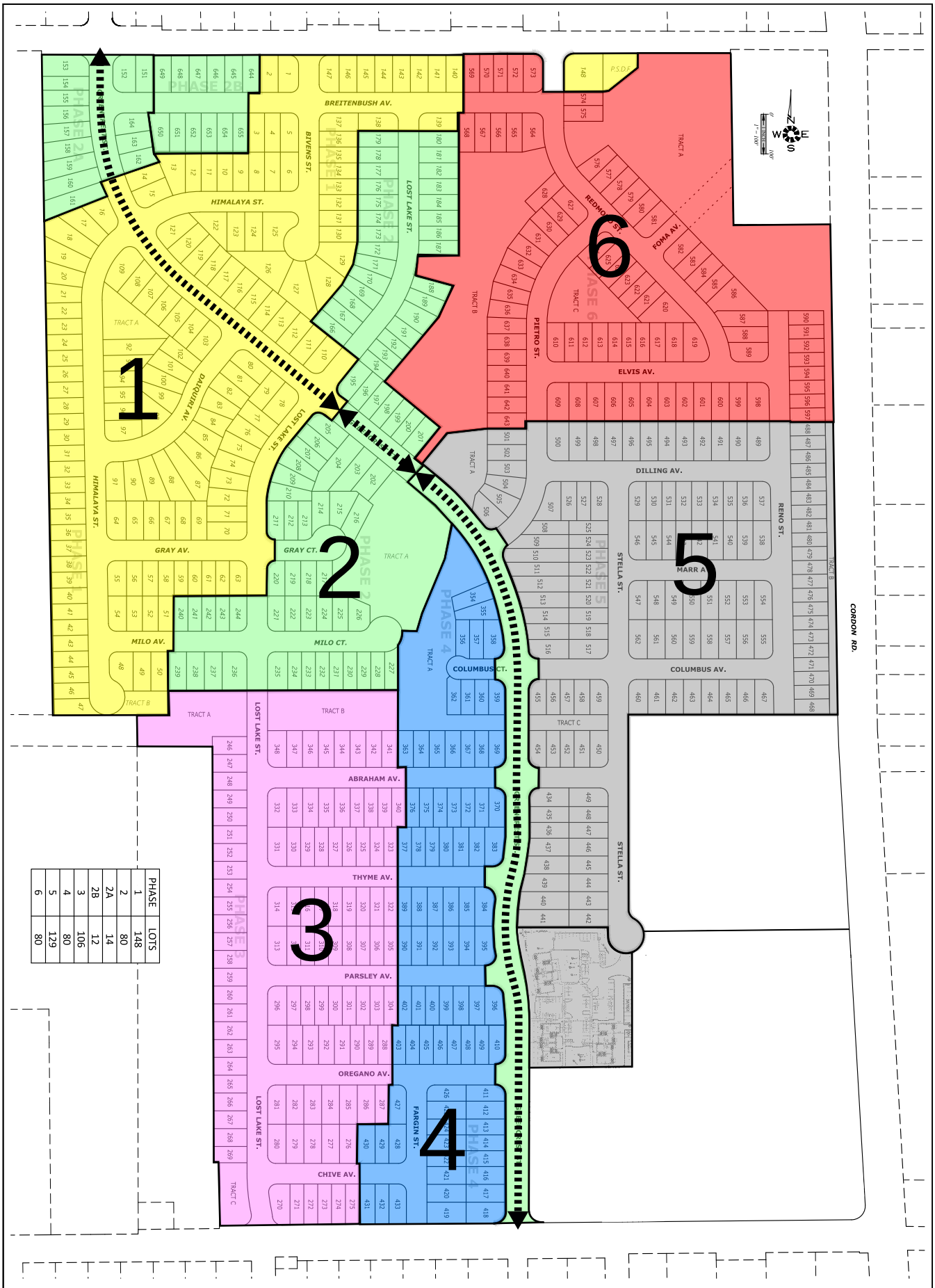
Recommendations based on the analysis presented in this memorandum include:

- Construct Greencrest Street NE southward to State Street as soon as possible. This connection will relieve congestion at the eastbound approach to the intersection of Auburn Road NE and Cordon Road NE by providing direct access to State Street which will shift some traffic away from this critical intersection. Until the signal can be constructed at Cordon Road NE & Auburn Road NE, some of the site traffic may travel south to State Street to avoid the congestion in the eastbound left-turn lane on Auburn Road NE. Currently, the Greencrest Street NE connection to State Street is identified as Condition 37 for completion of Phase 3.
- Construct the eastbound right-turn lane as soon as possible without the traffic signal. Constructing the turn lane plus the connection to State Street will allow the intersection to operate with a v/c ratio of 0.83 or less through construction of the housing proposed with Phase 3 (360 houses) and 0.88 or less through construction of the housing proposed with Phase 4 (440 houses). Currently this improvement is part of Condition 31 associated with completion of Phase 2.
- With construction of Greencrest Street NE southward to State Street and an eastbound right-turn lane on Auburn Road NE at Cordon Road NE, the installation of a traffic signal can be delayed beyond Phase 2. The eastbound left-through movement would still experience significant delays, but the analysis shows that all left-turning or crossing vehicles would be served during the evening peak hour through Phase 4. During the morning peak hour and other times of day, moderate delays are anticipated. The recommended timing for installation of the traffic signal would be after occupancy of the 360 houses in Phase 3.

Attachments

1. Site Plan
2. Trip Generation
3. Pictsweet Master Plan TIA – Trip Distribution and Assignments
4. Scenario 1 Operations Analysis
5. Scenario 1 Queuing Analysis
6. Scenario 1 Signal Warrant Analysis
7. Scenario 2 Operations Analysis
8. Scenario 2 Queuing Analysis
9. Scenario 2 Signal Warrant Analysis
10. Scenario 3 Operations Analysis
11. Scenario 3 Queuing Analysis

Attachment 1: Site Plan



PHASE	LOTS
1	148
2	80
2A	14
2B	12
3	106
4	80
5	129
6	80

1 / 1	XOB # 6427		EastPark SITE Design: M.D.G. Drawn: D.G.G. Proj Mgr: J.J.G. Date: AUG. 2021 Scale: AS SHOWN As-Built: ----	NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER. DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.	MULTI/TECH ENGINEERING EXEMPT FROM LIABILITY IF NOT STAMPED APPROVED NOT FOR CONSTRUCTION UNLESS STAMPED APPROVED HERE	**EAST PARK ESTATES** **A PLANNED UNIT DEVELOPMENT**	**SITE LAYOUT**

MULTI/TECH
ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

Attachment 2: Trip Generation

TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use:	Single-Family Detached Housing
Land Use Code:	210
Land Use Subcategory:	All Sites
Setting/Location	General Urban/Suburban
Variable:	Dwelling Units
Trip Type:	Vehicle
Variable Quantity:	649

AM PEAK HOUR

Trip Rate: 0.7

	Enter	Exit	Total
Directional Split	26%	74%	
Trip Ends	118	336	454

PM PEAK HOUR

Trip Rate: 0.94

	Enter	Exit	Total
Directional Split	63%	37%	
Trip Ends	384	226	610

WEEKDAY

Trip Rate: 9.43

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	3,060	3,060	6,120

SATURDAY

Trip Rate: 9.48

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	3,076	3,076	6,152

TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use:	Multifamily Housing (Low-Rise)
Land Use Code:	220
Land Use Subcategory:	Not Close to Rail Transit
Setting/Location	General Urban/Suburban
Variable:	Dwelling Units
Trip Type:	Vehicle
Variable Quantity:	36

AM PEAK HOUR

Trip Rate: 0.4

	Enter	Exit	Total
Directional Split	24%	76%	
Trip Ends	3	11	14

PM PEAK HOUR

Trip Rate: 0.51

	Enter	Exit	Total
Directional Split	63%	37%	
Trip Ends	11	7	18

WEEKDAY

Trip Rate: 6.74

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	121	121	242

SATURDAY

Trip Rate: 4.55

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	82	82	164

Caution: Small Sample Size

Attachment 3: Pictsweet Master Plan TIA – Trip Distribution and Assignments

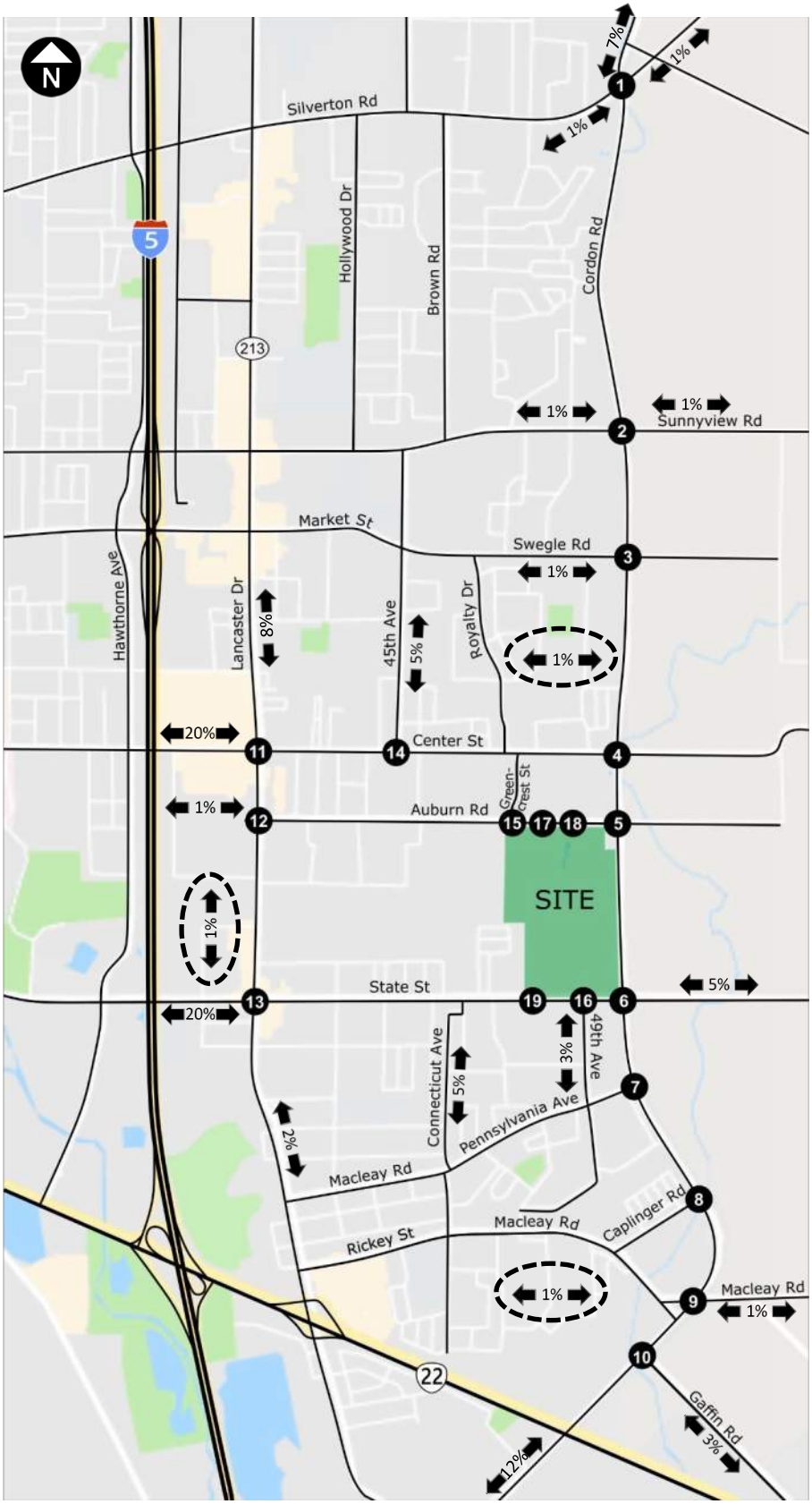
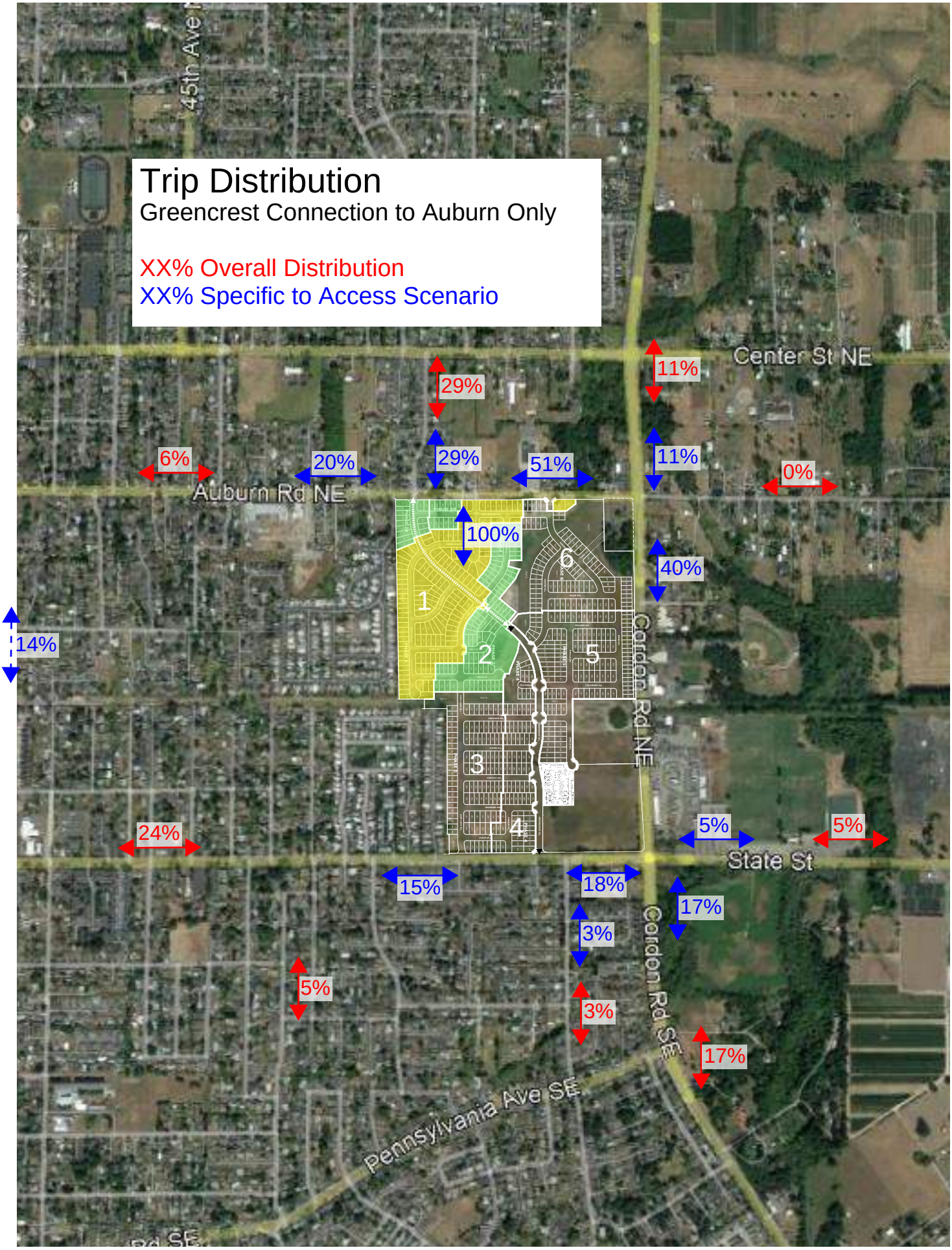
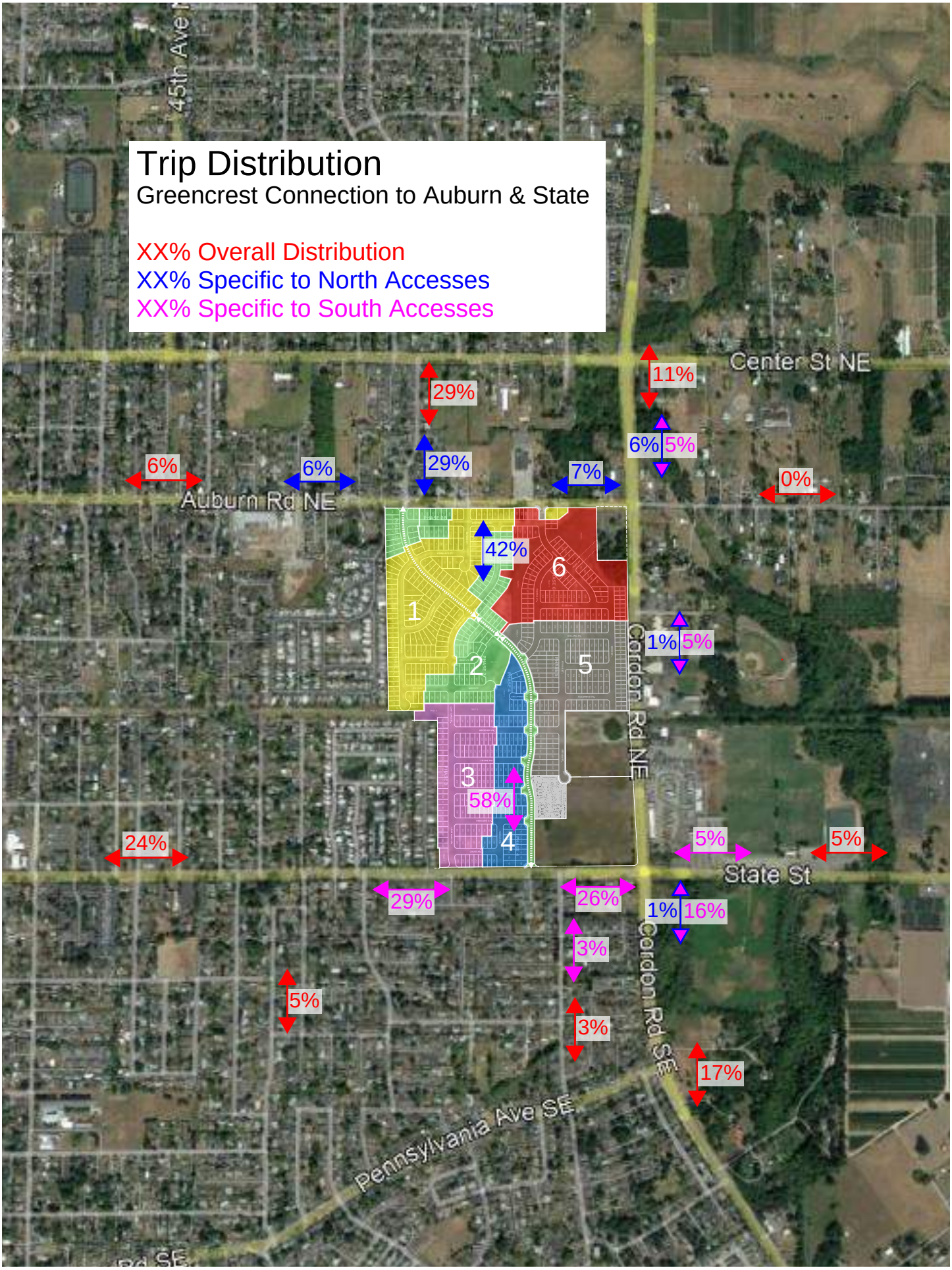


Figure 12. Estimated Trip Distribution Pattern.


Trip Distribution
Greencrest Connection to Auburn Only
XX% Overall Distribution
XX% Specific to Access Scenario
45th Ave
Center St NE
Auburn Rd NE
Corden Rd NE
State St
Pennsylvania Ave SE
29%
11%
6%
20%
29%
51%
11%
0%
100%
40%
14%
24%
5%
5%
15%
18%
17%
3%
5%
3%
17%
1
2
3
4
5
6


Trip Distribution
Greencrest Connection to Auburn & State
XX% Overall Distribution
XX% Specific to North Accesses
XX% Specific to South Accesses
45th Ave
Auburn Rd NE
Center St NE
Corson Rd NE
State St
Corson Rd SE
Pennsylvania Ave SE
29%
29%
6%
6%
7%
11%
6%
5%
0%
42%
1
2
3
4
5
6
1%
5%
58%
24%
29%
26%
5%
5%
1%
16%
3%
3%
5%
17%

Attachment 4: Scenario 1 Operations Analysis

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑		↰	↑	
Traffic Vol, veh/h	16	1	61	14	0	6	35	586	2	5	656	22
Future Vol, veh/h	16	1	61	14	0	6	35	586	2	5	656	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	0	3	0	0	0	3	6	0	0	5	3
Mvmt Flow	16	1	62	14	0	6	36	598	2	5	669	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1364	1362	680	1393	1372	599	691	0	0	600	0	0
Stage 1	690	690	-	671	671	-	-	-	-	-	-	-
Stage 2	674	672	-	722	701	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.23	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.327	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	124	149	449	120	147	505	899	-	-	987	-	-
Stage 1	434	449	-	449	458	-	-	-	-	-	-	-
Stage 2	443	458	-	421	444	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	118	142	449	99	140	505	899	-	-	987	-	-
Mov Cap-2 Maneuver	118	142	-	99	140	-	-	-	-	-	-	-
Stage 1	417	447	-	431	440	-	-	-	-	-	-	-
Stage 2	420	440	-	360	442	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.9	37.8	0.5	0.1
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	899	-	-	280	130	987	-	-
HCM Lane V/C Ratio	0.04	-	-	0.284	0.157	0.005	-	-
HCM Control Delay (s)	9.2	-	-	22.9	37.8	8.7	-	-
HCM Lane LOS	A	-	-	C	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.1	0.5	0	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	1	82	14	0	6	43	592	2	5	663	24
Future Vol, veh/h	23	1	82	14	0	6	43	592	2	5	663	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	0	3	0	0	0	3	6	0	0	5	3
Mvmt Flow	23	1	84	14	0	6	44	604	2	5	677	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1395	1393	689	1435	1404	605	701	0	0	606	0	0
Stage 1	699	699	-	693	693	-	-	-	-	-	-	-
Stage 2	696	694	-	742	711	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.23	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.327	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	118	143	444	113	141	501	891	-	-	982	-	-
Stage 1	429	445	-	437	448	-	-	-	-	-	-	-
Stage 2	430	447	-	411	439	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	112	135	444	87	133	501	891	-	-	982	-	-
Mov Cap-2 Maneuver	112	135	-	87	133	-	-	-	-	-	-	-
Stage 1	408	443	-	416	426	-	-	-	-	-	-	-
Stage 2	404	425	-	331	437	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27.4	42.5	0.6	0.1
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	891	-	-	267	116	982	-	-
HCM Lane V/C Ratio	0.049	-	-	0.405	0.176	0.005	-	-
HCM Control Delay (s)	9.2	-	-	27.4	42.5	8.7	-	-
HCM Lane LOS	A	-	-	D	E	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.9	0.6	0	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↱		↰	↱	
Traffic Vol, veh/h	13	1	30	14	0	6	24	590	2	5	657	21
Future Vol, veh/h	13	1	30	14	0	6	24	590	2	5	657	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	0	3	0	0	0	3	6	0	0	5	3
Mvmt Flow	13	1	31	14	0	6	24	602	2	5	670	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1345	1343	681	1358	1352	603	691	0	0	604	0	0
Stage 1	691	691	-	651	651	-	-	-	-	-	-	-
Stage 2	654	652	-	707	701	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.23	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.327	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	128	153	449	127	151	503	899	-	-	984	-	-
Stage 1	433	449	-	461	468	-	-	-	-	-	-	-
Stage 2	454	467	-	429	444	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	123	148	449	115	146	503	899	-	-	984	-	-
Mov Cap-2 Maneuver	123	148	-	115	146	-	-	-	-	-	-	-
Stage 1	421	447	-	449	455	-	-	-	-	-	-	-
Stage 2	437	454	-	397	442	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23	32.7	0.4	0.1
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	899	-	-	245	150	984	-	-
HCM Lane V/C Ratio	0.027	-	-	0.183	0.136	0.005	-	-
HCM Control Delay (s)	9.1	-	-	23	32.7	8.7	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.5	0	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↱		↰	↱	
Traffic Vol, veh/h	16	1	30	14	0	6	24	599	2	5	665	22
Future Vol, veh/h	16	1	30	14	0	6	24	599	2	5	665	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	0	3	0	0	0	3	6	0	0	5	3
Mvmt Flow	16	1	31	14	0	6	24	611	2	5	679	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1363	1361	690	1376	1371	612	701	0	0	613	0	0
Stage 1	700	700	-	660	660	-	-	-	-	-	-	-
Stage 2	663	661	-	716	711	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.23	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.327	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	124	150	443	124	147	497	891	-	-	976	-	-
Stage 1	428	444	-	455	463	-	-	-	-	-	-	-
Stage 2	449	463	-	424	439	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	120	145	443	112	142	497	891	-	-	976	-	-
Mov Cap-2 Maneuver	120	145	-	112	142	-	-	-	-	-	-	-
Stage 1	416	442	-	443	450	-	-	-	-	-	-	-
Stage 2	432	450	-	392	437	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.2	33.6	0.4	0.1
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	891	-	-	226	146	976	-	-
HCM Lane V/C Ratio	0.027	-	-	0.212	0.14	0.005	-	-
HCM Control Delay (s)	9.2	-	-	25.2	33.6	8.7	-	-
HCM Lane LOS	A	-	-	D	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.5	0	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↑		↰	↑	
Traffic Vol, veh/h	19	1	31	14	0	6	25	601	2	5	666	23
Future Vol, veh/h	19	1	31	14	0	6	25	601	2	5	666	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	0	3	0	0	0	3	6	0	0	5	3
Mvmt Flow	19	1	32	14	0	6	26	613	2	5	680	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1371	1369	692	1384	1379	614	703	0	0	615	0	0
Stage 1	702	702	-	666	666	-	-	-	-	-	-	-
Stage 2	669	667	-	718	713	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.23	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.327	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	123	148	442	122	146	496	890	-	-	974	-	-
Stage 1	427	443	-	452	460	-	-	-	-	-	-	-
Stage 2	445	460	-	423	438	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	118	143	442	110	141	496	890	-	-	974	-	-
Mov Cap-2 Maneuver	118	143	-	110	141	-	-	-	-	-	-	-
Stage 1	415	441	-	439	447	-	-	-	-	-	-	-
Stage 2	427	447	-	390	436	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27.1	34.1	0.4	0.1
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	890	-	-	214	144	974	-	-
HCM Lane V/C Ratio	0.029	-	-	0.243	0.142	0.005	-	-
HCM Control Delay (s)	9.2	-	-	27.1	34.1	8.7	-	-
HCM Lane LOS	A	-	-	D	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0.5	0	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	1	31	14	0	6	25	609	2	5	674	24
Future Vol, veh/h	22	1	31	14	0	6	25	609	2	5	674	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	0	3	0	0	0	3	6	0	0	5	3
Mvmt Flow	22	1	32	14	0	6	26	621	2	5	688	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1387	1385	700	1401	1396	622	712	0	0	623	0	0
Stage 1	710	710	-	674	674	-	-	-	-	-	-	-
Stage 2	677	675	-	727	722	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.23	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.327	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	120	145	438	119	142	490	883	-	-	968	-	-
Stage 1	423	440	-	448	457	-	-	-	-	-	-	-
Stage 2	441	456	-	419	434	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	115	140	438	107	137	490	883	-	-	968	-	-
Mov Cap-2 Maneuver	115	140	-	107	137	-	-	-	-	-	-	-
Stage 1	411	438	-	435	444	-	-	-	-	-	-	-
Stage 2	423	443	-	386	432	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	29.5	35.1	0.4	0.1
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	883	-	-	201	140	968	-	-
HCM Lane V/C Ratio	0.029	-	-	0.274	0.146	0.005	-	-
HCM Control Delay (s)	9.2	-	-	29.5	35.1	8.7	-	-
HCM Lane LOS	A	-	-	D	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.1	0.5	0	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↑		↰	↑	
Traffic Vol, veh/h	26	1	32	14	0	6	25	613	2	5	675	25
Future Vol, veh/h	26	1	32	14	0	6	25	613	2	5	675	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	0	3	0	0	0	3	6	0	0	5	3
Mvmt Flow	27	1	33	14	0	6	26	626	2	5	689	26

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1394	1392	702	1408	1404	627	715	0	0	628	0	0
Stage 1	712	712	-	679	679	-	-	-	-	-	-	-
Stage 2	682	680	-	729	725	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.23	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.327	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	118	143	436	118	141	487	881	-	-	964	-	-
Stage 1	422	439	-	445	454	-	-	-	-	-	-	-
Stage 2	438	454	-	417	433	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	113	138	436	106	136	487	881	-	-	964	-	-
Mov Cap-2 Maneuver	113	138	-	106	136	-	-	-	-	-	-	-
Stage 1	409	437	-	432	440	-	-	-	-	-	-	-
Stage 2	420	440	-	383	431	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	32.5	35.3	0.4	0.1
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	881	-	-	190	139	964	-	-
HCM Lane V/C Ratio	0.029	-	-	0.317	0.147	0.005	-	-
HCM Control Delay (s)	9.2	-	-	32.5	35.3	8.8	-	-
HCM Lane LOS	A	-	-	D	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.3	0.5	0	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	29	1	32	14	0	6	25	621	2	5	683	26
Future Vol, veh/h	29	1	32	14	0	6	25	621	2	5	683	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	0	3	0	0	0	3	6	0	0	5	3
Mvmt Flow	30	1	33	14	0	6	26	634	2	5	697	27

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1411	1409	711	1425	1421	635	724	0	0	636	0	0
Stage 1	721	721	-	687	687	-	-	-	-	-	-	-
Stage 2	690	688	-	738	734	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.23	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.327	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	115	140	431	114	138	482	874	-	-	957	-	-
Stage 1	417	435	-	440	450	-	-	-	-	-	-	-
Stage 2	434	450	-	413	429	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	111	135	431	102	133	482	874	-	-	957	-	-
Mov Cap-2 Maneuver	111	135	-	102	133	-	-	-	-	-	-	-
Stage 1	404	433	-	427	437	-	-	-	-	-	-	-
Stage 2	416	437	-	379	427	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	35.2	36.6	0.4	0.1
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	874	-	-	181	134	957	-	-
HCM Lane V/C Ratio	0.029	-	-	0.35	0.152	0.005	-	-
HCM Control Delay (s)	9.2	-	-	35.2	36.6	8.8	-	-
HCM Lane LOS	A	-	-	E	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.5	0.5	0	-	-

Intersection	
Int Delay, s/veh	15.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↑		↰	↑	
Traffic Vol, veh/h	26	3	107	9	2	7	114	835	19	10	829	41
Future Vol, veh/h	26	3	107	9	2	7	114	835	19	10	829	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	0	2	0	0	0	2	3	0	0	3	2
Mvmt Flow	27	3	111	9	2	7	119	870	20	10	864	43

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2029	2034	886	2081	2045	880	907	0	0	890	0	0
Stage 1	906	906	-	1118	1118	-	-	-	-	-	-	-
Stage 2	1123	1128	-	963	927	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.22	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	43	58	343	40	57	349	750	-	-	770	-	-
Stage 1	331	358	-	254	285	-	-	-	-	-	-	-
Stage 2	250	282	-	310	350	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	35	48	343	22	47	349	750	-	-	770	-	-
Mov Cap-2 Maneuver	35	48	-	22	47	-	-	-	-	-	-	-
Stage 1	278	353	-	214	240	-	-	-	-	-	-	-
Stage 2	204	237	-	205	345	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	200.1	170.2	1.3	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	750	-	-	122	38	770	-	-
HCM Lane V/C Ratio	0.158	-	-	1.161	0.493	0.014	-	-
HCM Control Delay (s)	10.7	-	-	200.1	170.2	9.7	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	8.6	1.7	0	-	-

Intersection	
Int Delay, s/veh	28.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↕		↰	↕	
Traffic Vol, veh/h	30	3	122	9	2	7	141	843	19	10	837	48
Future Vol, veh/h	30	3	122	9	2	7	141	843	19	10	837	48
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	0	2	0	0	0	2	3	0	0	3	2
Mvmt Flow	31	3	127	9	2	7	147	878	20	10	872	50

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2104	2109	897	2164	2124	888	922	0	0	898	0	0
Stage 1	917	917	-	1182	1182	-	-	-	-	-	-	-
Stage 2	1187	1192	-	982	942	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.22	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	38	52	339	35	51	345	741	-	-	765	-	-
Stage 1	326	354	-	234	266	-	-	-	-	-	-	-
Stage 2	230	263	-	302	344	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 30	41	339	17	40	345	741	-	-	765	-	-
Mov Cap-2 Maneuver	~ 30	41	-	17	40	-	-	-	-	-	-	-
Stage 1	261	349	-	188	213	-	-	-	-	-	-	-
Stage 2	179	211	-	185	340	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 336.3	242.8	1.6	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	741	-	-	108	30	765	-	-
HCM Lane V/C Ratio	0.198	-	-	1.495	0.625	0.014	-	-
HCM Control Delay (s)	11.1	-	-	$ 336.3	242.8	9.8	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.7	-	-	11.8	2	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	8.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑		↰	↑	
Traffic Vol, veh/h	23	3	88	9	2	7	81	838	19	10	833	36
Future Vol, veh/h	23	3	88	9	2	7	81	838	19	10	833	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	0	2	0	0	0	2	3	0	0	3	2
Mvmt Flow	24	3	92	9	2	7	84	873	20	10	868	38

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1963	1968	887	2006	1977	883	906	0	0	893	0	0
Stage 1	907	907	-	1051	1051	-	-	-	-	-	-	-
Stage 2	1056	1061	-	955	926	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.22	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	47	63	343	45	63	348	751	-	-	768	-	-
Stage 1	330	357	-	277	306	-	-	-	-	-	-	-
Stage 2	272	303	-	313	350	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	40	55	343	29	55	348	751	-	-	768	-	-
Mov Cap-2 Maneuver	40	55	-	29	55	-	-	-	-	-	-	-
Stage 1	293	352	-	246	272	-	-	-	-	-	-	-
Stage 2	235	269	-	224	345	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	124	118.3	0.9	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	751	-	-	129	49	768	-	-
HCM Lane V/C Ratio	0.112	-	-	0.921	0.383	0.014	-	-
HCM Control Delay (s)	10.4	-	-	124	118.3	9.8	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	6.1	1.4	0	-	-

Intersection	
Int Delay, s/veh	10.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	3	89	9	2	7	83	847	19	10	845	40
Future Vol, veh/h	25	3	89	9	2	7	83	847	19	10	845	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	0	2	0	0	0	2	3	0	0	3	2
Mvmt Flow	26	3	93	9	2	7	86	882	20	10	880	42

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1990	1995	901	2033	2006	892	922	0	0	902	0	0
Stage 1	921	921	-	1064	1064	-	-	-	-	-	-	-
Stage 2	1069	1074	-	969	942	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.22	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	45	61	337	43	60	344	741	-	-	762	-	-
Stage 1	324	352	-	272	302	-	-	-	-	-	-	-
Stage 2	268	299	-	307	344	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	39	53	337	27	52	344	741	-	-	762	-	-
Mov Cap-2 Maneuver	39	53	-	27	52	-	-	-	-	-	-	-
Stage 1	286	347	-	240	267	-	-	-	-	-	-	-
Stage 2	230	264	-	218	340	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	149.5	129.2	0.9	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	741	-	-	122	46	762	-	-
HCM Lane V/C Ratio	0.117	-	-	0.999	0.408	0.014	-	-
HCM Control Delay (s)	10.5	-	-	149.5	129.2	9.8	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	6.8	1.4	0	-	-

Intersection	
Int Delay, s/veh	13.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↑		↰	↑	
Traffic Vol, veh/h	28	3	89	9	2	7	83	849	19	10	848	44
Future Vol, veh/h	28	3	89	9	2	7	83	849	19	10	848	44
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	0	2	0	0	0	2	3	0	0	3	2
Mvmt Flow	29	3	93	9	2	7	86	884	20	10	883	46

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1997	2002	906	2040	2015	894	929	0	0	904	0	0
Stage 1	926	926	-	1066	1066	-	-	-	-	-	-	-
Stage 2	1071	1076	-	974	949	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.22	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	45	60	334	42	59	343	736	-	-	761	-	-
Stage 1	322	350	-	271	301	-	-	-	-	-	-	-
Stage 2	267	298	-	305	342	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	38	52	334	26	51	343	736	-	-	761	-	-
Mov Cap-2 Maneuver	38	52	-	26	51	-	-	-	-	-	-	-
Stage 1	284	345	-	239	266	-	-	-	-	-	-	-
Stage 2	229	263	-	215	338	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	188.9	137.6	0.9	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	736	-	-	113	44	761	-	-
HCM Lane V/C Ratio	0.117	-	-	1.106	0.426	0.014	-	-
HCM Control Delay (s)	10.5	-	-	188.9	137.6	9.8	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	7.6	1.5	0	-	-

Intersection	
Int Delay, s/veh	14.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↑		↰	↑	
Traffic Vol, veh/h	29	3	91	9	2	7	85	859	19	10	858	47
Future Vol, veh/h	29	3	91	9	2	7	85	859	19	10	858	47
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	0	2	0	0	0	2	3	0	0	3	2
Mvmt Flow	30	3	95	9	2	7	89	895	20	10	894	49

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2027	2032	919	2071	2046	905	943	0	0	915	0	0
Stage 1	939	939	-	1083	1083	-	-	-	-	-	-	-
Stage 2	1088	1093	-	988	963	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.22	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	43	58	329	40	57	338	727	-	-	754	-	-
Stage 1	317	345	-	265	296	-	-	-	-	-	-	-
Stage 2	261	293	-	300	337	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	37	50	329	24	49	338	727	-	-	754	-	-
Mov Cap-2 Maneuver	37	50	-	24	49	-	-	-	-	-	-	-
Stage 1	278	341	-	233	260	-	-	-	-	-	-	-
Stage 2	222	257	-	209	333	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	210.9	152.3	0.9	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	727	-	-	110	41	754	-	-
HCM Lane V/C Ratio	0.122	-	-	1.165	0.457	0.014	-	-
HCM Control Delay (s)	10.6	-	-	210.9	152.3	9.8	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	8.2	1.6	0	-	-

Intersection	
Int Delay, s/veh	17.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↑		↰	↑	
Traffic Vol, veh/h	32	3	91	9	2	7	85	861	19	10	862	51
Future Vol, veh/h	32	3	91	9	2	7	85	861	19	10	862	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	0	2	0	0	0	2	3	0	0	3	2
Mvmt Flow	33	3	95	9	2	7	89	897	20	10	898	53

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2035	2040	925	2079	2056	907	951	0	0	917	0	0
Stage 1	945	945	-	1085	1085	-	-	-	-	-	-	-
Stage 2	1090	1095	-	994	971	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.22	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	42	57	326	40	56	337	722	-	-	752	-	-
Stage 1	314	343	-	265	295	-	-	-	-	-	-	-
Stage 2	261	292	-	298	334	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	36	49	326	24	48	337	722	-	-	752	-	-
Mov Cap-2 Maneuver	36	49	-	24	48	-	-	-	-	-	-	-
Stage 1	275	339	-	232	259	-	-	-	-	-	-	-
Stage 2	222	256	-	207	330	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	256.1	152.3	0.9	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	722	-	-	103	41	752	-	-
HCM Lane V/C Ratio	0.123	-	-	1.274	0.457	0.014	-	-
HCM Control Delay (s)	10.7	-	-	256.1	152.3	9.9	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	9	1.6	0	-	-

Intersection	
Int Delay, s/veh	21.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↑		↰	↑	
Traffic Vol, veh/h	34	3	92	9	2	7	87	872	19	10	873	55
Future Vol, veh/h	34	3	92	9	2	7	87	872	19	10	873	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	0	2	0	0	0	2	3	0	0	3	2
Mvmt Flow	35	3	96	9	2	7	91	908	20	10	909	57

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2063	2068	938	2107	2086	918	966	0	0	928	0	0
Stage 1	958	958	-	1100	1100	-	-	-	-	-	-	-
Stage 2	1105	1110	-	1007	986	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.22	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	40	55	321	38	54	332	713	-	-	745	-	-
Stage 1	309	338	-	260	290	-	-	-	-	-	-	-
Stage 2	256	287	-	293	328	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 34	47	321	23	46	332	713	-	-	745	-	-
Mov Cap-2 Maneuver	~ 34	47	-	23	46	-	-	-	-	-	-	-
Stage 1	269	334	-	227	253	-	-	-	-	-	-	-
Stage 2	217	250	-	201	324	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 310.5	163.8	1	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	713	-	-	96	39	745	-	-
HCM Lane V/C Ratio	0.127	-	-	1.4	0.481	0.014	-	-
HCM Control Delay (s)	10.8	-	-	$ 310.5	163.8	9.9	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	9.9	1.7	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Attachment 5: Scenario 1 Queuing Analysis

Intersection: 100: Phase 1: Auburn Connection Only/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	101	50	50	25
Average Queue (ft)	39	17	16	2
95th Queue (ft)	79	45	41	14
Link Distance (ft)	719	711		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			200	200
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 101: Phases 1-2: Auburn Connection Only/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	TR
Maximum Queue (ft)	170	54	57	29	4
Average Queue (ft)	59	18	20	2	0
95th Queue (ft)	127	47	45	15	3
Link Distance (ft)	719	711			664
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			200	200	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 102: Phase 1: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	TR
Maximum Queue (ft)	90	58	46	22	4
Average Queue (ft)	29	16	12	2	0
95th Queue (ft)	65	45	37	11	3
Link Distance (ft)	719	711			664
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			200	200	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 103: Phases 1-2: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	74	55	39	28
Average Queue (ft)	30	18	11	3
95th Queue (ft)	62	47	34	17
Link Distance (ft)	719	711		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			200	200
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 104: Phases 1-3: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	TR
Maximum Queue (ft)	98	52	47	27	2
Average Queue (ft)	35	17	13	2	0
95th Queue (ft)	82	44	39	14	2
Link Distance (ft)	719	711			664
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			200	200	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 105: Phases 1-4: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	77	46	44	31
Average Queue (ft)	33	16	11	3
95th Queue (ft)	66	42	35	17
Link Distance (ft)	719	711		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			200	200
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 106: Phases 1-5: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	TR
Maximum Queue (ft)	132	60	39	27	4
Average Queue (ft)	45	17	12	3	0
95th Queue (ft)	96	47	36	16	4
Link Distance (ft)	719	711			664
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			200	200	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 107: Phases 1-6: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	TR
Maximum Queue (ft)	95	64	38	28	4
Average Queue (ft)	41	18	12	3	0
95th Queue (ft)	82	50	34	17	3
Link Distance (ft)	719	711			664
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			200	200	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 200: Phase 1: Auburn Connection Only/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	581	72	117	2	33	13
Average Queue (ft)	324	20	45	0	6	1
95th Queue (ft)	652	56	86	2	26	7
Link Distance (ft)	719	711		652		664
Upstream Blk Time (%)	2					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)			200		200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 201: Phases 1-2: Auburn Connection Only/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	TR
Maximum Queue (ft)	688	76	130	35	26
Average Queue (ft)	534	25	58	7	2
95th Queue (ft)	931	62	110	27	13
Link Distance (ft)	719	711			664
Upstream Blk Time (%)	48				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)			200	200	
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Intersection: 202: Phase 1: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	413	79	83	2	30	13
Average Queue (ft)	179	20	37	0	6	1
95th Queue (ft)	453	59	70	2	25	7
Link Distance (ft)	719	711		652		664
Upstream Blk Time (%)	2					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)			200		200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 203: Phases 1-2: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	TR
Maximum Queue (ft)	491	75	94	29	15
Average Queue (ft)	274	23	36	5	1
95th Queue (ft)	617	74	72	24	7
Link Distance (ft)	719	711			664
Upstream Blk Time (%)	7				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)			200	200	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 204: Phases 1-3: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	579	72	100	17	33	18
Average Queue (ft)	314	23	39	1	7	1
95th Queue (ft)	661	63	77	17	28	9
Link Distance (ft)	719	711		652		664
Upstream Blk Time (%)	7					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)			200		200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 205: Phases 1-4: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	642	77	109	2	32	21
Average Queue (ft)	443	22	40	0	6	1
95th Queue (ft)	862	61	77	2	24	13
Link Distance (ft)	719	711		652		664
Upstream Blk Time (%)	30					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)			200		200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 206: Phases 1-5: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	673	71	93	2	33	25
Average Queue (ft)	437	18	36	0	7	1
95th Queue (ft)	842	50	70	2	27	11
Link Distance (ft)	719	711		652		664
Upstream Blk Time (%)	18					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)			200		200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 207: Phases 1-6: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	TR
Maximum Queue (ft)	733	85	89	32	22
Average Queue (ft)	532	28	39	7	2
95th Queue (ft)	908	78	72	27	13
Link Distance (ft)	719	711			664
Upstream Blk Time (%)	35				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)			200	200	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 0

Attachment 6: Scenario 1 Signal Warrant Analysis

Preliminary Traffic Signal Warrant Analysis

Project: 22071 - East Park Phasing Analysis - Scenario 1
Date: 5/25/2022
Scenario: 2022 - PHASE 1: Greencrest Connects to Auburn Only

Major Street:	Cordon Road NE		Minor Street:	Auburn Road NE - EB	
Number of Lanes:	1		Number of Lanes:	1	
Peak Hour Volumes:	1848		Peak Hour Volumes:	136 107 50%	Total Rights RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	18,480	6,200	
Minor Street*	830	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	18,480	9,300	
Minor Street*	830	950	No
Combination Warrant			
Major Street	18,480	7,440	
Minor Street*	830	1,480	No

* Minor street right-turning traffic volumes reduced by 50%.

Preliminary Traffic Signal Warrant Analysis

Project: 22071 - East Park Phasing Analysis - Scenario 1
Date: 5/25/2022
Scenario: 2022 - PHASE 1: Greencrest Connects to Auburn & State

Major Street:	Cordon Road NE		Minor Street:	Auburn Road NE - EB	
Number of Lanes:	1		Number of Lanes:	1	
Peak Hour Volumes:	1817		Peak Hour Volumes:	114 88 50%	Total Rights RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	18,170	6,200	
Minor Street*	700	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	18,170	9,300	
Minor Street*	700	950	No
Combination Warrant			
Major Street	18,170	7,440	
Minor Street*	700	1,480	No

* Minor street right-turning traffic volumes reduced by 50%.

Preliminary Traffic Signal Warrant Analysis

Project: 22071 - East Park Phasing Analysis - Scenario 1
Date: 5/25/2022
Scenario: 2023 - PHASES 1-2: Greencrest Connects to Auburn Only

Major Street:	Cordon Road NE		Minor Street:	Auburn Road NE - EB	
Number of Lanes:	1		Number of Lanes:	1	
Peak Hour Volumes:	1898		Peak Hour Volumes:	155 122 50%	Total Rights RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	18,980	6,200	
Minor Street*	940	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	18,980	9,300	
Minor Street*	940	950	No
Combination Warrant			
Major Street	18,980	7,440	
Minor Street*	940	1,480	No

* Minor street right-turning traffic volumes reduced by 50%.

Preliminary Traffic Signal Warrant Analysis

Project: 22071 - East Park Phasing Analysis - Scenario 1
Date: 5/25/2022
Scenario: 2023 - PHASES 1-2: Greencrest Connects to Auburn & State

Major Street:	Cordon Road NE		Minor Street:	Auburn Road NE - EB	
Number of Lanes:	1		Number of Lanes:	1	
Peak Hour Volumes:	1844		Peak Hour Volumes:	117 89 50%	Total Rights RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	18,440	6,200	
Minor Street*	730	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	18,440	9,300	
Minor Street*	730	950	No
Combination Warrant			
Major Street	18,440	7,440	
Minor Street*	730	1,480	No

* Minor street right-turning traffic volumes reduced by 50%.

Preliminary Traffic Signal Warrant Analysis

Project: 22071 - East Park Phasing Analysis - Scenario 1
Date: 5/25/2022
Scenario: 2024 - PHASES 1-3: Greencrest Connects to Auburn & State

Major Street:	Cordon Road NE		Minor Street:	Auburn Road NE - EB	
Number of Lanes:	1		Number of Lanes:	1	
Peak Hour Volumes:	1853		Peak Hour Volumes:	120 89 50%	Total Rights RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	18,530	6,200	
Minor Street*	760	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	18,530	9,300	
Minor Street*	760	950	No
Combination Warrant			
Major Street	18,530	7,440	
Minor Street*	760	1,480	No

* Minor street right-turning traffic volumes reduced by 50%.

Preliminary Traffic Signal Warrant Analysis

Project: 22071 - East Park Phasing Analysis - Scenario 1
Date: 5/25/2022
Scenario: 2025 - PHASES 1-4: Greencrest Connects to Auburn & State

Major Street:	Cordon Road NE		Minor Street:	Auburn Road NE - EB	
Number of Lanes:	1		Number of Lanes:	1	
Peak Hour Volumes:	1878		Peak Hour Volumes:	123 91 50%	Total Rights RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	18,780	6,200	
Minor Street*	780	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	18,780	9,300	
Minor Street*	780	950	No
Combination Warrant			
Major Street	18,780	7,440	
Minor Street*	780	1,480	No

* Minor street right-turning traffic volumes reduced by 50%.

Preliminary Traffic Signal Warrant Analysis

Project: 22071 - East Park Phasing Analysis - Scenario 1
Date: 5/25/2022
Scenario: 2026 - PHASES 1-5: Greencrest Connects to Auburn & State

Major Street:	Cordon Road NE		Minor Street:	Auburn Road NE - EB	
Number of Lanes:	1		Number of Lanes:	1	
Peak Hour Volumes:	1888		Peak Hour Volumes:	126 91 50%	Total Rights RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	18,880	6,200	
Minor Street*	810	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	18,880	9,300	
Minor Street*	810	950	No
Combination Warrant			
Major Street	18,880	7,440	
Minor Street*	810	1,480	No

* Minor street right-turning traffic volumes reduced by 50%.

Preliminary Traffic Signal Warrant Analysis

Project: 22071 - East Park Phasing Analysis - Scenario 1
Date: 5/25/2022
Scenario: 2027 - PHASES 1-6: Greencrest Connects to Auburn & State

Major Street:	Cordon Road NE		Minor Street:	Auburn Road NE - EB	
Number of Lanes:	1		Number of Lanes:	1	
Peak Hour Volumes:	1916		Peak Hour Volumes:	129 92 50%	Total Rights RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	19,160	6,200	
Minor Street*	830	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	19,160	9,300	
Minor Street*	830	950	No
Combination Warrant			
Major Street	19,160	7,440	
Minor Street*	830	1,480	No

* Minor street right-turning traffic volumes reduced by 50%.

TRAFFIC SIGNAL WARRANTS - BASED ON 2009 MUTCD

5/25/2022

INTERSECTION INFORMATION

City:	Salem		Condition:	East Park - Scenario 1 - Phase 1	
Population:	100000			Greencrest Street Connection to Auburn Road Only	
Intersection Location:				50% Right Turn Discount	
(Rural/Urban)	Urban				
Major Street Name:	Cordon Road		Minor Street Name:	Auburn Road	
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1	
Speed:	45 mph		Speed:	35 mph	
Street Width:	36 ft		Street Width:	36 ft	
Direction:	NB	SB	Direction:	EB	WB
Hour Beginning:			Hour Beginning:		
12:00 AM			12:00 AM		
1:00 AM			1:00 AM		
2:00 AM			2:00 AM		
3:00 AM			3:00 AM		
4:00 AM			4:00 AM		
5:00 AM			5:00 AM		
6:00 AM			6:00 AM		
7:00 AM	623	683	7:00 AM	48	17
8:00 AM			8:00 AM		
9:00 AM			9:00 AM		
10:00 AM			10:00 AM		
11:00 AM			11:00 AM		
12:00 PM			12:00 PM		
1:00 PM			1:00 PM		
2:00 PM			2:00 PM		
3:00 PM			3:00 PM		
4:00 PM			4:00 PM		
5:00 PM	968	880	5:00 PM	83	15
6:00 PM			6:00 PM		
7:00 PM			7:00 PM		
8:00 PM			8:00 PM		
9:00 PM			9:00 PM		
10:00 PM			10:00 PM		
11:00 PM			11:00 PM		
24-hour Total	1,591	1,563	24-hour Total	131	32

Warrants Evaluted:

Warrant 1, 8-Hour Vehicular Volume - Evaluated for Conditions A & B
Warrant 2 , 4-Hour Vehicular Volume - Evaluated
Warrant 3, Peak Hour - Evaluated for Conditions A-2, A-3 (A-1 needs to be evaluated separately), and Condition B
Warrant 4, Pedestrian Volume - Not Analyzed
Warrant 5, School Crossing - Not Analyzed
Warrant 6, Coordinated Signal System - Not Analyzed
Warrant 7, Accident Experience - Not Analyzed
Warrant 8, Roadway Network - Not Analyzed
Warrant 9, Intersection Near a Grade Crossing - Not Analyzed

WARRANT 3, PEAK HOUR VEHICULAR VOLUME

	MAJOR			MINOR			Calculated		
	NB	SB	Total	EB	WB	Max	Threshold (B	A-2&3	B
5:00 PM	968	880	1,848	83	15	83	75	N	Y
7:00 AM	623	683	1,306	48	17	48	75	N	N
11:00 PM	0	0	0	0	0	0	610	N	N
10:00 PM	0	0	0	0	0	0	610	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

Warrant Requirements:
Major Street Lanes: 1
Minor Street Lanes: 1

CONDITION A-1 - Stopped Delay
Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

CONDITION A-2 - Minor Street Volume
Minimum Volume on Higher Minor Street Approach: 100

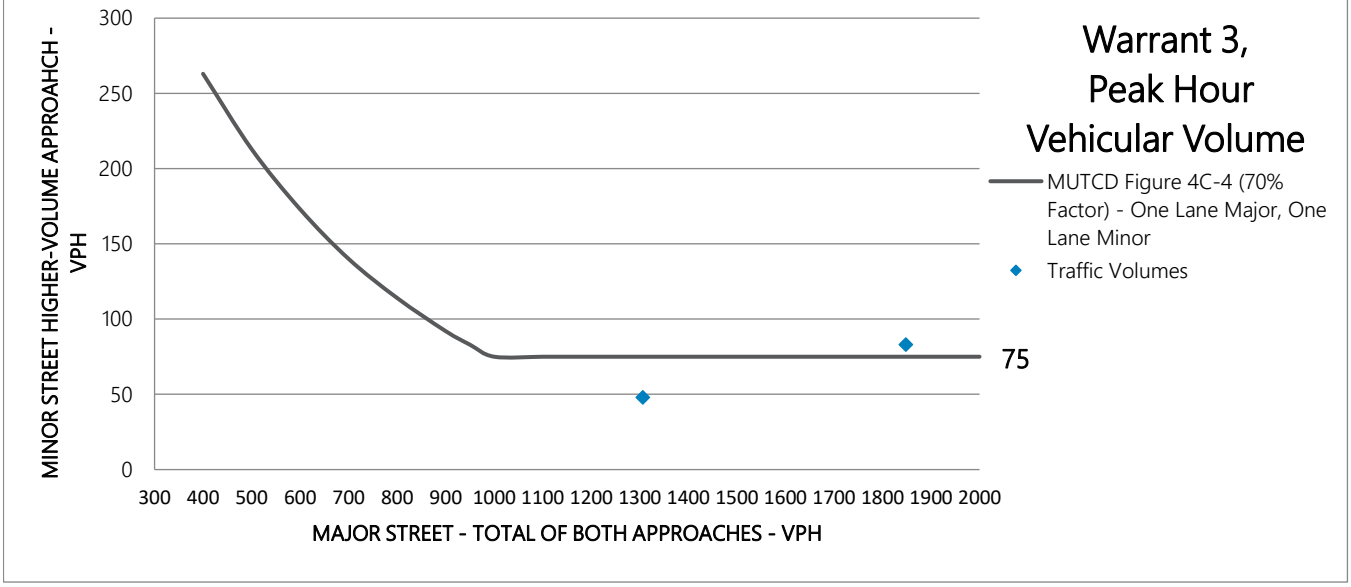
CONDITION A-3 - Total Approach Volume
Minimum Volume of Total Approaches: 800

CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO
Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? YES

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



TRAFFIC SIGNAL WARRANTS - BASED ON 2009 MUTCD

5/25/2022

INTERSECTION INFORMATION

City:	Salem		Condition:	East Park - Scenario 1 - Phases 1-2	
Population:	100000			Greencrest Street Connection to Auburn Road Only	
Intersection Location:				50% Right Turn Discount	
(Rural/Urban)	Urban				
Major Street Name:	Cordon Road		Minor Street Name:	Auburn Road	
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1	
Speed:	45 mph		Speed:	35 mph	
Street Width:	36 ft		Street Width:	36 ft	
Direction:	NB	SB	Direction:	EB	WB
Hour Beginning:			Hour Beginning:		
12:00 AM			12:00 AM		
1:00 AM			1:00 AM		
2:00 AM			2:00 AM		
3:00 AM			3:00 AM		
4:00 AM			4:00 AM		
5:00 AM			5:00 AM		
6:00 AM			6:00 AM		
7:00 AM	637	692	7:00 AM	65	17
8:00 AM			8:00 AM		
9:00 AM			9:00 AM		
10:00 AM			10:00 AM		
11:00 AM			11:00 AM		
12:00 PM			12:00 PM		
1:00 PM			1:00 PM		
2:00 PM			2:00 PM		
3:00 PM			3:00 PM		
4:00 PM			4:00 PM		
5:00 PM	1,003	895	5:00 PM	94	15
6:00 PM			6:00 PM		
7:00 PM			7:00 PM		
8:00 PM			8:00 PM		
9:00 PM			9:00 PM		
10:00 PM			10:00 PM		
11:00 PM			11:00 PM		
24-hour Total	1,640	1,587	24-hour Total	159	32

WARRANT 3, PEAK HOUR VEHICULAR VOLUME

	MAJOR			MINOR			Calculated		
	NB	SB	Total	EB	WB	Max	Threshold (B	A-2&3	B
5:00 PM	1,003	895	1,898	94	15	94	75	N	Y
7:00 AM	637	692	1,329	65	17	65	75	N	N
11:00 PM	0	0	0	0	0	0	610	N	N
10:00 PM	0	0	0	0	0	0	610	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

Warrant Requirements:
Major Street Lanes: 1
Minor Street Lanes: 1

CONDITION A-1 - Stopped Delay
Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

CONDITION A-2 - Minor Street Volume
Minimum Volume on Higher Minor Street Approach: 100

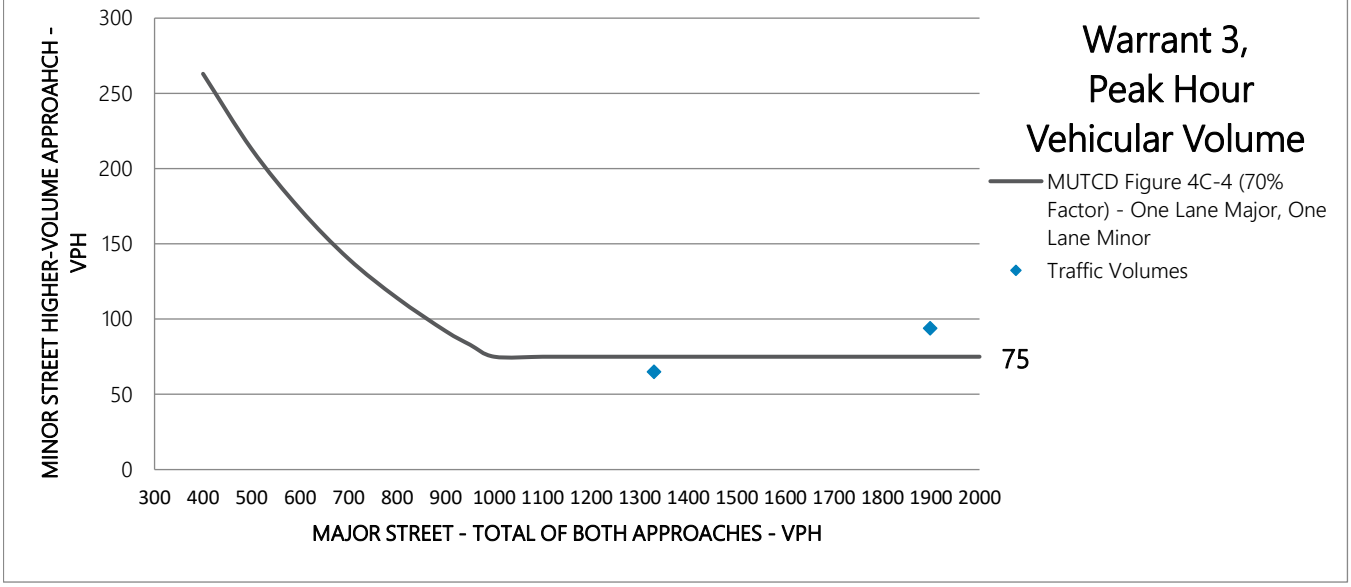
CONDITION A-3 - Total Approach Volume
Minimum Volume of Total Approaches: 800

CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO
Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? YES

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



TRAFFIC SIGNAL WARRANTS - BASED ON 2009 MUTCD

5/25/2022

INTERSECTION INFORMATION

City:	Salem		Condition:	East Park - Scenario 1 - Phase 1	
Population:	100000			Greencrest Street Connection to Auburn Road & State Street	
Intersection Location:				50% Right Turn Discount	
(Rural/Urban)	Urban				
Major Street Name:	Cordon Road		Minor Street Name:	Auburn Road	
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1	
Speed:	45 mph		Speed:	35 mph	
Street Width:	36 ft		Street Width:	36 ft	
Direction:	NB	SB	Direction:	EB	WB
Hour Beginning:			Hour Beginning:		
12:00 AM			12:00 AM		
1:00 AM			1:00 AM		
2:00 AM			2:00 AM		
3:00 AM			3:00 AM		
4:00 AM			4:00 AM		
5:00 AM			5:00 AM		
6:00 AM			6:00 AM		
7:00 AM	616	683	7:00 AM	29	17
8:00 AM			8:00 AM		
9:00 AM			9:00 AM		
10:00 AM			10:00 AM		
11:00 AM			11:00 AM		
12:00 PM			12:00 PM		
1:00 PM			1:00 PM		
2:00 PM			2:00 PM		
3:00 PM			3:00 PM		
4:00 PM			4:00 PM		
5:00 PM	938	879	5:00 PM	70	15
6:00 PM			6:00 PM		
7:00 PM			7:00 PM		
8:00 PM			8:00 PM		
9:00 PM			9:00 PM		
10:00 PM			10:00 PM		
11:00 PM			11:00 PM		
24-hour Total	1,554	1,562	24-hour Total	99	32

WARRANT 3, PEAK HOUR VEHICULAR VOLUME

	MAJOR			MINOR			Calculated		
	NB	SB	Total	EB	WB	Max	Threshold (B	A-2&3	B
5:00 PM	938	879	1,817	70	15	70	75	N	N
7:00 AM	616	683	1,299	29	17	29	75	N	N
11:00 PM	0	0	0	0	0	0	610	N	N
10:00 PM	0	0	0	0	0	0	610	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

Warrant Requirements:
Major Street Lanes: 1
Minor Street Lanes: 1

CONDITION A-1 - Stopped Delay
Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

CONDITION A-2 - Minor Street Volume
Minimum Volume on Higher Minor Street Approach: 100

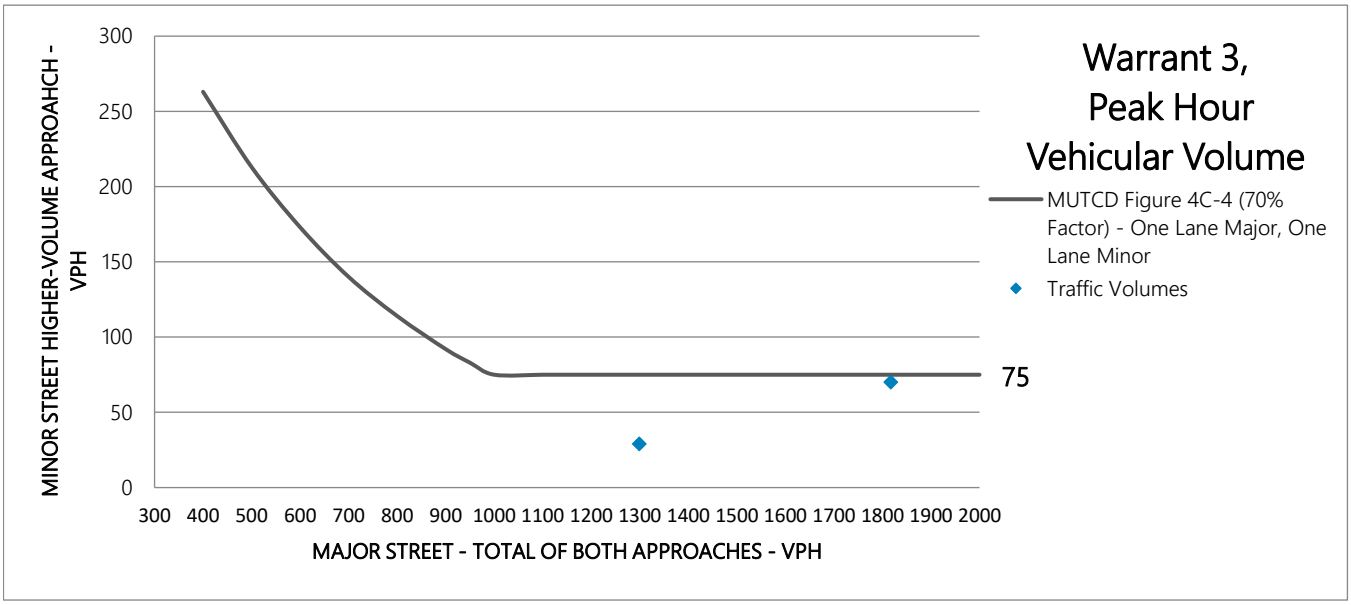
CONDITION A-3 - Total Approach Volume
Minimum Volume of Total Approaches: 800

CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO
Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? NO

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



TRAFFIC SIGNAL WARRANTS - BASED ON 2009 MUTCD

5/25/2022

INTERSECTION INFORMATION

City:	Salem		Condition:	East Park - Scenario 1 - Phases 1-2	
Population:	100000			Greencrest Street Connection to Auburn Road & State Street	
Intersection Location:				50% Right Turn Discount	
(Rural/Urban)	Urban				
Major Street Name:	Cordon Road		Minor Street Name:	Auburn Road	
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1	
Speed:	45 mph		Speed:	35 mph	
Street Width:	36 ft		Street Width:	36 ft	
Direction:	NB	SB	Direction:	EB	WB
Hour Beginning:			Hour Beginning:		
12:00 AM			12:00 AM		
1:00 AM			1:00 AM		
2:00 AM			2:00 AM		
3:00 AM			3:00 AM		
4:00 AM			4:00 AM		
5:00 AM			5:00 AM		
6:00 AM			6:00 AM		
7:00 AM	625	692	7:00 AM	32	17
8:00 AM			8:00 AM		
9:00 AM			9:00 AM		
10:00 AM			10:00 AM		
11:00 AM			11:00 AM		
12:00 PM			12:00 PM		
1:00 PM			1:00 PM		
2:00 PM			2:00 PM		
3:00 PM			3:00 PM		
4:00 PM			4:00 PM		
5:00 PM	949	895	5:00 PM	73	15
6:00 PM			6:00 PM		
7:00 PM			7:00 PM		
8:00 PM			8:00 PM		
9:00 PM			9:00 PM		
10:00 PM			10:00 PM		
11:00 PM			11:00 PM		
24-hour Total	1,574	1,587	24-hour Total	105	32

WARRANT 3, PEAK HOUR VEHICULAR VOLUME

	MAJOR			MINOR			Calculated		
	NB	SB	Total	EB	WB	Max	Threshold (B	A-2&3	B
5:00 PM	949	895	1,844	73	15	73	75	N	N
7:00 AM	625	692	1,317	32	17	32	75	N	N
11:00 PM	0	0	0	0	0	0	610	N	N
10:00 PM	0	0	0	0	0	0	610	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

Warrant Requirements:
Major Street Lanes: 1
Minor Street Lanes: 1

CONDITION A-1 - Stopped Delay
Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

CONDITION A-2 - Minor Street Volume
Minimum Volume on Higher Minor Street Approach: 100

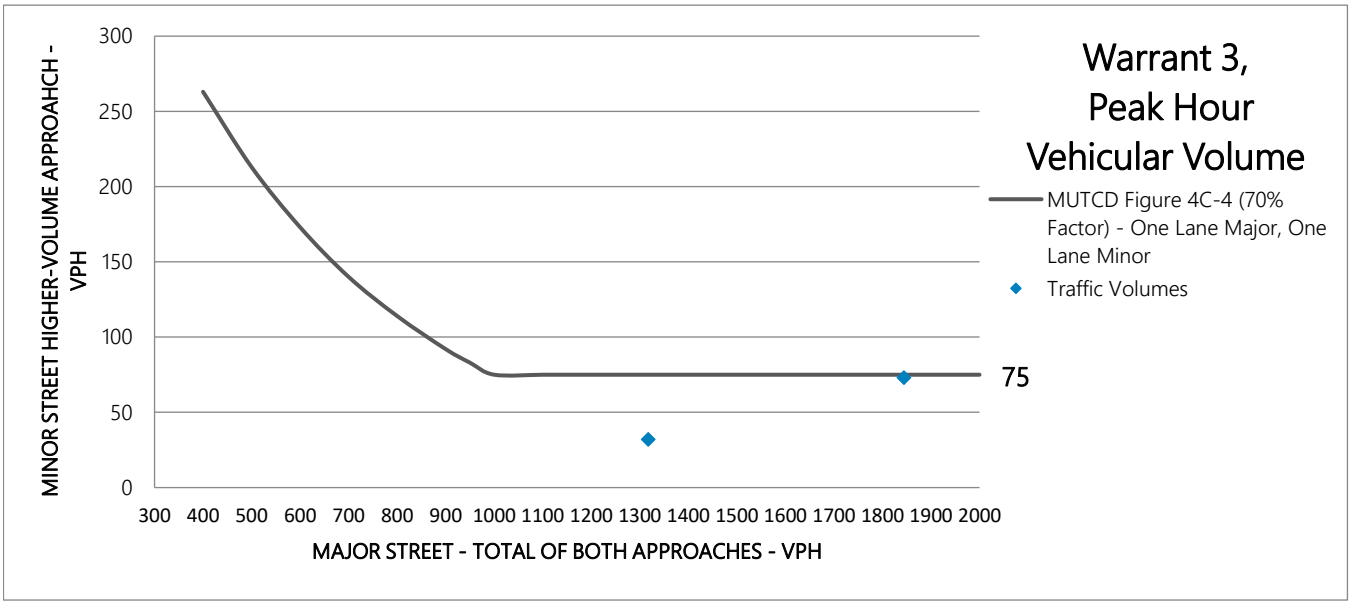
CONDITION A-3 - Total Approach Volume
Minimum Volume of Total Approaches: 800

CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO
Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? NO

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



TRAFFIC SIGNAL WARRANTS - BASED ON 2009 MUTCD

5/25/2022

INTERSECTION INFORMATION

City:	Salem		Condition:	East Park - Scenario 1 - Phases 1-3	
Population:	100000			Greencrest Street Connection to Auburn Road & State Street	
Intersection Location:				50% Right Turn Discount	
(Rural/Urban)	Urban				
Major Street Name:	Cordon Road		Minor Street Name:	Auburn Road	
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1	
Speed:	45 mph		Speed:	35 mph	
Street Width:	36 ft		Street Width:	36 ft	
Direction:	NB	SB	Direction:	EB	WB
Hour Beginning:			Hour Beginning:		
12:00 AM			12:00 AM		
1:00 AM			1:00 AM		
2:00 AM			2:00 AM		
3:00 AM			3:00 AM		
4:00 AM			4:00 AM		
5:00 AM			5:00 AM		
6:00 AM			6:00 AM		
7:00 AM	628	694	7:00 AM	36	17
8:00 AM			8:00 AM		
9:00 AM			9:00 AM		
10:00 AM			10:00 AM		
11:00 AM			11:00 AM		
12:00 PM			12:00 PM		
1:00 PM			1:00 PM		
2:00 PM			2:00 PM		
3:00 PM			3:00 PM		
4:00 PM			4:00 PM		
5:00 PM	951	902	5:00 PM	76	15
6:00 PM			6:00 PM		
7:00 PM			7:00 PM		
8:00 PM			8:00 PM		
9:00 PM			9:00 PM		
10:00 PM			10:00 PM		
11:00 PM			11:00 PM		
24-hour Total	1,579	1,596	24-hour Total	112	32

WARRANT 3, PEAK HOUR VEHICULAR VOLUME

	MAJOR			MINOR			Calculated		
	NB	SB	Total	EB	WB	Max	Threshold (B	A-2&3	B
5:00 PM	951	902	1,853	76	15	76	75	N	Y
7:00 AM	628	694	1,322	36	17	36	75	N	N
11:00 PM	0	0	0	0	0	0	610	N	N
10:00 PM	0	0	0	0	0	0	610	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

Warrant Requirements:
Major Street Lanes: 1
Minor Street Lanes: 1

CONDITION A-1 - Stopped Delay
Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

CONDITION A-2 - Minor Street Volume
Minimum Volume on Higher Minor Street Approach: 100

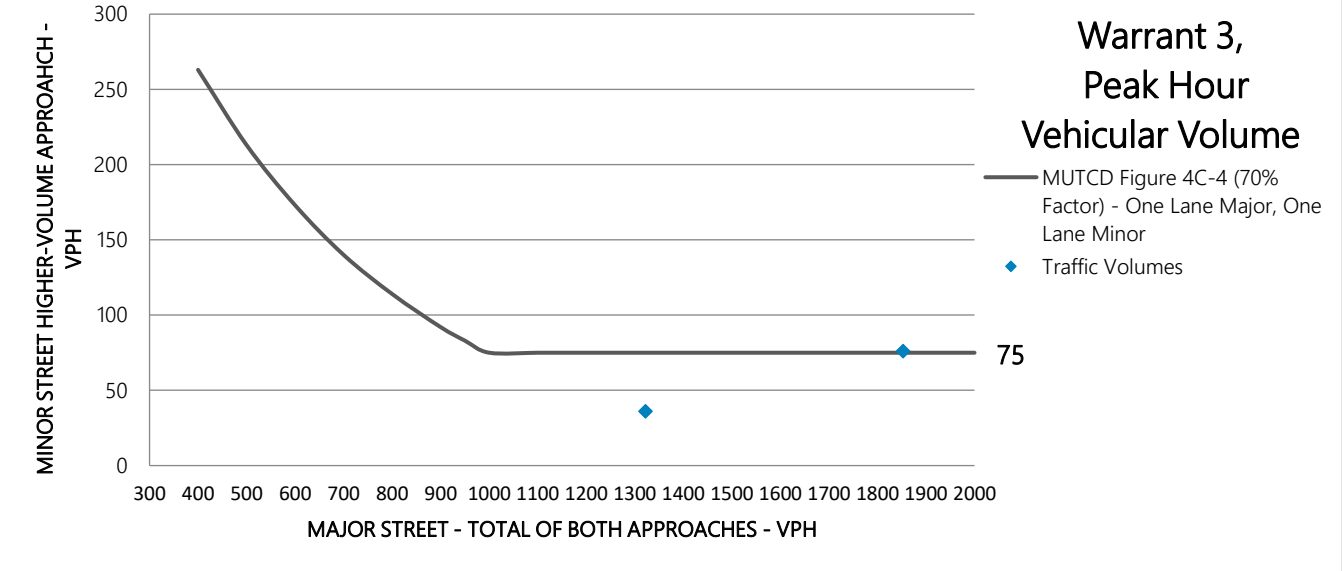
CONDITION A-3 - Total Approach Volume
Minimum Volume of Total Approaches: 800

CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO
Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? YES

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



TRAFFIC SIGNAL WARRANTS - BASED ON 2009 MUTCD

5/25/2022

INTERSECTION INFORMATION

City:	Salem		Condition:	East Park - Scenario 1 - Phases 1-4	
Population:	100000			Greencrest Street Connection to Auburn Road & State Street	
Intersection Location:				50% Right Turn Discount	
(Rural/Urban)	Urban				
Major Street Name:	Cordon Road		Minor Street Name:	Auburn Road	
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1	
Speed:	45 mph		Speed:	35 mph	
Street Width:	36 ft		Street Width:	36 ft	
Direction:	NB	SB	Direction:	EB	WB
Hour Beginning:			Hour Beginning:		
12:00 AM			12:00 AM		
1:00 AM			1:00 AM		
2:00 AM			2:00 AM		
3:00 AM			3:00 AM		
4:00 AM			4:00 AM		
5:00 AM			5:00 AM		
6:00 AM			6:00 AM		
7:00 AM	636	703	7:00 AM	39	17
8:00 AM			8:00 AM		
9:00 AM			9:00 AM		
10:00 AM			10:00 AM		
11:00 AM			11:00 AM		
12:00 PM			12:00 PM		
1:00 PM			1:00 PM		
2:00 PM			2:00 PM		
3:00 PM			3:00 PM		
4:00 PM			4:00 PM		
5:00 PM	963	915	5:00 PM	78	15
6:00 PM			6:00 PM		
7:00 PM			7:00 PM		
8:00 PM			8:00 PM		
9:00 PM			9:00 PM		
10:00 PM			10:00 PM		
11:00 PM			11:00 PM		
24-hour Total	1,599	1,618	24-hour Total	117	32

WARRANT 3, PEAK HOUR VEHICULAR VOLUME

	MAJOR			MINOR			Calculated		
	NB	SB	Total	EB	WB	Max	Threshold (B	A-2&3	B
5:00 PM	963	915	1,878	78	15	78	75	N	Y
7:00 AM	636	703	1,339	39	17	39	75	N	N
11:00 PM	0	0	0	0	0	0	610	N	N
10:00 PM	0	0	0	0	0	0	610	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

Warrant Requirements:
Major Street Lanes: 1
Minor Street Lanes: 1

CONDITION A-1 - Stopped Delay
Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

CONDITION A-2 - Minor Street Volume
Minimum Volume on Higher Minor Street Approach: 100

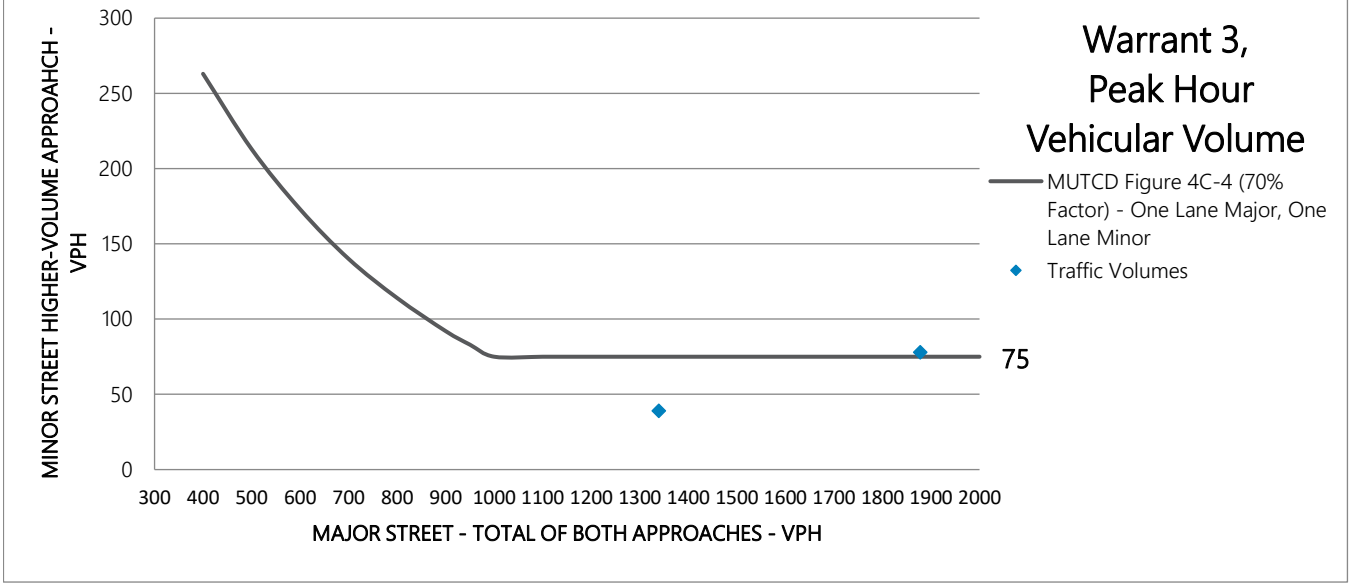
CONDITION A-3 - Total Approach Volume
Minimum Volume of Total Approaches: 800

CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO
Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? YES

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



INTERSECTION INFORMATION

City:	Salem		Condition:	East Park - Scenario 1 - Phases 1-5 All	
Population:	100000			Greencrest Street Connection to Auburn Road & State Street	
Intersection Location:				50% Right Turn Discount	
(Rural/Urban)	Urban				
Major Street Name:	Cordon Road		Minor Street Name:	Auburn Road	
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1	
Speed:	45 mph		Speed:	35 mph	
Street Width:	36 ft		Street Width:	36 ft	
Direction:	NB	SB	Direction:	EB	WB
Hour Beginning:			Hour Beginning:		
12:00 AM			12:00 AM		
1:00 AM			1:00 AM		
2:00 AM			2:00 AM		
3:00 AM			3:00 AM		
4:00 AM			4:00 AM		
5:00 AM			5:00 AM		
6:00 AM			6:00 AM		
7:00 AM	640	705	7:00 AM	43	17
8:00 AM			8:00 AM		
9:00 AM			9:00 AM		
10:00 AM			10:00 AM		
11:00 AM			11:00 AM		
12:00 PM			12:00 PM		
1:00 PM			1:00 PM		
2:00 PM			2:00 PM		
3:00 PM			3:00 PM		
4:00 PM			4:00 PM		
5:00 PM	965	923	5:00 PM	81	15
6:00 PM			6:00 PM		
7:00 PM			7:00 PM		
8:00 PM			8:00 PM		
9:00 PM			9:00 PM		
10:00 PM			10:00 PM		
11:00 PM			11:00 PM		
24-hour Total	1,605	1,628	24-hour Total	124	32

WARRANT 3, PEAK HOUR VEHICULAR VOLUME

	MAJOR			MINOR			Calculated		
	NB	SB	Total	EB	WB	Max	Threshold (B	A-2&3	B
5:00 PM	965	923	1,888	81	15	81	75	N	Y
7:00 AM	640	705	1,345	43	17	43	75	N	N
11:00 PM	0	0	0	0	0	0	610	N	N
10:00 PM	0	0	0	0	0	0	610	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

Warrant Requirements:
Major Street Lanes: 1
Minor Street Lanes: 1

CONDITION A-1 - Stopped Delay
Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

CONDITION A-2 - Minor Street Volume
Minimum Volume on Higher Minor Street Approach: 100

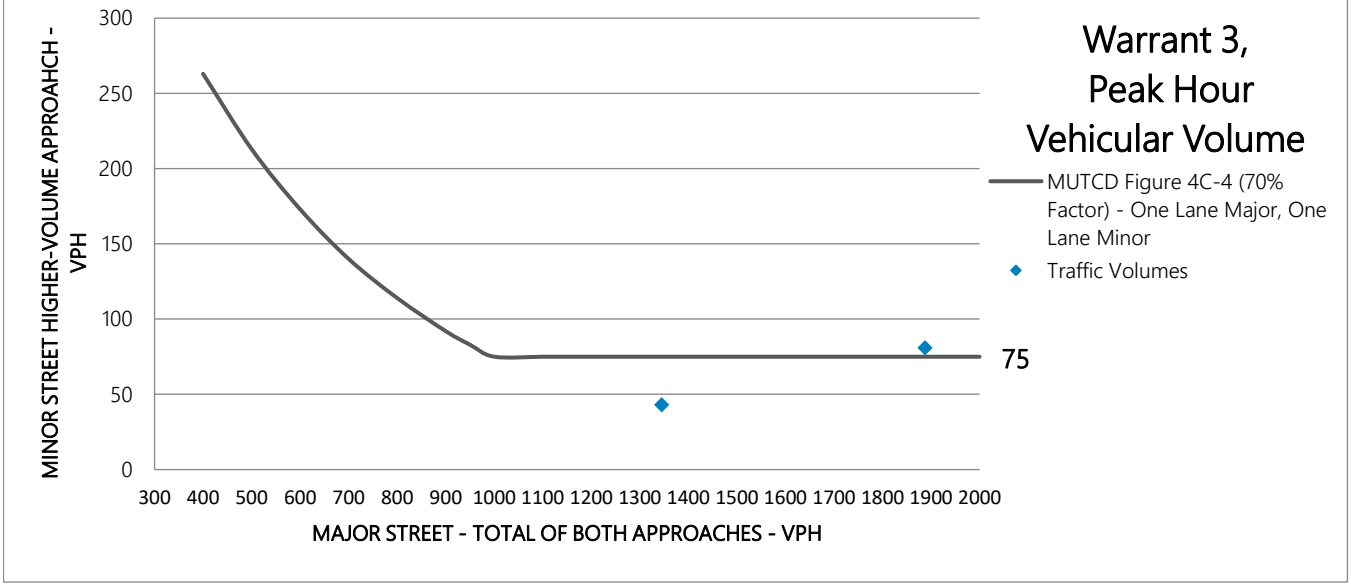
CONDITION A-3 - Total Approach Volume
Minimum Volume of Total Approaches: 800

CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO
Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? YES

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



TRAFFIC SIGNAL WARRANTS - BASED ON 2009 MUTCD

5/25/2022

INTERSECTION INFORMATION

City:	Salem		Condition:	East Park - Scenario 1 - Phases 1-6	
Population:	100000			Greencrest Street Connection to Auburn Road & State Street	
Intersection Location:				50% Right Turn Discount	
(Rural/Urban)	Urban				
Major Street Name:	Cordon Road		Minor Street Name:	Auburn Road	
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1	
Speed:	45 mph		Speed:	35 mph	
Street Width:	36 ft		Street Width:	36 ft	
Direction:	NB	SB	Direction:	EB	WB
Hour Beginning:			Hour Beginning:		
12:00 AM			12:00 AM		
1:00 AM			1:00 AM		
2:00 AM			2:00 AM		
3:00 AM			3:00 AM		
4:00 AM			4:00 AM		
5:00 AM			5:00 AM		
6:00 AM			6:00 AM		
7:00 AM	648	714	7:00 AM	46	17
8:00 AM			8:00 AM		
9:00 AM			9:00 AM		
10:00 AM			10:00 AM		
11:00 AM			11:00 AM		
12:00 PM			12:00 PM		
1:00 PM			1:00 PM		
2:00 PM			2:00 PM		
3:00 PM			3:00 PM		
4:00 PM			4:00 PM		
5:00 PM	978	938	5:00 PM	83	15
6:00 PM			6:00 PM		
7:00 PM			7:00 PM		
8:00 PM			8:00 PM		
9:00 PM			9:00 PM		
10:00 PM			10:00 PM		
11:00 PM			11:00 PM		
24-hour Total	1,626	1,652	24-hour Total	129	32

WARRANT 3, PEAK HOUR VEHICULAR VOLUME

	MAJOR			MINOR			Calculated		
	NB	SB	Total	EB	WB	Max	Threshold (B	A-2&3	B
5:00 PM	978	938	1,916	83	15	83	75	N	Y
7:00 AM	648	714	1,362	46	17	46	75	N	N
11:00 PM	0	0	0	0	0	0	610	N	N
10:00 PM	0	0	0	0	0	0	610	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

Warrant Requirements:
Major Street Lanes: 1
Minor Street Lanes: 1

CONDITION A-1 - Stopped Delay
Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

CONDITION A-2 - Minor Street Volume
Minimum Volume on Higher Minor Street Approach: 100

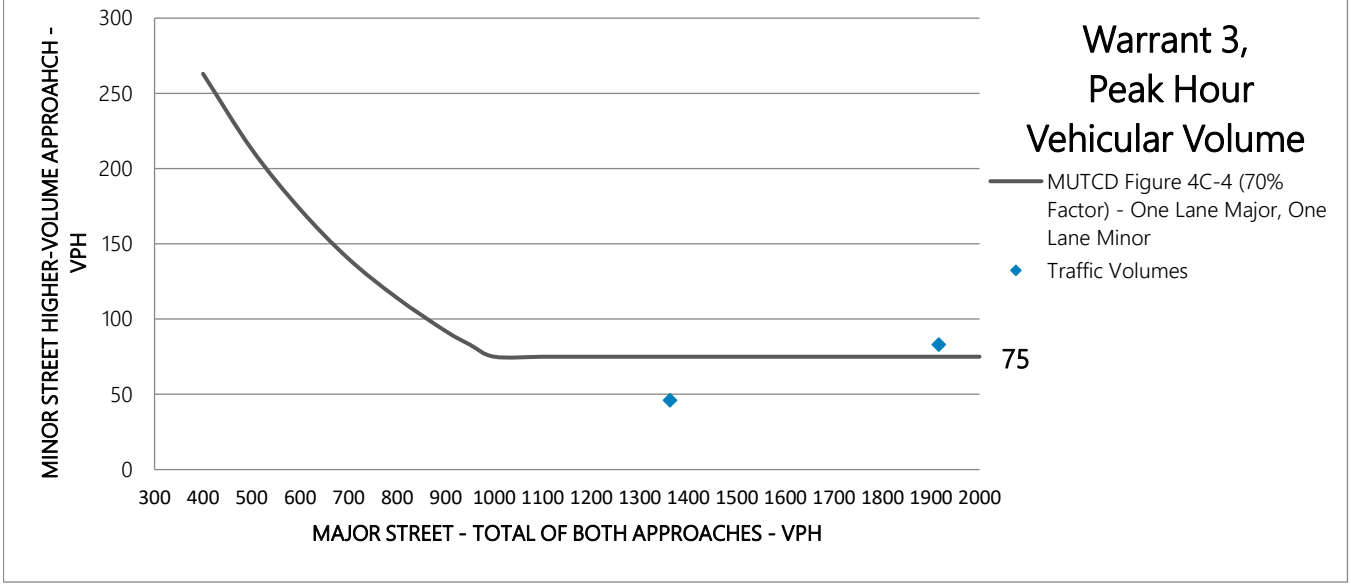
CONDITION A-3 - Total Approach Volume
Minimum Volume of Total Approaches: 800

CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO
Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? YES

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



Attachment 7: Scenario 2 Operations Analysis

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	1	82	14	0	6	43	592	2	5	663	24
Future Vol, veh/h	23	1	82	14	0	6	43	592	2	5	663	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	0	3	0	0	0	3	6	0	0	5	3
Mvmt Flow	23	1	84	14	0	6	44	604	2	5	677	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1395	1393	689	1435	1404	605	701	0	0	606	0	0
Stage 1	699	699	-	693	693	-	-	-	-	-	-	-
Stage 2	696	694	-	742	711	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.23	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.327	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	118	143	444	113	141	501	891	-	-	982	-	-
Stage 1	429	445	-	437	448	-	-	-	-	-	-	-
Stage 2	430	447	-	411	439	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	112	135	444	87	133	501	891	-	-	982	-	-
Mov Cap-2 Maneuver	112	135	-	87	133	-	-	-	-	-	-	-
Stage 1	408	443	-	416	426	-	-	-	-	-	-	-
Stage 2	404	425	-	331	437	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.9	42.5	0.6	0.1
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	891	-	-	113	444	116	982	-	-
HCM Lane V/C Ratio	0.049	-	-	0.217	0.188	0.176	0.005	-	-
HCM Control Delay (s)	9.2	-	-	45.5	15	42.5	8.7	-	-
HCM Lane LOS	A	-	-	E	C	E	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.8	0.7	0.6	0	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	1	30	14	0	6	24	599	2	5	665	22
Future Vol, veh/h	16	1	30	14	0	6	24	599	2	5	665	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	0	3	0	0	0	3	6	0	0	5	3
Mvmt Flow	16	1	31	14	0	6	24	611	2	5	679	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1363	1361	690	1376	1371	612	701	0	0	613	0	0
Stage 1	700	700	-	660	660	-	-	-	-	-	-	-
Stage 2	663	661	-	716	711	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.23	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.327	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	124	150	443	124	147	497	891	-	-	976	-	-
Stage 1	428	444	-	455	463	-	-	-	-	-	-	-
Stage 2	449	463	-	424	439	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	120	145	443	112	142	497	891	-	-	976	-	-
Mov Cap-2 Maneuver	120	145	-	112	142	-	-	-	-	-	-	-
Stage 1	416	442	-	443	450	-	-	-	-	-	-	-
Stage 2	432	450	-	392	437	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.1	33.6	0.4	0.1
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	891	-	-	121	443	146	976	-	-
HCM Lane V/C Ratio	0.027	-	-	0.143	0.069	0.14	0.005	-	-
HCM Control Delay (s)	9.2	-	-	39.7	13.7	33.6	8.7	-	-
HCM Lane LOS	A	-	-	E	B	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.2	0.5	0	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	1	31	14	0	6	25	601	2	5	666	23
Future Vol, veh/h	19	1	31	14	0	6	25	601	2	5	666	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	0	3	0	0	0	3	6	0	0	5	3
Mvmt Flow	19	1	32	14	0	6	26	613	2	5	680	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1371	1369	692	1384	1379	614	703	0	0	615	0	0
Stage 1	702	702	-	666	666	-	-	-	-	-	-	-
Stage 2	669	667	-	718	713	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.23	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.327	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	123	148	442	122	146	496	890	-	-	974	-	-
Stage 1	427	443	-	452	460	-	-	-	-	-	-	-
Stage 2	445	460	-	423	438	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	118	143	442	110	141	496	890	-	-	974	-	-
Mov Cap-2 Maneuver	118	143	-	110	141	-	-	-	-	-	-	-
Stage 1	415	441	-	439	447	-	-	-	-	-	-	-
Stage 2	427	447	-	390	436	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.6	34.1	0.4	0.1
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	890	-	-	119	442	144	974	-	-
HCM Lane V/C Ratio	0.029	-	-	0.171	0.072	0.142	0.005	-	-
HCM Control Delay (s)	9.2	-	-	41.4	13.8	34.1	8.7	-	-
HCM Lane LOS	A	-	-	E	B	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.2	0.5	0	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	1	31	14	0	6	25	609	2	5	674	24
Future Vol, veh/h	22	1	31	14	0	6	25	609	2	5	674	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	0	3	0	0	0	3	6	0	0	5	3
Mvmt Flow	22	1	32	14	0	6	26	621	2	5	688	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1387	1385	700	1401	1396	622	712	0	0	623	0	0
Stage 1	710	710	-	674	674	-	-	-	-	-	-	-
Stage 2	677	675	-	727	722	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.23	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.327	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	120	145	438	119	142	490	883	-	-	968	-	-
Stage 1	423	440	-	448	457	-	-	-	-	-	-	-
Stage 2	441	456	-	419	434	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	115	140	438	107	137	490	883	-	-	968	-	-
Mov Cap-2 Maneuver	115	140	-	107	137	-	-	-	-	-	-	-
Stage 1	411	438	-	435	444	-	-	-	-	-	-	-
Stage 2	423	443	-	386	432	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.6	35.1	0.4	0.1
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	883	-	-	116	438	140	968	-	-
HCM Lane V/C Ratio	0.029	-	-	0.202	0.072	0.146	0.005	-	-
HCM Control Delay (s)	9.2	-	-	43.7	13.9	35.1	8.7	-	-
HCM Lane LOS	A	-	-	E	B	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.2	0.5	0	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	1	32	14	0	6	25	613	2	5	675	25
Future Vol, veh/h	26	1	32	14	0	6	25	613	2	5	675	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	0	3	0	0	0	3	6	0	0	5	3
Mvmt Flow	27	1	33	14	0	6	26	626	2	5	689	26

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1394	1392	702	1408	1404	627	715	0	0	628	0	0
Stage 1	712	712	-	679	679	-	-	-	-	-	-	-
Stage 2	682	680	-	729	725	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.23	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.327	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	118	143	436	118	141	487	881	-	-	964	-	-
Stage 1	422	439	-	445	454	-	-	-	-	-	-	-
Stage 2	438	454	-	417	433	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	113	138	436	106	136	487	881	-	-	964	-	-
Mov Cap-2 Maneuver	113	138	-	106	136	-	-	-	-	-	-	-
Stage 1	409	437	-	432	440	-	-	-	-	-	-	-
Stage 2	420	440	-	383	431	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28.8	35.3	0.4	0.1
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	881	-	-	114	436	139	964	-	-
HCM Lane V/C Ratio	0.029	-	-	0.242	0.075	0.147	0.005	-	-
HCM Control Delay (s)	9.2	-	-	46.4	13.9	35.3	8.8	-	-
HCM Lane LOS	A	-	-	E	B	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0.2	0.5	0	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	1	32	14	0	6	25	621	2	5	683	26
Future Vol, veh/h	29	1	32	14	0	6	25	621	2	5	683	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	0	3	0	0	0	3	6	0	0	5	3
Mvmt Flow	30	1	33	14	0	6	26	634	2	5	697	27

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1411	1409	711	1425	1421	635	724	0	0	636	0	0
Stage 1	721	721	-	687	687	-	-	-	-	-	-	-
Stage 2	690	688	-	738	734	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.23	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.327	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	115	140	431	114	138	482	874	-	-	957	-	-
Stage 1	417	435	-	440	450	-	-	-	-	-	-	-
Stage 2	434	450	-	413	429	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	111	135	431	102	133	482	874	-	-	957	-	-
Mov Cap-2 Maneuver	111	135	-	102	133	-	-	-	-	-	-	-
Stage 1	404	433	-	427	437	-	-	-	-	-	-	-
Stage 2	416	437	-	379	427	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	30.8	36.6	0.4	0.1
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	874	-	-	112	431	134	957	-	-
HCM Lane V/C Ratio	0.029	-	-	0.273	0.076	0.152	0.005	-	-
HCM Control Delay (s)	9.2	-	-	48.8	14	36.6	8.8	-	-
HCM Lane LOS	A	-	-	E	B	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1	0.2	0.5	0	-	-

Intersection	
Int Delay, s/veh	10.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	3	122	9	2	7	141	843	19	10	837	48
Future Vol, veh/h	30	3	122	9	2	7	141	843	19	10	837	48
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	0	2	0	0	0	2	3	0	0	3	2
Mvmt Flow	31	3	127	9	2	7	147	878	20	10	872	50

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2104	2109	897	2164	2124	888	922	0	0	898	0	0
Stage 1	917	917	-	1182	1182	-	-	-	-	-	-	-
Stage 2	1187	1192	-	982	942	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.22	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	38	52	339	35	51	345	741	-	-	765	-	-
Stage 1	326	354	-	234	266	-	-	-	-	-	-	-
Stage 2	230	263	-	302	344	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 30	41	339	17	40	345	741	-	-	765	-	-
Mov Cap-2 Maneuver	~ 30	41	-	17	40	-	-	-	-	-	-	-
Stage 1	261	349	-	188	213	-	-	-	-	-	-	-
Stage 2	179	211	-	185	340	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	99.8	242.8	1.6	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	741	-	-	31	339	30	765	-	-
HCM Lane V/C Ratio	0.198	-	-	1.109	0.375	0.625	0.014	-	-
HCM Control Delay (s)	11.1	-	-	$ 387.6	21.9	242.8	9.8	-	-
HCM Lane LOS	B	-	-	F	C	F	A	-	-
HCM 95th %tile Q(veh)	0.7	-	-	3.8	1.7	2	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	3	89	9	2	7	83	847	19	10	845	40
Future Vol, veh/h	25	3	89	9	2	7	83	847	19	10	845	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	0	2	0	0	0	2	3	0	0	3	2
Mvmt Flow	26	3	93	9	2	7	86	882	20	10	880	42

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1990	1995	901	2033	2006	892	922	0	0	902	0	0
Stage 1	921	921	-	1064	1064	-	-	-	-	-	-	-
Stage 2	1069	1074	-	969	942	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.22	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	45	61	337	43	60	344	741	-	-	762	-	-
Stage 1	324	352	-	272	302	-	-	-	-	-	-	-
Stage 2	268	299	-	307	344	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	39	53	337	27	52	344	741	-	-	762	-	-
Mov Cap-2 Maneuver	39	53	-	27	52	-	-	-	-	-	-	-
Stage 1	286	347	-	240	267	-	-	-	-	-	-	-
Stage 2	230	264	-	218	340	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	66.8	129.2	0.9	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	741	-	-	40	337	46	762	-	-
HCM Lane V/C Ratio	0.117	-	-	0.729	0.275	0.408	0.014	-	-
HCM Control Delay (s)	10.5	-	-	216.4	19.7	129.2	9.8	-	-
HCM Lane LOS	B	-	-	F	C	F	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	2.7	1.1	1.4	0	-	-

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	3	89	9	2	7	83	849	19	10	848	44
Future Vol, veh/h	28	3	89	9	2	7	83	849	19	10	848	44
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	0	2	0	0	0	2	3	0	0	3	2
Mvmt Flow	29	3	93	9	2	7	86	884	20	10	883	46

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1997	2002	906	2040	2015	894	929	0	0	904	0	0
Stage 1	926	926	-	1066	1066	-	-	-	-	-	-	-
Stage 2	1071	1076	-	974	949	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.22	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	45	60	334	42	59	343	736	-	-	761	-	-
Stage 1	322	350	-	271	301	-	-	-	-	-	-	-
Stage 2	267	298	-	305	342	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	38	52	334	26	51	343	736	-	-	761	-	-
Mov Cap-2 Maneuver	38	52	-	26	51	-	-	-	-	-	-	-
Stage 1	284	345	-	239	266	-	-	-	-	-	-	-
Stage 2	229	263	-	215	338	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	78.9	137.6	0.9	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	736	-	-	39	334	44	761	-	-
HCM Lane V/C Ratio	0.117	-	-	0.828	0.278	0.426	0.014	-	-
HCM Control Delay (s)	10.5	-	-	248.1	19.9	137.6	9.8	-	-
HCM Lane LOS	B	-	-	F	C	F	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	3.1	1.1	1.5	0	-	-

Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	3	91	9	2	7	85	859	19	10	858	47
Future Vol, veh/h	29	3	91	9	2	7	85	859	19	10	858	47
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	0	2	0	0	0	2	3	0	0	3	2
Mvmt Flow	30	3	95	9	2	7	89	895	20	10	894	49

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2027	2032	919	2071	2046	905	943	0	0	915	0	0
Stage 1	939	939	-	1083	1083	-	-	-	-	-	-	-
Stage 2	1088	1093	-	988	963	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.22	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	43	58	329	40	57	338	727	-	-	754	-	-
Stage 1	317	345	-	265	296	-	-	-	-	-	-	-
Stage 2	261	293	-	300	337	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	37	50	329	24	49	338	727	-	-	754	-	-
Mov Cap-2 Maneuver	37	50	-	24	49	-	-	-	-	-	-	-
Stage 1	278	341	-	233	260	-	-	-	-	-	-	-
Stage 2	222	257	-	209	333	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	84.6	152.3	0.9	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	727	-	-	38	329	41	754	-	-
HCM Lane V/C Ratio	0.122	-	-	0.877	0.288	0.457	0.014	-	-
HCM Control Delay (s)	10.6	-	-	267.5	20.3	152.3	9.8	-	-
HCM Lane LOS	B	-	-	F	C	F	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	3.3	1.2	1.6	0	-	-

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	3	91	9	2	7	85	861	19	10	862	51
Future Vol, veh/h	32	3	91	9	2	7	85	861	19	10	862	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	0	2	0	0	0	2	3	0	0	3	2
Mvmt Flow	33	3	95	9	2	7	89	897	20	10	898	53

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2035	2040	925	2079	2056	907	951	0	0	917	0	0
Stage 1	945	945	-	1085	1085	-	-	-	-	-	-	-
Stage 2	1090	1095	-	994	971	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.22	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	42	57	326	40	56	337	722	-	-	752	-	-
Stage 1	314	343	-	265	295	-	-	-	-	-	-	-
Stage 2	261	292	-	298	334	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	36	49	326	24	48	337	722	-	-	752	-	-
Mov Cap-2 Maneuver	36	49	-	24	48	-	-	-	-	-	-	-
Stage 1	275	339	-	232	259	-	-	-	-	-	-	-
Stage 2	222	256	-	207	330	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	100	152.3	0.9	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	722	-	-	37	326	41	752	-	-
HCM Lane V/C Ratio	0.123	-	-	0.985	0.291	0.457	0.014	-	-
HCM Control Delay (s)	10.7	-	-	$ 306.7	20.5	152.3	9.9	-	-
HCM Lane LOS	B	-	-	F	C	F	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	3.7	1.2	1.6	0	-	-

Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	3	92	9	2	7	87	872	19	10	873	55
Future Vol, veh/h	34	3	92	9	2	7	87	872	19	10	873	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	0	2	0	0	0	2	3	0	0	3	2
Mvmt Flow	35	3	96	9	2	7	91	908	20	10	909	57

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2063	2068	938	2107	2086	918	966	0	0	928	0	0
Stage 1	958	958	-	1100	1100	-	-	-	-	-	-	-
Stage 2	1105	1110	-	1007	986	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.22	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	40	55	321	38	54	332	713	-	-	745	-	-
Stage 1	309	338	-	260	290	-	-	-	-	-	-	-
Stage 2	256	287	-	293	328	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 34	47	321	23	46	332	713	-	-	745	-	-
Mov Cap-2 Maneuver	~ 34	47	-	23	46	-	-	-	-	-	-	-
Stage 1	269	334	-	227	253	-	-	-	-	-	-	-
Stage 2	217	250	-	201	324	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	117.4	163.8	1	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	713	-	-	35	321	39	745	-	-
HCM Lane V/C Ratio	0.127	-	-	1.101	0.299	0.481	0.014	-	-
HCM Control Delay (s)	10.8	-	-	$ 357.5	20.9	163.8	9.9	-	-
HCM Lane LOS	B	-	-	F	C	F	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	4	1.2	1.7	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Attachment 8: Scenario 2 Queuing Analysis

Intersection: 101: Phases 1-2: Auburn Connection Only/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	EB	WB	NB	SB	SB
Directions Served	LT	R	LTR	L	L	TR
Maximum Queue (ft)	72	94	59	48	29	6
Average Queue (ft)	22	39	17	15	2	0
95th Queue (ft)	58	72	49	39	14	4
Link Distance (ft)	719	719	711			664
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				200	200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 103: Phases 1-2: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	EB	WB	NB	SB	SB
Directions Served	LT	R	LTR	L	L	TR
Maximum Queue (ft)	59	69	59	33	26	2
Average Queue (ft)	15	21	17	10	3	0
95th Queue (ft)	45	50	48	28	16	3
Link Distance (ft)	719	719	711			664
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				200	200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 104: Phases 1-3: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	EB	WB	NB	SB	SB
Directions Served	LT	R	LTR	L	L	TR
Maximum Queue (ft)	64	58	61	40	22	8
Average Queue (ft)	18	22	17	10	2	0
95th Queue (ft)	52	49	46	29	14	4
Link Distance (ft)	719	719	711			664
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				200	200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 105: Phases 1-4: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LTR	L	L
Maximum Queue (ft)	67	57	62	39	29
Average Queue (ft)	21	20	17	8	3
95th Queue (ft)	53	49	46	28	16
Link Distance (ft)	719	719	711		
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				200	200
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 106: Phases 1-5: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	EB	WB	NB	SB	SB
Directions Served	LT	R	LTR	L	L	TR
Maximum Queue (ft)	75	60	67	42	22	6
Average Queue (ft)	24	23	19	11	1	0
95th Queue (ft)	60	51	51	33	11	4
Link Distance (ft)	719	719	711			664
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				200	200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 107: Phases 1-6: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	EB	WB	NB	SB	SB
Directions Served	LT	R	LTR	L	L	TR
Maximum Queue (ft)	72	60	62	41	25	9
Average Queue (ft)	26	21	19	11	2	0
95th Queue (ft)	61	48	51	31	15	7
Link Distance (ft)	719	719	711			664
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				200	200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 201: Phases 1-2: Auburn Connection Only/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	256	133	142	124	21	35	40
Average Queue (ft)	137	60	64	49	1	6	3
95th Queue (ft)	297	111	184	92	20	26	18
Link Distance (ft)	719	719	711		639		664
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				200		200	
Storage Blk Time (%)					0		
Queuing Penalty (veh)					0		

Intersection: 203: Phases 1-2: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	117	123	76	83	2	32	12
Average Queue (ft)	50	50	25	32	0	7	0
95th Queue (ft)	122	95	66	65	2	28	6
Link Distance (ft)	719	719	711		639		664
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				200		200	
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 204: Phases 1-3: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	EB	WB	NB	SB	SB
Directions Served	LT	R	LTR	L	L	TR
Maximum Queue (ft)	204	153	108	86	35	19
Average Queue (ft)	95	52	33	31	6	1
95th Queue (ft)	203	118	85	66	26	9
Link Distance (ft)	719	719	711			664
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				200	200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 205: Phases 1-4: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	EB	WB	NB	SB	SB
Directions Served	LT	R	LTR	L	L	TR
Maximum Queue (ft)	192	133	98	92	37	26
Average Queue (ft)	92	51	31	35	6	2
95th Queue (ft)	208	107	81	72	26	14
Link Distance (ft)	719	719	711			664
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				200	200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 206: Phases 1-5: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	EB	WB	NB	SB	SB
Directions Served	LT	R	LTR	L	L	TR
Maximum Queue (ft)	254	118	96	100	37	23
Average Queue (ft)	137	49	31	36	7	2
95th Queue (ft)	322	91	82	76	27	11
Link Distance (ft)	719	719	711			664
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				200	200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 207: Phases 1-6: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	259	121	103	88	2	34	30
Average Queue (ft)	137	51	35	34	0	6	2
95th Queue (ft)	341	98	89	72	1	26	13
Link Distance (ft)	719	719	711		639		664
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				200		200	
Storage Blk Time (%)							
Queuing Penalty (veh)							

Zone Summary

Zone wide Queuing Penalty: 0

Attachment 9: Scenario 2 Signal Warrant Analysis

Preliminary Traffic Signal Warrant Analysis

Project: 22071 - East Park Phasing Analysis - Scenario 2
Date: 5/25/2022
Scenario: 2022 - PHASE 1: Greencrest Connects to Auburn Only

Major Street:	Cordon Road NE		Minor Street:	Auburn Road NE - EB	
Number of Lanes:	1		Number of Lanes:	1	
Peak Hour Volumes:	1848		Peak Hour Volumes:	136 107 100%	Total Rights RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	18,480	6,200	
Minor Street*	290	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	18,480	9,300	
Minor Street*	290	950	No
Combination Warrant			
Major Street	18,480	7,440	
Minor Street*	290	1,480	No

* Minor street right-turning traffic volumes reduced by 100%.

Preliminary Traffic Signal Warrant Analysis

Project: 22071 - East Park Phasing Analysis - Scenario 2
Date: 5/25/2022
Scenario: 2022 - PHASE 1: Greencrest Connects to Auburn & State

Major Street:	Cordon Road NE		Minor Street:	Auburn Road NE - EB	
Number of Lanes:	1		Number of Lanes:	1	
Peak Hour Volumes:	1817		Peak Hour Volumes:	114 88 100%	Total Rights RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	18,170	6,200	
Minor Street*	260	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	18,170	9,300	
Minor Street*	260	950	No
Combination Warrant			
Major Street	18,170	7,440	
Minor Street*	260	1,480	No

* Minor street right-turning traffic volumes reduced by 100%.

Preliminary Traffic Signal Warrant Analysis

Project: 22071 - East Park Phasing Analysis - Scenario 2
Date: 5/25/2022
Scenario: 2023 - PHASES 1-2: Greencrest Connects to Auburn Only

Major Street:	Cordon Road NE		Minor Street:	Auburn Road NE - EB	
Number of Lanes:	1		Number of Lanes:	1	
Peak Hour Volumes:	1898		Peak Hour Volumes:	155 122 100%	Total Rights RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	18,980	6,200	
Minor Street*	330	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	18,980	9,300	
Minor Street*	330	950	No
Combination Warrant			
Major Street	18,980	7,440	
Minor Street*	330	1,480	No

* Minor street right-turning traffic volumes reduced by 100%.

Preliminary Traffic Signal Warrant Analysis

Project: 22071 - East Park Phasing Analysis - Scenario 2
Date: 5/25/2022
Scenario: 2023 - PHASES 1-2: Greencrest Connects to Auburn & State

Major Street:	Cordon Road NE		Minor Street:	Auburn Road NE - EB	
Number of Lanes:	1		Number of Lanes:	1	
Peak Hour Volumes:	1844		Peak Hour Volumes:	117 89 100%	Total Rights RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	18,440	6,200	
Minor Street*	280	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	18,440	9,300	
Minor Street*	280	950	No
Combination Warrant			
Major Street	18,440	7,440	
Minor Street*	280	1,480	No

* Minor street right-turning traffic volumes reduced by 100%.

Preliminary Traffic Signal Warrant Analysis

Project: 22071 - East Park Phasing Analysis - Scenario 2
Date: 5/25/2022
Scenario: 2024 - PHASES 1-3: Greencrest Connects to Auburn & State

Major Street:	Cordon Road NE		Minor Street:	Auburn Road NE - EB	
Number of Lanes:	1		Number of Lanes:	1	
Peak Hour Volumes:	1853		Peak Hour Volumes:	120 89 100%	Total Rights RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	18,530	6,200	
Minor Street*	310	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	18,530	9,300	
Minor Street*	310	950	No
Combination Warrant			
Major Street	18,530	7,440	
Minor Street*	310	1,480	No

* Minor street right-turning traffic volumes reduced by 100%.

Preliminary Traffic Signal Warrant Analysis

Project: 22071 - East Park Phasing Analysis - Scenario 2
Date: 5/25/2022
Scenario: 2025 - PHASES 1-4: Greencrest Connects to Auburn & State

Major Street:	Cordon Road NE		Minor Street:	Auburn Road NE - EB	
Number of Lanes:	1		Number of Lanes:	1	
Peak Hour Volumes:	1878		Peak Hour Volumes:	123 91 100%	Total Rights RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	18,780	6,200	
Minor Street*	320	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	18,780	9,300	
Minor Street*	320	950	No
Combination Warrant			
Major Street	18,780	7,440	
Minor Street*	320	1,480	No

* Minor street right-turning traffic volumes reduced by 100%.

Preliminary Traffic Signal Warrant Analysis

Project: 22071 - East Park Phasing Analysis - Scenario 2
Date: 5/25/2022
Scenario: 2026 - PHASES 1-5: Greencrest Connects to Auburn & State

Major Street:	Cordon Road NE		Minor Street:	Auburn Road NE - EB	
Number of Lanes:	1		Number of Lanes:	1	
Peak Hour Volumes:	1888		Peak Hour Volumes:	126 91 100%	Total Rights RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	18,880	6,200	
Minor Street*	350	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	18,880	9,300	
Minor Street*	350	950	No
Combination Warrant			
Major Street	18,880	7,440	
Minor Street*	350	1,480	No

* Minor street right-turning traffic volumes reduced by 100%.

Preliminary Traffic Signal Warrant Analysis

Project: 22071 - East Park Phasing Analysis - Scenario 2
Date: 5/25/2022
Scenario: 2027 - PHASES 1-6: Greencrest Connects to Auburn & State

Major Street:	Cordon Road NE		Minor Street:	Auburn Road NE - EB	
Number of Lanes:	1		Number of Lanes:	1	
Peak Hour Volumes:	1916		Peak Hour Volumes:	129 92 100%	Total Rights RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	19,160	6,200	
Minor Street*	370	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	19,160	9,300	
Minor Street*	370	950	No
Combination Warrant			
Major Street	19,160	7,440	
Minor Street*	370	1,480	No

* Minor street right-turning traffic volumes reduced by 100%.

TRAFFIC SIGNAL WARRANTS - BASED ON 2009 MUTCD

5/25/2022

INTERSECTION INFORMATION

City:	Salem		Condition:	East Park - Scenario 2 - Phases 1-2	
Population:	100000			Greencrest Street Connection to Auburn Road Only	
Intersection Location:				50% Right Turn Discount	
(Rural/Urban)	Urban				
Major Street Name:	Cordon Road		Minor Street Name:	Auburn Road	
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1	
Speed:	45 mph		Speed:	35 mph	
Street Width:	36 ft		Street Width:	36 ft	
Direction:	NB	SB	Direction:	EB	WB
Hour Beginning:			Hour Beginning:		
12:00 AM			12:00 AM		
1:00 AM			1:00 AM		
2:00 AM			2:00 AM		
3:00 AM			3:00 AM		
4:00 AM			4:00 AM		
5:00 AM			5:00 AM		
6:00 AM			6:00 AM		
7:00 AM	637	692	7:00 AM	24	14
8:00 AM			8:00 AM		
9:00 AM			9:00 AM		
10:00 AM			10:00 AM		
11:00 AM			11:00 AM		
12:00 PM			12:00 PM		
1:00 PM			1:00 PM		
2:00 PM			2:00 PM		
3:00 PM			3:00 PM		
4:00 PM			4:00 PM		
5:00 PM	1,003	895	5:00 PM	33	11
6:00 PM			6:00 PM		
7:00 PM			7:00 PM		
8:00 PM			8:00 PM		
9:00 PM			9:00 PM		
10:00 PM			10:00 PM		
11:00 PM			11:00 PM		
24-hour Total	1,640	1,587	24-hour Total	57	25

WARRANT 3, PEAK HOUR VEHICULAR VOLUME

	MAJOR			MINOR			Calculated		
	NB	SB	Total	EB	WB	Max	Threshold (B	A-2&3	B
5:00 PM	1,003	895	1,898	33	11	33	75	N	N
7:00 AM	637	692	1,329	24	14	24	75	N	N
11:00 PM	0	0	0	0	0	0	610	N	N
10:00 PM	0	0	0	0	0	0	610	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

Warrant Requirements:
Major Street Lanes: 1
Minor Street Lanes: 1

CONDITION A-1 - Stopped Delay
Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

CONDITION A-2 - Minor Street Volume
Minimum Volume on Higher Minor Street Approach: 100

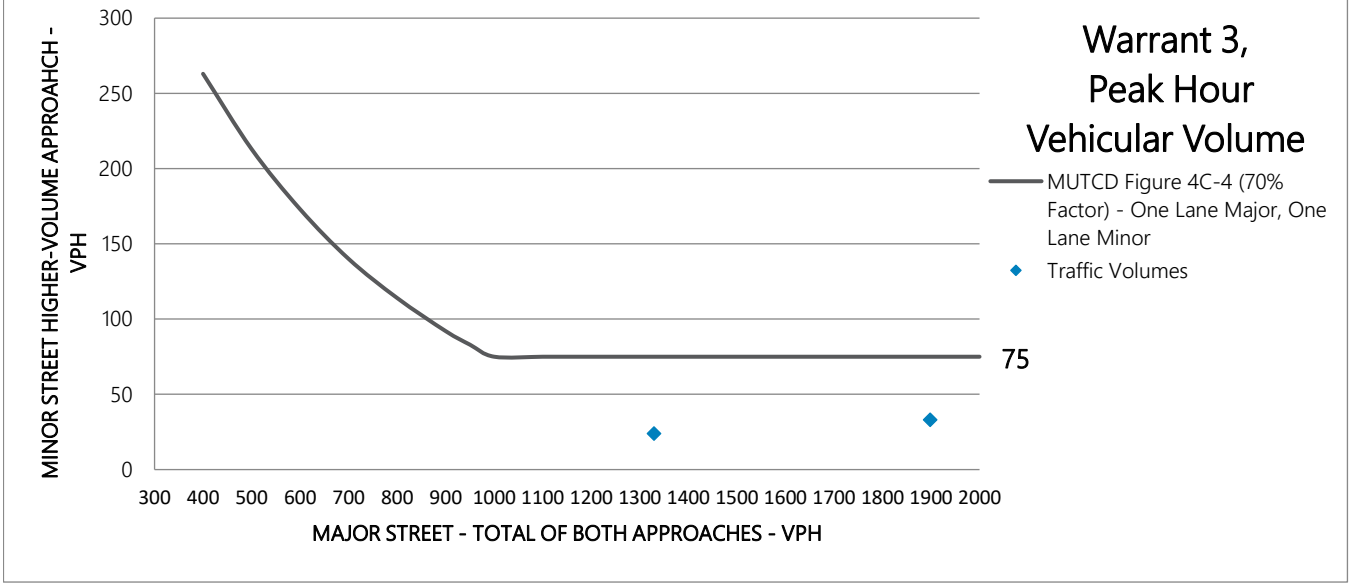
CONDITION A-3 - Total Approach Volume
Minimum Volume of Total Approaches: 800

CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO
Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? NO

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



TRAFFIC SIGNAL WARRANTS - BASED ON 2009 MUTCD

5/25/2022

INTERSECTION INFORMATION

City:	Salem		Condition:	East Park - Scenario 2 - Phases 1-2	
Population:	100000			Greencrest Street Connection to Auburn Road & State Street	
Intersection Location:				50% Right Turn Discount	
(Rural/Urban)	Urban				
Major Street Name:	Cordon Road		Minor Street Name:	Auburn Road	
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1	
Speed:	45 mph		Speed:	35 mph	
Street Width:	36 ft		Street Width:	36 ft	
Direction:	NB	SB	Direction:	EB	WB
Hour Beginning:			Hour Beginning:		
12:00 AM			12:00 AM		
1:00 AM			1:00 AM		
2:00 AM			2:00 AM		
3:00 AM			3:00 AM		
4:00 AM			4:00 AM		
5:00 AM			5:00 AM		
6:00 AM			6:00 AM		
7:00 AM	625	692	7:00 AM	17	14
8:00 AM			8:00 AM		
9:00 AM			9:00 AM		
10:00 AM			10:00 AM		
11:00 AM			11:00 AM		
12:00 PM			12:00 PM		
1:00 PM			1:00 PM		
2:00 PM			2:00 PM		
3:00 PM			3:00 PM		
4:00 PM			4:00 PM		
5:00 PM	949	895	5:00 PM	28	11
6:00 PM			6:00 PM		
7:00 PM			7:00 PM		
8:00 PM			8:00 PM		
9:00 PM			9:00 PM		
10:00 PM			10:00 PM		
11:00 PM			11:00 PM		
24-hour Total	1,574	1,587	24-hour Total	45	25

WARRANT 3, PEAK HOUR VEHICULAR VOLUME

	MAJOR			MINOR			Calculated		
	NB	SB	Total	EB	WB	Max	Threshold (B	A-2&3	B
5:00 PM	949	895	1,844	28	11	28	75	N	N
7:00 AM	625	692	1,317	17	14	17	75	N	N
11:00 PM	0	0	0	0	0	0	610	N	N
10:00 PM	0	0	0	0	0	0	610	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

Warrant Requirements:
Major Street Lanes: 1
Minor Street Lanes: 1

CONDITION A-1 - Stopped Delay
Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

CONDITION A-2 - Minor Street Volume
Minimum Volume on Higher Minor Street Approach: 100

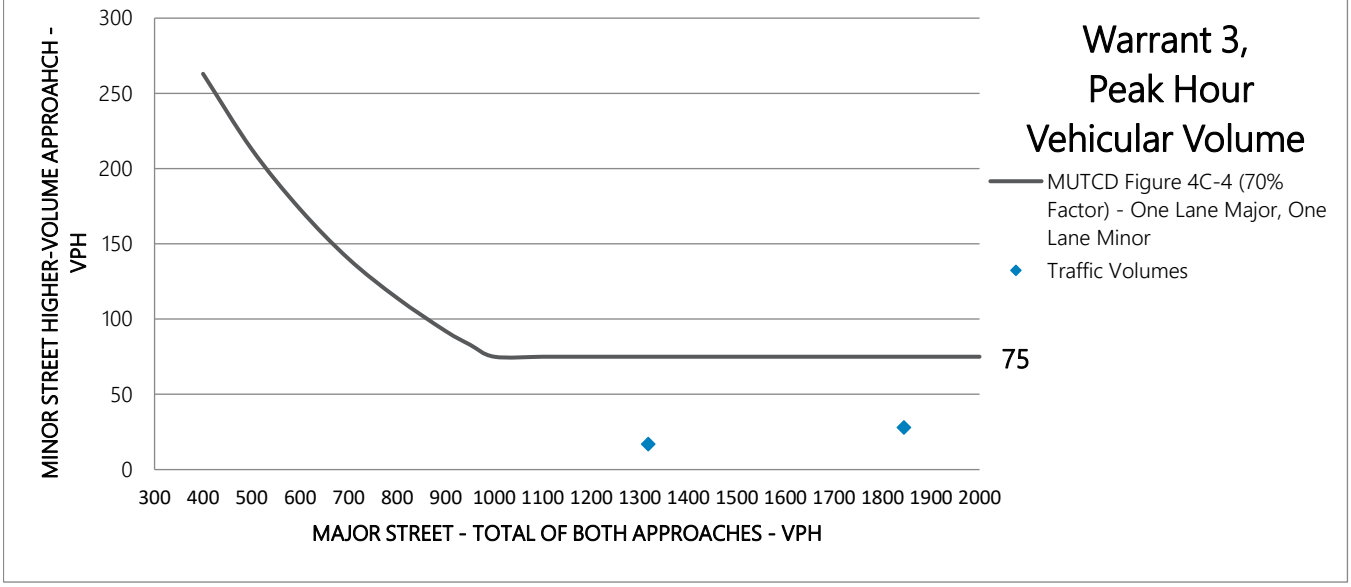
CONDITION A-3 - Total Approach Volume
Minimum Volume of Total Approaches: 800

CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO
Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? NO

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



TRAFFIC SIGNAL WARRANTS - BASED ON 2009 MUTCD

5/25/2022

INTERSECTION INFORMATION

City:	Salem		Condition:	East Park - Scenario 2 - Phases 1-3	
Population:	100000			Greencrest Street Connection to Auburn Road & State Street	
Intersection Location:				50% Right Turn Discount	
(Rural/Urban)	Urban				
Major Street Name:	Cordon Road		Minor Street Name:	Auburn Road	
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1	
Speed:	45 mph		Speed:	35 mph	
Street Width:	36 ft		Street Width:	36 ft	
Direction:	NB	SB	Direction:	EB	WB
Hour Beginning:			Hour Beginning:		
12:00 AM			12:00 AM		
1:00 AM			1:00 AM		
2:00 AM			2:00 AM		
3:00 AM			3:00 AM		
4:00 AM			4:00 AM		
5:00 AM			5:00 AM		
6:00 AM			6:00 AM		
7:00 AM	628	694	7:00 AM	20	14
8:00 AM			8:00 AM		
9:00 AM			9:00 AM		
10:00 AM			10:00 AM		
11:00 AM			11:00 AM		
12:00 PM			12:00 PM		
1:00 PM			1:00 PM		
2:00 PM			2:00 PM		
3:00 PM			3:00 PM		
4:00 PM			4:00 PM		
5:00 PM	951	902	5:00 PM	31	11
6:00 PM			6:00 PM		
7:00 PM			7:00 PM		
8:00 PM			8:00 PM		
9:00 PM			9:00 PM		
10:00 PM			10:00 PM		
11:00 PM			11:00 PM		
24-hour Total	1,579	1,596	24-hour Total	51	25

WARRANT 3, PEAK HOUR VEHICULAR VOLUME

	MAJOR			MINOR			Calculated		
	NB	SB	Total	EB	WB	Max	Threshold (B	A-2&3	B
5:00 PM	951	902	1,853	31	11	31	75	N	N
7:00 AM	628	694	1,322	20	14	20	75	N	N
11:00 PM	0	0	0	0	0	0	610	N	N
10:00 PM	0	0	0	0	0	0	610	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

Warrant Requirements:
Major Street Lanes: 1
Minor Street Lanes: 1

CONDITION A-1 - Stopped Delay
Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

CONDITION A-2 - Minor Street Volume
Minimum Volume on Higher Minor Street Approach: 100

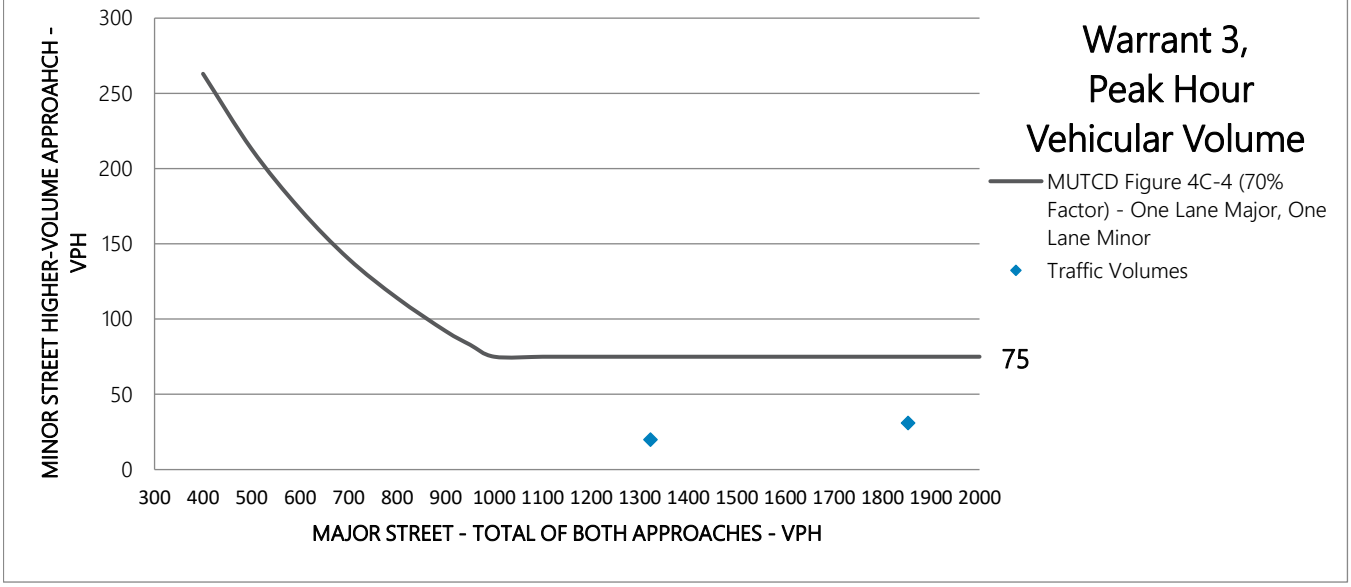
CONDITION A-3 - Total Approach Volume
Minimum Volume of Total Approaches: 800

CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO
Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? NO

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



TRAFFIC SIGNAL WARRANTS - BASED ON 2009 MUTCD

5/25/2022

INTERSECTION INFORMATION

City:	Salem		Condition:	East Park - Scenario 2 - Phases 1-4	
Population:	100000			Greencrest Street Connection to Auburn Road & State Street	
Intersection Location:				50% Right Turn Discount	
(Rural/Urban)	Urban				
Major Street Name:	Cordon Road		Minor Street Name:	Auburn Road	
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1	
Speed:	45 mph		Speed:	35 mph	
Street Width:	36 ft		Street Width:	36 ft	
Direction:	NB	SB	Direction:	EB	WB
Hour Beginning:			Hour Beginning:		
12:00 AM			12:00 AM		
1:00 AM			1:00 AM		
2:00 AM			2:00 AM		
3:00 AM			3:00 AM		
4:00 AM			4:00 AM		
5:00 AM			5:00 AM		
6:00 AM			6:00 AM		
7:00 AM	636	703	7:00 AM	23	14
8:00 AM			8:00 AM		
9:00 AM			9:00 AM		
10:00 AM			10:00 AM		
11:00 AM			11:00 AM		
12:00 PM			12:00 PM		
1:00 PM			1:00 PM		
2:00 PM			2:00 PM		
3:00 PM			3:00 PM		
4:00 PM			4:00 PM		
5:00 PM	963	915	5:00 PM	32	11
6:00 PM			6:00 PM		
7:00 PM			7:00 PM		
8:00 PM			8:00 PM		
9:00 PM			9:00 PM		
10:00 PM			10:00 PM		
11:00 PM			11:00 PM		
24-hour Total	1,599	1,618	24-hour Total	55	25

WARRANT 3, PEAK HOUR VEHICULAR VOLUME

	MAJOR			MINOR			Calculated		
	NB	SB	Total	EB	WB	Max	Threshold (B	A-2&3	B
5:00 PM	963	915	1,878	32	11	32	75	N	N
7:00 AM	636	703	1,339	23	14	23	75	N	N
11:00 PM	0	0	0	0	0	0	610	N	N
10:00 PM	0	0	0	0	0	0	610	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

Warrant Requirements:
Major Street Lanes: 1
Minor Street Lanes: 1

CONDITION A-1 - Stopped Delay
Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

CONDITION A-2 - Minor Street Volume
Minimum Volume on Higher Minor Street Approach: 100

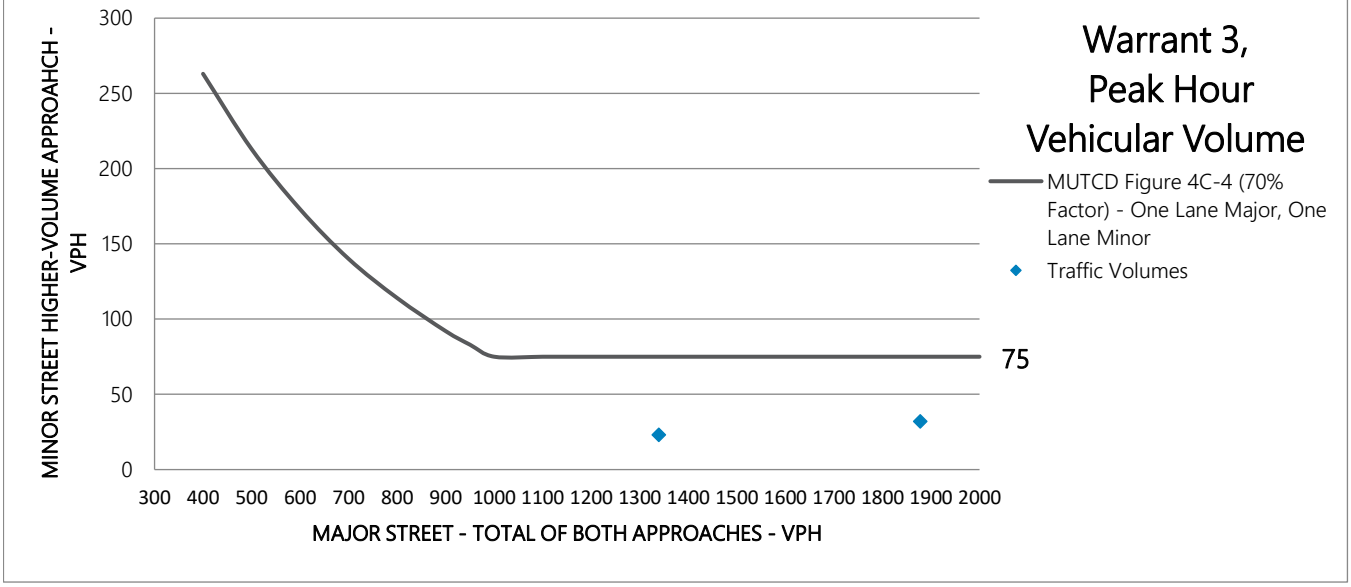
CONDITION A-3 - Total Approach Volume
Minimum Volume of Total Approaches: 800

CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO
Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? NO

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



INTERSECTION INFORMATION

City:	Salem		Condition:	East Park - Scenario 2 - Phases 1-5 (All)	
Population:	100000			Greencrest Street Connection to Auburn Road & State Street	
Intersection Location:				50% Right Turn Discount	
(Rural/Urban)	Urban				
Major Street Name:	Cordon Road		Minor Street Name:	Auburn Road	
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1	
Speed:	45 mph		Speed:	35 mph	
Street Width:	36 ft		Street Width:	36 ft	
Direction:	NB	SB	Direction:	EB	WB
Hour Beginning:			Hour Beginning:		
12:00 AM			12:00 AM		
1:00 AM			1:00 AM		
2:00 AM			2:00 AM		
3:00 AM			3:00 AM		
4:00 AM			4:00 AM		
5:00 AM			5:00 AM		
6:00 AM			6:00 AM		
7:00 AM	640	705	7:00 AM	27	14
8:00 AM			8:00 AM		
9:00 AM			9:00 AM		
10:00 AM			10:00 AM		
11:00 AM			11:00 AM		
12:00 PM			12:00 PM		
1:00 PM			1:00 PM		
2:00 PM			2:00 PM		
3:00 PM			3:00 PM		
4:00 PM			4:00 PM		
5:00 PM	965	923	5:00 PM	35	11
6:00 PM			6:00 PM		
7:00 PM			7:00 PM		
8:00 PM			8:00 PM		
9:00 PM			9:00 PM		
10:00 PM			10:00 PM		
11:00 PM			11:00 PM		
24-hour Total	1,605	1,628	24-hour Total	62	25

Warrants Evaluted:

Warrant 1, 8-Hour Vehicular Volume - Evaluated for Conditions A & B
Warrant 2 , 4-Hour Vehicular Volume - Evaluated
Warrant 3, Peak Hour - Evaluated for Conditions A-2, A-3 (A-1 needs to be evaluated separately), and Condition B
Warrant 4, Pedestrian Volume - Not Analyzed
Warrant 5, School Crossing - Not Analyzed
Warrant 6, Coordinated Signal System - Not Analyzed
Warrant 7, Accident Experience - Not Analyzed
Warrant 8, Roadway Network - Not Analyzed
Warrant 9, Intersection Near a Grade Crossing - Not Analyzed

WARRANT 3, PEAK HOUR VEHICULAR VOLUME

	MAJOR			MINOR			Calculated		
	NB	SB	Total	EB	WB	Max	Threshold (B	A-2&3	B
5:00 PM	965	923	1,888	35	11	35	75	N	N
7:00 AM	640	705	1,345	27	14	27	75	N	N
11:00 PM	0	0	0	0	0	0	610	N	N
10:00 PM	0	0	0	0	0	0	610	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

Warrant Requirements:
Major Street Lanes: 1
Minor Street Lanes: 1

CONDITION A-1 - Stopped Delay
Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

CONDITION A-2 - Minor Street Volume
Minimum Volume on Higher Minor Street Approach: 100

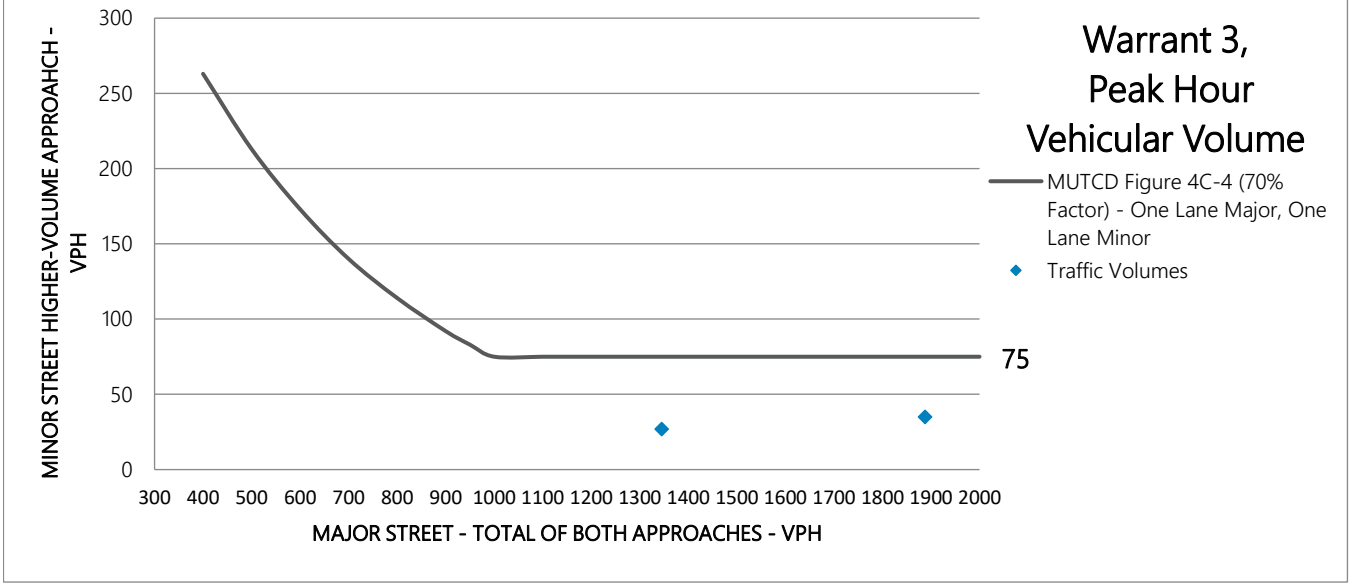
CONDITION A-3 - Total Approach Volume
Minimum Volume of Total Approaches: 800

CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO
Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? NO

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



TRAFFIC SIGNAL WARRANTS - BASED ON 2009 MUTCD

5/25/2022

INTERSECTION INFORMATION

City:	Salem		Condition:	East Park - Scenario 2 - Phases 1-6	
Population:	100000			Greencrest Street Connection to Auburn Road & State Street	
Intersection Location:				50% Right Turn Discount	
(Rural/Urban)	Urban				
Major Street Name:	Cordon Road		Minor Street Name:	Auburn Road	
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1	
Speed:	45 mph		Speed:	35 mph	
Street Width:	36 ft		Street Width:	36 ft	
Direction:	NB	SB	Direction:	EB	WB
Hour Beginning:			Hour Beginning:		
12:00 AM			12:00 AM		
1:00 AM			1:00 AM		
2:00 AM			2:00 AM		
3:00 AM			3:00 AM		
4:00 AM			4:00 AM		
5:00 AM			5:00 AM		
6:00 AM			6:00 AM		
7:00 AM	648	714	7:00 AM	30	14
8:00 AM			8:00 AM		
9:00 AM			9:00 AM		
10:00 AM			10:00 AM		
11:00 AM			11:00 AM		
12:00 PM			12:00 PM		
1:00 PM			1:00 PM		
2:00 PM			2:00 PM		
3:00 PM			3:00 PM		
4:00 PM			4:00 PM		
5:00 PM	978	938	5:00 PM	37	11
6:00 PM			6:00 PM		
7:00 PM			7:00 PM		
8:00 PM			8:00 PM		
9:00 PM			9:00 PM		
10:00 PM			10:00 PM		
11:00 PM			11:00 PM		
24-hour Total	1,626	1,652	24-hour Total	67	25

WARRANT 3, PEAK HOUR VEHICULAR VOLUME

	MAJOR			MINOR			Calculated		
	NB	SB	Total	EB	WB	Max	Threshold (B	A-2&3	B
5:00 PM	978	938	1,916	37	11	37	75	N	N
7:00 AM	648	714	1,362	30	14	30	75	N	N
11:00 PM	0	0	0	0	0	0	610	N	N
10:00 PM	0	0	0	0	0	0	610	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

Warrant Requirements:
Major Street Lanes: 1
Minor Street Lanes: 1

CONDITION A-1 - Stopped Delay
Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

CONDITION A-2 - Minor Street Volume
Minimum Volume on Higher Minor Street Approach: 100

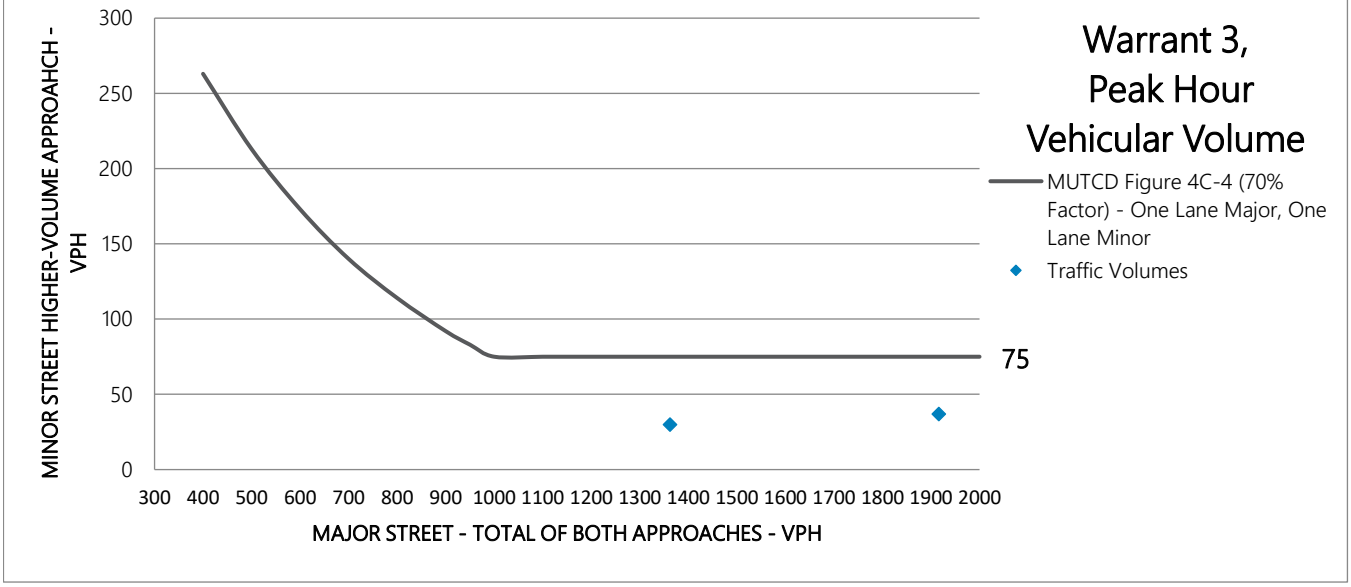
CONDITION A-3 - Total Approach Volume
Minimum Volume of Total Approaches: 800

CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO
Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? NO

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



Attachment 10: Scenario 3 Operations Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	1	82	14	0	6	43	592	2	5	663	24
Future Volume (veh/h)	23	1	82	14	0	6	43	592	2	5	663	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1800	1758	1800	1800	1800	1758	1716	1800	1800	1730	1758
Adj Flow Rate, veh/h	23	1	84	14	0	6	44	604	2	5	677	24
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	0	3	0	0	0	3	6	0	0	5	3
Cap, veh/h	270	9	127	195	21	41	93	1115	4	28	1019	36
Arrive On Green	0.09	0.09	0.09	0.09	0.00	0.09	0.06	0.65	0.63	0.02	0.61	0.59
Sat Flow, veh/h	1385	96	1490	792	219	433	1674	1709	6	1714	1660	59
Grp Volume(v), veh/h	24	0	84	20	0	0	44	0	606	5	0	701
Grp Sat Flow(s),veh/h/ln	1481	0	1490	1445	0	0	1674	0	1715	1714	0	1719
Q Serve(g_s), s	0.1	0.0	2.8	0.0	0.0	0.0	1.3	0.0	9.7	0.1	0.0	13.5
Cycle Q Clear(g_c), s	0.7	0.0	2.8	0.6	0.0	0.0	1.3	0.0	9.7	0.1	0.0	13.5
Prop In Lane	0.96		1.00	0.70		0.30	1.00		0.00	1.00		0.03
Lane Grp Cap(c), veh/h	265	0	127	243	0	0	93	0	1119	28	0	1055
V/C Ratio(X)	0.09	0.00	0.66	0.08	0.00	0.00	0.47	0.00	0.54	0.18	0.00	0.66
Avail Cap(c_a), veh/h	769	0	647	727	0	0	211	0	1679	189	0	1656
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.4	0.0	22.6	21.3	0.0	0.0	23.3	0.0	4.7	24.7	0.0	6.4
Incr Delay (d2), s/veh	0.1	0.0	5.8	0.1	0.0	0.0	3.7	0.0	0.4	2.9	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.1	0.2	0.0	0.0	0.5	0.0	1.0	0.1	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.5	0.0	28.4	21.5	0.0	0.0	27.0	0.0	5.2	27.6	0.0	7.1
LnGrp LOS	C	A	C	C	A	A	C	A	A	C	A	A
Approach Vol, veh/h		108			20			650			706	
Approach Delay, s/veh		26.8			21.5			6.6			7.3	
Approach LOS		C			C			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	37.2		8.8	6.8	35.2		8.8				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	5.1	48.8		22.1	5.9	48.0		22.1				
Max Q Clear Time (g_c+I1), s	2.1	11.7		4.8	3.3	15.5		2.6				
Green Ext Time (p_c), s	0.0	12.9		0.4	0.0	14.7		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		8.6	
HCM 6th LOS		A	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	1	30	14	0	6	24	599	2	5	665	22
Future Volume (veh/h)	16	1	30	14	0	6	24	599	2	5	665	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1800	1758	1800	1800	1800	1758	1716	1800	1800	1730	1758
Adj Flow Rate, veh/h	16	1	31	14	0	6	24	611	2	5	679	22
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	0	3	0	0	0	3	6	0	0	5	3
Cap, veh/h	247	12	93	191	6	29	65	1123	4	30	1059	34
Arrive On Green	0.06	0.07	0.06	0.06	0.00	0.06	0.04	0.66	0.64	0.02	0.64	0.61
Sat Flow, veh/h	1368	160	1490	855	81	401	1674	1709	6	1714	1666	54
Grp Volume(v), veh/h	17	0	31	20	0	0	24	0	613	5	0	701
Grp Sat Flow(s),veh/h/ln	1529	0	1490	1337	0	0	1674	0	1715	1714	0	1720
Q Serve(g_s), s	0.0	0.0	0.9	0.4	0.0	0.0	0.7	0.0	9.1	0.1	0.0	11.9
Cycle Q Clear(g_c), s	0.4	0.0	0.9	0.8	0.0	0.0	0.7	0.0	9.1	0.1	0.0	11.9
Prop In Lane	0.94		1.00	0.70		0.30	1.00		0.00	1.00		0.03
Lane Grp Cap(c), veh/h	242	0	93	212	0	0	65	0	1127	30	0	1093
V/C Ratio(X)	0.07	0.00	0.33	0.09	0.00	0.00	0.37	0.00	0.54	0.17	0.00	0.64
Avail Cap(c_a), veh/h	823	0	690	787	0	0	197	0	1801	202	0	1807
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.8	0.0	21.3	21.1	0.0	0.0	22.3	0.0	4.3	23.0	0.0	5.3
Incr Delay (d2), s/veh	0.1	0.0	2.1	0.2	0.0	0.0	3.4	0.0	0.4	2.7	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.3	0.2	0.0	0.0	0.3	0.0	0.6	0.1	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.0	0.0	23.4	21.2	0.0	0.0	25.7	0.0	4.8	25.7	0.0	6.0
LnGrp LOS	C	A	C	C	A	A	C	A	A	C	A	A
Approach Vol, veh/h		48			20			637			706	
Approach Delay, s/veh		22.5			21.2			5.5			6.1	
Approach LOS		C			C			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	35.2		7.5	5.9	34.2		7.5				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	5.1	48.9		22.0	5.1	48.9		22.0				
Max Q Clear Time (g_c+I1), s	2.1	11.1		2.9	2.7	13.9		2.8				
Green Ext Time (p_c), s	0.0	13.2		0.1	0.0	15.3		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		6.6	
HCM 6th LOS		A	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	1	31	14	0	6	25	601	2	5	666	23
Future Volume (veh/h)	19	1	31	14	0	6	25	601	2	5	666	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1800	1758	1800	1800	1800	1758	1716	1800	1800	1730	1758
Adj Flow Rate, veh/h	19	1	32	14	0	6	26	613	2	5	680	23
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	0	3	0	0	0	3	6	0	0	5	3
Cap, veh/h	250	10	96	190	8	30	69	1125	4	29	1055	36
Arrive On Green	0.06	0.07	0.06	0.06	0.00	0.06	0.04	0.66	0.64	0.02	0.63	0.61
Sat Flow, veh/h	1388	134	1490	833	111	405	1674	1709	6	1714	1663	56
Grp Volume(v), veh/h	20	0	32	20	0	0	26	0	615	5	0	703
Grp Sat Flow(s),veh/h/ln	1522	0	1490	1349	0	0	1674	0	1715	1714	0	1720
Q Serve(g_s), s	0.0	0.0	1.0	0.3	0.0	0.0	0.7	0.0	9.2	0.1	0.0	12.1
Cycle Q Clear(g_c), s	0.5	0.0	1.0	0.8	0.0	0.0	0.7	0.0	9.2	0.1	0.0	12.1
Prop In Lane	0.95		1.00	0.70		0.30	1.00		0.00	1.00		0.03
Lane Grp Cap(c), veh/h	244	0	96	214	0	0	69	0	1128	29	0	1091
V/C Ratio(X)	0.08	0.00	0.33	0.09	0.00	0.00	0.38	0.00	0.55	0.17	0.00	0.64
Avail Cap(c_a), veh/h	815	0	683	780	0	0	195	0	1787	197	0	1789
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.0	0.0	21.5	21.1	0.0	0.0	22.4	0.0	4.4	23.2	0.0	5.4
Incr Delay (d2), s/veh	0.1	0.0	2.0	0.2	0.0	0.0	3.4	0.0	0.4	2.7	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.4	0.2	0.0	0.0	0.3	0.0	0.7	0.1	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.1	0.0	23.5	21.3	0.0	0.0	25.8	0.0	4.8	25.9	0.0	6.1
LnGrp LOS	C	A	C	C	A	A	C	A	A	C	A	A
Approach Vol, veh/h		52			20			641			708	
Approach Delay, s/veh		22.6			21.3			5.6			6.2	
Approach LOS		C			C			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	35.6		7.6	6.0	34.4		7.6				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	5.0	49.0		22.0	5.1	48.9		22.0				
Max Q Clear Time (g_c+I1), s	2.1	11.2		3.0	2.7	14.1		2.8				
Green Ext Time (p_c), s	0.0	13.2		0.1	0.0	15.3		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		6.8	
HCM 6th LOS		A	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	1	31	14	0	6	25	609	2	5	674	24
Future Volume (veh/h)	22	1	31	14	0	6	25	609	2	5	674	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1800	1758	1800	1800	1800	1758	1716	1800	1800	1730	1758
Adj Flow Rate, veh/h	22	1	32	14	0	6	26	621	2	5	688	24
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	0	3	0	0	0	3	6	0	0	5	3
Cap, veh/h	251	9	98	187	10	31	68	1129	4	29	1058	37
Arrive On Green	0.07	0.08	0.07	0.07	0.00	0.07	0.04	0.66	0.64	0.02	0.64	0.62
Sat Flow, veh/h	1404	115	1490	811	133	405	1674	1709	6	1714	1661	58
Grp Volume(v), veh/h	23	0	32	20	0	0	26	0	623	5	0	712
Grp Sat Flow(s),veh/h/ln	1519	0	1490	1349	0	0	1674	0	1715	1714	0	1719
Q Serve(g_s), s	0.0	0.0	1.0	0.2	0.0	0.0	0.7	0.0	9.4	0.1	0.0	12.5
Cycle Q Clear(g_c), s	0.6	0.0	1.0	0.8	0.0	0.0	0.7	0.0	9.4	0.1	0.0	12.5
Prop In Lane	0.96		1.00	0.70		0.30	1.00		0.00	1.00		0.03
Lane Grp Cap(c), veh/h	244	0	98	214	0	0	68	0	1132	29	0	1095
V/C Ratio(X)	0.09	0.00	0.33	0.09	0.00	0.00	0.38	0.00	0.55	0.17	0.00	0.65
Avail Cap(c_a), veh/h	804	0	674	769	0	0	193	0	1763	194	0	1765
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.3	0.0	21.7	21.3	0.0	0.0	22.7	0.0	4.4	23.6	0.0	5.5
Incr Delay (d2), s/veh	0.2	0.0	1.9	0.2	0.0	0.0	3.5	0.0	0.4	2.7	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.4	0.2	0.0	0.0	0.3	0.0	0.7	0.1	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.4	0.0	23.6	21.5	0.0	0.0	26.2	0.0	4.8	26.3	0.0	6.1
LnGrp LOS	C	A	C	C	A	A	C	A	A	C	A	A
Approach Vol, veh/h		55			20			649			717	
Approach Delay, s/veh		22.7			21.5			5.7			6.3	
Approach LOS		C			C			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	36.1		7.7	6.0	35.0		7.7				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	5.0	49.0		22.0	5.1	48.9		22.0				
Max Q Clear Time (g_c+I1), s	2.1	11.4		3.0	2.7	14.5		2.8				
Green Ext Time (p_c), s	0.0	13.4		0.2	0.0	15.5		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		6.9	
HCM 6th LOS		A	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	1	32	14	0	6	25	613	2	5	675	25
Future Volume (veh/h)	26	1	32	14	0	6	25	613	2	5	675	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1800	1758	1800	1800	1800	1758	1716	1800	1800	1730	1758
Adj Flow Rate, veh/h	27	1	33	14	0	6	26	626	2	5	689	26
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	0	3	0	0	0	3	6	0	0	5	3
Cap, veh/h	256	7	101	186	13	32	68	1128	4	29	1054	40
Arrive On Green	0.07	0.08	0.07	0.07	0.00	0.07	0.04	0.66	0.64	0.02	0.64	0.62
Sat Flow, veh/h	1422	92	1490	777	167	405	1674	1709	5	1714	1656	62
Grp Volume(v), veh/h	28	0	33	20	0	0	26	0	628	5	0	715
Grp Sat Flow(s),veh/h/ln	1514	0	1490	1348	0	0	1674	0	1715	1714	0	1719
Q Serve(g_s), s	0.0	0.0	1.0	0.1	0.0	0.0	0.7	0.0	9.6	0.1	0.0	12.7
Cycle Q Clear(g_c), s	0.8	0.0	1.0	0.8	0.0	0.0	0.7	0.0	9.6	0.1	0.0	12.7
Prop In Lane	0.96		1.00	0.70		0.30	1.00		0.00	1.00		0.04
Lane Grp Cap(c), veh/h	247	0	101	217	0	0	68	0	1132	29	0	1094
V/C Ratio(X)	0.11	0.00	0.33	0.09	0.00	0.00	0.38	0.00	0.55	0.17	0.00	0.65
Avail Cap(c_a), veh/h	796	0	668	762	0	0	191	0	1748	192	0	1748
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.4	0.0	21.8	21.4	0.0	0.0	22.9	0.0	4.5	23.8	0.0	5.6
Incr Delay (d2), s/veh	0.2	0.0	1.8	0.2	0.0	0.0	3.5	0.0	0.4	2.8	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.4	0.2	0.0	0.0	0.3	0.0	0.7	0.1	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.6	0.0	23.6	21.5	0.0	0.0	26.4	0.0	4.9	26.5	0.0	6.2
LnGrp LOS	C	A	C	C	A	A	C	A	A	C	A	A
Approach Vol, veh/h		61			20			654			720	
Approach Delay, s/veh		22.7			21.5			5.8			6.4	
Approach LOS		C			C			A			A	

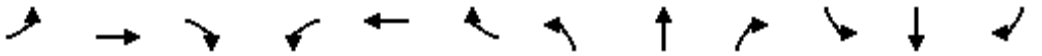
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	36.4		7.8	6.0	35.2		7.8				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	5.0	49.0		22.0	5.1	48.9		22.0				
Max Q Clear Time (g_c+I1), s	2.1	11.6		3.0	2.7	14.7		2.8				
Green Ext Time (p_c), s	0.0	13.5		0.2	0.0	15.5		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		7.0
HCM 6th LOS		A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	1	32	14	0	6	25	621	2	5	683	26
Future Volume (veh/h)	29	1	32	14	0	6	25	621	2	5	683	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1800	1758	1800	1800	1800	1758	1716	1800	1800	1730	1758
Adj Flow Rate, veh/h	30	1	33	14	0	6	26	634	2	5	697	27
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	0	3	0	0	0	3	6	0	0	5	3
Cap, veh/h	256	7	103	183	15	32	68	1133	4	29	1057	41
Arrive On Green	0.07	0.08	0.07	0.07	0.00	0.07	0.04	0.66	0.64	0.02	0.64	0.62
Sat Flow, veh/h	1431	83	1490	755	184	402	1674	1709	5	1714	1654	64
Grp Volume(v), veh/h	31	0	33	20	0	0	26	0	636	5	0	724
Grp Sat Flow(s),veh/h/ln	1514	0	1490	1342	0	0	1674	0	1715	1714	0	1718
Q Serve(g_s), s	0.0	0.0	1.0	0.0	0.0	0.0	0.8	0.0	9.9	0.1	0.0	13.1
Cycle Q Clear(g_c), s	0.8	0.0	1.0	0.9	0.0	0.0	0.8	0.0	9.9	0.1	0.0	13.1
Prop In Lane	0.97		1.00	0.70		0.30	1.00		0.00	1.00		0.04
Lane Grp Cap(c), veh/h	247	0	103	216	0	0	68	0	1136	29	0	1098
V/C Ratio(X)	0.13	0.00	0.32	0.09	0.00	0.00	0.38	0.00	0.56	0.17	0.00	0.66
Avail Cap(c_a), veh/h	786	0	660	751	0	0	189	0	1726	190	0	1726
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.7	0.0	22.0	21.6	0.0	0.0	23.2	0.0	4.5	24.1	0.0	5.6
Incr Delay (d2), s/veh	0.2	0.0	1.8	0.2	0.0	0.0	3.5	0.0	0.4	2.8	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.4	0.2	0.0	0.0	0.3	0.0	0.8	0.1	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	0.0	23.8	21.7	0.0	0.0	26.8	0.0	4.9	26.9	0.0	6.3
LnGrp LOS	C	A	C	C	A	A	C	A	A	C	A	A
Approach Vol, veh/h		64			20			662			729	
Approach Delay, s/veh		22.9			21.7			5.8			6.4	
Approach LOS		C			C			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	36.9		7.9	6.0	35.7		7.9				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	5.0	49.0		22.0	5.1	48.9		22.0				
Max Q Clear Time (g_c+I1), s	2.1	11.9		3.0	2.8	15.1		2.9				
Green Ext Time (p_c), s	0.0	13.7		0.2	0.0	15.7		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		7.1
HCM 6th LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	3	122	9	2	7	141	843	19	10	837	48
Future Volume (veh/h)	30	3	122	9	2	7	141	843	19	10	837	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1800	1772	1800	1800	1800	1772	1758	1800	1800	1758	1772
Adj Flow Rate, veh/h	31	3	127	9	2	7	147	878	20	10	872	50
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	0	2	0	0	0	2	3	0	0	3	2
Cap, veh/h	252	20	171	140	43	69	191	1192	27	33	992	57
Arrive On Green	0.11	0.12	0.11	0.11	0.12	0.11	0.11	0.70	0.68	0.02	0.60	0.59
Sat Flow, veh/h	1311	168	1502	547	354	573	1688	1712	39	1714	1646	94
Grp Volume(v), veh/h	34	0	127	18	0	0	147	0	898	10	0	922
Grp Sat Flow(s),veh/h/ln	1479	0	1502	1474	0	0	1688	0	1751	1714	0	1741
Q Serve(g_s), s	0.7	0.0	6.0	0.0	0.0	0.0	6.2	0.0	23.5	0.4	0.0	32.9
Cycle Q Clear(g_c), s	1.4	0.0	6.0	0.7	0.0	0.0	6.2	0.0	23.5	0.4	0.0	32.9
Prop In Lane	0.91		1.00	0.50		0.39	1.00		0.02	1.00		0.05
Lane Grp Cap(c), veh/h	262	0	171	242	0	0	191	0	1219	33	0	1049
V/C Ratio(X)	0.13	0.00	0.74	0.07	0.00	0.00	0.77	0.00	0.74	0.30	0.00	0.88
Avail Cap(c_a), veh/h	534	0	452	506	0	0	207	0	1219	131	0	1100
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.2	0.0	31.5	28.9	0.0	0.0	31.6	0.0	7.0	35.5	0.0	12.4
Incr Delay (d2), s/veh	0.2	0.0	6.2	0.1	0.0	0.0	15.0	0.0	2.4	5.0	0.0	8.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	2.4	0.3	0.0	0.0	3.1	0.0	4.9	0.2	0.0	10.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.4	0.0	37.7	29.0	0.0	0.0	46.6	0.0	9.3	40.5	0.0	20.5
LnGrp LOS	C	A	D	C	A	A	D	A	A	D	A	C
Approach Vol, veh/h		161			18			1045			932	
Approach Delay, s/veh		35.9			29.0			14.6			20.7	
Approach LOS		D			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.4	55.1		12.9	12.3	48.2		12.9				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	5.1	48.8		22.1	8.5	45.4		22.1				
Max Q Clear Time (g_c+I1), s	2.4	25.5		8.0	8.2	34.9		2.7				
Green Ext Time (p_c), s	0.0	15.9		0.6	0.0	8.4		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			18.9									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	3	89	9	2	7	83	847	19	10	845	40
Future Volume (veh/h)	25	3	89	9	2	7	83	847	19	10	845	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1800	1772	1800	1800	1800	1772	1758	1800	1800	1758	1772
Adj Flow Rate, veh/h	26	3	93	9	2	7	86	882	20	10	880	42
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	0	2	0	0	0	2	3	0	0	3	2
Cap, veh/h	225	21	134	130	40	57	120	1205	27	35	1087	52
Arrive On Green	0.09	0.10	0.09	0.09	0.10	0.09	0.07	0.70	0.69	0.02	0.65	0.64
Sat Flow, veh/h	1275	216	1502	509	413	587	1688	1712	39	1714	1664	79
Grp Volume(v), veh/h	29	0	93	18	0	0	86	0	902	10	0	922
Grp Sat Flow(s),veh/h/ln	1491	0	1502	1509	0	0	1688	0	1751	1714	0	1744
Q Serve(g_s), s	0.4	0.0	4.0	0.0	0.0	0.0	3.3	0.0	21.1	0.4	0.0	26.1
Cycle Q Clear(g_c), s	1.1	0.0	4.0	0.7	0.0	0.0	3.3	0.0	21.1	0.4	0.0	26.1
Prop In Lane	0.90		1.00	0.50		0.39	1.00		0.02	1.00		0.05
Lane Grp Cap(c), veh/h	235	0	134	216	0	0	120	0	1232	35	0	1138
V/C Ratio(X)	0.12	0.00	0.69	0.08	0.00	0.00	0.72	0.00	0.73	0.29	0.00	0.81
Avail Cap(c_a), veh/h	586	0	495	561	0	0	151	0	1301	143	0	1285
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.0	0.0	29.6	27.8	0.0	0.0	30.5	0.0	6.1	32.4	0.0	8.6
Incr Delay (d2), s/veh	0.2	0.0	6.2	0.2	0.0	0.0	11.3	0.0	2.0	4.5	0.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.6	0.3	0.0	0.0	1.6	0.0	3.5	0.2	0.0	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.2	0.0	35.9	28.0	0.0	0.0	41.7	0.0	8.1	36.9	0.0	12.2
LnGrp LOS	C	A	D	C	A	A	D	A	A	D	A	B
Approach Vol, veh/h		122			18			988			932	
Approach Delay, s/veh		34.0			28.0			11.0			12.5	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	51.2		10.5	8.8	47.8		10.5				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	5.1	48.8		22.1	5.5	48.4		22.1				
Max Q Clear Time (g_c+I1), s	2.4	23.1		6.0	5.3	28.1		2.7				
Green Ext Time (p_c), s	0.0	17.2		0.4	0.0	14.6		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			13.2									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	3	89	9	2	7	83	849	19	10	848	44
Future Volume (veh/h)	28	3	89	9	2	7	83	849	19	10	848	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1800	1772	1800	1800	1800	1772	1758	1800	1800	1758	1772
Adj Flow Rate, veh/h	29	3	93	9	2	7	86	884	20	10	883	46
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	0	2	0	0	0	2	3	0	0	3	2
Cap, veh/h	228	19	135	130	40	57	120	1207	27	34	1083	56
Arrive On Green	0.09	0.10	0.09	0.09	0.10	0.09	0.07	0.70	0.69	0.02	0.65	0.64
Sat Flow, veh/h	1293	195	1502	511	411	587	1688	1712	39	1714	1656	86
Grp Volume(v), veh/h	32	0	93	18	0	0	86	0	904	10	0	929
Grp Sat Flow(s),veh/h/ln	1488	0	1502	1509	0	0	1688	0	1751	1714	0	1742
Q Serve(g_s), s	0.6	0.0	4.1	0.0	0.0	0.0	3.4	0.0	21.3	0.4	0.0	26.7
Cycle Q Clear(g_c), s	1.2	0.0	4.1	0.7	0.0	0.0	3.4	0.0	21.3	0.4	0.0	26.7
Prop In Lane	0.91		1.00	0.50		0.39	1.00		0.02	1.00		0.05
Lane Grp Cap(c), veh/h	235	0	135	216	0	0	120	0	1234	34	0	1139
V/C Ratio(X)	0.14	0.00	0.69	0.08	0.00	0.00	0.72	0.00	0.73	0.29	0.00	0.82
Avail Cap(c_a), veh/h	582	0	492	558	0	0	150	0	1293	142	0	1276
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	29.8	28.0	0.0	0.0	30.7	0.0	6.1	32.6	0.0	8.7
Incr Delay (d2), s/veh	0.3	0.0	6.1	0.2	0.0	0.0	11.5	0.0	2.1	4.6	0.0	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	1.6	0.3	0.0	0.0	1.6	0.0	3.6	0.2	0.0	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.5	0.0	35.9	28.2	0.0	0.0	42.2	0.0	8.2	37.1	0.0	12.5
LnGrp LOS	C	A	D	C	A	A	D	A	A	D	A	B
Approach Vol, veh/h		125			18			990			939	
Approach Delay, s/veh		34.0			28.2			11.1			12.8	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.4	51.5		10.6	8.8	48.1		10.6				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	5.1	48.8		22.1	5.5	48.4		22.1				
Max Q Clear Time (g_c+I1), s	2.4	23.3		6.1	5.4	28.7		2.7				
Green Ext Time (p_c), s	0.0	17.1		0.5	0.0	14.4		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			13.4									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	3	91	9	2	7	85	859	19	10	858	47
Future Volume (veh/h)	29	3	91	9	2	7	85	859	19	10	858	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1800	1772	1800	1800	1800	1772	1758	1800	1800	1758	1772
Adj Flow Rate, veh/h	30	3	95	9	2	7	89	895	20	10	894	49
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	0	2	0	0	0	2	3	0	0	3	2
Cap, veh/h	228	18	137	130	40	58	124	1210	27	34	1078	59
Arrive On Green	0.09	0.10	0.09	0.09	0.10	0.09	0.07	0.71	0.69	0.02	0.65	0.64
Sat Flow, veh/h	1299	187	1502	515	406	586	1688	1713	38	1714	1651	90
Grp Volume(v), veh/h	33	0	95	18	0	0	89	0	915	10	0	943
Grp Sat Flow(s),veh/h/ln	1487	0	1502	1506	0	0	1688	0	1751	1714	0	1742
Q Serve(g_s), s	0.6	0.0	4.2	0.0	0.0	0.0	3.5	0.0	22.0	0.4	0.0	28.1
Cycle Q Clear(g_c), s	1.3	0.0	4.2	0.7	0.0	0.0	3.5	0.0	22.0	0.4	0.0	28.1
Prop In Lane	0.91		1.00	0.50		0.39	1.00		0.02	1.00		0.05
Lane Grp Cap(c), veh/h	236	0	137	216	0	0	124	0	1237	34	0	1137
V/C Ratio(X)	0.14	0.00	0.69	0.08	0.00	0.00	0.72	0.00	0.74	0.29	0.00	0.83
Avail Cap(c_a), veh/h	573	0	485	549	0	0	153	0	1273	140	0	1251
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.6	0.0	30.2	28.3	0.0	0.0	31.0	0.0	6.2	33.1	0.0	9.0
Incr Delay (d2), s/veh	0.3	0.0	6.1	0.2	0.0	0.0	11.8	0.0	2.3	4.6	0.0	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	1.7	0.3	0.0	0.0	1.7	0.0	3.8	0.2	0.0	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.9	0.0	36.3	28.5	0.0	0.0	42.8	0.0	8.5	37.7	0.0	13.5
LnGrp LOS	C	A	D	C	A	A	D	A	A	D	A	B
Approach Vol, veh/h		128			18			1004			953	
Approach Delay, s/veh		34.4			28.5			11.5			13.7	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.4	52.4		10.8	9.0	48.7		10.8				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	5.1	48.8		22.1	5.7	48.2		22.1				
Max Q Clear Time (g_c+I1), s	2.4	24.0		6.2	5.5	30.1		2.7				
Green Ext Time (p_c), s	0.0	17.0		0.5	0.0	13.6		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		14.1	
HCM 6th LOS		B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	3	91	9	2	7	85	861	19	10	862	51
Future Volume (veh/h)	32	3	91	9	2	7	85	861	19	10	862	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1800	1772	1800	1800	1800	1772	1758	1800	1800	1758	1772
Adj Flow Rate, veh/h	33	3	95	9	2	7	89	897	20	10	898	53
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	0	2	0	0	0	2	3	0	0	3	2
Cap, veh/h	230	17	138	129	40	58	124	1212	27	34	1075	63
Arrive On Green	0.09	0.10	0.09	0.09	0.10	0.09	0.07	0.71	0.69	0.02	0.65	0.64
Sat Flow, veh/h	1313	171	1502	517	403	585	1688	1713	38	1714	1643	97
Grp Volume(v), veh/h	36	0	95	18	0	0	89	0	917	10	0	951
Grp Sat Flow(s),veh/h/ln	1484	0	1502	1506	0	0	1688	0	1751	1714	0	1740
Q Serve(g_s), s	0.8	0.0	4.2	0.0	0.0	0.0	3.6	0.0	22.2	0.4	0.0	28.8
Cycle Q Clear(g_c), s	1.5	0.0	4.2	0.7	0.0	0.0	3.6	0.0	22.2	0.4	0.0	28.8
Prop In Lane	0.92		1.00	0.50		0.39	1.00		0.02	1.00		0.06
Lane Grp Cap(c), veh/h	236	0	138	216	0	0	124	0	1239	34	0	1139
V/C Ratio(X)	0.15	0.00	0.69	0.08	0.00	0.00	0.72	0.00	0.74	0.29	0.00	0.84
Avail Cap(c_a), veh/h	568	0	480	544	0	0	147	0	1262	139	0	1245
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.9	0.0	30.4	28.6	0.0	0.0	31.3	0.0	6.2	33.4	0.0	9.1
Incr Delay (d2), s/veh	0.3	0.0	6.0	0.2	0.0	0.0	13.1	0.0	2.3	4.7	0.0	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	1.7	0.3	0.0	0.0	1.7	0.0	3.9	0.2	0.0	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.2	0.0	36.5	28.7	0.0	0.0	44.4	0.0	8.5	38.1	0.0	13.9
LnGrp LOS	C	A	D	C	A	A	D	A	A	D	A	B
Approach Vol, veh/h		131			18			1006			961	
Approach Delay, s/veh		34.5			28.7			11.7			14.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.4	52.9		10.8	9.1	49.2		10.8				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	5.1	48.8		22.1	5.5	48.4		22.1				
Max Q Clear Time (g_c+I1), s	2.4	24.2		6.2	5.6	30.8		2.7				
Green Ext Time (p_c), s	0.0	16.9		0.5	0.0	13.4		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			14.4									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	3	92	9	2	7	87	872	19	10	873	55
Future Volume (veh/h)	34	3	92	9	2	7	87	872	19	10	873	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1800	1772	1800	1800	1800	1772	1758	1800	1800	1758	1772
Adj Flow Rate, veh/h	35	3	96	9	2	7	91	908	20	10	909	57
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	0	2	0	0	0	2	3	0	0	3	2
Cap, veh/h	231	16	139	129	40	58	126	1215	27	34	1071	67
Arrive On Green	0.09	0.10	0.09	0.09	0.10	0.09	0.07	0.71	0.69	0.02	0.65	0.64
Sat Flow, veh/h	1322	161	1502	519	400	585	1688	1713	38	1714	1637	103
Grp Volume(v), veh/h	38	0	96	18	0	0	91	0	928	10	0	966
Grp Sat Flow(s),veh/h/ln	1483	0	1502	1504	0	0	1688	0	1751	1714	0	1739
Q Serve(g_s), s	0.9	0.0	4.3	0.0	0.0	0.0	3.7	0.0	23.0	0.4	0.0	30.2
Cycle Q Clear(g_c), s	1.6	0.0	4.3	0.7	0.0	0.0	3.7	0.0	23.0	0.4	0.0	30.2
Prop In Lane	0.92		1.00	0.50		0.39	1.00		0.02	1.00		0.06
Lane Grp Cap(c), veh/h	236	0	139	216	0	0	126	0	1241	34	0	1138
V/C Ratio(X)	0.16	0.00	0.69	0.08	0.00	0.00	0.72	0.00	0.75	0.29	0.00	0.85
Avail Cap(c_a), veh/h	561	0	475	537	0	0	150	0	1247	137	0	1224
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.2	0.0	30.8	28.8	0.0	0.0	31.6	0.0	6.3	33.8	0.0	9.4
Incr Delay (d2), s/veh	0.3	0.0	6.0	0.2	0.0	0.0	13.0	0.0	2.5	4.7	0.0	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	1.7	0.3	0.0	0.0	1.8	0.0	4.1	0.2	0.0	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.5	0.0	36.8	29.0	0.0	0.0	44.6	0.0	8.8	38.5	0.0	14.9
LnGrp LOS	C	A	D	C	A	A	D	A	A	D	A	B
Approach Vol, veh/h		134			18			1019			976	
Approach Delay, s/veh		34.7			29.0			12.0			15.2	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.4	53.6		11.0	9.2	49.7		11.0				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	5.1	48.8		22.1	5.7	48.2		22.1				
Max Q Clear Time (g_c+I1), s	2.4	25.0		6.3	5.7	32.2		2.7				
Green Ext Time (p_c), s	0.0	16.7		0.5	0.0	12.5		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		15.0	
HCM 6th LOS		B	

Attachment 11: Scenario 3 Queuing Analysis

Intersection: 101: Phases 1-2: Auburn Connection Only/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	57	103	52	81	212	30	264
Average Queue (ft)	20	38	17	24	56	4	103
95th Queue (ft)	48	75	43	58	139	19	215
Link Distance (ft)	719	719	711		639		664
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				200		200	
Storage Blk Time (%)					0		1
Queuing Penalty (veh)					0		0

Intersection: 103: Phases 1-2: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	44	58	48	53	165	30	267
Average Queue (ft)	13	20	14	16	50	3	76
95th Queue (ft)	40	49	41	41	132	18	177
Link Distance (ft)	719	719	711		639		664
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				200		200	
Storage Blk Time (%)					0		0
Queuing Penalty (veh)					0		0

Intersection: 104: Phases 1-3: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	48	49	48	53	180	29	231
Average Queue (ft)	15	20	14	14	54	5	83
95th Queue (ft)	43	45	40	38	137	23	175
Link Distance (ft)	719	719	711		639		664
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				200		200	
Storage Blk Time (%)					0		0
Queuing Penalty (veh)					0		0

Intersection: 105: Phases 1-4: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	57	66	53	49	189	30	256
Average Queue (ft)	19	20	15	14	61	4	92
95th Queue (ft)	49	49	42	36	144	21	198
Link Distance (ft)	719	719	711		639		664
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				200		200	
Storage Blk Time (%)					0		1
Queuing Penalty (veh)					0		0

Intersection: 106: Phases 1-5: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	78	61	49	55	222	30	287
Average Queue (ft)	21	21	16	15	66	5	95
95th Queue (ft)	53	50	43	41	158	22	208
Link Distance (ft)	719	719	711		639		664
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				200		200	
Storage Blk Time (%)					0		1
Queuing Penalty (veh)					0		0

Intersection: 107: Phases 1-6: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/AM Peak Hour

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	65	61	40	61	212	30	262
Average Queue (ft)	18	20	12	14	61	4	91
95th Queue (ft)	49	49	36	40	149	20	193
Link Distance (ft)	719	719	711		639		664
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				200		200	
Storage Blk Time (%)					0		1
Queuing Penalty (veh)					0		0

Intersection: 201: Phases 1-2: Auburn Connection Only/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	60	134	47	166	374	100	612
Average Queue (ft)	24	61	13	82	113	12	271
95th Queue (ft)	55	110	39	144	265	60	516
Link Distance (ft)	719	719	711		639		664
Upstream Blk Time (%)							0
Queuing Penalty (veh)							0
Storage Bay Dist (ft)				200		200	
Storage Blk Time (%)				0	2		15
Queuing Penalty (veh)				0	3		1

Intersection: 203: Phases 1-2: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	69	121	51	114	274	98	581
Average Queue (ft)	23	46	14	48	101	10	198
95th Queue (ft)	55	87	41	90	225	59	449
Link Distance (ft)	719	719	711		639		664
Upstream Blk Time (%)							1
Queuing Penalty (veh)							0
Storage Bay Dist (ft)				200		200	
Storage Blk Time (%)					2		7
Queuing Penalty (veh)					1		1

Intersection: 204: Phases 1-3: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	69	118	50	198	316	36	536
Average Queue (ft)	24	51	16	53	100	8	195
95th Queue (ft)	57	94	42	121	236	30	405
Link Distance (ft)	719	719	711		639		664
Upstream Blk Time (%)							0
Queuing Penalty (veh)							0
Storage Bay Dist (ft)				200		200	
Storage Blk Time (%)					2		7
Queuing Penalty (veh)					1		1

Intersection: 205: Phases 1-4: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	69	108	48	158	383	105	471
Average Queue (ft)	24	48	13	52	110	12	200
95th Queue (ft)	59	88	42	113	265	62	410
Link Distance (ft)	719	719	711		639		664
Upstream Blk Time (%)							0
Queuing Penalty (veh)							0
Storage Bay Dist (ft)				200		200	
Storage Blk Time (%)					2		8
Queuing Penalty (veh)					2		1

Intersection: 206: Phases 1-5: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	74	96	57	192	387	161	541
Average Queue (ft)	24	47	16	57	124	13	219
95th Queue (ft)	58	84	44	133	288	64	468
Link Distance (ft)	719	719	711		639		664
Upstream Blk Time (%)							2
Queuing Penalty (veh)							0
Storage Bay Dist (ft)				200		200	
Storage Blk Time (%)					3		8
Queuing Penalty (veh)					2		1

Intersection: 207: Phases 1-6: Auburn & State Connections/Cordon Rd NE & Auburn Rd NE/PM Peak Hour

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	75	108	44	181	353	152	557
Average Queue (ft)	26	47	11	54	111	16	226
95th Queue (ft)	62	89	37	123	264	94	462
Link Distance (ft)	719	719	711		639		664
Upstream Blk Time (%)							1
Queuing Penalty (veh)							0
Storage Bay Dist (ft)				200		200	
Storage Blk Time (%)					2		10
Queuing Penalty (veh)					2		1

Zone Summary

Zone wide Queuing Penalty: 18