Creekside at Lorson Ranch Filing No.2
PUDSP-22-003
Traffic Impact Study

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Introduction

The Creekside at Lorson Ranch Filing No.2 development, herein referred to as "the site", is a proposed development located in El Paso County, Colorado. The site includes 38 proposed single-family detached houses. The site is bounded by Lorson Boulevard to the north, Trappe Drive to the east, Luneth Drive to the south, and Jimmy Camp Creek to the west. See Figure 1 for a vicinity map. The overall development was previously analyzed by LSC in the Lorson Ranch Sketch Plan Amendment 2 Traffic Impact and Access Analysis, dated December 17, 2018. Additionally, several individual developments in and surrounding the Baseline development have submitted traffic impact studies. These studies include:

- Creekside at Lorson Ranch Filing No. 1 Traffic Impact and Access Analysis, October 25, 2020
- Creekside at Lorson Ranch South Transportation Memo, March 9, 2020 with minor revisions May 5, 2020

Additionally, Matrix has completed the Corvallis Traffic Impact Study, June 14, 2021 in the vicinity of the Creekside at Lorson Ranch development.

The purpose of this TIS is to analyze the existing conditions within the study area, determine the traffic generated by the site, analyze the build-out year (2025) and horizon year (2040) traffic conditions, and determine the impact of site-generated traffic on the adjacent roadway network. The study area for this TIS includes the following intersections:

- Marksheffel Road/Lorson Boulevard
- Lorson Boulevard/Trappe Drive
- Trappe Drive/Magothy Drive
- Trappe Drive/Luneth Drive
- Luneth Drive/Akela Lane

Only the Marksheffel Road/Lorson Boulevard intersection currently has traffic as the other roads and intersections either do not exist yet or are under construction by adjacent developments. The existing intersection volumes at the Marksheffel Road/Lorson Boulevard intersection was taken from the other traffic studies for consistency.

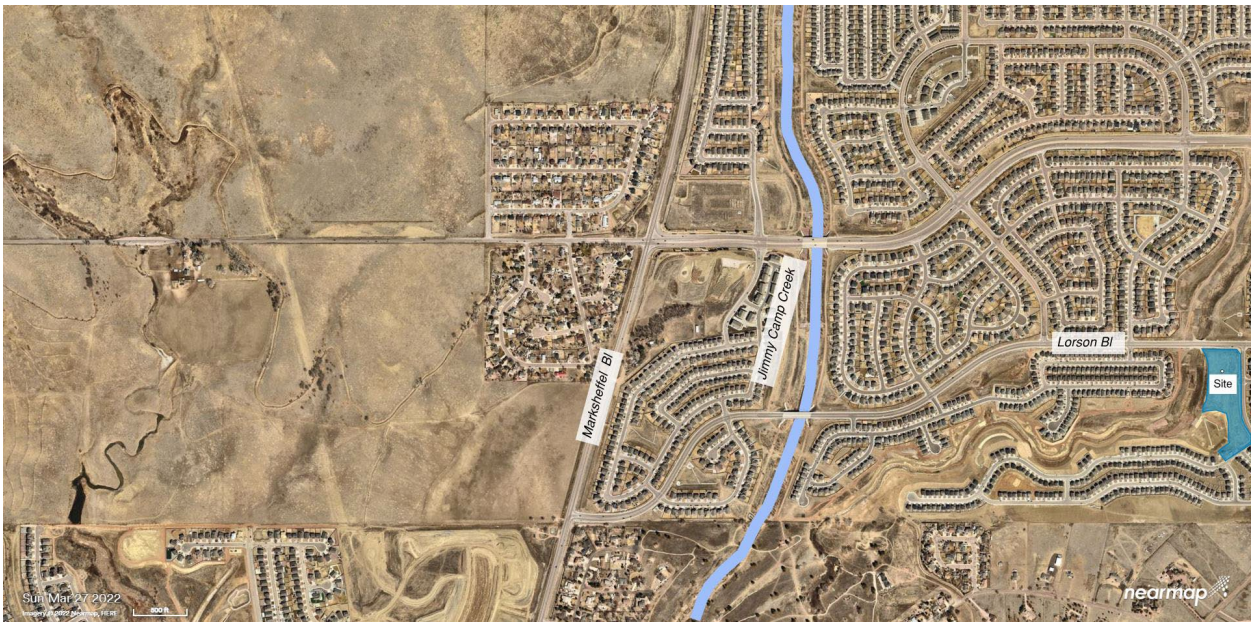
The purpose of this study is to assess the effects this proposed development will have on the surrounding transportation system.

The report is organized as follows:

- ***Introduction –*** Describes the purpose and intent of this study.
- ***Area Conditions –*** Describes the study area land uses as well as the existing and future roadway network.
- ***Proposed Development –*** Describes the proposed development and the location.
- ***Projected Traffic –*** Identifies the expected number of daily and peak hour trips that will be generated by the Creekside at Lorson Ranch Filing No.2 development. The expected external trip distribution is also shown.

- ***Traffic Analysis –*** Will analyze the existing conditions in the study area as well as buildout year and horizon year (2040) conditions with and without the project.
- ***Findings and Conclusions –*** Identifies any deficiencies in the study area roadway network with or without the project and mitigation measures that will alleviate any identified deficiencies.
- ***Recommendations –*** Provides a summary of the study findings.

Figure 1. Vicinity Map



Existing Conditions

Matrix analyzed the existing traffic conditions at the Marksheffel Road/Lorson Boulevard intersection based on the traffic volumes from previous studies. Jimmy Camp Creek flows in the west side of the project. There is an unpaved bicycle/trail path along the west side of the creek that intersects Lorson Boulevard and continues north. Paved sidewalk is provided on both sides of Lorson Boulevard. Bicycle path and school pedestrians routes are shown in Figure 2. The proposed land use of the site is shown on the site plan in Figure 2. The existing intersection geometry is shown in Figure 3. The existing AM and PM peak hour traffic volumes are shown in Figures 4 and 5, respectively. Existing conditions turning movements were obtained by reviewing the Corvallis Traffic Impact Study (See Appendix A). A summary of how the Marksheffel Road/Lorson Boulevard intersection currently operates in the AM and PM peak scenarios is shown in Table 1 and Table 2. As shown in the tables, the intersection operates at an acceptable level-of-service (LOS) during both the AM and PM peak hours. For more information on intersection operations see Appendix C.

Figure 2. Creekside at Lorson Ranch Filing No.2 Site Plan

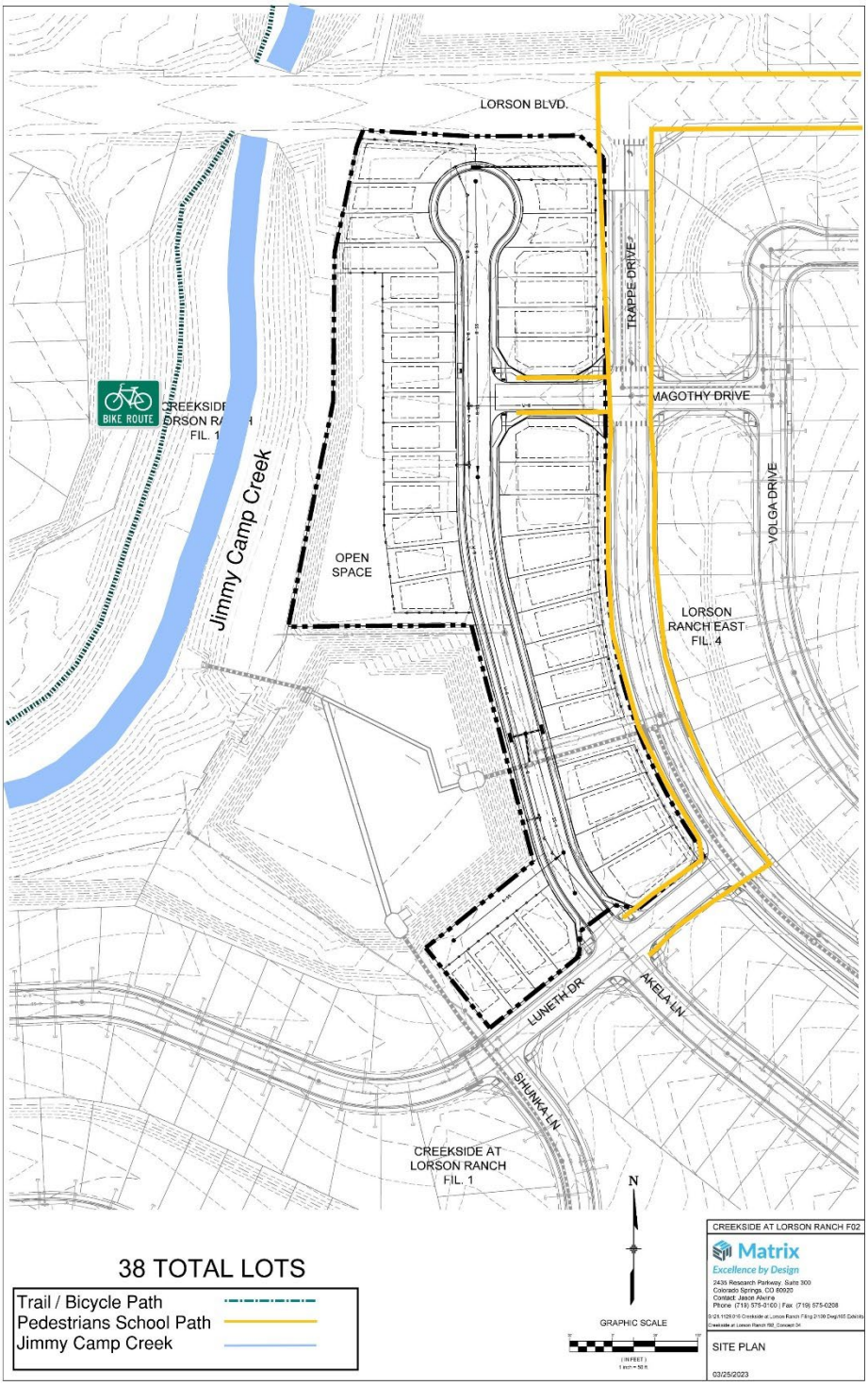
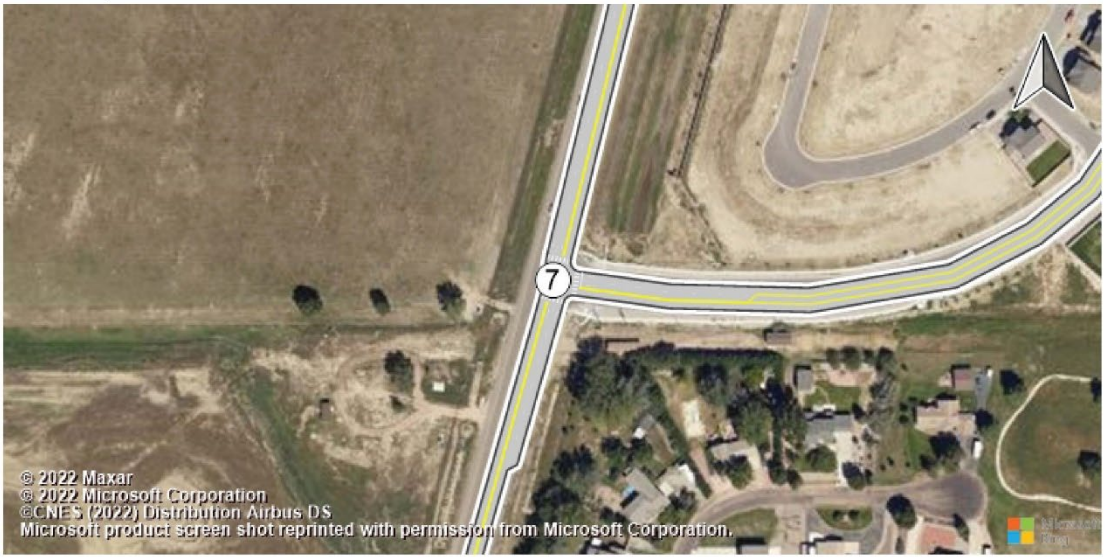


Figure 3. Existing Conditions Intersection Configurations



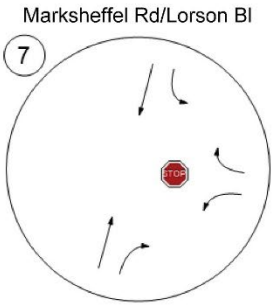
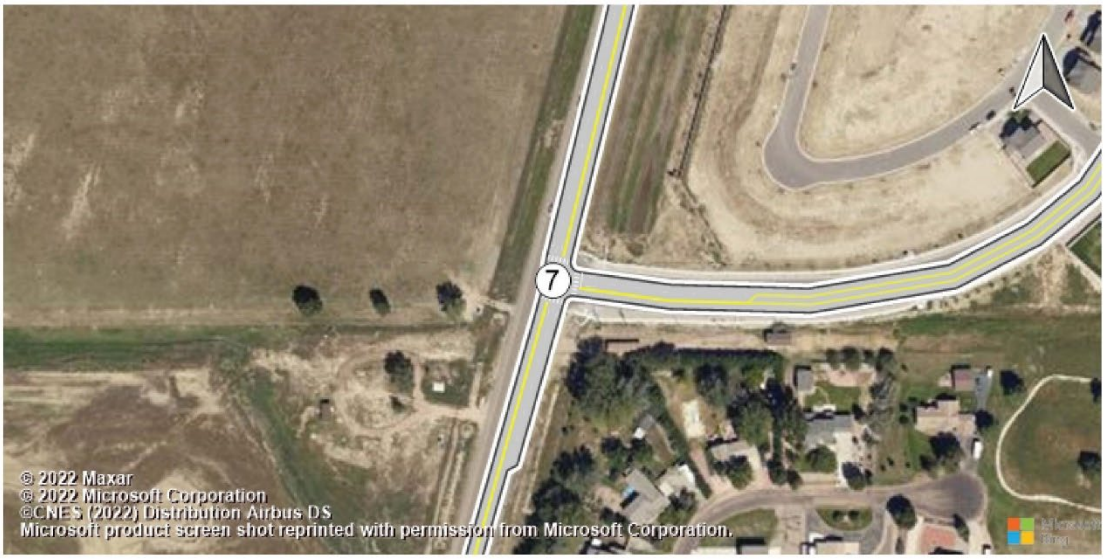


Figure 4. Existing Conditions Traffic Volumes (AM Peak Hour)



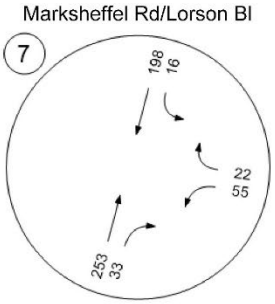


Figure 5. Existing Conditions Traffic Volumes (PM Peak Hour)

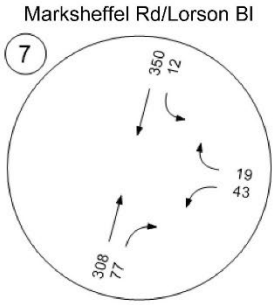


Table 1. Existing Conditions Intersection Operations (AM Peak Hour)

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
7	Marksheffel Rd/Lorson Bl	Two-way stop	HCM 6th Edition	WB Left	0.103	12.5	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Table 2. Existing Conditions Intersection Operations (PM Peak Hour)

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
7	Marksheffel Rd/Lorson Bl	Two-way stop	HCM 6th Edition	WB Left	0.105	14.8	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Crash History

CDOT historical crash data for Lorson Boulevard from 2017 to 2020 were used in this step. During the analysis period only one crash occurred within the analyzed segment. The equation below was used to calculate crash rate on this road segment

$$R = \frac{100{,}000{,}000 * \mathrm{C}}{365 * \mathrm{N} * \mathrm{V} * \mathrm{L}}$$

Where:
R = Crash rate for the road segment expressed as crashes per 100 million vehicle-miles of travel (VMT).
C = Total number of crashes in the study period.
N = Number of years of data.
V = Number of vehicles per day (both directions)
L = Length of the roadway segment in miles*
Table 3 shows the crash rates for the analyzed segment.

Source: FHWA

Table 3. Crash Rate in the vicinity of Lorosn Ranch Commercial

Roadway Segment	Length of the Segment	Crash Rate (Crashes/Year)			Crash Rate (Crashes/100 Million vehicle-miles Travel (VMT)
		PDO	Injury	Fatal	
Lorson Bulevard	0.25 Mile East of Marksheffel Boulevard	0.25	0	0	57.8

Projected Development Traffic

The site proposes 38 detached single-family houses, as shown in Figure 2. The trip generation results for daily trips and both AM and PM peak hours can be found in Table 4.

The site connects to the existing roadway network via Trappe Drive. All project traffic will travel along Lorson Boulevard to Marksheffel Road. At Marksheffel Road, 65% of project traffic will travel to/from the north and 35% will travel to/from the south. See Figure 6 for the anticipated trip distribution of site-generated traffic.

The assignment of the new project trips from the site are shown in Figures 7 and 8 for AM and PM peak hours, respectively.

Trip Generation

The vehicle trips associated with the Project were calculated using the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition.* This methodology consists of choosing an independent variable for the land use for a particular time of day. The independent variable correlates to the variation in trip ends and is related to the land use. The value of the independent variable is either multiplied by a weighted average or used in a regression equation to calculate the trips generated by the land use. The *ITE Trip Generation Manual* provides guidance on when to use the weighted average versus the regression equation.

Table 4 shows the trips that are expected to be generated by Creekside at Lorson Ranch Filing No.2 at build out. More information can be found in Appendix B -Trip Generation Calculations

Table 4. Creekside at Lorson Ranch Filing No.2 Trip Generation

				Weekday			AM Peak Hour			PM Peak Hour		
ITE Code	Land Use	Size	Units	Total	Entering	Exiting	Total	Entering	Exiting	Total	Entering	Exiting
210	Single Family Detached Housing	38	DU	426	213	213	32	8	24	40	25	15

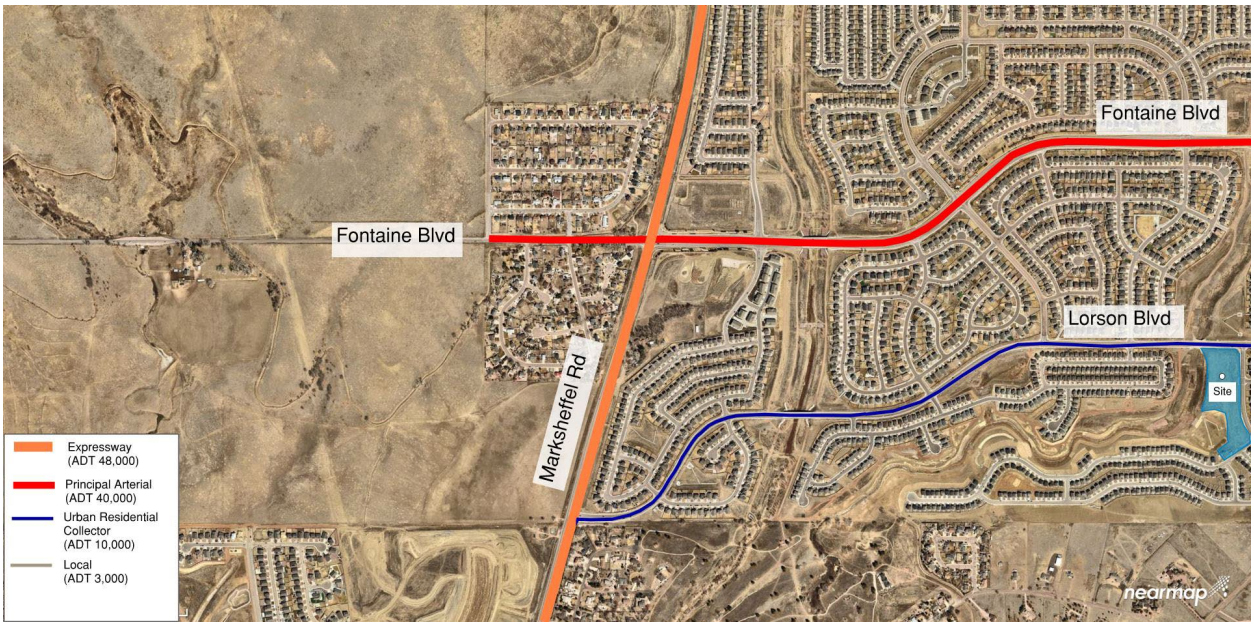
Trip Distribution

Figure 6 illustrates the expected external distribution of travel for the site-generated trips. This distribution was determined by reviewing the total trips on the roadway network

Figure 6. Trip Distribution

Roadways adjacent to the new development were classified based on the 2040 Major Transportation Corridor Plan and are shown in figure 7.

Figure 7. Roadway Classification



Turning movements were obtained by using trip distributions in Figure 6, and assigning the trips generated by the new development to adjacent roadways. The project trips for both the AM and PM peak hours are shown in Figures 8 and 9

Figure 8. Creekside at Lorson Ranch Filing No.2 Project Trips (AM Peak Hour)

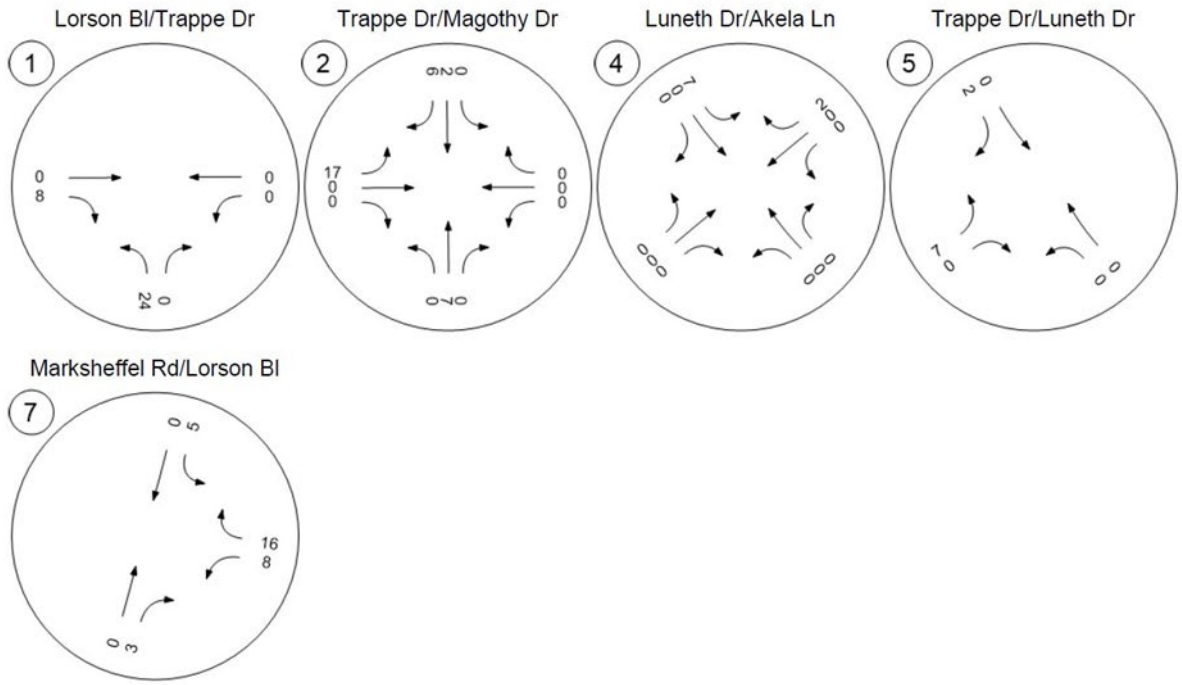
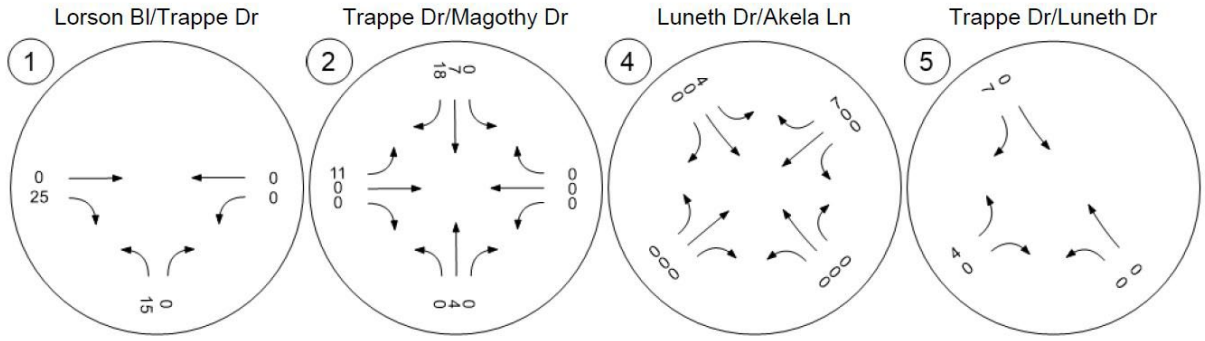
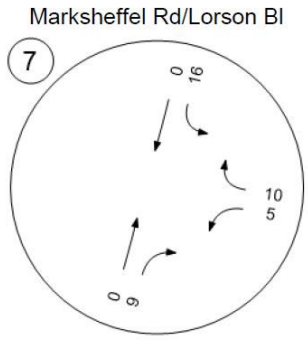


Figure 9. Creekside at Lorson Ranch Filing No.2 Project Trips (PM Peak)





Traffic Analysis

Traffic conditions both with and without the project have been analyzed for buildout year (2025) and horizon year (2040) conditions.

Buildout Background Conditions

The anticipated AM and PM peak hour intersection volumes at build out (2025) without the project are shown in Figures 10 and 11. These volumes were taken directly from The Creekside at Lorson Ranch Filing 1 TIS, October 2018 and The Creekside South at Lorson Ranch TIS, March 2021. By reviewing other Studies (mainly Corvallis TIS, and Lorson Ranch Commercial TIS) it is understood that the signal will be constructed by other Lorson Ranch developments at Marksheffel Road/Lorson Boulevard. Therefore, this intersection is assumed to be a signalized intersection in the Buildout and horizon scenarios. Updated costs and financial responsibility for this intersection is summarized in Conclusions and Recommendations section.

A summary of the anticipated intersection performance during the background AM and PM peak hours at buildout are shown in Tables 5 and 6, respectively.

Figure 10. Build out Background Traffic Volumes (AM Peak Hour)

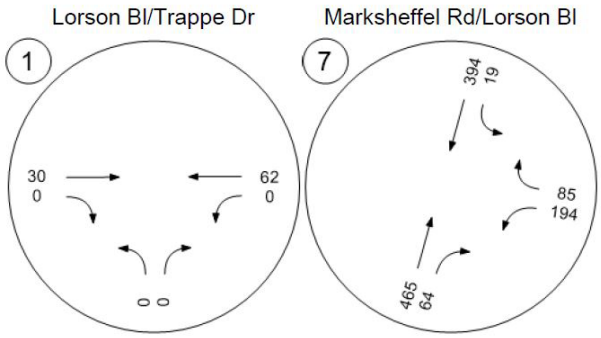


Figure 11. Build out Background Traffic Volumes (PM Peak Hour)

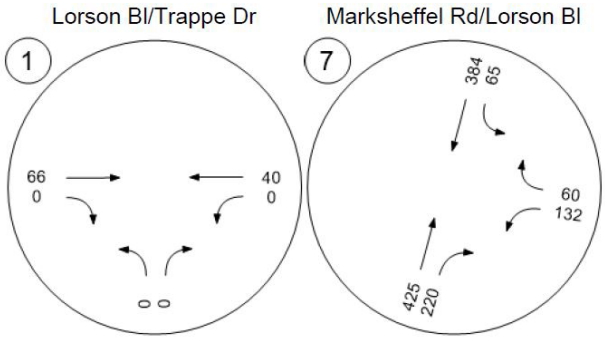


Figure 12. Build Out Background Intersection Configurations

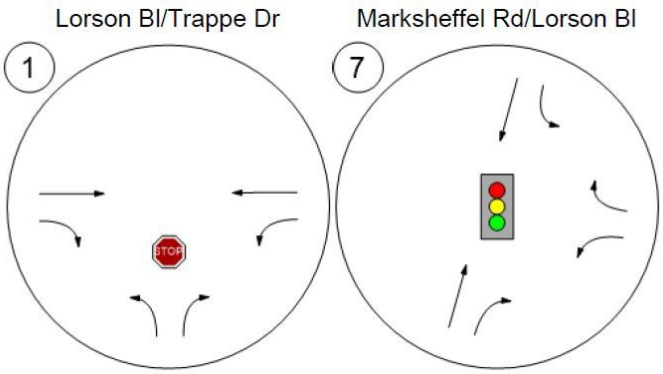


Table 5. Build Out Background Intersection Operations (AM Peak Hour)

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Lorson Bl/Trappe Dr	Two-way stop	HCM 6th Edition	WB Thru	0.001	0.0	A
7	Marksheffel Rd/Lorson Bl	Signalized	HCM 6th Edition	WB Left	0.404	14.9	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Table 6. Build Out Background Intersection Operations (PM Peak Hour)

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Lorson Bl/Trappe Dr	Two-way stop	HCM 6th Edition	EB Thru	0.001	0.0	A
7	Marksheffel Rd/Lorson Bl	Signalized	HCM 6th Edition	NB Thru	0.357	13.6	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

All study area intersections are projected to operate at an acceptable LOS at buildout without the project traffic as shown in Tables 5 and 6.

Build Out Total Conditions

The anticipated AM and PM peak hour counts in the total (background and site-generated) traffic scenarios are shown in Figures 13 and 14, respectively. A summary of how each intersection operates in the AM and PM peaks is shown in Tables 7 and 8. As shown in the tables, each of the 5 intersections analyzed are anticipated to operate at an acceptable level-of-service (LOS) during both the AM and PM peak hours.

Figure 13. Build Out Total Traffic Volumes (AM Peak Hour)

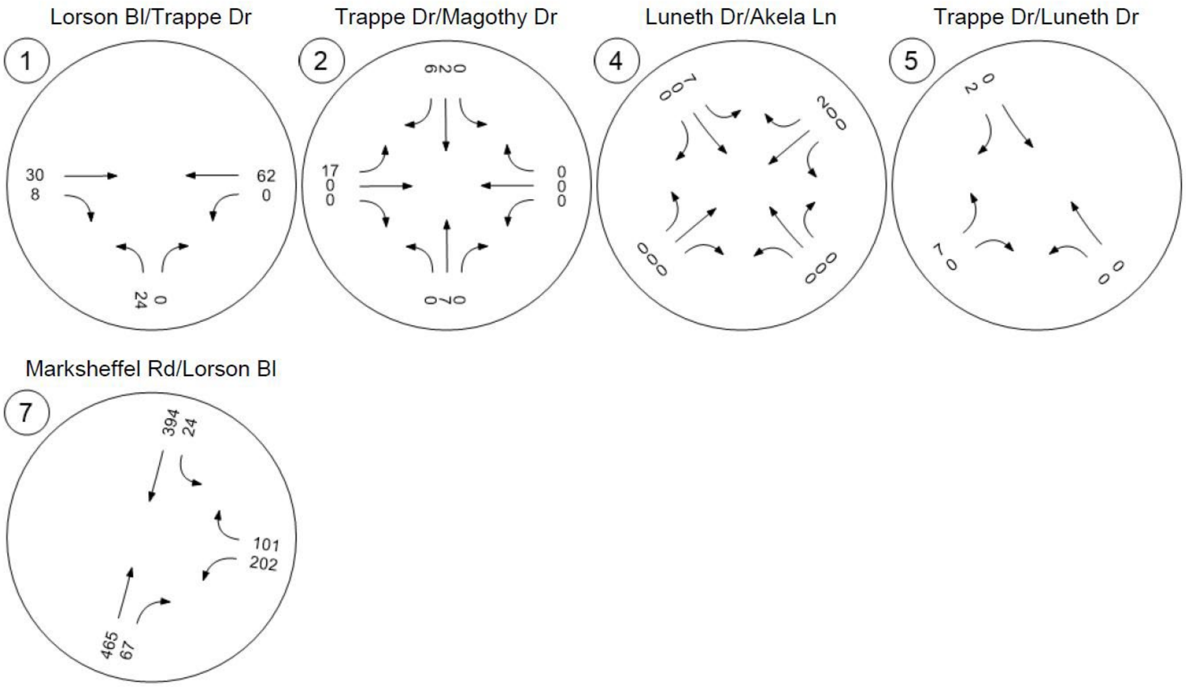
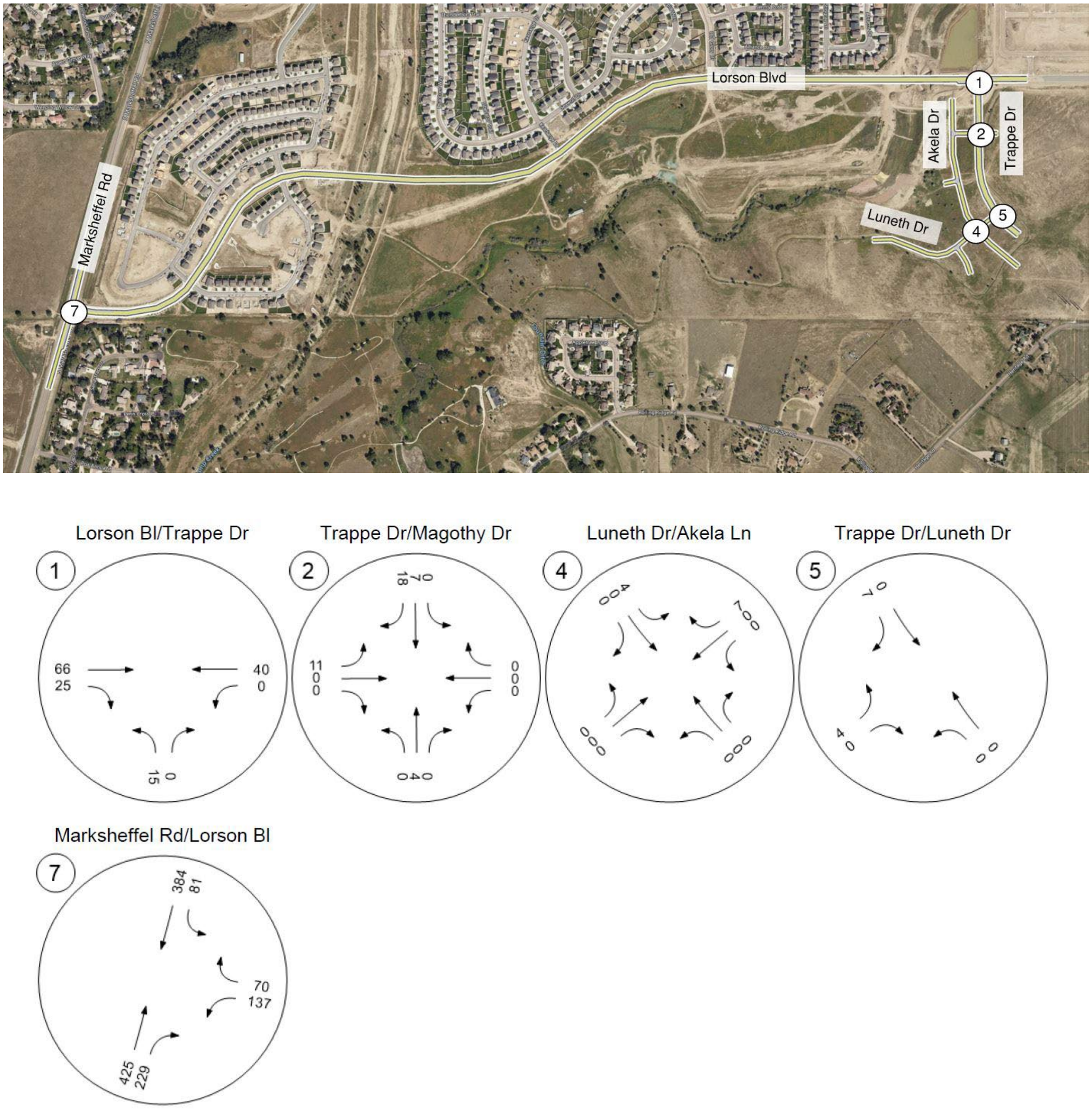
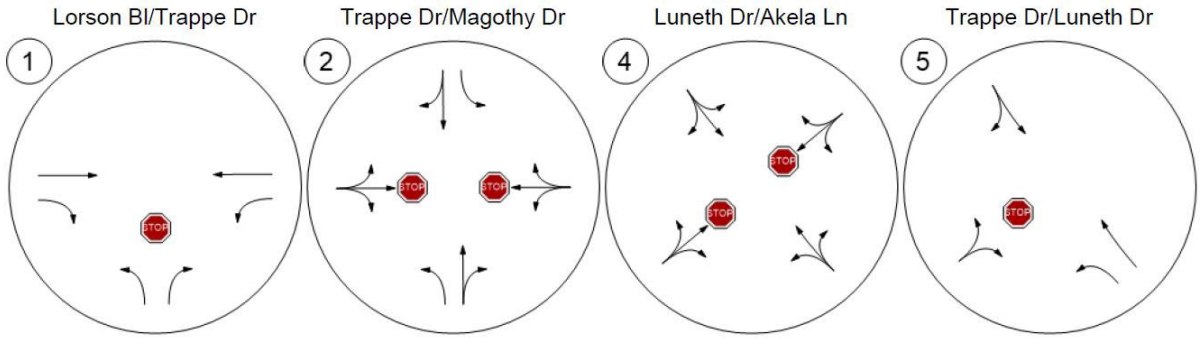


Figure 14. Build Out Total Traffic Volumes (PM Peak Hour)



Assumed intersection configurations for the project intersections are shown in Figure 15.

Figure 15. Build Out Total Project Intersection Configurations



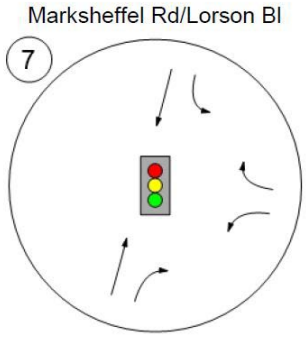


Table 7. Build Out Total Intersection Operations (AM Peak Hour)

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Lorson Bl/Trappe Dr	Two-way stop	HCM 6th Edition	NB Left	0.026	9.1	A
2	Trappe Dr/Magothy Dr	Two-way stop	HCM 6th Edition	EB Left	0.017	8.6	A
4	Luneth Dr/Akela Ln	Two-way stop	HCM 6th Edition	WB Right	0.002	8.3	A
5	Trappe Dr/Luneth Dr	Two-way stop	HCM 6th Edition	EB Left	0.007	8.5	A
7	Marksheffel Rd/Lorson Bl	Signalized	HCM 6th Edition	WB Left	0.411	15.0	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Table 8. Build Out Total Intersection Operations (PM Peak Hour)

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Lorson Bl/Trappe Dr	Two-way stop	HCM 6th Edition	NB Left	0.017	9.1	A
2	Trappe Dr/Magothy Dr	Two-way stop	HCM 6th Edition	EB Left	0.011	8.7	A
4	Luneth Dr/Akela Ln	Two-way stop	HCM 6th Edition	WB Right	0.006	8.3	A
5	Trappe Dr/Luneth Dr	Two-way stop	HCM 6th Edition	EB Left	0.004	8.5	A
7	Marksheffel Rd/Lorson Bl	Signalized	HCM 6th Edition	WB Left	0.366	13.7	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

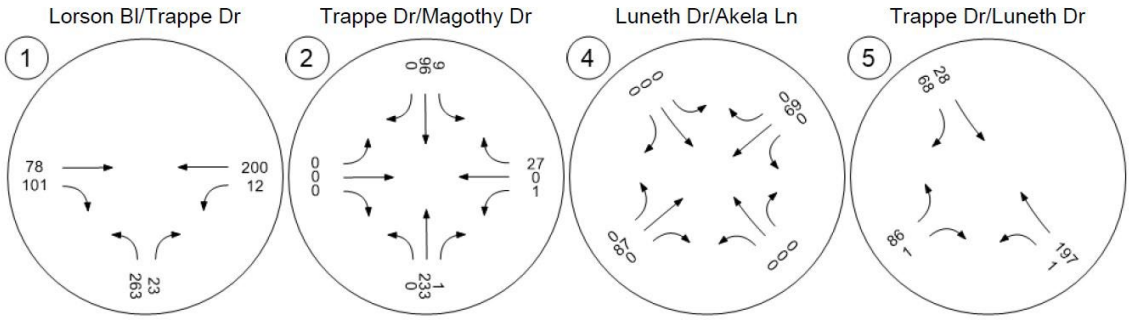
All study area intersections operate at an acceptable level-of-service (LOS) at project build out with the addition of project traffic

Horizon (2040) Year Background Conditions

Matrix analyzed the traffic conditions for the horizon scenario, year 2040. The projected traffic volumes during the 2040 AM and PM background peak hours are shown in Figures 16 and 17, respectively. These

volumes were taken directly from The Creekside at Lorson Ranch Filing 1, October 2018 and The Creekside South at Lorson Ranch, March 2021 A summary of how the study area intersections will operate during the 2040 AM and PM background peak hours are shown in Tables 9 and 10, respectively. The anticipated intersection geometry is shown in Figure 18 based on the geometries shown in the other traffic impact studies that cover this area.

Figure 16. Horizon Year Background Traffic Volumes (AM Peak Hour)



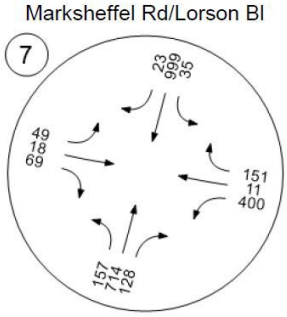
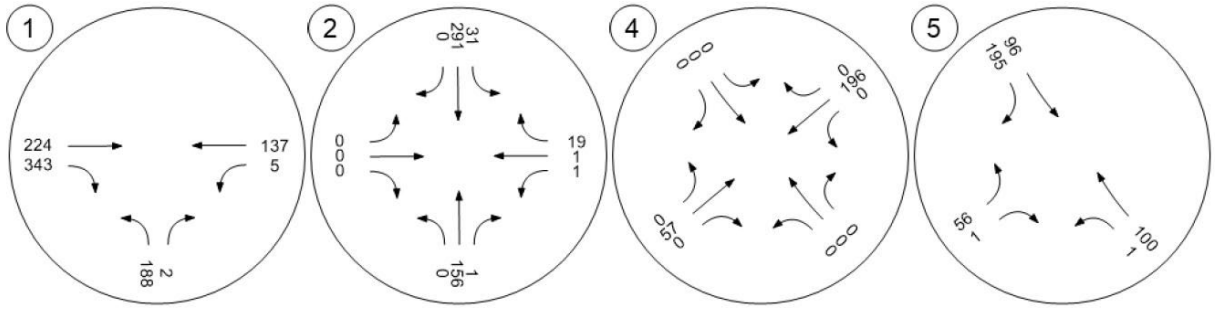
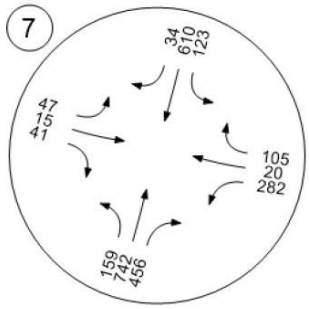


Figure 17. Horizon Year Background Traffic Volumes (PM Peak Hour)

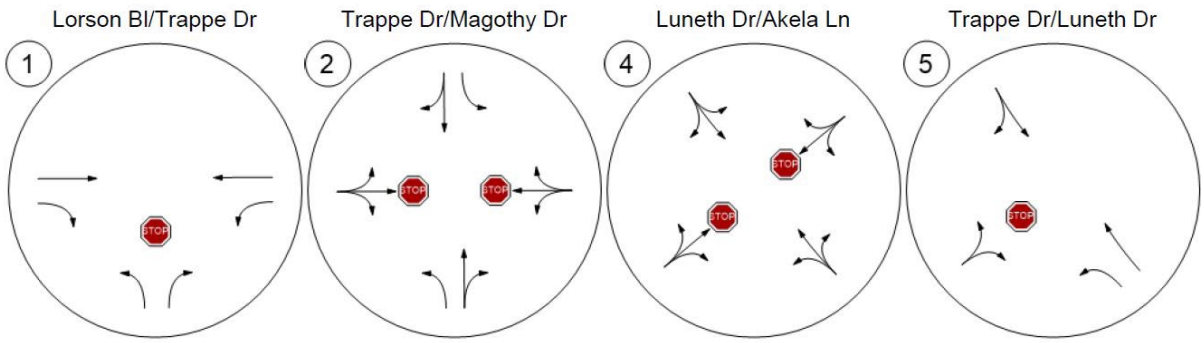


Marksheffel Rd/Lorson Bl



The assumed intersection configurations are shown in Figure 18. The operations of the study area intersections in the horizon background (no project) scenario are shown in Tables 9 and 10.

Figure 18. Horizon Background Intersection Configurations



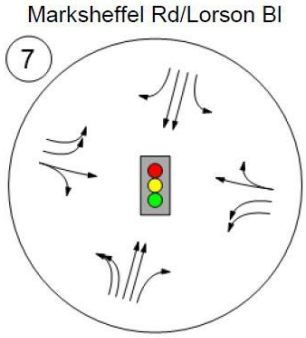


Table 9. Horizon Background Intersection Operations (AM Peak Hour)

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Lorson Bl/Trappe Dr	Two-way stop	HCM 6th Edition	NB Left	0.385	13.5	B
2	Trappe Dr/Magothy Dr	Two-way stop	HCM 6th Edition	WB Left	0.002	11.1	B
4	Luneth Dr/Akela Ln	Two-way stop	HCM 6th Edition	EB Thru	0.097	9.4	A
5	Trappe Dr/Luneth Dr	Two-way stop	HCM 6th Edition	EB Left	0.118	10.6	B
7	Marksheffel Rd/Lorson Bl	Signalized	HCM 6th Edition	SB Left	0.550	24.2	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Table 10. Horizon Background Intersection Operations (PM Peak Hour)

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Lorson Bl/Trappe Dr	Two-way stop	HCM 6th Edition	NB Left	0.300	13.2	B
2	Trappe Dr/Magothy Dr	Two-way stop	HCM 6th Edition	WB Thru	0.002	13.0	B
4	Luneth Dr/Akela Ln	Two-way stop	HCM 6th Edition	WB Thru	0.219	10.1	B
5	Trappe Dr/Luneth Dr	Two-way stop	HCM 6th Edition	EB Left	0.081	10.6	B
7	Marksheffel Rd/Lorson Bl	Signalized	HCM 6th Edition	SB Left	0.524	21.8	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

All study area intersections are projected to operate at an acceptable LOS in the horizon year without the project traffic as shown in Tables 9 and 10. All intersection approaches operate at acceptable LOS.

Horizon (2040) Year Total Conditions

The projected traffic volumes during the 2040 AM and PM total (background and site-generated) traffic scenarios are shown in Figures 19 and 20. A summary of how the study area intersections will operate

during the AM and PM peaks is shown in Tables 11 and 12. All study area intersections continue to operate at acceptable LOS with the addition of project traffic and no mitigation is required.

Figure 19. Horizon Total Traffic Volumes (AM Peak Hour)

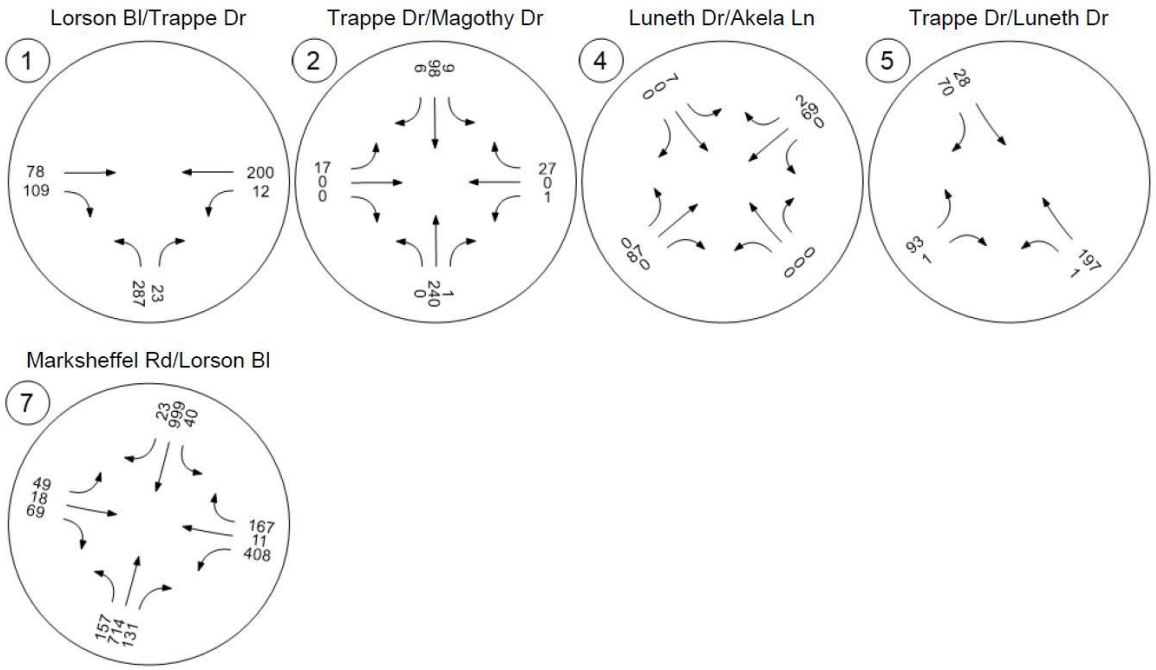
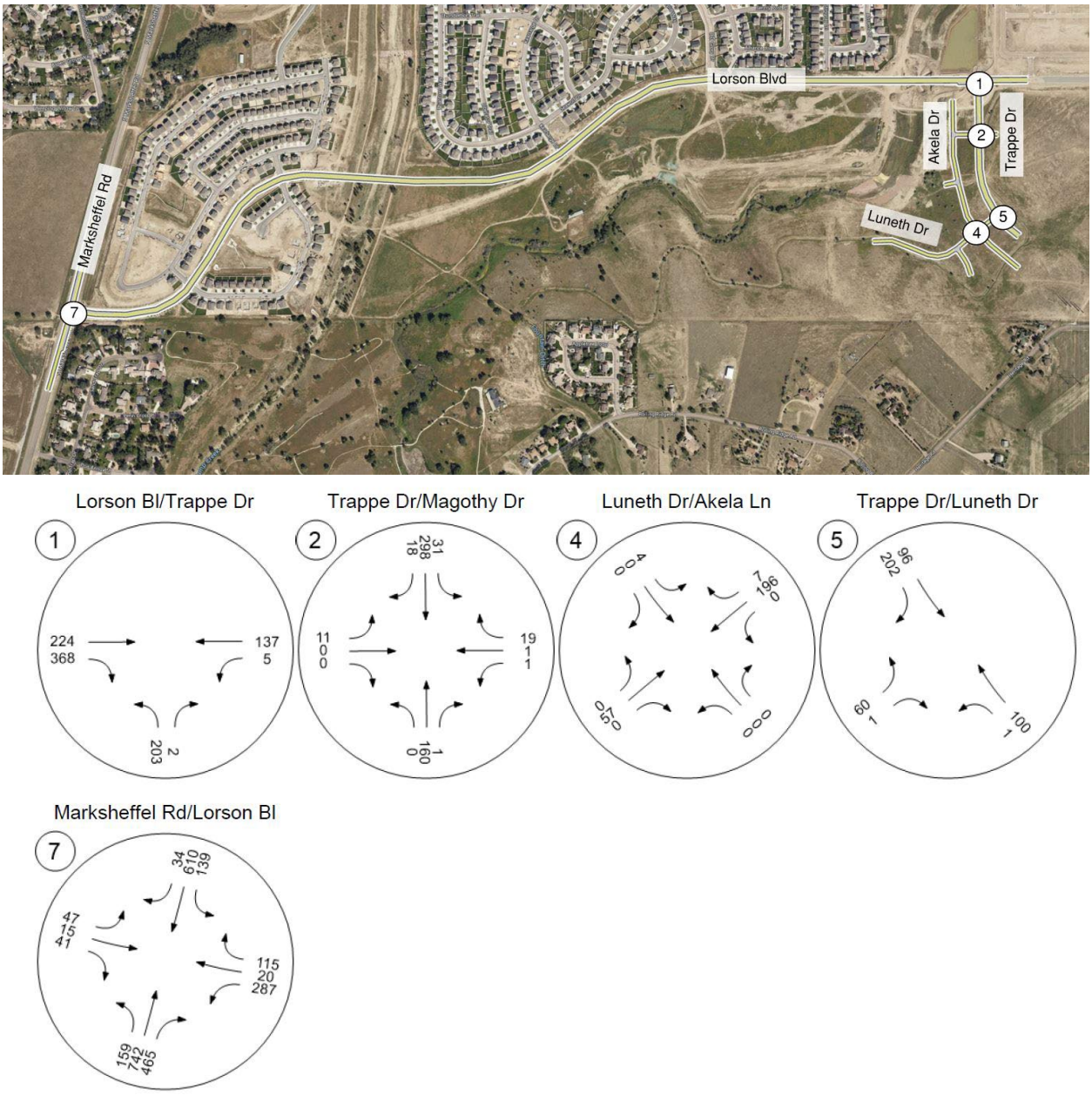


Figure 20. Horizon Total Traffic Volumes (PM Peak Hour)



Assumed intersection configurations for the project intersections are shown in Figure 18.

Analysis of the intersections and roadways for build out conditions with the volumes and configurations shown above results in the operations shown in Tables 11 and 12

Table 11. Horizon Total Intersection Operations (AM Peak Hour)

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Lorson Bl/Trappe Dr	Two-way stop	HCM 6th Edition	NB Left	0.420	14.0	B
2	Trappe Dr/Magothy Dr	Two-way stop	HCM 6th Edition	EB Left	0.030	11.6	B
4	Luneth Dr/Akela Ln	Two-way stop	HCM 6th Edition	EB Thru	0.099	9.6	A
5	Trappe Dr/Luneth Dr	Two-way stop	HCM 6th Edition	EB Left	0.128	10.7	B
7	Marksheffel Rd/Lorson Bl	Signalized	HCM 6th Edition	SB Left	0.552	23.1	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Table 12. Horizon Total Intersection Operations (PM Peak Hour)

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Lorson Bl/Trappe Dr	Two-way stop	HCM 6th Edition	NB Left	0.324	13.5	B
2	Trappe Dr/Magothy Dr	Two-way stop	HCM 6th Edition	EB Left	0.025	13.5	B
4	Luneth Dr/Akela Ln	Two-way stop	HCM 6th Edition	WB Thru	0.222	10.3	B
5	Trappe Dr/Luneth Dr	Two-way stop	HCM 6th Edition	EB Left	0.087	10.7	B
7	Marksheffel Rd/Lorson Bl	Signalized	HCM 6th Edition	SB Left	0.542	22.4	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

All study area intersection will operate at acceptable LOS (LOS D or better) in the horizon year (2040) with the addition of project traffic. Therefore, no mitigation is recommended.

The turn lane requirements at the study area intersections were also reviewed based on El Paso County *Engineering Criteria Manual*. Marksheffel Road is classified by El Paso County as a 4-lane Expressway which carries a 60 miles-per-hour (mph) design speed with it. Separate turn lanes are required for all turn movements along Marksheffel Road. Lorson Boulevard at the intersection with Marksheffel Road is an Urban Non-Residential Collector with a 40-mph design speed. Lorson Bouelvard at Trappe Drive is classified as an Urban Residential Collector with a 40-mph design speed. Additionally, Trappe Drive is classified as an Urban Residential Collector with a 40-mph design speed. The turn lane requirements are shown below. Deceleration and taper lengths were determined from the *Engineering Criteria Manual*, Table 2-24 and Table 2-30. Where an intersection approach was not signalized or stop-controlled, a 50-ft minimum storage length was used. Where an intersection approach was signalized, the 95% queue length from the traffic analysis was used for storage length.

Lorson Boulevard/Trappe Drive

- Northbound Left – 290-ft storage; 155-ft deceleration length; 160-ft taper length
- Eastbound Right – 100-ft storage; 155-ft deceleration length; 160-ft taper length

Trappe Drive/Magothy Drive

- No turn lanes required, but northbound left possible due to painted median

Trappe Drive/Luneth Drive

- Southbound Right – 50-ft storage; 155-ft deceleration length; 160-ft taper length

Luneth Drive/Akela Lane

- No turn lanes required

Recommended Improvements

Creekside at Lorson Ranch is the last development in Lorson Ranch. All turn lanes and intersections have been built by other projects therefore no additional improvements are required for the development of Creekside at Lorson Ranch. No design deviations are required for this development.

The traffic signal that will be installed at the intersection of Marksheffel Road and Lorson Boulevard has had financial responsibility spread to multiple Lorson Ranch developments based on an estimated cost of $300,000. However, a recent traffic signal estimate for a similar three-legged intersection was estimated to cost $590,000. This leaves a $290,000 funding gap between fair shares collected and estimated construction cost. Matrix is recommending that financial assurances be posted for the estimated difference in construction cost of $290,000. These financial assurances should be shared between The Ridge at Lorson Ranch, Hillside at Lorson Ranch and Creekside at Lorson Ranch based on the number of single-family dwelling units in each development.

- The Ridge at Lorson Ranch (994 lots; 66% of remaining lots; $190,396 financial assurance)
- Hillside at Lorson Ranch (489 lots; 32% of remaining lots; $93,666 financial assurance)
- Creekside Filing 2 at Lorson Ranch (31 lots; 2% of remaining lots; $5,938 financial assurance)

Table below shows the traffic signal cost contribution for each development included the Creekside at Lorson Ranch. Creekside at Lorson Ranch Filing No.2 is only responsible for 2% of the cost that is equivalent to $ 5,938 as shown in the table below. Creekside Filing 2 will only construct what is within the project boundaries. Everything else will be built by other developments including Creekside at Lorson Ranch Filing 1 and Lorson Ranch East Filing 4.

Subdivision	Dwelling Units		Previously Identified Signal Contribution	Currently Proposed Signal Contribution	Remaining Needed (Based on $590,000 Total Cost)
Existing Subdivisions:					
Carriage Meadows South at Lorson Ranch Filing No. 1[1]			$115,302		$474,698
Lorson Ranch East Filing No. 1[2]			$86,003		$388,695
Lorson Ranch East Filing No. 2[3]			$0		$388,695
Lorson Ranch East Filing No. 3[4]			$0		$388,695
Lorson Ranch East Filing No. 4[5]			$68,801		$319,894
Carriage Meadows Townhomes[6]			$10,453		$309,441
Creekside at Lorson Ranch Filing No. 1[7]			$19,441		$290,000
			$300,000		
Short-Term Future Subdivisions:					
Creekside at Lorson Ranch Filing 2	31	2%		$5,938	$284,062
Hillside at Lorson Ranch	489	32%		$93,666	$190,396
Ridge at Lorson Ranch Fil 1	535	35%		$102,477	$87,919
Ridge at Lorson Ranch Fil 2	277	18%		$53,058	$34,861
Ridge at Lorson Ranch Fil 3	182	12%		$34,861	$0
	1,514			**$290,000**	

Notes:
(1) *Carriage Meadows South at Lorson Ranch Filing No 1 Updated Traffic Impact Analysis* by LSC August 14, 2017
(2) *Lorson Ranch East Filing No 1 Transportation Memorandum* by LSC May 2, 2018
(3) *Lorson Ranch East Filing No 2 Transportation Memorandum* by LSC September 24, 2018
(4) *Lorson Ranch East Filing No 3 Transportation Memorandum* by LSC January 22, 2019
(5) *Lorson Ranch East Filing No 4 Transportation Memorandum* by LSC March 12, 2019
(6) *Carriage Meadows Townhomes Traffic Impact Analysis* by LSC April 10, 2019
(7) *Creekside at Lorson Ranch Filing No. 1 Transportation Memorandum* by LSC April 26, 2019

Source: LSC Transportation Consultants, Inc. *Jul-22*

The applicant is required to pay road impact fees to El Paso County. The County allows for the applicant to pay three different upfront fee amounts. The applicant can either pay the full fee amount, a smaller upfront fee to the 5 mill Public Improvement District (PID), or an even smaller upfront fee amount to the 10 mill PID. The different fee amounts are shown in Table 12 below, calculated using 38 single-family dwelling units. The applicant has chosen to join the 10 Mill PID . If the applicant chooses one of the PIDs, the PID will collect taxes over time.

Dwelling Units	Full Fee	5 Mill PID	10 Mill PID
38	$145,540	$96,026	$46,398

Traffic Engineer's Statement

The attached traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.

COLORADO LICENSED SCOTT BARNHART 37447 PROFESSIONAL ENGINEER

August 24, 2022

Scott D. Barnhart, P.E. #37447 Date

Developer's Statement

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

8/25/22

Jeff Mark *Date*

The Landhuis Company

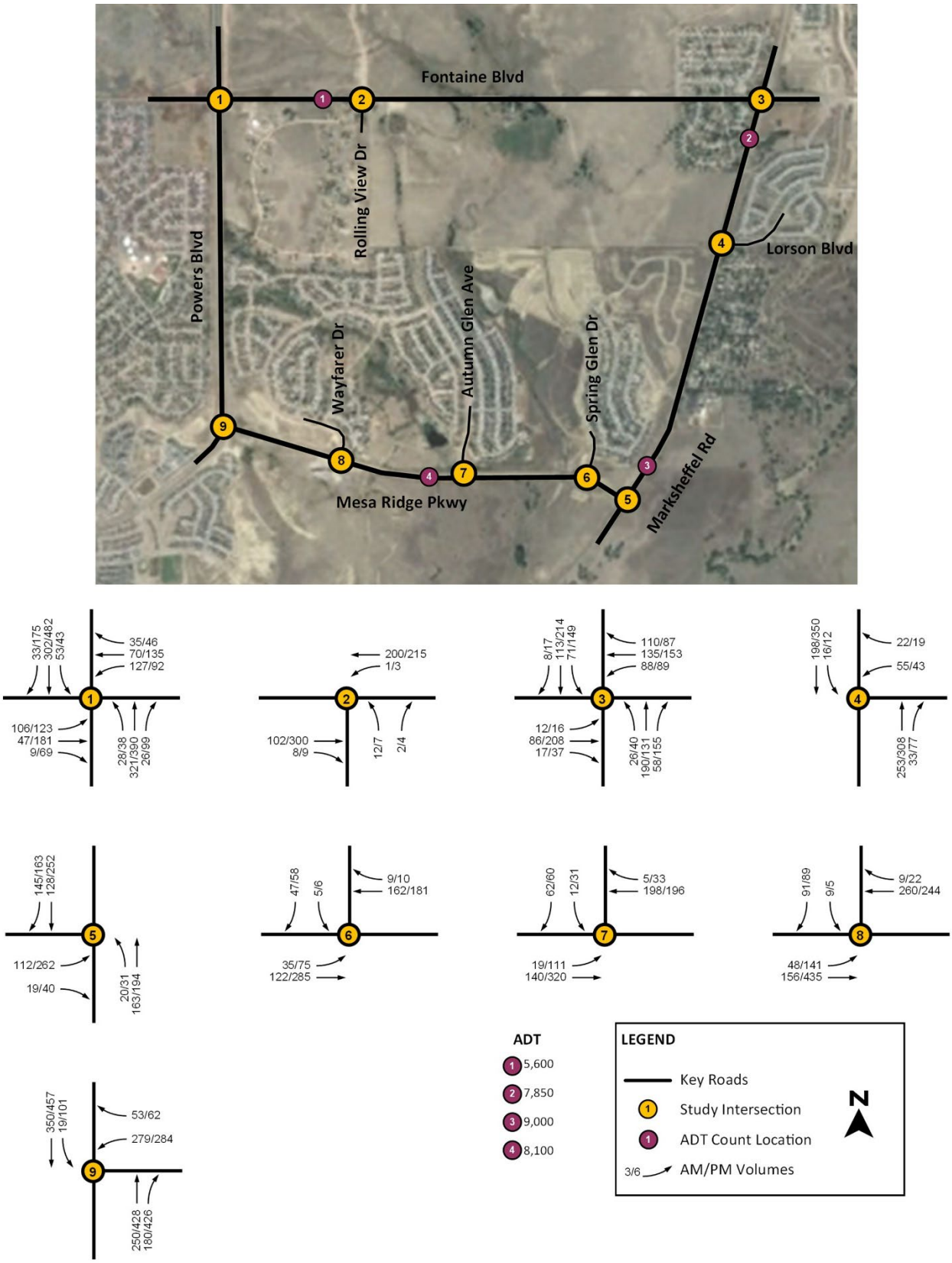
212 N. Wahsatch Avenue, Suite 301

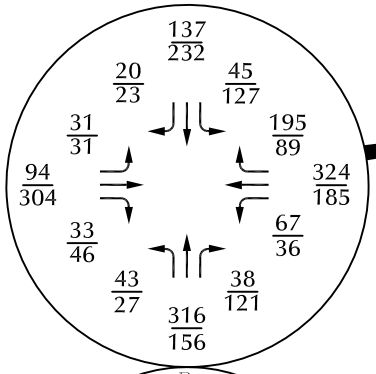
Colorado Springs, CO 80903

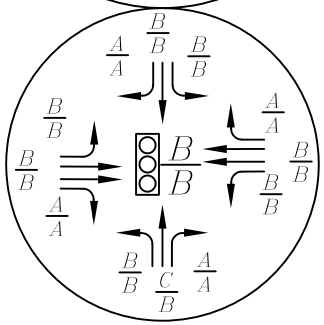
Appendix A

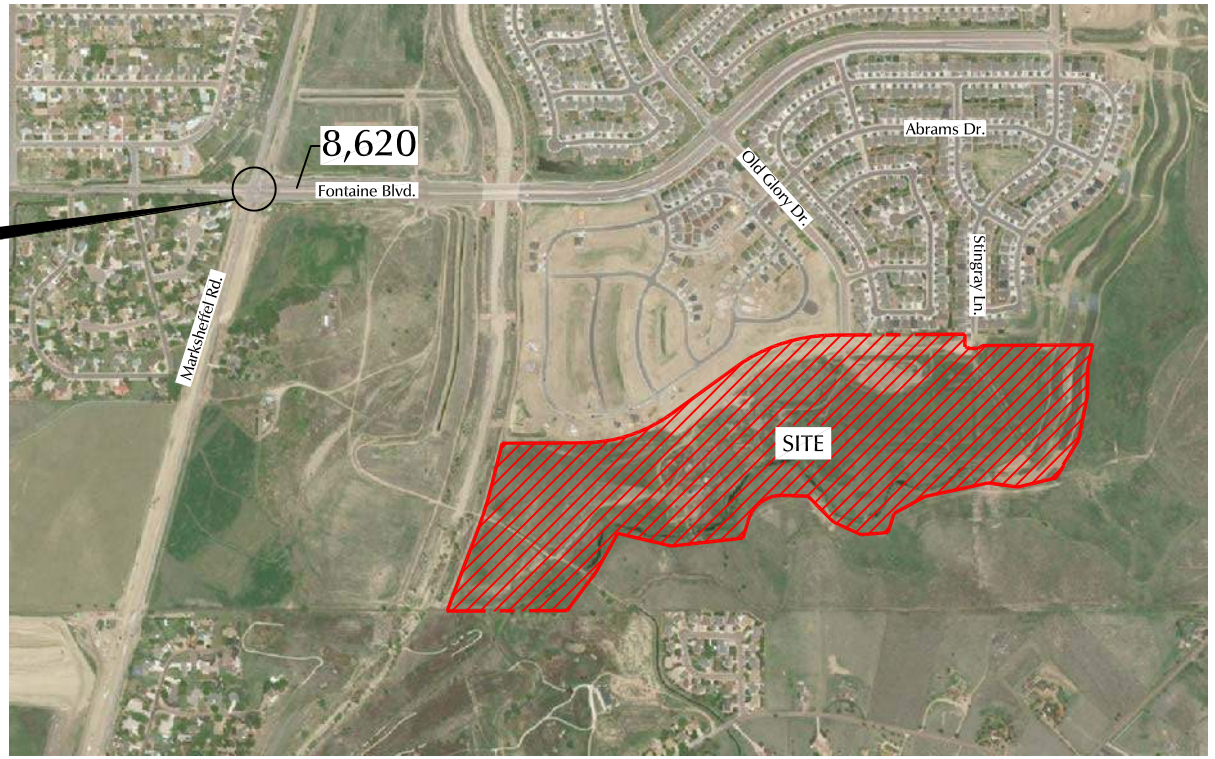
Exiting Traffic Counts

Figure 2 – Existing (2020) Traffic









Approximate Scale
Scale: 1"= 1,200'

LEGEND:

= Stop Sign

= Traffic Signal

$\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour)

$\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service

$\frac{C}{C}$ = AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service

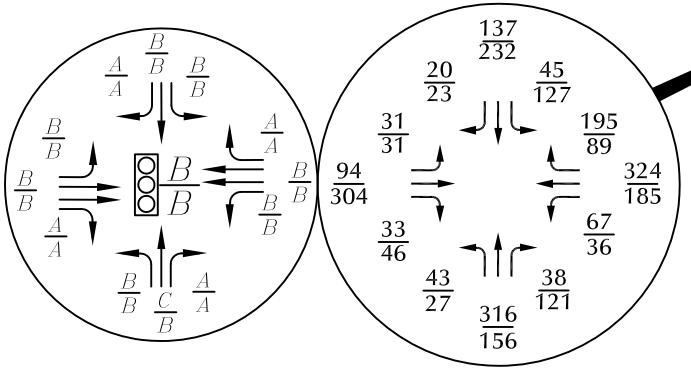
X,XXX= Average Weekday Traffic (vehicles per day) (estimate by LSC)

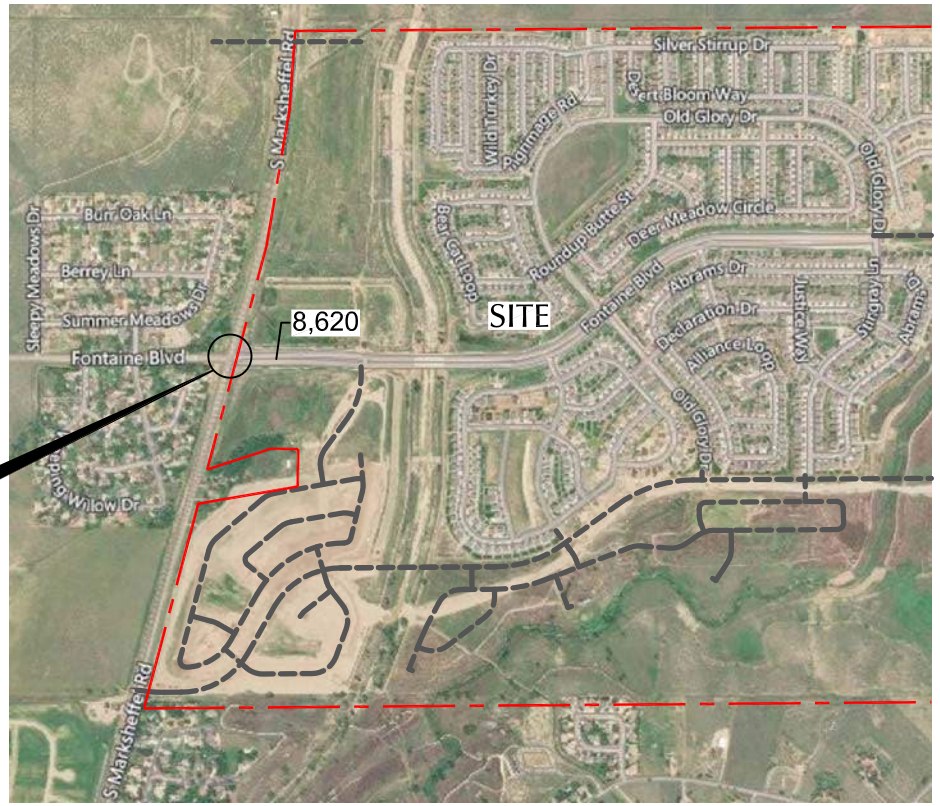
Based on counts by LSC March 2018

Figure 3

Existing Traffic, Lane Geometry, Traffic Control and Level of Service

Creekside at Lorson Ranch Filing No. 1 (LSC #184520)





Approximate Scale
Scale: 1"= 1,500'

LEGEND:

= Stop Sign

= Traffic Signal

$\frac{XX}{XX}$ = $\frac{\text{AM Weekday Peak-Hour Traffic (vehicles per hour)}}{\text{PM Weekday Peak-Hour Traffic (vehicles per hour)}}$ Based on counts by LSC March 2018

$\frac{A}{B}$ = $\frac{\text{AM Individual Movement Peak-Hour Level of Service}}{\text{PM Individual Movement Peak-Hour Level of Service}}$

$\frac{C}{C}$ = $\frac{\text{AM Entire Intersection Peak-Hour Level of Service}}{\text{PM Entire Intersection Peak-Hour Level of Service}}$

X,XXX= Average Daily Traffic (vehicles per day) (Estimates by LSC)

Figure 3

Existing Traffic, Lane Geometry, Traffic Control and Level of Service

Lorson Ranch Sketch Plan 2018 Amendment (LSC #184890)

Appendix B

Trip Generation Calculations

PROJECT DETAILS

Project Name:	Creekside at Lorson Ranch F2	Type of Project:	
Project No:		City:	
Country:		Built-up Area(Sq.ft):	
Analyst Name:	Scott Barnhart	Clients Name:	The Landhuis Company
Date:	10/29/2021	ZIP/Postal Code:	
State/Province:		No. of Scenarios:	3
Analysis Region:			

SCENARIO SUMMARY

Scenarios	Name	No. of Land Uses	Phases of Development	No. of Years to Project Traffic	User Group	Estimated New Vehicle Trips		
						Entry	Exit	Total
Scenario - 1	Daily Trips	1	1	0		213	213	426
Scenario - 2	AM Peak Hour	1	1	0		8	24	32
Scenario - 3	PM Peak Hour	1	1	0		25	15	40

Scenario - 1

Scenario Name: Daily Trips
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method	Entry	Exit	Total
					Rate/Equation	Split%	Split%	
210 - Single-Family Detached Housing	General Urban/Suburban	Dwelling Units	38	Weekday	Best Fit (LOG)	213	213	426
Data Source: Trip Generation Manual, 10th Ed					Ln(T) =0.92Ln(X) + 2.71	50%	50%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
210 - Single-Family Detached Housing	100	100	1	1	50	50

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
210 - Single-Family Detached Housing	213	213	0	0	213	213
	426		0		426	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
210 - Single-Family Detached Housing	213	213	426

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	213	213	426
External Vehicle Trips	213	213	426
New Vehicle Trips	213	213	426

Scenario - 2

Scenario Name: AM Peak Hour
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method	Entry	Exit	Total
					Rate/Equation	Split%	Split%	
210 - Single-Family Detached Housing	General Urban/Suburban	Dwelling Units	38	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LIN)	8	24	32
Data Source: Trip Generation Manual, 10th Ed					T = 0.71(X) + 4.80	25%	75%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
210 - Single-Family Detached Housing	100	100	1	1	25	75

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
210 - Single-Family Detached Housing	8	24	0	0	8	24
	32		0		32	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
210 - Single-Family Detached Housing	8	24	32

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	8	24	32
External Vehicle Trips	8	24	32
New Vehicle Trips	8	24	32

Scenario - 3

Scenario Name: PM Peak Hour
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method	Entry	Exit	Total
					Rate/Equation	Split%	Split%	
210 - Single-Family Detached Housing	General Urban/Suburban	Dwelling Units	38	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	25	15	40
Data Source: Trip Generation Manual, 10th Ed					Ln(T) =0.96Ln(X) + 0.20	63%	37%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
210 - Single-Family Detached Housing	100	100	1	1	63	37

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
210 - Single-Family Detached Housing	25	15	0	0	25	15
	40		0		40	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
210 - Single-Family Detached Housing	25	15	40

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	25	15	40
External Vehicle Trips	25	15	40
New Vehicle Trips	25	15	40

Appendix C

Existing (2021) LOS Reports

Intersection Level Of Service Report
Intersection 7: Marksheffel Rd/Lorson Bl

Control Type:	Two-way stop	Delay (sec / veh):	12.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.103

Intersection Setup

Name	Marksheffel Rd		Marksheffel Rd		Lorson Bl	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	245.00	400.00	100.00	250.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Marksheffel Rd		Marksheffel Rd		Lorson Bl	
Base Volume Input [veh/h]	253	33	16	198	55	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	253	33	16	198	55	22
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	8	4	50	14	6
Total Analysis Volume [veh/h]	253	33	16	198	55	22
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.10	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	7.86	0.00	12.49	9.71
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.04	0.00	0.34	0.09
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.95	0.00	8.53	2.16
d_A, Approach Delay [s/veh]	0.00		0.59		11.70	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.78					
Intersection LOS	B					

Signal Warrants Report For Intersection 7: Marksheffel Rd/Lorson Bl

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	214	286	77
2	208	277	75
3	203	272	73
4	190	255	69
5	169	226	61
6	167	223	60
7	165	220	59
8	150	200	54
9	148	197	53
10	146	194	52
11	126	169	45
12	118	157	42
13	116	154	42
14	86	114	31
15	86	114	31
16	60	80	22
17	34	46	12
18	34	46	12
19	19	26	7
20	11	14	4
21	6	9	2
22	2	3	1
23	2	3	1
24	2	3	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	500	2	77	No	No	No	No	No	No	No	No	No	No
2	2	485	2	75	No	No	No	No	No	No	No	No	No	No
3	2	475	2	73	No	No	No	No	No	No	No	No	No	No
4	2	445	2	69	No	No	No	No	No	No	No	No	No	No
5	2	395	2	61	No	No	No	No	No	No	No	No	No	No
6	2	390	2	60	No	No	No	No	No	No	No	No	No	No
7	2	385	2	59	No	No	No	No	No	No	No	No	No	No
8	2	350	2	54	No	No	No	No	No	No	No	No	No	No
9	2	345	2	53	No	No	No	No	No	No	No	No	No	No
10	2	340	2	52	No	No	No	No	No	No	No	No	No	No
11	2	295	2	45	No	No	No	No	No	No	No	No	No	No
12	2	275	2	42	No	No	No	No	No	No	No	No	No	No
13	2	270	2	42	No	No	No	No	No	No	No	No	No	No
14	2	200	2	31	No	No	No	No	No	No	No	No	No	No
15	2	200	2	31	No	No	No	No	No	No	No	No	No	No
16	2	140	2	22	No	No	No	No	No	No	No	No	No	No
17	2	80	2	12	No	No	No	No	No	No	No	No	No	No
18	2	80	2	12	No	No	No	No	No	No	No	No	No	No
19	2	45	2	7	No	No	No	No	No	No	No	No	No	No
20	2	25	2	4	No	No	No	No	No	No	No	No	No	No
21	2	15	2	2	No	No	No	No	No	No	No	No	No	No
22	2	5	2	1	No	No	No	No	No	No	No	No	No	No
23	2	5	2	1	No	No	No	No	No	No	No	No	No	No
24	2	5	2	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.7
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:15
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	77
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	577
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Intersection Level Of Service Report
Intersection 7: Marksheffel Rd/Lorson Bl

Control Type:	Two-way stop	Delay (sec / veh):	14.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.105

Intersection Setup

Name	Marksheffel Rd		Marksheffel Rd		Lorson Bl	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	245.00	400.00	100.00	250.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Marksheffel Rd		Marksheffel Rd		Lorson Bl	
Base Volume Input [veh/h]	308	77	12	350	43	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	308	77	12	350	43	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	77	19	3	88	11	5
Total Analysis Volume [veh/h]	308	77	12	350	43	19
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.10	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	8.10	0.00	14.77	10.05
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.03	0.00	0.35	0.08
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.77	0.00	8.69	2.00
d_A, Approach Delay [s/veh]	0.00		0.27		13.33	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.14					
Intersection LOS	B					

Signal Warrants Report For Intersection 7: Marksheffel Rd/Lorson Bl

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	362	385	62
2	351	373	60
3	344	366	59
4	322	343	55
5	286	304	49
6	282	300	48
7	279	296	48
8	253	270	43
9	250	266	43
10	246	262	42
11	214	227	37
12	199	212	34
13	195	208	33
14	145	154	25
15	145	154	25
16	101	108	17
17	58	62	10
18	58	62	10
19	33	35	6
20	18	19	3
21	11	12	2
22	4	4	1
23	4	4	1
24	4	4	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	747	2	62	No	No	No	No	No	No	No	Yes	No	No
2	2	724	2	60	No	No	No	No	No	No	No	Yes	No	No
3	2	710	2	59	No	No	No	No	No	No	No	Yes	No	No
4	2	665	2	55	No	No	No	No	No	No	No	No	No	No
5	2	590	2	49	No	No	No	No	No	No	No	No	No	No
6	2	582	2	48	No	No	No	No	No	No	No	No	No	No
7	2	575	2	48	No	No	No	No	No	No	No	No	No	No
8	2	523	2	43	No	No	No	No	No	No	No	No	No	No
9	2	516	2	43	No	No	No	No	No	No	No	No	No	No
10	2	508	2	42	No	No	No	No	No	No	No	No	No	No
11	2	441	2	37	No	No	No	No	No	No	No	No	No	No
12	2	411	2	34	No	No	No	No	No	No	No	No	No	No
13	2	403	2	33	No	No	No	No	No	No	No	No	No	No
14	2	299	2	25	No	No	No	No	No	No	No	No	No	No
15	2	299	2	25	No	No	No	No	No	No	No	No	No	No
16	2	209	2	17	No	No	No	No	No	No	No	No	No	No
17	2	120	2	10	No	No	No	No	No	No	No	No	No	No
18	2	120	2	10	No	No	No	No	No	No	No	No	No	No
19	2	68	2	6	No	No	No	No	No	No	No	No	No	No
20	2	37	2	3	No	No	No	No	No	No	No	No	No	No
21	2	23	2	2	No	No	No	No	No	No	No	No	No	No
22	2	8	2	1	No	No	No	No	No	No	No	No	No	No
23	2	8	2	1	No	No	No	No	No	No	No	No	No	No
24	2	8	2	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	3	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.3
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:13
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	62
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	809
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Appendix D

Build-out (2025) LOS Reports

Intersection Level Of Service Report
Intersection 1: Lorson Bl/Trappe Dr

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.001

Intersection Setup

Name	Trappe Dr		Lorson Bl		Lorson Bl	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Trappe Dr		Lorson Bl		Lorson Bl	
Base Volume Input [veh/h]	0	0	30	0	0	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	30	0	0	62
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	8	0	0	16
Total Analysis Volume [veh/h]	0	0	30	0	0	62
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.96	8.45	0.00	0.00	7.27	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	8.71		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 7: Marksheffel Rd/Lorson Bl

Control Type:	Signalized	Delay (sec / veh):	14.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.404

Intersection Setup

Name	Marksheffel Rd		Marksheffel Rd		Lorson Bl	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	245.00	400.00	100.00	250.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Marksheffel Rd		Marksheffel Rd		Lorson Bl	
Base Volume Input [veh/h]	465	64	19	394	194	85
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	465	64	19	394	194	85
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	116	16	5	99	49	21
Total Analysis Volume [veh/h]	465	64	19	394	194	85
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor stree	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	5	10	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	29	0	9	38	22	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	34	34	18	18
g / C, Green / Cycle	0.42	0.42	0.57	0.57	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.28	0.04	0.02	0.23	0.12	0.06
s, saturation flow rate [veh/h]	1683	1431	955	1683	1603	1431
c, Capacity [veh/h]	701	596	539	954	481	429
d1, Uniform Delay [s]	14.11	10.69	7.23	7.36	16.72	15.63
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.89	0.36	0.12	1.32	2.51	1.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.11	0.04	0.41	0.40	0.20
d, Delay for Lane Group [s/veh]	19.00	11.05	7.35	8.68	19.23	16.66
Lane Group LOS	B	B	A	A	B	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.35	0.52	0.10	2.58	2.27	0.92
50th-Percentile Queue Length [ft/ln]	133.67	12.96	2.54	64.55	56.84	22.92
95th-Percentile Queue Length [veh/ln]	9.14	0.93	0.18	4.65	4.09	1.65
95th-Percentile Queue Length [ft/ln]	228.48	23.32	4.57	116.18	102.30	41.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.00	11.05	7.35	8.68	19.23	16.66
Movement LOS	B	B	A	A	B	B
d_A, Approach Delay [s/veh]	18.04		8.62		18.45	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	14.95					
Intersection LOS	B					
Intersection V/C	0.404					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	21.68	21.68
l_p,int, Pedestrian LOS Score for Intersection	2.284	2.234	2.051
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	1133	600
d_b, Bicycle Delay [s]	10.21	5.63	14.70
l_b,int, Bicycle LOS Score for Intersection	2.432	2.241	1.560
Bicycle LOS	B	B	A

Sequence

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

Signal Warrants Report For Intersection 1: Lorson Bl/Trappe Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	62	30	0
2	60	29	0
3	59	29	0
4	55	27	0
5	49	24	0
6	48	23	0
7	48	23	0
8	43	21	0
9	43	21	0
10	42	20	0
11	37	18	0
12	34	17	0
13	33	16	0
14	25	12	0
15	25	12	0
16	17	8	0
17	10	5	0
18	10	5	0
19	6	3	0
20	3	2	0
21	2	1	0
22	1	0	0
23	1	0	0
24	1	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	92	2	0	No	No	No	No	No	No	No	No	No	No
2	2	89	2	0	No	No	No	No	No	No	No	No	No	No
3	2	88	2	0	No	No	No	No	No	No	No	No	No	No
4	2	82	2	0	No	No	No	No	No	No	No	No	No	No
5	2	73	2	0	No	No	No	No	No	No	No	No	No	No
6	2	71	2	0	No	No	No	No	No	No	No	No	No	No
7	2	71	2	0	No	No	No	No	No	No	No	No	No	No
8	2	64	2	0	No	No	No	No	No	No	No	No	No	No
9	2	64	2	0	No	No	No	No	No	No	No	No	No	No
10	2	62	2	0	No	No	No	No	No	No	No	No	No	No
11	2	55	2	0	No	No	No	No	No	No	No	No	No	No
12	2	51	2	0	No	No	No	No	No	No	No	No	No	No
13	2	49	2	0	No	No	No	No	No	No	No	No	No	No
14	2	37	2	0	No	No	No	No	No	No	No	No	No	No
15	2	37	2	0	No	No	No	No	No	No	No	No	No	No
16	2	25	2	0	No	No	No	No	No	No	No	No	No	No
17	2	15	2	0	No	No	No	No	No	No	No	No	No	No
18	2	15	2	0	No	No	No	No	No	No	No	No	No	No
19	2	9	2	0	No	No	No	No	No	No	No	No	No	No
20	2	5	2	0	No	No	No	No	No	No	No	No	No	No
21	2	3	2	0	No	No	No	No	No	No	No	No	No	No
22	2	1	2	0	No	No	No	No	No	No	No	No	No	No
23	2	1	2	0	No	No	No	No	No	No	No	No	No	No
24	2	1	2	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.7
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	92
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Intersection Level Of Service Report
Intersection 1: Lorson Bl/Trappe Dr

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.001

Intersection Setup

Name	Trappe Dr		Lorson Bl		Lorson Bl	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Trappe Dr		Lorson Bl		Lorson Bl	
Base Volume Input [veh/h]	0	0	66	0	0	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	66	0	0	40
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	17	0	0	10
Total Analysis Volume [veh/h]	0	0	66	0	0	40
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.04	8.61	0.00	0.00	7.34	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	8.82		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 7: Marksheffel Rd/Lorson Bl

Control Type:	Signalized	Delay (sec / veh):	13.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.357

Intersection Setup

Name	Marksheffel Rd		Marksheffel Rd		Lorson Bl	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	245.00	400.00	100.00	250.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Marksheffel Rd		Marksheffel Rd		Lorson Bl	
Base Volume Input [veh/h]	425	220	65	384	132	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	425	220	65	384	132	60
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	106	55	16	96	33	15
Total Analysis Volume [veh/h]	425	220	65	384	132	60
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor stree	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	5	10	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	29	0	9	38	22	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	34	34	18	18
g / C, Green / Cycle	0.42	0.42	0.57	0.57	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.25	0.15	0.07	0.23	0.08	0.04
s, saturation flow rate [veh/h]	1683	1431	891	1683	1603	1431
c, Capacity [veh/h]	701	596	539	954	481	429
d1, Uniform Delay [s]	13.66	12.06	7.15	7.30	16.02	15.34
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.86	1.76	0.46	1.27	1.41	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.61	0.37	0.12	0.40	0.27	0.14
d, Delay for Lane Group [s/veh]	17.52	13.82	7.61	8.56	17.43	16.02
Lane Group LOS	B	B	A	A	B	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.64	2.07	0.36	2.49	1.45	0.63
50th-Percentile Queue Length [ft/ln]	116.02	51.71	9.06	62.34	36.29	15.78
95th-Percentile Queue Length [veh/ln]	8.17	3.72	0.65	4.49	2.61	1.14
95th-Percentile Queue Length [ft/ln]	204.35	93.08	16.31	112.22	65.33	28.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.52	13.82	7.61	8.56	17.43	16.02
Movement LOS	B	B	A	A	B	B
d_A, Approach Delay [s/veh]	16.26		8.43		16.99	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	13.63					
Intersection LOS	B					
Intersection V/C	0.357					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	21.68	21.68
l_p,int, Pedestrian LOS Score for Intersection	2.298	2.224	2.117
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	1133	600
d_b, Bicycle Delay [s]	10.21	5.63	14.70
l_b,int, Bicycle LOS Score for Intersection	2.624	2.300	1.560
Bicycle LOS	B	B	A

Sequence

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

Signal Warrants Report For Intersection 1: Lorson Bl/Trappe Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	40	66	0
2	39	64	0
3	38	63	0
4	36	59	0
5	32	52	0
6	31	51	0
7	31	51	0
8	28	46	0
9	28	46	0
10	27	45	0
11	24	39	0
12	22	36	0
13	22	36	0
14	16	26	0
15	16	26	0
16	11	18	0
17	6	11	0
18	6	11	0
19	4	6	0
20	2	3	0
21	1	2	0
22	0	1	0
23	0	1	0
24	0	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	106	2	0	No	No	No	No	No	No	No	No	No	No
2	2	103	2	0	No	No	No	No	No	No	No	No	No	No
3	2	101	2	0	No	No	No	No	No	No	No	No	No	No
4	2	95	2	0	No	No	No	No	No	No	No	No	No	No
5	2	84	2	0	No	No	No	No	No	No	No	No	No	No
6	2	82	2	0	No	No	No	No	No	No	No	No	No	No
7	2	82	2	0	No	No	No	No	No	No	No	No	No	No
8	2	74	2	0	No	No	No	No	No	No	No	No	No	No
9	2	74	2	0	No	No	No	No	No	No	No	No	No	No
10	2	72	2	0	No	No	No	No	No	No	No	No	No	No
11	2	63	2	0	No	No	No	No	No	No	No	No	No	No
12	2	58	2	0	No	No	No	No	No	No	No	No	No	No
13	2	58	2	0	No	No	No	No	No	No	No	No	No	No
14	2	42	2	0	No	No	No	No	No	No	No	No	No	No
15	2	42	2	0	No	No	No	No	No	No	No	No	No	No
16	2	29	2	0	No	No	No	No	No	No	No	No	No	No
17	2	17	2	0	No	No	No	No	No	No	No	No	No	No
18	2	17	2	0	No	No	No	No	No	No	No	No	No	No
19	2	10	2	0	No	No	No	No	No	No	No	No	No	No
20	2	5	2	0	No	No	No	No	No	No	No	No	No	No
21	2	3	2	0	No	No	No	No	No	No	No	No	No	No
22	2	1	2	0	No	No	No	No	No	No	No	No	No	No
23	2	1	2	0	No	No	No	No	No	No	No	No	No	No
24	2	1	2	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.8
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	106
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Intersection Level Of Service Report
Intersection 1: Lorson Bl/Trappe Dr

Control Type:	Two-way stop	Delay (sec / veh):	9.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.026

Intersection Setup

Name	Trappe Dr		Lorson Bl		Lorson Bl	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Trappe Dr		Lorson Bl		Lorson Bl	
Base Volume Input [veh/h]	0	0	30	0	0	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	24	0	0	8	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	0	30	8	0	62
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	0	8	2	0	16
Total Analysis Volume [veh/h]	24	0	30	8	0	62
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.07	8.45	0.00	0.00	7.29	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.08	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	2.03	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.07		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.76					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 2: Trappe Dr/Magothy Dr

Control Type:	Two-way stop	Delay (sec / veh):	8.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.017

Intersection Setup

Name	Trappe Dr			Trappe Dr			Magothy Dr			Magothy Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Trappe Dr			Trappe Dr			Magothy Dr			Magothy Dr		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	7	0	0	2	6	17	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	7	0	0	2	6	17	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	0	0	1	2	4	0	0	0	0	0
Total Analysis Volume [veh/h]	0	7	0	0	2	6	17	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.23	0.00	0.00	7.23	0.00	0.00	8.64	9.14	8.40	8.58	9.09	8.35
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.05	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	1.29	1.29	1.29	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			8.64			8.67		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	4.59											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 4: Luneth Dr/Akela Ln

Control Type:	Two-way stop	Delay (sec / veh):	8.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

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

Volumes

Name	Akela Ln			Akela Ln			Luneth Dr			Luneth Dr		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	7	0	0	0	0	0	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	7	0	0	0	0	0	0	0	2
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	2	0	0	0	0	0	0	0	1
Total Analysis Volume [veh/h]	0	0	0	7	0	0	0	0	0	0	0	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	7.23	0.00	0.00	8.62	9.11	8.32	8.61	9.11	8.32
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.32	0.32	0.32	0.00	0.00	0.00	0.14	0.14	0.14
d_A, Approach Delay [s/veh]	2.41			7.23			8.68			8.32		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	7.47											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 5: Trappe Dr/Luneth Dr

Control Type:	Two-way stop	Delay (sec / veh):	8.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Trappe Dr		Trappe Dr		Luneth Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Trappe Dr		Trappe Dr		Luneth Dr	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	2	7	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	2	7	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	1	2	0
Total Analysis Volume [veh/h]	0	0	0	2	7	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	0.00	8.55	8.35
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.02	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.52	0.52
d_A, Approach Delay [s/veh]	3.61		0.00		8.55	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	6.65					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 7: Marksheffel Rd/Lorson Bl

Control Type:	Signalized	Delay (sec / veh):	15.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.411

Intersection Setup

Name	Marksheffel Rd		Marksheffel Rd		Lorson Bl	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	245.00	400.00	100.00	250.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Marksheffel Rd		Marksheffel Rd		Lorson Bl	
Base Volume Input [veh/h]	465	64	19	394	194	85
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	5	0	8	16
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	465	67	24	394	202	101
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	116	17	6	99	51	25
Total Analysis Volume [veh/h]	465	67	24	394	202	101
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor stree	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	5	10	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	29	0	9	38	22	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	34	34	18	18
g / C, Green / Cycle	0.42	0.42	0.57	0.57	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.28	0.05	0.03	0.23	0.13	0.07
s, saturation flow rate [veh/h]	1683	1431	953	1683	1603	1431
c, Capacity [veh/h]	701	596	539	954	481	429
d1, Uniform Delay [s]	14.11	10.71	7.25	7.36	16.82	15.82
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.89	0.38	0.16	1.32	2.68	1.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.11	0.04	0.41	0.42	0.24
d, Delay for Lane Group [s/veh]	19.00	11.09	7.41	8.68	19.50	17.10
Lane Group LOS	B	B	A	A	B	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.35	0.54	0.13	2.58	2.39	1.11
50th-Percentile Queue Length [ft/ln]	133.67	13.60	3.22	64.55	59.71	27.69
95th-Percentile Queue Length [veh/ln]	9.14	0.98	0.23	4.65	4.30	1.99
95th-Percentile Queue Length [ft/ln]	228.48	24.48	5.80	116.18	107.48	49.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.00	11.09	7.41	8.68	19.50	17.10
Movement LOS	B	B	A	A	B	B
d_A, Approach Delay [s/veh]	18.00		8.60		18.70	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	15.04					
Intersection LOS	B					
Intersection V/C	0.411					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	21.68	21.68
l_p,int, Pedestrian LOS Score for Intersection	2.287	2.241	2.064
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	1133	600
d_b, Bicycle Delay [s]	10.21	5.63	14.70
l_b,int, Bicycle LOS Score for Intersection	2.437	2.249	1.560
Bicycle LOS	B	B	A

Sequence

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

Signal Warrants Report For Intersection 1: Lorson Bl/Trappe Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	62	38	24
2	60	37	23
3	59	36	23
4	55	34	21
5	49	30	19
6	48	30	19
7	48	29	18
8	43	27	17
9	43	26	17
10	42	26	16
11	37	22	14
12	34	21	13
13	33	21	13
14	25	15	10
15	25	15	10
16	17	11	7
17	10	6	4
18	10	6	4
19	6	3	2
20	3	2	1
21	2	1	1
22	1	0	0
23	1	0	0
24	1	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	100	2	24	No	No	No	No	No	No	No	No	No	No
2	2	97	2	23	No	No	No	No	No	No	No	No	No	No
3	2	95	2	23	No	No	No	No	No	No	No	No	No	No
4	2	89	2	21	No	No	No	No	No	No	No	No	No	No
5	2	79	2	19	No	No	No	No	No	No	No	No	No	No
6	2	78	2	19	No	No	No	No	No	No	No	No	No	No
7	2	77	2	18	No	No	No	No	No	No	No	No	No	No
8	2	70	2	17	No	No	No	No	No	No	No	No	No	No
9	2	69	2	17	No	No	No	No	No	No	No	No	No	No
10	2	68	2	16	No	No	No	No	No	No	No	No	No	No
11	2	59	2	14	No	No	No	No	No	No	No	No	No	No
12	2	55	2	13	No	No	No	No	No	No	No	No	No	No
13	2	54	2	13	No	No	No	No	No	No	No	No	No	No
14	2	40	2	10	No	No	No	No	No	No	No	No	No	No
15	2	40	2	10	No	No	No	No	No	No	No	No	No	No
16	2	28	2	7	No	No	No	No	No	No	No	No	No	No
17	2	16	2	4	No	No	No	No	No	No	No	No	No	No
18	2	16	2	4	No	No	No	No	No	No	No	No	No	No
19	2	9	2	2	No	No	No	No	No	No	No	No	No	No
20	2	5	2	1	No	No	No	No	No	No	No	No	No	No
21	2	3	2	1	No	No	No	No	No	No	No	No	No	No
22	2	1	2	0	No	No	No	No	No	No	No	No	No	No
23	2	1	2	0	No	No	No	No	No	No	No	No	No	No
24	2	1	2	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.1
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:03
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	24
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	124
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 2: Trappe Dr/Magothy Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	7	8	0	17
2	7	8	0	16
3	7	8	0	16
4	6	7	0	15
5	6	6	0	13
6	5	6	0	13
7	5	6	0	13
8	5	6	0	12
9	5	6	0	12
10	5	5	0	12
11	4	5	0	10
12	4	4	0	9
13	4	4	0	9
14	3	3	0	7
15	3	3	0	7
16	2	2	0	5
17	1	1	0	3
18	1	1	0	3
19	1	1	0	2
20	0	0	0	1
21	0	0	0	1
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	15	1	17	No	No	No	No	No	No	No	No	No	No
2	2	15	1	16	No	No	No	No	No	No	No	No	No	No
3	2	15	1	16	No	No	No	No	No	No	No	No	No	No
4	2	13	1	15	No	No	No	No	No	No	No	No	No	No
5	2	12	1	13	No	No	No	No	No	No	No	No	No	No
6	2	11	1	13	No	No	No	No	No	No	No	No	No	No
7	2	11	1	13	No	No	No	No	No	No	No	No	No	No
8	2	11	1	12	No	No	No	No	No	No	No	No	No	No
9	2	11	1	12	No	No	No	No	No	No	No	No	No	No
10	2	10	1	12	No	No	No	No	No	No	No	No	No	No
11	2	9	1	10	No	No	No	No	No	No	No	No	No	No
12	2	8	1	9	No	No	No	No	No	No	No	No	No	No
13	2	8	1	9	No	No	No	No	No	No	No	No	No	No
14	2	6	1	7	No	No	No	No	No	No	No	No	No	No
15	2	6	1	7	No	No	No	No	No	No	No	No	No	No
16	2	4	1	5	No	No	No	No	No	No	No	No	No	No
17	2	2	1	3	No	No	No	No	No	No	No	No	No	No
18	2	2	1	3	No	No	No	No	No	No	No	No	No	No
19	2	2	1	2	No	No	No	No	No	No	No	No	No	No
20	2	0	1	1	No	No	No	No	No	No	No	No	No	No
21	2	0	1	1	No	No	No	No	No	No	No	No	No	No
22	2	0	1	0	No	No	No	No	No	No	No	No	No	No
23	2	0	1	0	No	No	No	No	No	No	No	No	No	No
24	2	0	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.7	8.6
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00	0:02
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	0	17
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	32	32
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 4: Luneth Dr/Akela Ln

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	0	7	2	0
2	0	7	2	0
3	0	7	2	0
4	0	6	2	0
5	0	6	2	0
6	0	5	2	0
7	0	5	2	0
8	0	5	1	0
9	0	5	1	0
10	0	5	1	0
11	0	4	1	0
12	0	4	1	0
13	0	4	1	0
14	0	3	1	0
15	0	3	1	0
16	0	2	1	0
17	0	1	0	0
18	0	1	0	0
19	0	1	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	7	1	2	No	No	No	No	No	No	No	No	No	No
2	1	7	1	2	No	No	No	No	No	No	No	No	No	No
3	1	7	1	2	No	No	No	No	No	No	No	No	No	No
4	1	6	1	2	No	No	No	No	No	No	No	No	No	No
5	1	6	1	2	No	No	No	No	No	No	No	No	No	No
6	1	5	1	2	No	No	No	No	No	No	No	No	No	No
7	1	5	1	2	No	No	No	No	No	No	No	No	No	No
8	1	5	1	1	No	No	No	No	No	No	No	No	No	No
9	1	5	1	1	No	No	No	No	No	No	No	No	No	No
10	1	5	1	1	No	No	No	No	No	No	No	No	No	No
11	1	4	1	1	No	No	No	No	No	No	No	No	No	No
12	1	4	1	1	No	No	No	No	No	No	No	No	No	No
13	1	4	1	1	No	No	No	No	No	No	No	No	No	No
14	1	3	1	1	No	No	No	No	No	No	No	No	No	No
15	1	3	1	1	No	No	No	No	No	No	No	No	No	No
16	1	2	1	1	No	No	No	No	No	No	No	No	No	No
17	1	1	1	0	No	No	No	No	No	No	No	No	No	No
18	1	1	1	0	No	No	No	No	No	No	No	No	No	No
19	1	1	1	0	No	No	No	No	No	No	No	No	No	No
20	1	0	1	0	No	No	No	No	No	No	No	No	No	No
21	1	0	1	0	No	No	No	No	No	No	No	No	No	No
22	1	0	1	0	No	No	No	No	No	No	No	No	No	No
23	1	0	1	0	No	No	No	No	No	No	No	No	No	No
24	1	0	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.3	8.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	2	0
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	9	9
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 5: Trappe Dr/Luneth Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	0	2	7
2	0	2	7
3	0	2	7
4	0	2	6
5	0	2	6
6	0	2	5
7	0	2	5
8	0	1	5
9	0	1	5
10	0	1	5
11	0	1	4
12	0	1	4
13	0	1	4
14	0	1	3
15	0	1	3
16	0	1	2
17	0	0	1
18	0	0	1
19	0	0	1
20	0	0	0
21	0	0	0
22	0	0	0
23	0	0	0
24	0	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	2	1	7	No	No	No	No	No	No	No	No	No	No
2	2	2	1	7	No	No	No	No	No	No	No	No	No	No
3	2	2	1	7	No	No	No	No	No	No	No	No	No	No
4	2	2	1	6	No	No	No	No	No	No	No	No	No	No
5	2	2	1	6	No	No	No	No	No	No	No	No	No	No
6	2	2	1	5	No	No	No	No	No	No	No	No	No	No
7	2	2	1	5	No	No	No	No	No	No	No	No	No	No
8	2	1	1	5	No	No	No	No	No	No	No	No	No	No
9	2	1	1	5	No	No	No	No	No	No	No	No	No	No
10	2	1	1	5	No	No	No	No	No	No	No	No	No	No
11	2	1	1	4	No	No	No	No	No	No	No	No	No	No
12	2	1	1	4	No	No	No	No	No	No	No	No	No	No
13	2	1	1	4	No	No	No	No	No	No	No	No	No	No
14	2	1	1	3	No	No	No	No	No	No	No	No	No	No
15	2	1	1	3	No	No	No	No	No	No	No	No	No	No
16	2	1	1	2	No	No	No	No	No	No	No	No	No	No
17	2	0	1	1	No	No	No	No	No	No	No	No	No	No
18	2	0	1	1	No	No	No	No	No	No	No	No	No	No
19	2	0	1	1	No	No	No	No	No	No	No	No	No	No
20	2	0	1	0	No	No	No	No	No	No	No	No	No	No
21	2	0	1	0	No	No	No	No	No	No	No	No	No	No
22	2	0	1	0	No	No	No	No	No	No	No	No	No	No
23	2	0	1	0	No	No	No	No	No	No	No	No	No	No
24	2	0	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	7
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	9
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Intersection Level Of Service Report
Intersection 1: Lorson Bl/Trappe Dr

Control Type:	Two-way stop	Delay (sec / veh):	9.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.017

Intersection Setup

Name	Trappe Dr		Lorson Bl		Lorson Bl	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Trappe Dr		Lorson Bl		Lorson Bl	
Base Volume Input [veh/h]	0	0	66	0	0	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	0	0	25	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	0	66	25	0	40
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	0	17	6	0	10
Total Analysis Volume [veh/h]	15	0	66	25	0	40
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.11	8.61	0.00	0.00	7.39	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.05	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.28	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.11		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.94					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 2: Trappe Dr/Magothy Dr

Control Type:	Two-way stop	Delay (sec / veh):	8.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

Intersection Setup

Name	Trappe Dr			Trappe Dr			Magothy Dr			Magothy Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Trappe Dr			Trappe Dr			Magothy Dr			Magothy Dr		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	0	7	18	11	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	4	0	0	7	18	11	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	0	0	2	5	3	0	0	0	0	0
Total Analysis Volume [veh/h]	0	4	0	0	7	18	11	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.26	0.00	0.00	7.23	0.00	0.00	8.66	9.16	8.43	8.62	9.17	8.33
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.84	0.84	0.84	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			8.66			8.71		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	2.38											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 4: Luneth Dr/Akela Ln

Control Type:	Two-way stop	Delay (sec / veh):	8.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

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

Volumes

Name	Akela Ln			Akela Ln			Luneth Dr			Luneth Dr		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	4	0	0	0	0	0	0	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	4	0	0	0	0	0	0	0	7
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	1	0	0	0	0	0	0	0	2
Total Analysis Volume [veh/h]	0	0	0	4	0	0	0	0	0	0	0	7
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	7.22	0.00	0.00	8.61	9.07	8.32	8.59	9.09	8.34
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.02	0.02	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.19	0.19	0.19	0.00	0.00	0.00	0.49	0.49	0.49
d_A, Approach Delay [s/veh]	2.41			7.22			8.67			8.34		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	7.93											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 5: Trappe Dr/Luneth Dr

Control Type:	Two-way stop	Delay (sec / veh):	8.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Trappe Dr		Trappe Dr		Luneth Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Trappe Dr		Trappe Dr		Luneth Dr	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	7	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	7	4	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	2	1	0
Total Analysis Volume [veh/h]	0	0	0	7	4	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.23	0.00	0.00	0.00	8.55	8.35
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.01	0.01
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.30	0.30
d_A, Approach Delay [s/veh]	3.62		0.00		8.55	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.11					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 7: Marksheffel Rd/Lorson Bl

Control Type:	Signalized	Delay (sec / veh):	13.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.366

Intersection Setup

Name	Marksheffel Rd		Marksheffel Rd		Lorson Bl	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	245.00	400.00	100.00	250.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Marksheffel Rd		Marksheffel Rd		Lorson Bl	
Base Volume Input [veh/h]	425	220	65	384	132	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	16	0	5	10
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	425	229	81	384	137	70
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	106	57	20	96	34	18
Total Analysis Volume [veh/h]	425	229	81	384	137	70
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor stree	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	5	10	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	29	0	9	38	22	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	34	34	18	18
g / C, Green / Cycle	0.42	0.42	0.57	0.57	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.25	0.16	0.09	0.23	0.09	0.05
s, saturation flow rate [veh/h]	1683	1431	886	1683	1603	1431
c, Capacity [veh/h]	701	596	538	954	481	429
d1, Uniform Delay [s]	13.66	12.15	7.25	7.30	16.07	15.46
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.86	1.87	0.59	1.27	1.48	0.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.61	0.38	0.15	0.40	0.28	0.16
d, Delay for Lane Group [s/veh]	17.52	14.03	7.84	8.56	17.56	16.27
Lane Group LOS	B	B	A	A	B	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.64	2.17	0.46	2.49	1.51	0.74
50th-Percentile Queue Length [ft/ln]	116.02	54.36	11.47	62.34	37.85	18.59
95th-Percentile Queue Length [veh/ln]	8.17	3.91	0.83	4.49	2.73	1.34
95th-Percentile Queue Length [ft/ln]	204.35	97.84	20.64	112.22	68.13	33.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.52	14.03	7.84	8.56	17.56	16.27
Movement LOS	B	B	A	A	B	B
d_A, Approach Delay [s/veh]	16.30		8.44		17.12	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	13.67					
Intersection LOS	B					
Intersection V/C	0.366					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	21.68	21.68
l_p,int, Pedestrian LOS Score for Intersection	2.303	2.233	2.141
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	1133	600
d_b, Bicycle Delay [s]	10.21	5.63	14.70
l_b,int, Bicycle LOS Score for Intersection	2.639	2.327	1.560
Bicycle LOS	B	B	A

Sequence

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

Signal Warrants Report For Intersection 1: Lorson Bl/Trappe Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	40	91	15
2	39	88	15
3	38	86	14
4	36	81	13
5	32	72	12
6	31	71	12
7	31	70	12
8	28	64	11
9	28	63	10
10	27	62	10
11	24	54	9
12	22	50	8
13	22	49	8
14	16	36	6
15	16	36	6
16	11	25	4
17	6	15	2
18	6	15	2
19	4	8	1
20	2	5	1
21	1	3	0
22	0	1	0
23	0	1	0
24	0	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	131	2	15	No	No	No	No	No	No	No	No	No	No
2	2	127	2	15	No	No	No	No	No	No	No	No	No	No
3	2	124	2	14	No	No	No	No	No	No	No	No	No	No
4	2	117	2	13	No	No	No	No	No	No	No	No	No	No
5	2	104	2	12	No	No	No	No	No	No	No	No	No	No
6	2	102	2	12	No	No	No	No	No	No	No	No	No	No
7	2	101	2	12	No	No	No	No	No	No	No	No	No	No
8	2	92	2	11	No	No	No	No	No	No	No	No	No	No
9	2	91	2	10	No	No	No	No	No	No	No	No	No	No
10	2	89	2	10	No	No	No	No	No	No	No	No	No	No
11	2	78	2	9	No	No	No	No	No	No	No	No	No	No
12	2	72	2	8	No	No	No	No	No	No	No	No	No	No
13	2	71	2	8	No	No	No	No	No	No	No	No	No	No
14	2	52	2	6	No	No	No	No	No	No	No	No	No	No
15	2	52	2	6	No	No	No	No	No	No	No	No	No	No
16	2	36	2	4	No	No	No	No	No	No	No	No	No	No
17	2	21	2	2	No	No	No	No	No	No	No	No	No	No
18	2	21	2	2	No	No	No	No	No	No	No	No	No	No
19	2	12	2	1	No	No	No	No	No	No	No	No	No	No
20	2	7	2	1	No	No	No	No	No	No	No	No	No	No
21	2	4	2	0	No	No	No	No	No	No	No	No	No	No
22	2	1	2	0	No	No	No	No	No	No	No	No	No	No
23	2	1	2	0	No	No	No	No	No	No	No	No	No	No
24	2	1	2	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.1
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:02
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	15
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	146
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 2: Trappe Dr/Magothy Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	4	25	0	11
2	4	24	0	11
3	4	24	0	10
4	4	22	0	10
5	3	20	0	9
6	3	20	0	9
7	3	19	0	8
8	3	18	0	8
9	3	17	0	8
10	3	17	0	7
11	2	15	0	6
12	2	14	0	6
13	2	14	0	6
14	2	10	0	4
15	2	10	0	4
16	1	7	0	3
17	1	4	0	2
18	1	4	0	2
19	0	2	0	1
20	0	1	0	1
21	0	1	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	29	1	11	No	No	No	No	No	No	No	No	No	No
2	2	28	1	11	No	No	No	No	No	No	No	No	No	No
3	2	28	1	10	No	No	No	No	No	No	No	No	No	No
4	2	26	1	10	No	No	No	No	No	No	No	No	No	No
5	2	23	1	9	No	No	No	No	No	No	No	No	No	No
6	2	23	1	9	No	No	No	No	No	No	No	No	No	No
7	2	22	1	8	No	No	No	No	No	No	No	No	No	No
8	2	21	1	8	No	No	No	No	No	No	No	No	No	No
9	2	20	1	8	No	No	No	No	No	No	No	No	No	No
10	2	20	1	7	No	No	No	No	No	No	No	No	No	No
11	2	17	1	6	No	No	No	No	No	No	No	No	No	No
12	2	16	1	6	No	No	No	No	No	No	No	No	No	No
13	2	16	1	6	No	No	No	No	No	No	No	No	No	No
14	2	12	1	4	No	No	No	No	No	No	No	No	No	No
15	2	12	1	4	No	No	No	No	No	No	No	No	No	No
16	2	8	1	3	No	No	No	No	No	No	No	No	No	No
17	2	5	1	2	No	No	No	No	No	No	No	No	No	No
18	2	5	1	2	No	No	No	No	No	No	No	No	No	No
19	2	2	1	1	No	No	No	No	No	No	No	No	No	No
20	2	1	1	1	No	No	No	No	No	No	No	No	No	No
21	2	1	1	0	No	No	No	No	No	No	No	No	No	No
22	2	0	1	0	No	No	No	No	No	No	No	No	No	No
23	2	0	1	0	No	No	No	No	No	No	No	No	No	No
24	2	0	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.7	8.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00	0:01
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	0	11
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	40	40
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 4: Luneth Dr/Akela Ln

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	0	4	7	0
2	0	4	7	0
3	0	4	7	0
4	0	4	6	0
5	0	3	6	0
6	0	3	5	0
7	0	3	5	0
8	0	3	5	0
9	0	3	5	0
10	0	3	5	0
11	0	2	4	0
12	0	2	4	0
13	0	2	4	0
14	0	2	3	0
15	0	2	3	0
16	0	1	2	0
17	0	1	1	0
18	0	1	1	0
19	0	0	1	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	4	1	7	No	No	No	No	No	No	No	No	No	No
2	1	4	1	7	No	No	No	No	No	No	No	No	No	No
3	1	4	1	7	No	No	No	No	No	No	No	No	No	No
4	1	4	1	6	No	No	No	No	No	No	No	No	No	No
5	1	3	1	6	No	No	No	No	No	No	No	No	No	No
6	1	3	1	5	No	No	No	No	No	No	No	No	No	No
7	1	3	1	5	No	No	No	No	No	No	No	No	No	No
8	1	3	1	5	No	No	No	No	No	No	No	No	No	No
9	1	3	1	5	No	No	No	No	No	No	No	No	No	No
10	1	3	1	5	No	No	No	No	No	No	No	No	No	No
11	1	2	1	4	No	No	No	No	No	No	No	No	No	No
12	1	2	1	4	No	No	No	No	No	No	No	No	No	No
13	1	2	1	4	No	No	No	No	No	No	No	No	No	No
14	1	2	1	3	No	No	No	No	No	No	No	No	No	No
15	1	2	1	3	No	No	No	No	No	No	No	No	No	No
16	1	1	1	2	No	No	No	No	No	No	No	No	No	No
17	1	1	1	1	No	No	No	No	No	No	No	No	No	No
18	1	1	1	1	No	No	No	No	No	No	No	No	No	No
19	1	0	1	1	No	No	No	No	No	No	No	No	No	No
20	1	0	1	0	No	No	No	No	No	No	No	No	No	No
21	1	0	1	0	No	No	No	No	No	No	No	No	No	No
22	1	0	1	0	No	No	No	No	No	No	No	No	No	No
23	1	0	1	0	No	No	No	No	No	No	No	No	No	No
24	1	0	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.3	8.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	7	0
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	11	11
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 5: Trappe Dr/Luneth Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	0	7	4
2	0	7	4
3	0	7	4
4	0	6	4
5	0	6	3
6	0	5	3
7	0	5	3
8	0	5	3
9	0	5	3
10	0	5	3
11	0	4	2
12	0	4	2
13	0	4	2
14	0	3	2
15	0	3	2
16	0	2	1
17	0	1	1
18	0	1	1
19	0	1	0
20	0	0	0
21	0	0	0
22	0	0	0
23	0	0	0
24	0	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	7	1	4	No	No	No	No	No	No	No	No	No	No
2	2	7	1	4	No	No	No	No	No	No	No	No	No	No
3	2	7	1	4	No	No	No	No	No	No	No	No	No	No
4	2	6	1	4	No	No	No	No	No	No	No	No	No	No
5	2	6	1	3	No	No	No	No	No	No	No	No	No	No
6	2	5	1	3	No	No	No	No	No	No	No	No	No	No
7	2	5	1	3	No	No	No	No	No	No	No	No	No	No
8	2	5	1	3	No	No	No	No	No	No	No	No	No	No
9	2	5	1	3	No	No	No	No	No	No	No	No	No	No
10	2	5	1	3	No	No	No	No	No	No	No	No	No	No
11	2	4	1	2	No	No	No	No	No	No	No	No	No	No
12	2	4	1	2	No	No	No	No	No	No	No	No	No	No
13	2	4	1	2	No	No	No	No	No	No	No	No	No	No
14	2	3	1	2	No	No	No	No	No	No	No	No	No	No
15	2	3	1	2	No	No	No	No	No	No	No	No	No	No
16	2	2	1	1	No	No	No	No	No	No	No	No	No	No
17	2	1	1	1	No	No	No	No	No	No	No	No	No	No
18	2	1	1	1	No	No	No	No	No	No	No	No	No	No
19	2	1	1	0	No	No	No	No	No	No	No	No	No	No
20	2	0	1	0	No	No	No	No	No	No	No	No	No	No
21	2	0	1	0	No	No	No	No	No	No	No	No	No	No
22	2	0	1	0	No	No	No	No	No	No	No	No	No	No
23	2	0	1	0	No	No	No	No	No	No	No	No	No	No
24	2	0	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	4
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	11
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Appendix E

Horizon (2040) LOS Reports

Intersection Level Of Service Report
Intersection 1: Lorson Bl/Trappe Dr

Control Type:	Two-way stop	Delay (sec / veh):	13.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.385

Intersection Setup

Name	Trappe Dr		Lorson Bl		Lorson Bl	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Trappe Dr		Lorson Bl		Lorson Bl	
Base Volume Input [veh/h]	263	23	78	101	12	200
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	263	23	78	101	12	200
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	6	20	25	3	50
Total Analysis Volume [veh/h]	263	23	78	101	12	200
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.38	0.02	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	13.52	8.75	0.00	0.00	7.60	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.81	0.07	0.00	0.00	0.03	0.00
95th-Percentile Queue Length [ft/ln]	45.32	1.80	0.00	0.00	0.65	0.00
d_A, Approach Delay [s/veh]	13.14		0.00		0.43	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	5.68					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 2: Trappe Dr/Magothy Dr

Control Type:	Two-way stop	Delay (sec / veh):	11.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name	Trappe Dr			Trappe Dr			Magothy Dr			Magothy Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Trappe Dr			Trappe Dr			Magothy Dr			Magothy Dr		
Base Volume Input [veh/h]	0	233	1	9	96	0	0	0	0	1	0	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	233	1	9	96	0	0	0	0	1	0	27
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	58	0	2	24	0	0	0	0	0	0	7
Total Analysis Volume [veh/h]	0	233	1	9	96	0	0	0	0	1	0	27
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
d_M, Delay for Movement [s/veh]	7.40	0.00	0.00	7.72	0.00	0.00	11.30	11.30	8.75	11.13	11.46	9.63
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.11	0.11	0.11
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	2.73	2.73	2.73
d_A, Approach Delay [s/veh]	0.00			0.66			10.45			9.69		
Approach LOS	A			A			B			A		
d_I, Intersection Delay [s/veh]	0.93											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 4: Luneth Dr/Akela Ln

Control Type:	Two-way stop	Delay (sec / veh):	9.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.097

Intersection Setup

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

Volumes

Name	Akela Ln			Akela Ln			Luneth Dr			Luneth Dr		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	87	0	0	69	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	87	0	0	69	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	22	0	0	17	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	87	0	0	69	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.08	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	7.22	0.00	0.00	9.37	9.45	8.75	9.39	9.35	8.65
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.32	0.32	0.25	0.25	0.25
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	8.04	8.04	8.04	6.24	6.24	6.24
d_A, Approach Delay [s/veh]	2.41			2.41			9.45			9.35		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	9.41											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 5: Trappe Dr/Luneth Dr

Control Type:	Two-way stop	Delay (sec / veh):	10.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.118

Intersection Setup

Name	Trappe Dr		Trappe Dr		Luneth Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Trappe Dr		Trappe Dr		Luneth Dr	
Base Volume Input [veh/h]	1	197	28	68	86	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	197	28	68	86	1
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	49	7	17	22	0
Total Analysis Volume [veh/h]	1	197	28	68	86	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.12	0.00
d_M, Delay for Movement [s/veh]	7.41	0.00	0.00	0.00	10.62	9.26
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.40	0.40
95th-Percentile Queue Length [ft/ln]	0.05	0.00	0.00	0.00	10.10	10.10
d_A, Approach Delay [s/veh]	0.04		0.00		10.60	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.44					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 7: Marksheffel Rd/Lorson Bl

Control Type:	Signalized	Delay (sec / veh):	24.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.550

Intersection Setup

Name	Marksheffel Rd			Marksheffel Rd						Lorson Bl		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	2	0	0
Entry Pocket Length [ft]	100.00	100.00	245.00	400.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marksheffel Rd			Marksheffel Rd						Lorson Bl		
Base Volume Input [veh/h]	157	714	128	35	999	23	49	18	69	400	11	151
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	157	714	128	35	999	23	49	18	69	400	11	151
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	179	32	9	250	6	12	5	17	100	3	38
Total Analysis Volume [veh/h]	157	714	128	35	999	23	49	18	69	400	11	151
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Permis	Permis	Permis	Protect	Permis	Permis
Signal Group	1	6	0	5	2	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	0	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	25	0	9	25	0	0	30	0	16	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No			No		No	No	
Maximum Recall	No	No		No	No			No		No	No	
Pedestrian Recall	No	No		No	No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	37	37	3	35	35	12	12	12	28
g / C, Green / Cycle	0.06	0.46	0.46	0.03	0.43	0.43	0.15	0.15	0.15	0.35
(v / s)_i Volume / Saturation Flow Rate	0.05	0.22	0.09	0.02	0.31	0.02	0.02	0.06	0.13	0.11
s, saturation flow rate [veh/h]	3113	3204	1431	1603	3204	1431	2139	1476	3113	1445
c, Capacity [veh/h]	196	1487	664	56	1396	623	175	223	468	508
d1, Uniform Delay [s]	37.03	14.80	12.64	38.16	18.53	12.96	37.78	30.66	33.19	18.97
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.34	1.11	0.65	11.19	3.17	0.11	0.86	1.11	4.59	0.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.48	0.19	0.63	0.72	0.04	0.28	0.39	0.86	0.32
d, Delay for Lane Group [s/veh]	44.38	15.92	13.28	49.35	21.70	13.07	38.63	31.76	37.78	19.33
Lane Group LOS	D	B	B	D	C	B	D	C	D	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.68	4.39	1.39	0.84	7.64	0.25	0.48	1.54	3.97	2.15
50th-Percentile Queue Length [ft/ln]	42.12	109.68	34.79	20.95	191.07	6.14	12.08	38.61	99.34	53.78
95th-Percentile Queue Length [veh/ln]	3.03	7.82	2.50	1.51	12.18	0.44	0.87	2.78	7.15	3.87
95th-Percentile Queue Length [ft/ln]	75.81	195.55	62.62	37.70	304.41	11.05	21.75	69.49	178.82	96.80

Movement, Approach, & Intersection Results

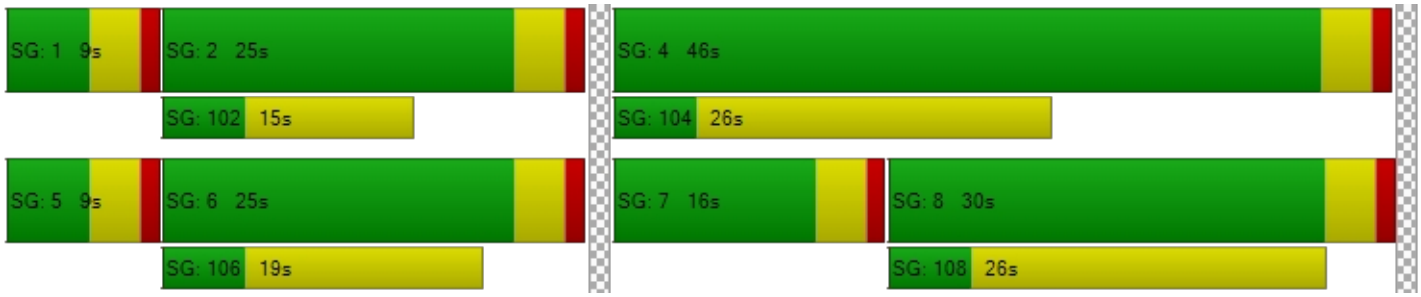
d_M, Delay for Movement [s/veh]	44.38	15.92	13.28	49.35	21.70	13.07	38.63	31.76	31.76	37.78	19.33	19.33
Movement LOS	D	B	B	D	C	B	D	C	C	D	B	B
d_A, Approach Delay [s/veh]	20.05			22.43			34.24			32.46		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	24.20											
Intersection LOS	C											
Intersection V/C	0.550											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.53	31.53	31.53	31.53
l_p,int, Pedestrian LOS Score for Intersection	2.933	2.839	2.359	2.308
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	525	525	650	1049
d_b, Bicycle Delay [s]	21.78	21.78	18.25	9.04
l_b,int, Bicycle LOS Score for Intersection	2.384	2.432	1.784	2.487
Bicycle LOS	B	B	A	B

Sequence

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



Signal Warrants Report For Intersection 1: Lorson Bl/Trappe Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	212	179	286
2	206	174	277
3	201	170	272
4	189	159	255
5	167	141	226
6	165	140	223
7	163	138	220
8	148	125	200
9	146	124	197
10	144	122	194
11	125	106	169
12	117	98	157
13	114	97	154
14	85	72	114
15	85	72	114
16	59	50	80
17	34	29	46
18	34	29	46
19	19	16	26
20	11	9	14
21	6	5	9
22	2	2	3
23	2	2	3
24	2	2	3

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	391	2	286	No	No	No	Yes	No	No	No	No	No	No
2	2	380	2	277	No	No	No	Yes	No	No	No	No	No	No
3	2	371	2	272	No	No	No	Yes	No	No	No	No	No	No
4	2	348	2	255	No	No	No	Yes	No	No	No	No	No	No
5	2	308	2	226	No	No	No	No	No	No	No	No	No	No
6	2	305	2	223	No	No	No	No	No	No	No	No	No	No
7	2	301	2	220	No	No	No	No	No	No	No	No	No	No
8	2	273	2	200	No	No	No	No	No	No	No	No	No	No
9	2	270	2	197	No	No	No	No	No	No	No	No	No	No
10	2	266	2	194	No	No	No	No	No	No	No	No	No	No
11	2	231	2	169	No	No	No	No	No	No	No	No	No	No
12	2	215	2	157	No	No	No	No	No	No	No	No	No	No
13	2	211	2	154	No	No	No	No	No	No	No	No	No	No
14	2	157	2	114	No	No	No	No	No	No	No	No	No	No
15	2	157	2	114	No	No	No	No	No	No	No	No	No	No
16	2	109	2	80	No	No	No	No	No	No	No	No	No	No
17	2	63	2	46	No	No	No	No	No	No	No	No	No	No
18	2	63	2	46	No	No	No	No	No	No	No	No	No	No
19	2	35	2	26	No	No	No	No	No	No	No	No	No	No
20	2	20	2	14	No	No	No	No	No	No	No	No	No	No
21	2	11	2	9	No	No	No	No	No	No	No	No	No	No
22	2	4	2	3	No	No	No	No	No	No	No	No	No	No
23	2	4	2	3	No	No	No	No	No	No	No	No	No	No
24	2	4	2	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	4	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.1
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:02
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	286
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	677
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 2: Trappe Dr/Magothy Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	234	105	28	0
2	227	102	27	0
3	222	100	27	0
4	208	93	25	0
5	185	83	22	0
6	183	82	22	0
7	180	81	22	0
8	164	74	20	0
9	161	72	19	0
10	159	71	19	0
11	138	62	17	0
12	129	58	15	0
13	126	57	15	0
14	94	42	11	0
15	94	42	11	0
16	66	29	8	0
17	37	17	4	0
18	37	17	4	0
19	21	9	3	0
20	12	5	1	0
21	7	3	1	0
22	2	1	0	0
23	2	1	0	0
24	2	1	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	339	1	28	No	No	No	No	No	No	No	No	No	No
2	2	329	1	27	No	No	No	No	No	No	No	No	No	No
3	2	322	1	27	No	No	No	No	No	No	No	No	No	No
4	2	301	1	25	No	No	No	No	No	No	No	No	No	No
5	2	268	1	22	No	No	No	No	No	No	No	No	No	No
6	2	265	1	22	No	No	No	No	No	No	No	No	No	No
7	2	261	1	22	No	No	No	No	No	No	No	No	No	No
8	2	238	1	20	No	No	No	No	No	No	No	No	No	No
9	2	233	1	19	No	No	No	No	No	No	No	No	No	No
10	2	230	1	19	No	No	No	No	No	No	No	No	No	No
11	2	200	1	17	No	No	No	No	No	No	No	No	No	No
12	2	187	1	15	No	No	No	No	No	No	No	No	No	No
13	2	183	1	15	No	No	No	No	No	No	No	No	No	No
14	2	136	1	11	No	No	No	No	No	No	No	No	No	No
15	2	136	1	11	No	No	No	No	No	No	No	No	No	No
16	2	95	1	8	No	No	No	No	No	No	No	No	No	No
17	2	54	1	4	No	No	No	No	No	No	No	No	No	No
18	2	54	1	4	No	No	No	No	No	No	No	No	No	No
19	2	30	1	3	No	No	No	No	No	No	No	No	No	No
20	2	17	1	1	No	No	No	No	No	No	No	No	No	No
21	2	10	1	1	No	No	No	No	No	No	No	No	No	No
22	2	3	1	0	No	No	No	No	No	No	No	No	No	No
23	2	3	1	0	No	No	No	No	No	No	No	No	No	No
24	2	3	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.7	10.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:04	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	28	0
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	367	367
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 4: Luneth Dr/Akela Ln

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	0	0	69	87
2	0	0	67	84
3	0	0	66	83
4	0	0	61	77
5	0	0	55	69
6	0	0	54	68
7	0	0	53	67
8	0	0	48	61
9	0	0	48	60
10	0	0	47	59
11	0	0	41	51
12	0	0	38	48
13	0	0	37	47
14	0	0	28	35
15	0	0	28	35
16	0	0	19	24
17	0	0	11	14
18	0	0	11	14
19	0	0	6	8
20	0	0	3	4
21	0	0	2	3
22	0	0	1	1
23	0	0	1	1
24	0	0	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	0	1	87	No	No	No	No	No	No	No	No	No	No
2	1	0	1	84	No	No	No	No	No	No	No	No	No	No
3	1	0	1	83	No	No	No	No	No	No	No	No	No	No
4	1	0	1	77	No	No	No	No	No	No	No	No	No	No
5	1	0	1	69	No	No	No	No	No	No	No	No	No	No
6	1	0	1	68	No	No	No	No	No	No	No	No	No	No
7	1	0	1	67	No	No	No	No	No	No	No	No	No	No
8	1	0	1	61	No	No	No	No	No	No	No	No	No	No
9	1	0	1	60	No	No	No	No	No	No	No	No	No	No
10	1	0	1	59	No	No	No	No	No	No	No	No	No	No
11	1	0	1	51	No	No	No	No	No	No	No	No	No	No
12	1	0	1	48	No	No	No	No	No	No	No	No	No	No
13	1	0	1	47	No	No	No	No	No	No	No	No	No	No
14	1	0	1	35	No	No	No	No	No	No	No	No	No	No
15	1	0	1	35	No	No	No	No	No	No	No	No	No	No
16	1	0	1	24	No	No	No	No	No	No	No	No	No	No
17	1	0	1	14	No	No	No	No	No	No	No	No	No	No
18	1	0	1	14	No	No	No	No	No	No	No	No	No	No
19	1	0	1	8	No	No	No	No	No	No	No	No	No	No
20	1	0	1	4	No	No	No	No	No	No	No	No	No	No
21	1	0	1	3	No	No	No	No	No	No	No	No	No	No
22	1	0	1	1	No	No	No	No	No	No	No	No	No	No
23	1	0	1	1	No	No	No	No	No	No	No	No	No	No
24	1	0	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.4	9.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:10	0:13
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	69	87
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	156	156
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 5: Trappe Dr/Luneth Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	198	96	87
2	192	93	84
3	188	91	83
4	176	85	77
5	156	76	69
6	154	75	68
7	152	74	67
8	139	67	61
9	137	66	60
10	135	65	59
11	117	57	51
12	109	53	48
13	107	52	47
14	79	38	35
15	79	38	35
16	55	27	24
17	32	15	14
18	32	15	14
19	18	9	8
20	10	5	4
21	6	3	3
22	2	1	1
23	2	1	1
24	2	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	294	1	87	No	No	No	No	No	No	No	No	No	No
2	2	285	1	84	No	No	No	No	No	No	No	No	No	No
3	2	279	1	83	No	No	No	No	No	No	No	No	No	No
4	2	261	1	77	No	No	No	No	No	No	No	No	No	No
5	2	232	1	69	No	No	No	No	No	No	No	No	No	No
6	2	229	1	68	No	No	No	No	No	No	No	No	No	No
7	2	226	1	67	No	No	No	No	No	No	No	No	No	No
8	2	206	1	61	No	No	No	No	No	No	No	No	No	No
9	2	203	1	60	No	No	No	No	No	No	No	No	No	No
10	2	200	1	59	No	No	No	No	No	No	No	No	No	No
11	2	174	1	51	No	No	No	No	No	No	No	No	No	No
12	2	162	1	48	No	No	No	No	No	No	No	No	No	No
13	2	159	1	47	No	No	No	No	No	No	No	No	No	No
14	2	117	1	35	No	No	No	No	No	No	No	No	No	No
15	2	117	1	35	No	No	No	No	No	No	No	No	No	No
16	2	82	1	24	No	No	No	No	No	No	No	No	No	No
17	2	47	1	14	No	No	No	No	No	No	No	No	No	No
18	2	47	1	14	No	No	No	No	No	No	No	No	No	No
19	2	27	1	8	No	No	No	No	No	No	No	No	No	No
20	2	15	1	4	No	No	No	No	No	No	No	No	No	No
21	2	9	1	3	No	No	No	No	No	No	No	No	No	No
22	2	3	1	1	No	No	No	No	No	No	No	No	No	No
23	2	3	1	1	No	No	No	No	No	No	No	No	No	No
24	2	3	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:15
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	87
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	381
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Intersection Level Of Service Report
Intersection 1: Lorson Bl/Trappe Dr

Control Type:	Two-way stop	Delay (sec / veh):	13.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.300

Intersection Setup

Name	Trappe Dr		Lorson Bl		Lorson Bl	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Trappe Dr		Lorson Bl		Lorson Bl	
Base Volume Input [veh/h]	188	2	224	343	5	137
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	188	2	224	343	5	137
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	1	56	86	1	34
Total Analysis Volume [veh/h]	188	2	224	343	5	137
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.30	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	13.19	9.43	0.00	0.00	8.60	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.26	0.01	0.00	0.00	0.01	0.00
95th-Percentile Queue Length [ft/ln]	31.44	0.18	0.00	0.00	0.37	0.00
d_A, Approach Delay [s/veh]	13.15		0.00		0.30	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.83					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 2: Trappe Dr/Magothy Dr

Control Type:	Two-way stop	Delay (sec / veh):	13.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name	Trappe Dr			Trappe Dr			Magothy Dr			Magothy Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Trappe Dr			Trappe Dr			Magothy Dr			Magothy Dr		
Base Volume Input [veh/h]	0	156	1	31	291	0	0	0	0	1	1	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	156	1	31	291	0	0	0	0	1	1	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	39	0	8	73	0	0	0	0	0	0	5
Total Analysis Volume [veh/h]	0	156	1	31	291	0	0	0	0	1	1	19
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	7.83	0.00	0.00	7.59	0.00	0.00	13.02	12.89	9.81	12.84	13.00	9.17
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.08
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	1.98	1.98	1.98
d_A, Approach Delay [s/veh]	0.00			0.73			11.91			9.52		
Approach LOS	A			A			B			A		
d_I, Intersection Delay [s/veh]	0.87											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 4: Luneth Dr/Akela Ln

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.219

Intersection Setup

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

Volumes

Name	Akela Ln			Akela Ln			Luneth Dr			Luneth Dr		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	57	0	0	196	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	57	0	0	196	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	14	0	0	49	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	57	0	0	196	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.22	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	7.22	0.00	0.00	10.17	9.29	8.59	9.98	10.14	9.44
Movement LOS	A	A	A	A	A	A	B	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.20	0.83	0.83	0.83
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	5.09	5.09	5.09	20.80	20.80	20.80
d_A, Approach Delay [s/veh]	2.41			2.41			9.29			10.14		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	9.95											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 5: Trappe Dr/Luneth Dr

Control Type:	Two-way stop	Delay (sec / veh):	10.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.081

Intersection Setup

Name	Trappe Dr		Trappe Dr		Luneth Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Trappe Dr		Trappe Dr		Luneth Dr	
Base Volume Input [veh/h]	1	100	96	195	56	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	100	96	195	56	1
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	25	24	49	14	0
Total Analysis Volume [veh/h]	1	100	96	195	56	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.08	0.00
d_M, Delay for Movement [s/veh]	7.84	0.00	0.00	0.00	10.64	9.70
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.27	0.27
95th-Percentile Queue Length [ft/ln]	0.06	0.00	0.00	0.00	6.66	6.66
d_A, Approach Delay [s/veh]	0.08		0.00		10.62	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.37					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 7: Marksheffel Rd/Lorson Bl

Control Type:	Signalized	Delay (sec / veh):	21.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.524

Intersection Setup

Name	Marksheffel Rd			Marksheffel Rd						Lorson Bl		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	2	0	0
Entry Pocket Length [ft]	100.00	100.00	245.00	400.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marksheffel Rd			Marksheffel Rd						Lorson Bl		
Base Volume Input [veh/h]	159	742	456	123	610	34	47	15	41	282	20	105
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	742	456	123	610	34	47	15	41	282	20	105
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	186	114	31	153	9	12	4	10	71	5	26
Total Analysis Volume [veh/h]	159	742	456	123	610	34	47	15	41	282	20	105
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	23	0	14	19	0	10	30	0	13	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	40	40	8	42	42	3	7	9	13
g / C, Green / Cycle	0.08	0.50	0.50	0.10	0.52	0.52	0.04	0.09	0.11	0.16
(v / s)_i Volume / Saturation Flow Rate	0.05	0.23	0.32	0.08	0.19	0.02	0.02	0.04	0.09	0.09
s, saturation flow rate [veh/h]	3113	3204	1431	1603	3204	1431	3113	1490	3113	1466
c, Capacity [veh/h]	240	1605	716	154	1666	744	131	135	352	237
d1, Uniform Delay [s]	36.01	13.01	14.68	35.50	11.42	9.47	37.37	34.47	34.68	30.82
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.14	0.96	4.29	9.13	0.62	0.12	1.65	2.03	4.22	1.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.46	0.64	0.80	0.37	0.05	0.36	0.41	0.80	0.53
d, Delay for Lane Group [s/veh]	39.15	13.97	18.97	44.63	12.05	9.59	39.01	36.50	38.91	32.63
Lane Group LOS	D	B	B	D	B	A	D	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.59	4.17	6.33	2.69	3.07	0.29	0.47	1.09	2.82	2.28
50th-Percentile Queue Length [ft/ln]	39.63	104.20	158.37	67.21	76.75	7.36	11.75	27.17	70.51	56.89
95th-Percentile Queue Length [veh/ln]	2.85	7.50	10.46	4.84	5.53	0.53	0.85	1.96	5.08	4.10
95th-Percentile Queue Length [ft/ln]	71.33	187.55	261.57	120.98	138.15	13.25	21.16	48.90	126.91	102.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.15	13.97	18.97	44.63	12.05	9.59	39.01	36.50	36.50	38.91	32.63	32.63
Movement LOS	D	B	B	D	B	A	D	D	D	D	C	C
d_A, Approach Delay [s/veh]	18.60			17.16			37.65			36.98		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	21.77											
Intersection LOS	C											
Intersection V/C	0.524											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.56	31.56	31.56	31.56
l_p,int, Pedestrian LOS Score for Intersection	2.909	2.719	2.357	2.371
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	474	374	649	724
d_b, Bicycle Delay [s]	23.31	26.46	18.27	16.30
l_b,int, Bicycle LOS Score for Intersection	2.679	2.192	1.730	2.231
Bicycle LOS	B	B	A	B

Sequence

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

Signal Warrants Report For Intersection 1: Lorson Bl/Trappe Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	142	567	190
2	138	550	184
3	135	539	181
4	126	505	169
5	112	448	150
6	111	442	148
7	109	437	146
8	99	397	133
9	98	391	131
10	97	386	129
11	84	335	112
12	78	312	105
13	77	306	103
14	57	227	76
15	57	227	76
16	40	159	53
17	23	91	30
18	23	91	30
19	13	51	17
20	7	28	10
21	4	17	6
22	1	6	2
23	1	6	2
24	1	6	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	709	2	190	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
2	2	688	2	184	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
3	2	674	2	181	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
4	2	631	2	169	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
5	2	560	2	150	No	No	Yes	Yes	No	No	No	Yes	No	No
6	2	553	2	148	No	No	Yes	Yes	No	No	No	Yes	No	No
7	2	546	2	146	No	No	Yes	Yes	No	No	No	Yes	No	No
8	2	496	2	133	No	No	No	Yes	No	No	No	No	No	No
9	2	489	2	131	No	No	No	Yes	No	No	No	No	No	No
10	2	483	2	129	No	No	No	Yes	No	No	No	No	No	No
11	2	419	2	112	No	No	No	Yes	No	No	No	No	No	No
12	2	390	2	105	No	No	No	No	No	No	No	No	No	No
13	2	383	2	103	No	No	No	No	No	No	No	No	No	No
14	2	284	2	76	No	No	No	No	No	No	No	No	No	No
15	2	284	2	76	No	No	No	No	No	No	No	No	No	No
16	2	199	2	53	No	No	No	No	No	No	No	No	No	No
17	2	114	2	30	No	No	No	No	No	No	No	No	No	No
18	2	114	2	30	No	No	No	No	No	No	No	No	No	No
19	2	64	2	17	No	No	No	No	No	No	No	No	No	No
20	2	35	2	10	No	No	No	No	No	No	No	No	No	No
21	2	21	2	6	No	No	No	No	No	No	No	No	No	No
22	2	7	2	2	No	No	No	No	No	No	No	No	No	No
23	2	7	2	2	No	No	No	No	No	No	No	No	No	No
24	2	7	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	11	0	0	4	7	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.2
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:41
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	190
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	899
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 2: Trappe Dr/Magothy Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	157	322	21	0
2	152	312	20	0
3	149	306	20	0
4	140	287	19	0
5	124	254	17	0
6	122	251	16	0
7	121	248	16	0
8	110	225	15	0
9	108	222	14	0
10	107	219	14	0
11	93	190	12	0
12	86	177	12	0
13	85	174	11	0
14	63	129	8	0
15	63	129	8	0
16	44	90	6	0
17	25	52	3	0
18	25	52	3	0
19	14	29	2	0
20	8	16	1	0
21	5	10	1	0
22	2	3	0	0
23	2	3	0	0
24	2	3	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	479	1	21	No	No	No	No	No	No	No	No	No	No
2	2	464	1	20	No	No	No	No	No	No	No	No	No	No
3	2	455	1	20	No	No	No	No	No	No	No	No	No	No
4	2	427	1	19	No	No	No	No	No	No	No	No	No	No
5	2	378	1	17	No	No	No	No	No	No	No	No	No	No
6	2	373	1	16	No	No	No	No	No	No	No	No	No	No
7	2	369	1	16	No	No	No	No	No	No	No	No	No	No
8	2	335	1	15	No	No	No	No	No	No	No	No	No	No
9	2	330	1	14	No	No	No	No	No	No	No	No	No	No
10	2	326	1	14	No	No	No	No	No	No	No	No	No	No
11	2	283	1	12	No	No	No	No	No	No	No	No	No	No
12	2	263	1	12	No	No	No	No	No	No	No	No	No	No
13	2	259	1	11	No	No	No	No	No	No	No	No	No	No
14	2	192	1	8	No	No	No	No	No	No	No	No	No	No
15	2	192	1	8	No	No	No	No	No	No	No	No	No	No
16	2	134	1	6	No	No	No	No	No	No	No	No	No	No
17	2	77	1	3	No	No	No	No	No	No	No	No	No	No
18	2	77	1	3	No	No	No	No	No	No	No	No	No	No
19	2	43	1	2	No	No	No	No	No	No	No	No	No	No
20	2	24	1	1	No	No	No	No	No	No	No	No	No	No
21	2	15	1	1	No	No	No	No	No	No	No	No	No	No
22	2	5	1	0	No	No	No	No	No	No	No	No	No	No
23	2	5	1	0	No	No	No	No	No	No	No	No	No	No
24	2	5	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.5	11.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:03	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	21	0
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	500	500
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 4: Luneth Dr/Akela Ln

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	0	0	196	57
2	0	0	190	55
3	0	0	186	54
4	0	0	174	51
5	0	0	155	45
6	0	0	153	44
7	0	0	151	44
8	0	0	137	40
9	0	0	135	39
10	0	0	133	39
11	0	0	116	34
12	0	0	108	31
13	0	0	106	31
14	0	0	78	23
15	0	0	78	23
16	0	0	55	16
17	0	0	31	9
18	0	0	31	9
19	0	0	18	5
20	0	0	10	3
21	0	0	6	2
22	0	0	2	1
23	0	0	2	1
24	0	0	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	0	1	196	No	No	No	No	No	No	No	No	No	No
2	1	0	1	190	No	No	No	No	No	No	No	No	No	No
3	1	0	1	186	No	No	No	No	No	No	No	No	No	No
4	1	0	1	174	No	No	No	No	No	No	No	No	No	No
5	1	0	1	155	No	No	No	No	No	No	No	No	No	No
6	1	0	1	153	No	No	No	No	No	No	No	No	No	No
7	1	0	1	151	No	No	No	No	No	No	No	No	No	No
8	1	0	1	137	No	No	No	No	No	No	No	No	No	No
9	1	0	1	135	No	No	No	No	No	No	No	No	No	No
10	1	0	1	133	No	No	No	No	No	No	No	No	No	No
11	1	0	1	116	No	No	No	No	No	No	No	No	No	No
12	1	0	1	108	No	No	No	No	No	No	No	No	No	No
13	1	0	1	106	No	No	No	No	No	No	No	No	No	No
14	1	0	1	78	No	No	No	No	No	No	No	No	No	No
15	1	0	1	78	No	No	No	No	No	No	No	No	No	No
16	1	0	1	55	No	No	No	No	No	No	No	No	No	No
17	1	0	1	31	No	No	No	No	No	No	No	No	No	No
18	1	0	1	31	No	No	No	No	No	No	No	No	No	No
19	1	0	1	18	No	No	No	No	No	No	No	No	No	No
20	1	0	1	10	No	No	No	No	No	No	No	No	No	No
21	1	0	1	6	No	No	No	No	No	No	No	No	No	No
22	1	0	1	2	No	No	No	No	No	No	No	No	No	No
23	1	0	1	2	No	No	No	No	No	No	No	No	No	No
24	1	0	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.1	9.3
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:33	0:08
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	196	57
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	253	253
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 5: Trappe Dr/Luneth Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	101	291	57
2	98	282	55
3	96	276	54
4	90	259	51
5	80	230	45
6	79	227	44
7	78	224	44
8	71	204	40
9	70	201	39
10	69	198	39
11	60	172	34
12	56	160	31
13	55	157	31
14	40	116	23
15	40	116	23
16	28	81	16
17	16	47	9
18	16	47	9
19	9	26	5
20	5	15	3
21	3	9	2
22	1	3	1
23	1	3	1
24	1	3	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	392	1	57	No	No	No	No	No	No	No	No	No	No
2	2	380	1	55	No	No	No	No	No	No	No	No	No	No
3	2	372	1	54	No	No	No	No	No	No	No	No	No	No
4	2	349	1	51	No	No	No	No	No	No	No	No	No	No
5	2	310	1	45	No	No	No	No	No	No	No	No	No	No
6	2	306	1	44	No	No	No	No	No	No	No	No	No	No
7	2	302	1	44	No	No	No	No	No	No	No	No	No	No
8	2	275	1	40	No	No	No	No	No	No	No	No	No	No
9	2	271	1	39	No	No	No	No	No	No	No	No	No	No
10	2	267	1	39	No	No	No	No	No	No	No	No	No	No
11	2	232	1	34	No	No	No	No	No	No	No	No	No	No
12	2	216	1	31	No	No	No	No	No	No	No	No	No	No
13	2	212	1	31	No	No	No	No	No	No	No	No	No	No
14	2	156	1	23	No	No	No	No	No	No	No	No	No	No
15	2	156	1	23	No	No	No	No	No	No	No	No	No	No
16	2	109	1	16	No	No	No	No	No	No	No	No	No	No
17	2	63	1	9	No	No	No	No	No	No	No	No	No	No
18	2	63	1	9	No	No	No	No	No	No	No	No	No	No
19	2	35	1	5	No	No	No	No	No	No	No	No	No	No
20	2	20	1	3	No	No	No	No	No	No	No	No	No	No
21	2	12	1	2	No	No	No	No	No	No	No	No	No	No
22	2	4	1	1	No	No	No	No	No	No	No	No	No	No
23	2	4	1	1	No	No	No	No	No	No	No	No	No	No
24	2	4	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:10
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	57
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	449
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Intersection Level Of Service Report
Intersection 1: Lorson Bl/Trappe Dr

Control Type:	Two-way stop	Delay (sec / veh):	14.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.420

Intersection Setup

Name	Trappe Dr		Lorson Bl		Lorson Bl	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Trappe Dr		Lorson Bl		Lorson Bl	
Base Volume Input [veh/h]	263	23	78	101	12	200
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	24	0	0	8	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	287	23	78	109	12	200
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	6	20	27	3	50
Total Analysis Volume [veh/h]	287	23	78	109	12	200
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.42	0.02	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	14.02	8.75	0.00	0.00	7.62	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.08	0.07	0.00	0.00	0.03	0.00
95th-Percentile Queue Length [ft/ln]	52.08	1.80	0.00	0.00	0.65	0.00
d_A, Approach Delay [s/veh]	13.63		0.00		0.43	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	6.09					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 2: Trappe Dr/Magothy Dr

Control Type:	Two-way stop	Delay (sec / veh):	11.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.030

Intersection Setup

Name	Trappe Dr			Trappe Dr			Magothy Dr			Magothy Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Trappe Dr			Trappe Dr			Magothy Dr			Magothy Dr		
Base Volume Input [veh/h]	0	233	1	9	96	0	0	0	0	1	0	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	7	0	0	2	6	17	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	240	1	9	98	6	17	0	0	1	0	27
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	60	0	2	25	2	4	0	0	0	0	7
Total Analysis Volume [veh/h]	0	240	1	9	98	6	17	0	0	1	0	27
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.03
d_M, Delay for Movement [s/veh]	7.42	0.00	0.00	7.73	0.00	0.00	11.61	11.59	8.97	11.24	11.58	9.68
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.00	0.00	0.09	0.09	0.09	0.11	0.11	0.11
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.51	0.00	0.00	2.34	2.34	2.34	2.76	2.76	2.76
d_A, Approach Delay [s/veh]	0.00			0.62			11.61			9.73		
Approach LOS	A			A			B			A		
d_I, Intersection Delay [s/veh]	1.35											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 4: Luneth Dr/Akela Ln

Control Type:	Two-way stop	Delay (sec / veh):	9.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.099

Intersection Setup

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

Volumes

Name	Akela Ln			Akela Ln			Luneth Dr			Luneth Dr		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	87	0	0	69	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	7	0	0	0	0	0	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	7	0	0	0	87	0	0	69	2
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	2	0	0	0	22	0	0	17	1
Total Analysis Volume [veh/h]	0	0	0	7	0	0	0	87	0	0	69	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.08	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	7.23	0.00	0.00	9.50	9.56	8.77	9.52	9.46	8.68
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.01	0.01	0.01	0.33	0.33	0.33	0.26	0.26	0.26
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.32	0.32	0.32	8.24	8.24	8.24	6.55	6.55	6.55
d_A, Approach Delay [s/veh]	2.41			7.23			9.56			9.44		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	9.41											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 5: Trappe Dr/Luneth Dr

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.128

Intersection Setup

Name	Trappe Dr		Trappe Dr		Luneth Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Trappe Dr		Trappe Dr		Luneth Dr	
Base Volume Input [veh/h]	1	197	28	68	86	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	2	7	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	197	28	70	93	1
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	49	7	18	23	0
Total Analysis Volume [veh/h]	1	197	28	70	93	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.13	0.00
d_M, Delay for Movement [s/veh]	7.41	0.00	0.00	0.00	10.69	9.32
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.44	0.44
95th-Percentile Queue Length [ft/ln]	0.05	0.00	0.00	0.00	11.05	11.05
d_A, Approach Delay [s/veh]	0.04		0.00		10.67	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.59					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 7: Marksheffel Rd/Lorson Bl

Control Type:	Signalized	Delay (sec / veh):	23.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.552

Intersection Setup

Name	Marksheffel Rd			Marksheffel Rd						Lorson Bl		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	245.00	400.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marksheffel Rd			Marksheffel Rd						Lorson Bl		
Base Volume Input [veh/h]	157	714	128	35	999	23	49	18	69	400	11	151
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	3	5	0	0	0	0	0	8	0	16
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	157	714	131	40	999	23	49	18	69	408	11	167
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	179	33	10	250	6	12	5	17	102	3	42
Total Analysis Volume [veh/h]	157	714	131	40	999	23	49	18	69	408	11	167
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	24	0	9	24	0	9	30	0	17	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	40	40	3	38	38	3	9	12	18	18
g / C, Green / Cycle	0.06	0.50	0.50	0.04	0.47	0.47	0.04	0.11	0.15	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.05	0.22	0.09	0.02	0.31	0.02	0.02	0.06	0.13	0.01	0.12
s, saturation flow rate [veh/h]	3113	3204	1431	1603	3204	1431	3113	1476	3113	1683	1431
c, Capacity [veh/h]	198	1597	713	62	1516	677	134	160	484	372	316
d1, Uniform Delay [s]	37.04	12.99	11.12	38.03	16.18	11.32	37.32	33.89	32.91	24.51	27.57
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.03	0.91	0.57	10.93	2.26	0.09	1.66	2.86	4.06	0.03	1.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.45	0.18	0.65	0.66	0.03	0.37	0.54	0.84	0.03	0.53
d, Delay for Lane Group [s/veh]	44.07	13.90	11.68	48.96	18.44	11.41	38.98	36.76	36.98	24.55	28.94
Lane Group LOS	D	B	B	D	B	B	D	D	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.68	3.99	1.30	0.95	6.87	0.22	0.49	1.70	4.01	0.16	2.86
50th-Percentile Queue Length [ft/ln]	41.96	99.67	32.52	23.68	171.66	5.59	12.24	42.41	100.28	4.09	71.39
95th-Percentile Queue Length [veh/ln]	3.02	7.18	2.34	1.70	11.16	0.40	0.88	3.05	7.22	0.29	5.14
95th-Percentile Queue Length [ft/ln]	75.53	179.41	58.53	42.62	279.09	10.05	22.03	76.33	180.51	7.36	128.51

Movement, Approach, & Intersection Results

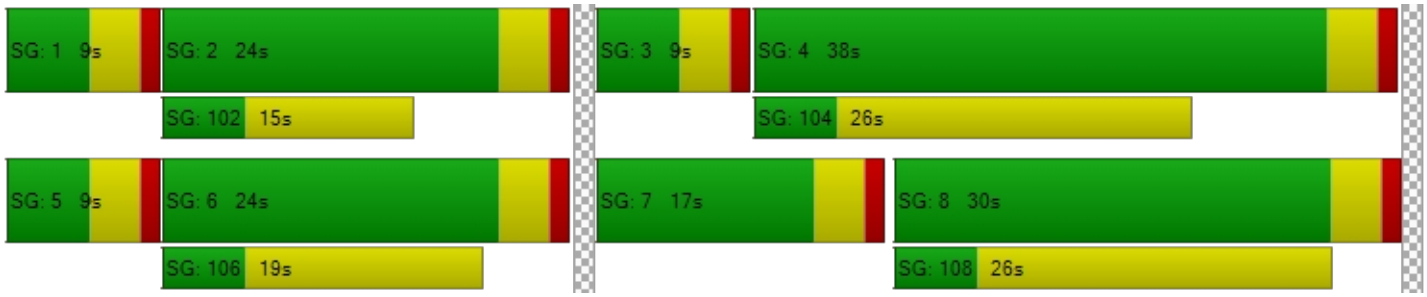
d_M, Delay for Movement [s/veh]	44.07	13.90	11.68	48.96	18.44	11.41	38.98	36.76	36.76	36.98	24.55	28.94
Movement LOS	D	B	B	D	B	B	D	D	D	D	C	C
d_A, Approach Delay [s/veh]	18.34			19.43			37.56			34.45		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	23.08											
Intersection LOS	C											
Intersection V/C	0.552											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.56	31.56	31.56	31.56
l_p,int, Pedestrian LOS Score for Intersection	2.935	2.772	2.359	2.447
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	499	499	649	849
d_b, Bicycle Delay [s]	22.55	22.55	18.27	13.27
l_b,int, Bicycle LOS Score for Intersection	2.386	2.436	1.784	2.527
Bicycle LOS	B	B	A	B

Sequence

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



Signal Warrants Report For Intersection 1: Lorson Bl/Trappe Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	212	187	310
2	206	181	301
3	201	178	295
4	189	166	276
5	167	148	245
6	165	146	242
7	163	144	239
8	148	131	217
9	146	129	214
10	144	127	211
11	125	110	183
12	117	103	171
13	114	101	167
14	85	75	124
15	85	75	124
16	59	52	87
17	34	30	50
18	34	30	50
19	19	17	28
20	11	9	16
21	6	6	9
22	2	2	3
23	2	2	3
24	2	2	3

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	399	2	310	No	No	No	Yes	No	No	No	No	No	No
2	2	387	2	301	No	No	No	Yes	No	No	No	No	No	No
3	2	379	2	295	No	No	No	Yes	No	No	No	No	No	No
4	2	355	2	276	No	No	No	Yes	No	No	No	No	No	No
5	2	315	2	245	No	No	No	No	No	No	No	No	No	No
6	2	311	2	242	No	No	No	No	No	No	No	No	No	No
7	2	307	2	239	No	No	No	No	No	No	No	No	No	No
8	2	279	2	217	No	No	No	No	No	No	No	No	No	No
9	2	275	2	214	No	No	No	No	No	No	No	No	No	No
10	2	271	2	211	No	No	No	No	No	No	No	No	No	No
11	2	235	2	183	No	No	No	No	No	No	No	No	No	No
12	2	220	2	171	No	No	No	No	No	No	No	No	No	No
13	2	215	2	167	No	No	No	No	No	No	No	No	No	No
14	2	160	2	124	No	No	No	No	No	No	No	No	No	No
15	2	160	2	124	No	No	No	No	No	No	No	No	No	No
16	2	111	2	87	No	No	No	No	No	No	No	No	No	No
17	2	64	2	50	No	No	No	No	No	No	No	No	No	No
18	2	64	2	50	No	No	No	No	No	No	No	No	No	No
19	2	36	2	28	No	No	No	No	No	No	No	No	No	No
20	2	20	2	16	No	No	No	No	No	No	No	No	No	No
21	2	12	2	9	No	No	No	No	No	No	No	No	No	No
22	2	4	2	3	No	No	No	No	No	No	No	No	No	No
23	2	4	2	3	No	No	No	No	No	No	No	No	No	No
24	2	4	2	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	4	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.6
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:10
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	310
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	709
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 2: Trappe Dr/Magothy Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	241	113	28	17
2	234	110	27	16
3	229	107	27	16
4	214	101	25	15
5	190	89	22	13
6	188	88	22	13
7	186	87	22	13
8	169	79	20	12
9	166	78	19	12
10	164	77	19	12
11	142	67	17	10
12	133	62	15	9
13	130	61	15	9
14	96	45	11	7
15	96	45	11	7
16	67	32	8	5
17	39	18	4	3
18	39	18	4	3
19	22	10	3	2
20	12	6	1	1
21	7	3	1	1
22	2	1	0	0
23	2	1	0	0
24	2	1	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	354	1	28	No	No	No	No	No	No	No	No	No	No
2	2	344	1	27	No	No	No	No	No	No	No	No	No	No
3	2	336	1	27	No	No	No	No	No	No	No	No	No	No
4	2	315	1	25	No	No	No	No	No	No	No	No	No	No
5	2	279	1	22	No	No	No	No	No	No	No	No	No	No
6	2	276	1	22	No	No	No	No	No	No	No	No	No	No
7	2	273	1	22	No	No	No	No	No	No	No	No	No	No
8	2	248	1	20	No	No	No	No	No	No	No	No	No	No
9	2	244	1	19	No	No	No	No	No	No	No	No	No	No
10	2	241	1	19	No	No	No	No	No	No	No	No	No	No
11	2	209	1	17	No	No	No	No	No	No	No	No	No	No
12	2	195	1	15	No	No	No	No	No	No	No	No	No	No
13	2	191	1	15	No	No	No	No	No	No	No	No	No	No
14	2	141	1	11	No	No	No	No	No	No	No	No	No	No
15	2	141	1	11	No	No	No	No	No	No	No	No	No	No
16	2	99	1	8	No	No	No	No	No	No	No	No	No	No
17	2	57	1	4	No	No	No	No	No	No	No	No	No	No
18	2	57	1	4	No	No	No	No	No	No	No	No	No	No
19	2	32	1	3	No	No	No	No	No	No	No	No	No	No
20	2	18	1	1	No	No	No	No	No	No	No	No	No	No
21	2	10	1	1	No	No	No	No	No	No	No	No	No	No
22	2	3	1	0	No	No	No	No	No	No	No	No	No	No
23	2	3	1	0	No	No	No	No	No	No	No	No	No	No
24	2	3	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.7	11.6
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:04	0:03
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	28	17
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	399	399
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 4: Luneth Dr/Akela Ln

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	0	7	71	87
2	0	7	69	84
3	0	7	67	83
4	0	6	63	77
5	0	6	56	69
6	0	5	55	68
7	0	5	55	67
8	0	5	50	61
9	0	5	49	60
10	0	5	48	59
11	0	4	42	51
12	0	4	39	48
13	0	4	38	47
14	0	3	28	35
15	0	3	28	35
16	0	2	20	24
17	0	1	11	14
18	0	1	11	14
19	0	1	6	8
20	0	0	4	4
21	0	0	2	3
22	0	0	1	1
23	0	0	1	1
24	0	0	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	7	1	87	No	No	No	No	No	No	No	No	No	No
2	1	7	1	84	No	No	No	No	No	No	No	No	No	No
3	1	7	1	83	No	No	No	No	No	No	No	No	No	No
4	1	6	1	77	No	No	No	No	No	No	No	No	No	No
5	1	6	1	69	No	No	No	No	No	No	No	No	No	No
6	1	5	1	68	No	No	No	No	No	No	No	No	No	No
7	1	5	1	67	No	No	No	No	No	No	No	No	No	No
8	1	5	1	61	No	No	No	No	No	No	No	No	No	No
9	1	5	1	60	No	No	No	No	No	No	No	No	No	No
10	1	5	1	59	No	No	No	No	No	No	No	No	No	No
11	1	4	1	51	No	No	No	No	No	No	No	No	No	No
12	1	4	1	48	No	No	No	No	No	No	No	No	No	No
13	1	4	1	47	No	No	No	No	No	No	No	No	No	No
14	1	3	1	35	No	No	No	No	No	No	No	No	No	No
15	1	3	1	35	No	No	No	No	No	No	No	No	No	No
16	1	2	1	24	No	No	No	No	No	No	No	No	No	No
17	1	1	1	14	No	No	No	No	No	No	No	No	No	No
18	1	1	1	14	No	No	No	No	No	No	No	No	No	No
19	1	1	1	8	No	No	No	No	No	No	No	No	No	No
20	1	0	1	4	No	No	No	No	No	No	No	No	No	No
21	1	0	1	3	No	No	No	No	No	No	No	No	No	No
22	1	0	1	1	No	No	No	No	No	No	No	No	No	No
23	1	0	1	1	No	No	No	No	No	No	No	No	No	No
24	1	0	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.4	9.6
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:11	0:13
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	71	87
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	165	165
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 5: Trappe Dr/Luneth Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	198	98	94
2	192	95	91
3	188	93	89
4	176	87	84
5	156	77	74
6	154	76	73
7	152	75	72
8	139	69	66
9	137	68	65
10	135	67	64
11	117	58	55
12	109	54	52
13	107	53	51
14	79	39	38
15	79	39	38
16	55	27	26
17	32	16	15
18	32	16	15
19	18	9	8
20	10	5	5
21	6	3	3
22	2	1	1
23	2	1	1
24	2	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	296	1	94	No	No	No	No	No	No	No	No	No	No
2	2	287	1	91	No	No	No	No	No	No	No	No	No	No
3	2	281	1	89	No	No	No	No	No	No	No	No	No	No
4	2	263	1	84	No	No	No	No	No	No	No	No	No	No
5	2	233	1	74	No	No	No	No	No	No	No	No	No	No
6	2	230	1	73	No	No	No	No	No	No	No	No	No	No
7	2	227	1	72	No	No	No	No	No	No	No	No	No	No
8	2	208	1	66	No	No	No	No	No	No	No	No	No	No
9	2	205	1	65	No	No	No	No	No	No	No	No	No	No
10	2	202	1	64	No	No	No	No	No	No	No	No	No	No
11	2	175	1	55	No	No	No	No	No	No	No	No	No	No
12	2	163	1	52	No	No	No	No	No	No	No	No	No	No
13	2	160	1	51	No	No	No	No	No	No	No	No	No	No
14	2	118	1	38	No	No	No	No	No	No	No	No	No	No
15	2	118	1	38	No	No	No	No	No	No	No	No	No	No
16	2	82	1	26	No	No	No	No	No	No	No	No	No	No
17	2	48	1	15	No	No	No	No	No	No	No	No	No	No
18	2	48	1	15	No	No	No	No	No	No	No	No	No	No
19	2	27	1	8	No	No	No	No	No	No	No	No	No	No
20	2	15	1	5	No	No	No	No	No	No	No	No	No	No
21	2	9	1	3	No	No	No	No	No	No	No	No	No	No
22	2	3	1	1	No	No	No	No	No	No	No	No	No	No
23	2	3	1	1	No	No	No	No	No	No	No	No	No	No
24	2	3	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:16
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	94
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	390
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Intersection Level Of Service Report
Intersection 1: Lorson Bl/Trappe Dr

Control Type:	Two-way stop	Delay (sec / veh):	13.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.324

Intersection Setup

Name	Trappe Dr		Lorson Bl		Lorson Bl	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Trappe Dr		Lorson Bl		Lorson Bl	
Base Volume Input [veh/h]	188	2	224	343	5	137
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	0	0	25	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	203	2	224	368	5	137
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	1	56	92	1	34
Total Analysis Volume [veh/h]	203	2	224	368	5	137
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.32	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	13.48	9.43	0.00	0.00	8.68	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.40	0.01	0.00	0.00	0.02	0.00
95th-Percentile Queue Length [ft/ln]	35.04	0.18	0.00	0.00	0.38	0.00
d_A, Approach Delay [s/veh]	13.44		0.00		0.31	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.98					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 2: Trappe Dr/Magothy Dr

Control Type:	Two-way stop	Delay (sec / veh):	13.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.025

Intersection Setup

Name	Trappe Dr			Trappe Dr			Magothy Dr			Magothy Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Trappe Dr			Trappe Dr			Magothy Dr			Magothy Dr		
Base Volume Input [veh/h]	0	156	1	31	291	0	0	0	0	1	1	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	0	7	18	11	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	160	1	31	298	18	11	0	0	1	1	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	40	0	8	75	5	3	0	0	0	0	5
Total Analysis Volume [veh/h]	0	160	1	31	298	18	11	0	0	1	1	19
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	7.89	0.00	0.00	7.60	0.00	0.00	13.49	13.31	10.13	13.08	13.31	9.19
Movement LOS	A	A	A	A	A	A	B	B	B	B	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.07	0.00	0.00	0.08	0.08	0.08	0.08	0.08	0.08
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	1.68	0.00	0.00	1.94	1.94	1.94	2.00	2.00	2.00
d_A, Approach Delay [s/veh]	0.00			0.68			13.49			9.57		
Approach LOS	A			A			B			A		
d_I, Intersection Delay [s/veh]	1.08											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 4: Luneth Dr/Akela Ln

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.222

Intersection Setup

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

Volumes

Name	Akela Ln			Akela Ln			Luneth Dr			Luneth Dr		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	57	0	0	196	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	4	0	0	0	0	0	0	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	4	0	0	0	57	0	0	196	7
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	1	0	0	0	14	0	0	49	2
Total Analysis Volume [veh/h]	0	0	0	4	0	0	0	57	0	0	196	7
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.22	0.01
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	7.22	0.00	0.00	10.32	9.35	8.60	10.10	10.26	9.51
Movement LOS	A	A	A	A	A	A	B	A	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.01	0.01	0.01	0.21	0.21	0.21	0.88	0.88	0.88
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.19	0.19	0.19	5.15	5.15	5.15	21.92	21.92	21.92
d_A, Approach Delay [s/veh]	2.41			7.22			9.35			10.23		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	10.00											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 5: Trappe Dr/Luneth Dr

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.087

Intersection Setup

Name	Trappe Dr		Trappe Dr		Luneth Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Trappe Dr		Trappe Dr		Luneth Dr	
Base Volume Input [veh/h]	1	100	96	195	56	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	7	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	100	96	202	60	1
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	25	24	51	15	0
Total Analysis Volume [veh/h]	1	100	96	202	60	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.09	0.00
d_M, Delay for Movement [s/veh]	7.85	0.00	0.00	0.00	10.70	9.76
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.29	0.29
95th-Percentile Queue Length [ft/ln]	0.06	0.00	0.00	0.00	7.20	7.20
d_A, Approach Delay [s/veh]	0.08		0.00		10.69	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.43					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 7: Marksheffel Rd/Lorson Bl

Control Type:	Signalized	Delay (sec / veh):	22.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.542

Intersection Setup

Name	Marksheffel Rd			Marksheffel Rd						Lorson Bl		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	2	0	1
Entry Pocket Length [ft]	100.00	100.00	245.00	400.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marksheffel Rd			Marksheffel Rd						Lorson Bl		
Base Volume Input [veh/h]	159	742	456	123	610	34	47	15	41	282	20	105
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	9	16	0	0	0	0	0	5	0	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	742	465	139	610	34	47	15	41	287	20	115
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	186	116	35	153	9	12	4	10	72	5	29
Total Analysis Volume [veh/h]	159	742	465	139	610	34	47	15	41	287	20	115
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	23	0	14	19	0	10	30	0	13	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	39	39	9	42	42	3	7	9	13	13
g / C, Green / Cycle	0.08	0.49	0.49	0.11	0.52	0.52	0.04	0.09	0.11	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.05	0.23	0.33	0.09	0.19	0.02	0.02	0.04	0.09	0.01	0.08
s, saturation flow rate [veh/h]	3113	3204	1431	1603	3204	1431	3113	1490	3113	1683	1431
c, Capacity [veh/h]	240	1569	701	172	1666	744	131	135	352	272	231
d1, Uniform Delay [s]	36.01	13.59	15.48	35.02	11.42	9.47	37.37	34.47	34.75	28.53	30.65
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.14	1.02	4.91	8.76	0.62	0.12	1.65	2.03	4.59	0.11	1.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.47	0.66	0.81	0.37	0.05	0.36	0.41	0.81	0.07	0.50
d, Delay for Lane Group [s/veh]	39.15	14.62	20.39	43.77	12.05	9.59	39.01	36.50	39.34	28.64	32.30
Lane Group LOS	D	B	C	D	B	A	D	D	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.59	4.30	6.77	3.01	3.07	0.29	0.47	1.09	2.89	0.33	2.08
50th-Percentile Queue Length [ft/ln]	39.63	107.39	169.19	75.14	76.75	7.36	11.75	27.17	72.23	8.20	51.98
95th-Percentile Queue Length [veh/ln]	2.85	7.69	11.03	5.41	5.53	0.53	0.85	1.96	5.20	0.59	3.74
95th-Percentile Queue Length [ft/ln]	71.33	192.37	275.85	135.24	138.15	13.25	21.16	48.90	130.02	14.76	93.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.15	14.62	20.39	43.77	12.05	9.59	39.01	36.50	36.50	39.34	28.64	32.30
Movement LOS	D	B	C	D	B	A	D	D	D	D	C	C
d_A, Approach Delay [s/veh]	19.44			17.57			37.65			36.91		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	22.35											
Intersection LOS	C											
Intersection V/C	0.542											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.56	31.56	31.56	31.56
I_p,int, Pedestrian LOS Score for Intersection	2.911	2.723	2.357	2.499
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	474	374	649	724
d_b, Bicycle Delay [s]	23.31	26.46	18.27	16.30
I_b,int, Bicycle LOS Score for Intersection	2.687	2.206	1.730	2.256
Bicycle LOS	B	B	A	B

Sequence

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

Signal Warrants Report For Intersection 1: Lorson Bl/Trappe Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	142	592	205
2	138	574	199
3	135	562	195
4	126	527	182
5	112	468	162
6	111	462	160
7	109	456	158
8	99	414	144
9	98	408	141
10	97	403	139
11	84	349	121
12	78	326	113
13	77	320	111
14	57	237	82
15	57	237	82
16	40	166	57
17	23	95	33
18	23	95	33
19	13	53	18
20	7	30	10
21	4	18	6
22	1	6	2
23	1	6	2
24	1	6	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	734	2	205	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
2	2	712	2	199	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
3	2	697	2	195	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
4	2	653	2	182	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
5	2	580	2	162	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	2	573	2	160	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	2	565	2	158	No	No	Yes	Yes	No	No	No	Yes	No	No
8	2	513	2	144	No	No	Yes	Yes	No	No	No	Yes	No	No
9	2	506	2	141	No	No	Yes	Yes	No	No	No	Yes	No	No
10	2	500	2	139	No	No	No	Yes	No	No	No	No	No	No
11	2	433	2	121	No	No	No	Yes	No	No	No	No	No	No
12	2	404	2	113	No	No	No	Yes	No	No	No	No	No	No
13	2	397	2	111	No	No	No	No	No	No	No	No	No	No
14	2	294	2	82	No	No	No	No	No	No	No	No	No	No
15	2	294	2	82	No	No	No	No	No	No	No	No	No	No
16	2	206	2	57	No	No	No	No	No	No	No	No	No	No
17	2	118	2	33	No	No	No	No	No	No	No	No	No	No
18	2	118	2	33	No	No	No	No	No	No	No	No	No	No
19	2	66	2	18	No	No	No	No	No	No	No	No	No	No
20	2	37	2	10	No	No	No	No	No	No	No	No	No	No
21	2	22	2	6	No	No	No	No	No	No	No	No	No	No
22	2	7	2	2	No	No	No	No	No	No	No	No	No	No
23	2	7	2	2	No	No	No	No	No	No	No	No	No	No
24	2	7	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					1	6	9	12	0	1	4	9	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.4
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:45
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	205
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	939
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 2: Trappe Dr/Magothy Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	161	347	21	11
2	156	337	20	11
3	153	330	20	10
4	143	309	19	10
5	127	274	17	9
6	126	271	16	9
7	124	267	16	8
8	113	243	15	8
9	111	239	14	8
10	109	236	14	7
11	95	205	12	6
12	89	191	12	6
13	87	187	11	6
14	64	139	8	4
15	64	139	8	4
16	45	97	6	3
17	26	56	3	2
18	26	56	3	2
19	14	31	2	1
20	8	17	1	1
21	5	10	1	0
22	2	3	0	0
23	2	3	0	0
24	2	3	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	508	1	21	No	No	No	No	No	No	No	No	No	No
2	2	493	1	20	No	No	No	No	No	No	No	No	No	No
3	2	483	1	20	No	No	No	No	No	No	No	No	No	No
4	2	452	1	19	No	No	No	No	No	No	No	No	No	No
5	2	401	1	17	No	No	No	No	No	No	No	No	No	No
6	2	397	1	16	No	No	No	No	No	No	No	No	No	No
7	2	391	1	16	No	No	No	No	No	No	No	No	No	No
8	2	356	1	15	No	No	No	No	No	No	No	No	No	No
9	2	350	1	14	No	No	No	No	No	No	No	No	No	No
10	2	345	1	14	No	No	No	No	No	No	No	No	No	No
11	2	300	1	12	No	No	No	No	No	No	No	No	No	No
12	2	280	1	12	No	No	No	No	No	No	No	No	No	No
13	2	274	1	11	No	No	No	No	No	No	No	No	No	No
14	2	203	1	8	No	No	No	No	No	No	No	No	No	No
15	2	203	1	8	No	No	No	No	No	No	No	No	No	No
16	2	142	1	6	No	No	No	No	No	No	No	No	No	No
17	2	82	1	3	No	No	No	No	No	No	No	No	No	No
18	2	82	1	3	No	No	No	No	No	No	No	No	No	No
19	2	45	1	2	No	No	No	No	No	No	No	No	No	No
20	2	25	1	1	No	No	No	No	No	No	No	No	No	No
21	2	15	1	1	No	No	No	No	No	No	No	No	No	No
22	2	5	1	0	No	No	No	No	No	No	No	No	No	No
23	2	5	1	0	No	No	No	No	No	No	No	No	No	No
24	2	5	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.6	13.5
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:03	0:02
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	21	11
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	540	540
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 4: Luneth Dr/Akela Ln

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	0	4	203	57
2	0	4	197	55
3	0	4	193	54
4	0	4	181	51
5	0	3	160	45
6	0	3	158	44
7	0	3	156	44
8	0	3	142	40
9	0	3	140	39
10	0	3	138	39
11	0	2	120	34
12	0	2	112	31
13	0	2	110	31
14	0	2	81	23
15	0	2	81	23
16	0	1	57	16
17	0	1	32	9
18	0	1	32	9
19	0	0	18	5
20	0	0	10	3
21	0	0	6	2
22	0	0	2	1
23	0	0	2	1
24	0	0	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	4	1	203	No	No	No	No	No	No	No	No	No	No
2	1	4	1	197	No	No	No	No	No	No	No	No	No	No
3	1	4	1	193	No	No	No	No	No	No	No	No	No	No
4	1	4	1	181	No	No	No	No	No	No	No	No	No	No
5	1	3	1	160	No	No	No	No	No	No	No	No	No	No
6	1	3	1	158	No	No	No	No	No	No	No	No	No	No
7	1	3	1	156	No	No	No	No	No	No	No	No	No	No
8	1	3	1	142	No	No	No	No	No	No	No	No	No	No
9	1	3	1	140	No	No	No	No	No	No	No	No	No	No
10	1	3	1	138	No	No	No	No	No	No	No	No	No	No
11	1	2	1	120	No	No	No	No	No	No	No	No	No	No
12	1	2	1	112	No	No	No	No	No	No	No	No	No	No
13	1	2	1	110	No	No	No	No	No	No	No	No	No	No
14	1	2	1	81	No	No	No	No	No	No	No	No	No	No
15	1	2	1	81	No	No	No	No	No	No	No	No	No	No
16	1	1	1	57	No	No	No	No	No	No	No	No	No	No
17	1	1	1	32	No	No	No	No	No	No	No	No	No	No
18	1	1	1	32	No	No	No	No	No	No	No	No	No	No
19	1	0	1	18	No	No	No	No	No	No	No	No	No	No
20	1	0	1	10	No	No	No	No	No	No	No	No	No	No
21	1	0	1	6	No	No	No	No	No	No	No	No	No	No
22	1	0	1	2	No	No	No	No	No	No	No	No	No	No
23	1	0	1	2	No	No	No	No	No	No	No	No	No	No
24	1	0	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.2	9.3
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:34	0:08
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	203	57
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	264	264
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 5: Trappe Dr/Luneth Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	101	298	61
2	98	289	59
3	96	283	58
4	90	265	54
5	80	235	48
6	79	232	48
7	78	229	47
8	71	209	43
9	70	206	42
10	69	203	41
11	60	176	36
12	56	164	34
13	55	161	33
14	40	119	24
15	40	119	24
16	28	83	17
17	16	48	10
18	16	48	10
19	9	27	5
20	5	15	3
21	3	9	2
22	1	3	1
23	1	3	1
24	1	3	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	399	1	61	No	No	No	No	No	No	No	No	No	No
2	2	387	1	59	No	No	No	No	No	No	No	No	No	No
3	2	379	1	58	No	No	No	No	No	No	No	No	No	No
4	2	355	1	54	No	No	No	No	No	No	No	No	No	No
5	2	315	1	48	No	No	No	No	No	No	No	No	No	No
6	2	311	1	48	No	No	No	No	No	No	No	No	No	No
7	2	307	1	47	No	No	No	No	No	No	No	No	No	No
8	2	280	1	43	No	No	No	No	No	No	No	No	No	No
9	2	276	1	42	No	No	No	No	No	No	No	No	No	No
10	2	272	1	41	No	No	No	No	No	No	No	No	No	No
11	2	236	1	36	No	No	No	No	No	No	No	No	No	No
12	2	220	1	34	No	No	No	No	No	No	No	No	No	No
13	2	216	1	33	No	No	No	No	No	No	No	No	No	No
14	2	159	1	24	No	No	No	No	No	No	No	No	No	No
15	2	159	1	24	No	No	No	No	No	No	No	No	No	No
16	2	111	1	17	No	No	No	No	No	No	No	No	No	No
17	2	64	1	10	No	No	No	No	No	No	No	No	No	No
18	2	64	1	10	No	No	No	No	No	No	No	No	No	No
19	2	36	1	5	No	No	No	No	No	No	No	No	No	No
20	2	20	1	3	No	No	No	No	No	No	No	No	No	No
21	2	12	1	2	No	No	No	No	No	No	No	No	No	No
22	2	4	1	1	No	No	No	No	No	No	No	No	No	No
23	2	4	1	1	No	No	No	No	No	No	No	No	No	No
24	2	4	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:10
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	61
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	460
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**