TRANSPORTATION MEMORANDUM

For

State Highway 83 & Needles Subdivision
El Paso County, Colorado
P268
SF2622

Please update for final plat.

June 2026
Revised July 2026
Revised August 2026

Prepared for:

The North Ranch, LLC
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Prepared by:

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COLORADO LICENSED
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08/05/2026
PROFESSIONAL ENGINEER

Project Engineer:
Leo Ornelas, EIT

Engineer in Responsible Charge:
Brandon Wilson, PE

26-042650

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.

Brandon Wilson 08/05/2026

Brandon Wilson, P.E. #68282 Date

Developer's Statement

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

08/05/2026

Rob Myers
The North Ranch, LLC
944 Cheyenne Boulevard
Colorado Springs, Colorado 80905

Date

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I. Introduction

Project Overview

This transportation memorandum is provided as a planning document and addresses the capacity, geometric, and control requirements associated with the rezone application being referred to as State Highway 83 & Needles Subdivision. This analysis was prepared in accordance with Appendix B of the County's Engineering Criteria Manual[1].

This transportation memorandum has been revised to address County review comments made to the July 2026 version regarding additional discussion on the daily volume threshold of gravel roadways.

This proposed residential development is located near the northeast corner of State Highway 83 and Hodgen Road in El Paso County, Colorado.

Study Area

The study area to be examined in this analysis encompasses the area bounded by State Highway 83 east to Timber Meadow Drive, and from Hodgen Road north to Walden Way.

Consistent with Section B.2.3.D of Appendix B – Transportation Impact Study Guidelines from the County's ECM, the study area did not extend towards the intersection of State Highway 83 and Hodgen Road since the development's trip distribution pattern does not anticipate much, if any, site traffic traveling to/from this intersection.

Figure 1 illustrates location of the site and study intersections.

Site Description

final plat has been submitted with 15 lots, please update the report to reflect the new lot count.

Land for the development is currently by a single-family detached home and is surrounded by residential land uses.

The proposed development is understood to entail the subdivision of approximately 40 acres of land into 14 single-family residential lots.

Proposed access to the development is provided via one full-movement access onto Walden Way by way of Needles Drive. With the extension of Needles Drive, the corridor will be lengthened from 2,800 feet to 6,675 feet as measured from Walden Way. As such, pursuant to Section 2.3.8 of the County's ECM, a deviation request will be sought. The existing access drive that currently serves the single-family detached home will be used as an emergency-only access.

[1] El Paso County Engineering Criteria Manual, El Paso County, January 9, 2025.

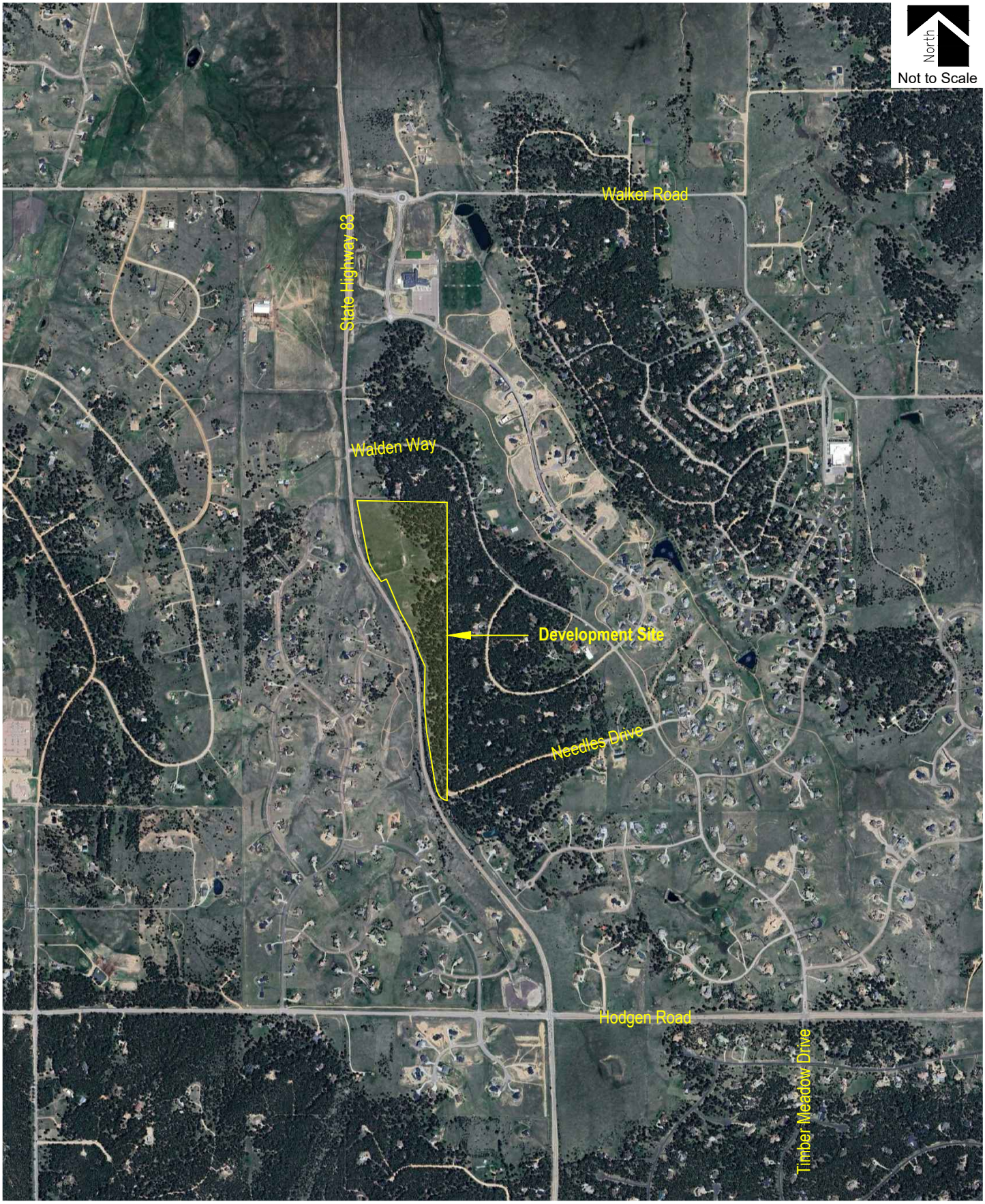
For purposes of this study, it is anticipated that development construction would be completed by end of Year 2028.

General site and access locations are shown on Figure 1.

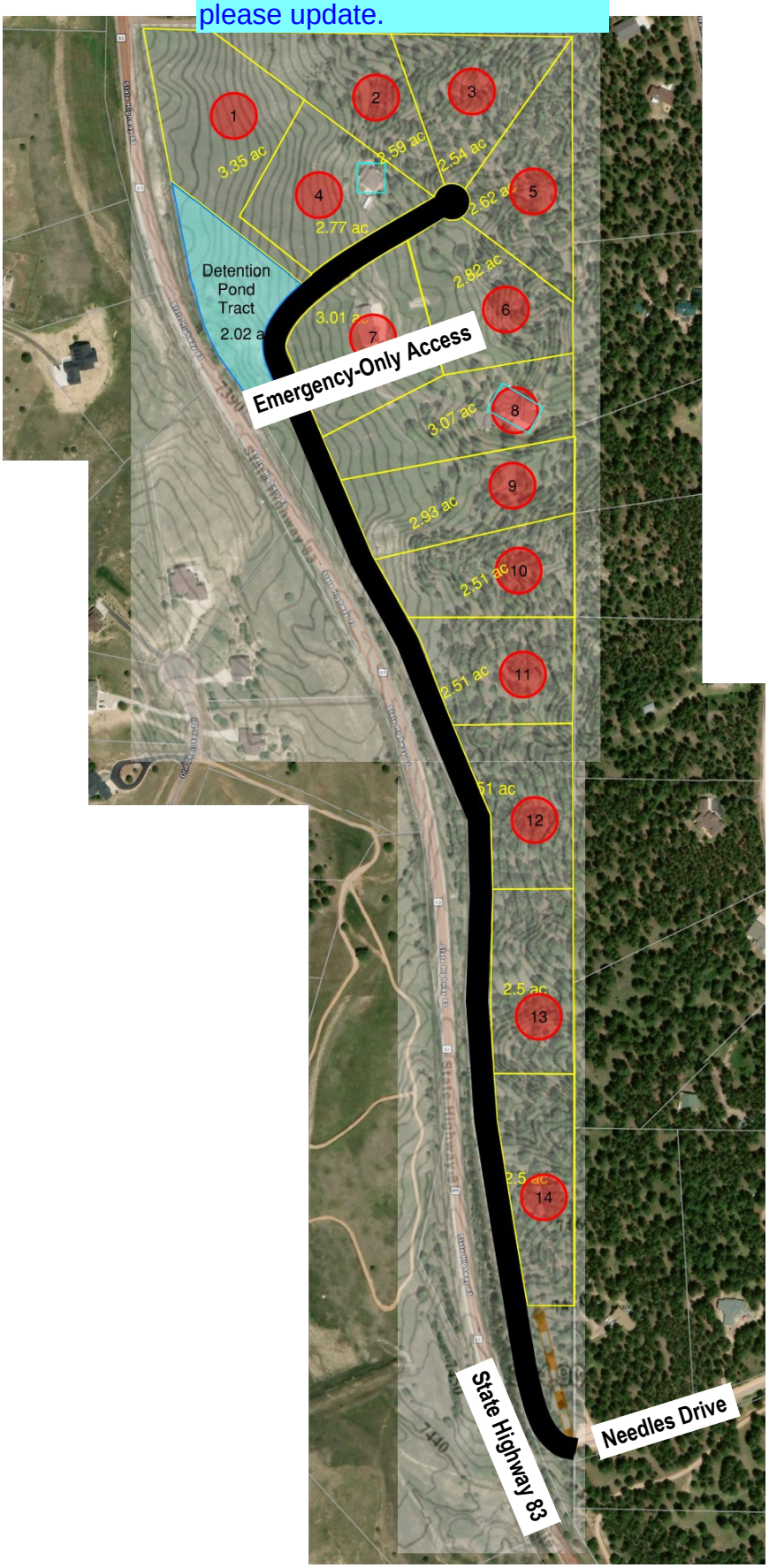
A conceptual site plan is shown in Figure 2. This plan is provided for illustrative purposes only.

Conceptual sight distance exhibits, illustrating approximate intersection sight distance triangles, is included for reference in Appendix D. These two-dimensional exhibits do not consider the potential for landscaping, utility, nor vertical curve obstructions, and were prepared in accordance to Table 2-35 of the County's ECM, Section 4.3 of the Colorado Department of Transportation's (CDOT) State Highway Access Code (SHAC)[2], and Section 9.5.3.2 of the American Association of State Highway and Transportation Officials' (AASHTO) A Policy on Geometric Design of Highway and Streets (Green Book)[3], and is provided for illustrative purposes only. As shown in Appendix D, the emergency-only access along State Highway 83 has an entering sight distance requirement of 600 feet, while Needles Drive has an entering sight distance requirement of 300 feet at the intersection with Needles Drive.

[2] State Highway Access Code, The Transportation Commission of Colorado, March 2002.
[3] A Policy on Geometric Design of Highways and Streets (7th Edition), American Association of State Highway and Transportation Officials, 2018.


North
Not to Scale
Walker Road
State Highway 83
Walden Way
Development Site
Needles Drive
Hodgen Road
Timber Meadow Drive

New layout has been proposed, please update.



Existing and Committed Surface Transportation Network

Within the study area, State Highway 83 and Hodgen Road are the primary roadways that will accommodate traffic to and from the proposed development. The secondary roadways include Timber Meadow Drive, Walden Way, and Needles Drive. A brief description of each roadway, based on the County's Major Transportation Corridors Plan (MTCP)[4] and ECM is provided below.

> State Highway 83 is a north-south state roadway having two through lanes (one lane in each direction) with a combination of shared and exclusive turn lanes at the intersection within the study area. The Colorado Department of Transportation (CDOT) categorizes the adjacent segment of State Highway 83 as a Regional Highway (R-A) and provides a posted speed limit of 60 miles per hour (MPH).
>
> Hodgen Road is an east-west, rural minor arterial roadway having two through lanes (one in each direction) with a combination of shared and exclusive turn lanes at the intersections within the study area. Hodgen Road provides a posted speed limit of 55 MPH.
>
> Timber Meadow Drive is generally a north-south, paved, rural local roadway having two through lanes (one in each direction) with shared turn lanes at the intersections within the study area. Timber Meadow Drive has a posted speed limit of 30 MPH. Timber Meadow Drive ends at Needles Drive and continues north as Walden Way.
>
> Needles Drive is an east-west, gravel, rural local roadway having two through lanes (one in each direction) with shared turn lanes at the intersections within the study area. Needles Drive is assumed to provide a posted speed limit of 30 MPH based on its rural local roadway classification.

All study intersections operate under a stop-controlled condition. A stop-controlled intersection is defined as a roadway intersection where vehicle rights-of-way are controlled by one or more "STOP" signs.

Pursuant to discussions provided within the CO 83 Access Control Plan Final Report[5], State Highway 83 is envisioned to be widened from two to four through lanes from Old North Gate Road to Hodgen Road. However, the CO 83 Access Control Plan Final Report describes how this widening improvement isn't anticipated until Year 2045 and therefore was not considered within this analysis.

[4] El Paso County Major Transportation Corridors Plan (MTCP), Felsburg Holt & Ullevig, July 2024.
[5] CO 83 Access Control Plan, Atkins, October 2021.

II. Existing Traffic Conditions

Morning (AM) and afternoon (PM) peak hour traffic counts were collected at the intersections of State Highway 83 with Walden Way and Existing Access, as well as the intersections of Timber Meadow Drive with Hodgen Road and Needles Drive. Average daily traffic (ADT) volumes were collected over a 24-hour period on Walden Way, Needles Drive, and Timber Meadow Drive. Counts were collected on Tuesday, April 28, 2026, with AM peak hour counts being collected during the period of 7:00 a.m. to 9:00 a.m. and PM peak hour counts being collected during the period of 4:00 p.m. to 6:00 p.m.

Existing volumes and intersection geometry are shown in Figure 3. Traffic count data is included for reference in Appendix A.

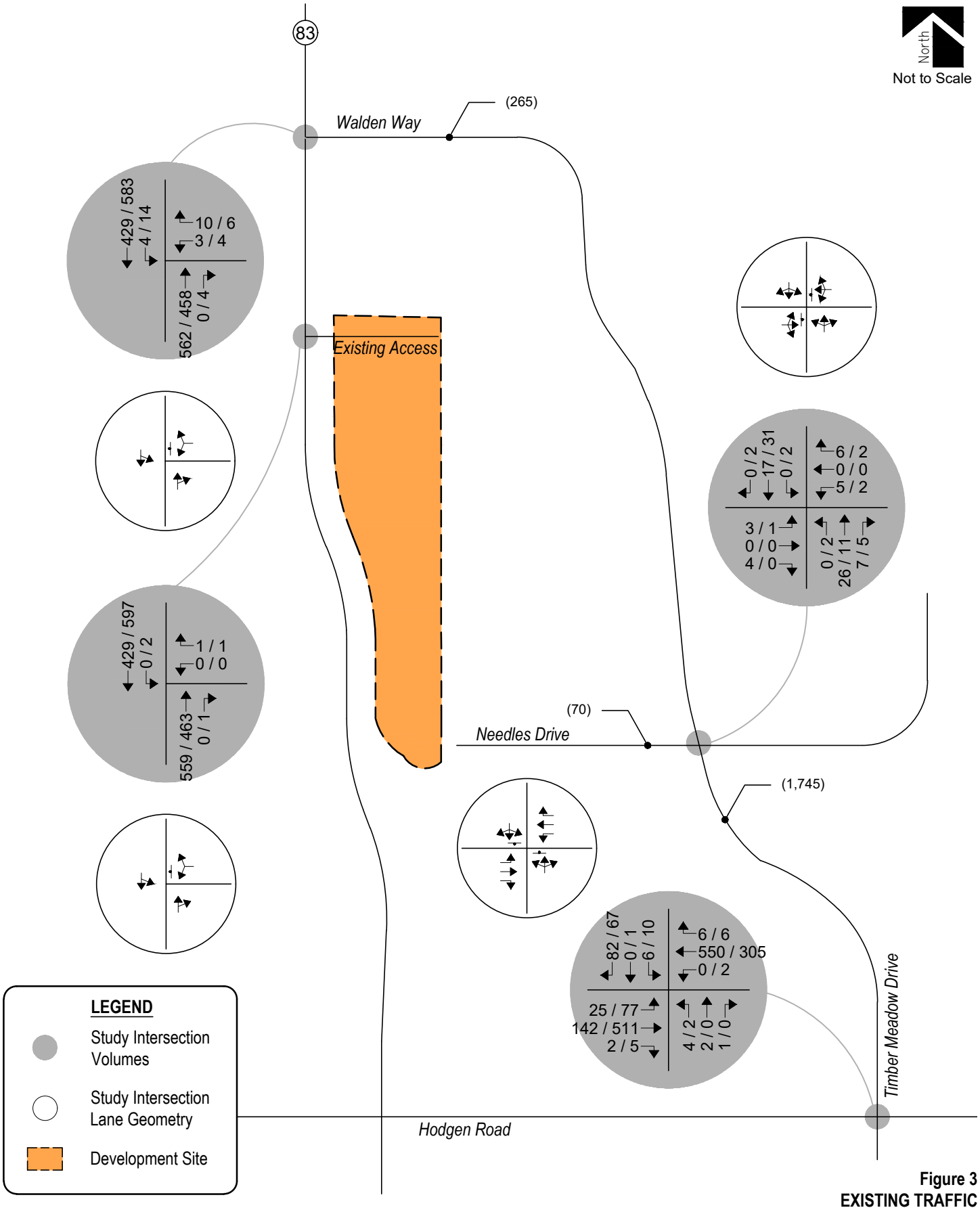


Figure 3
EXISTING TRAFFIC
Volumes & Intersection Geometry
AM / PM Peak Traffic Hour
(ADT) : Average Daily Traffic

Peak Hour Intersection Levels of Service – Existing Traffic

The Unsignalized Intersection Analysis technique, as published in the Highway Capacity Manual (HCM), 7th Edition, by the Transportation Research Board and as incorporated into the SYNCHRO computer program, was used to analyze the study intersections for existing and future traffic conditions. This nationally accepted technique allows for the determination of intersection level of service (LOS) based on the congestion and delay of each traffic movement

Pursuant to Section B.4.1.A of the County's ECM, the design objective for each scenario of this study shall be level of service "D". Level of service is a method of measurement used by transportation professionals to quantify a driver's perception of travel conditions that include travel time, number of stops, and total amount of stopped delay experienced on a roadway network. The HCM categorizes level of service into a range from "A" which indicates little, if any, vehicle delay, to "F" which indicates a level of operation considered unacceptable to most drivers. These levels of service grades with brief descriptions of the operating condition, for unsignalized and signalized intersections, are included for reference in Appendix B and have been used throughout this study.

The level of service analyses results for existing conditions are summarized in Table 1.

Intersection capacity worksheets developed for this study are provided in Appendix C.

Table 1 – Intersection Capacity Analysis Summary – Existing Traffic

INTERSECTION	LEVEL OF SERVICE	
LANE GROUPS	AM PEAK HOUR	PM PEAK HOUR
Hodgen Road / Timber Meadow Drive (Stop-Controlled)		
Eastbound Left	A	A
Westbound Left	A	A
Northbound Left, Through, and Right	C	D
Southbound Left, Through, and Right	B	B
Timber Meadow Drive / Needles Drive (Stop-Controlled)		
Eastbound Left, Through and Right	A	A
Westbound Left, Through and Right	A	A
Northbound Left, Through and Right	A	A
Southbound Left, Through, and Right	A	A
State Highway 83 / Existing Access (Stop-Controlled)		
Westbound Left and Right	B	B
Southbound Left and Through	A	A
State Highway 83 / Walden Way (Stop-Controlled)		
Westbound Left and Right	B	C
Southbound Left and Through	A	A

Key: Stop-Controlled Intersection: Level of Service

Existing Traffic Analysis Results

Under existing conditions, the unsignalized intersection of Hodgen Road with Timber Meadow Drive has turn movement operations at LOS C or better during the morning peak traffic hour and LOS D or better during the afternoon peak traffic hour.

The unsignalized intersection of Timber Meadow Drive with Needles Drive has turn movement operations at LOS A during the morning and afternoon peak traffic hours.

The stop-controlled intersection of State Highway 83 with Existing Access experiences turn movement operations at LOS B or better during the morning and afternoon peak traffic hours.

The unsignalized intersection of State Highway 83 and Walden Way has turn movement operations at LOS B or better during the morning peak traffic hour and LOS C or better during the afternoon peak traffic hour.

III. Future Traffic Conditions Without Proposed Development

Background traffic is the traffic projected to be on area roadways without consideration of the proposed development. Background traffic includes traffic generated by development of vacant parcels in the area.

To account for projected increases in background traffic for Year 2028, a compounded annual growth rate was determined using historical traffic data for the surrounding area provided by CDOT's Online Transportation Information System (OTIS) along State Highway 83, which shows a 20-year growth rate between one and two percent. Therefore, in order to provide for a conservative analysis, a growth rate of approximately two percent was applied to existing traffic volumes.

It is important to note that ingress and egress traffic volumes along Needles Drive at Timber Meadow Drive are not subject to annual growth patterns since these access drives do not provide connection to other roadways, therefore do not serve regional traffic.

Pursuant to the area roadway improvements discussed in Section I, Year 2028 background traffic conditions assume no roadway improvements to accommodate regional transportation demands.

Projected background traffic volumes and intersection geometry for Year 2028 are shown in Figure 4.

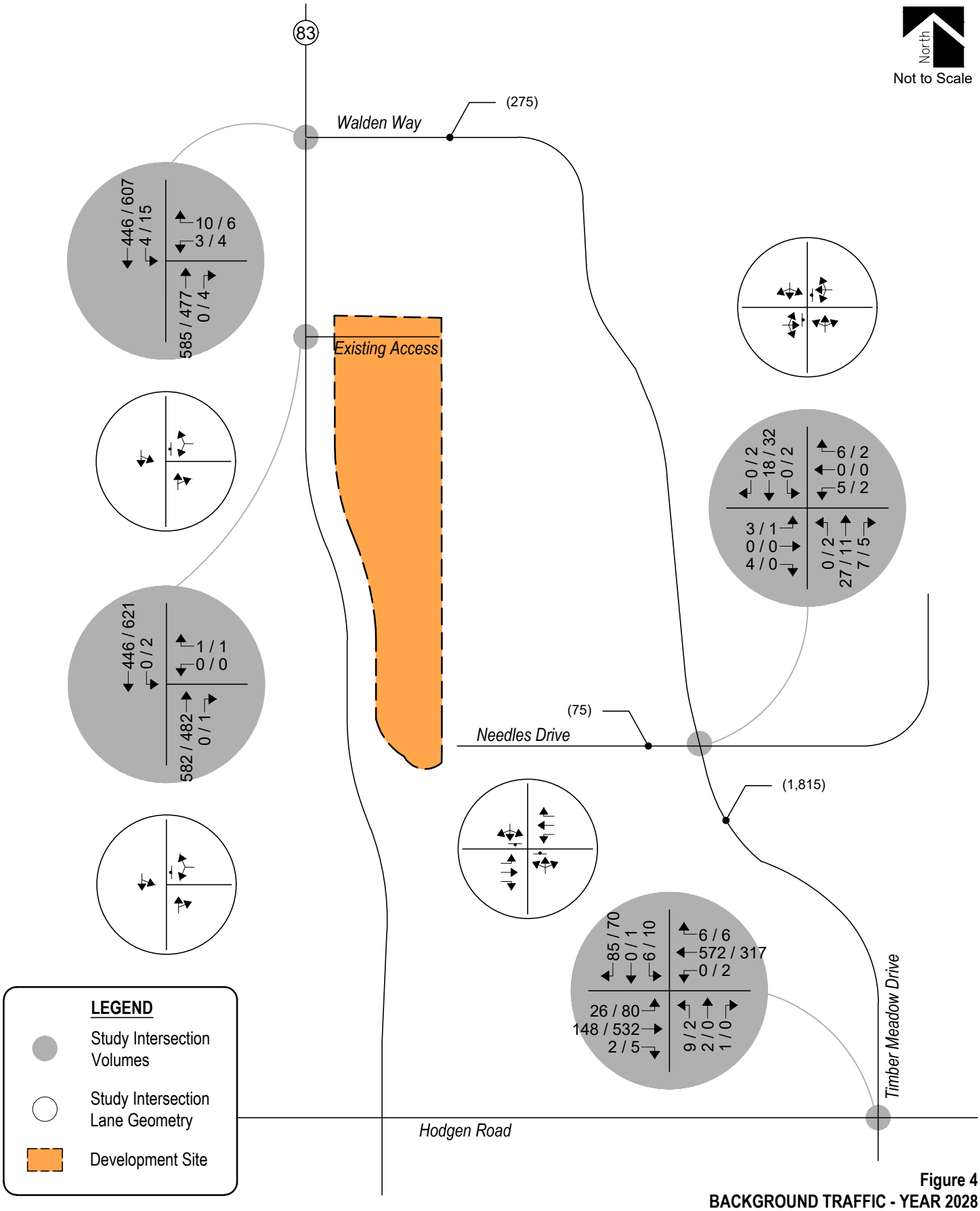


Figure 4
BACKGROUND TRAFFIC - YEAR 2028
Volumes & Intersection Geometry
AM / PM Peak Traffic Hour
(ADT) : Average Daily Traffic

Peak Hour Intersection Levels of Service – Background Traffic

As with existing traffic conditions, the operations of study intersections were analyzed under background conditions, without the proposed development, using the SYNCHRO computer program.

Background traffic level of service analysis results for Year 2028 are listed in Table 2.

Definitions of levels of service are given in Appendix B. Intersection capacity worksheets are provided in Appendix C.

Table 2 – Intersection Capacity Analysis Summary – Background Traffic – Year 2028

INTERSECTION	LEVEL OF SERVICE	
LANE GROUPS	AM PEAK HOUR	PM PEAK HOUR
Hodgen Road / Timber Meadow Drive (Stop-Controlled)		
Eastbound Left	A	A
Westbound Left	A	A
Northbound Left, Through, and Right	C	D
Southbound Left, Through, and Right	B	B
Timber Meadow Drive / Needles Drive (Stop-Controlled)		
Eastbound Left, Through and Right	A	A
Westbound Left, Through and Right	A	A
Northbound Left, Through and Right	A	A
Southbound Left, Through, and Right	A	A
State Highway 83 / Existing Access (Stop-Controlled)		
Westbound Left and Right	B	B
Southbound Left and Through	A	A
State Highway 83 / Walden Way (Stop-Controlled)		
Westbound Left and Right	B	C
Southbound Left and Through	A	A

Key: Stop-Controlled Intersection: Level of Service

Background Traffic Analysis Results – Year 2028

Year 2028 background traffic analysis indicates that the unsignalized intersection of Hodgen Road with Timber Meadow Drive operates at or better than LOS C during the morning peak traffic hour and LOS D or better during the afternoon peak traffic hour.

The stop-controlled intersection of Timber Meadow Drive with Needles Drive projects turn movement operations at LOS A during the morning and afternoon peak traffic hours.

The stop-controlled intersection of State Highway 83 and Existing Access anticipates turn movement operations at LOS B or better during the morning and afternoon peak traffic hours.

The stop-controlled intersection of State Highway 83 with Walden Way expects turn movement operations at LOS B or better during the morning peak traffic hour and LOS C or better during the afternoon peak traffic hour.

These intersection operations are similar to existing conditions.

IV. Proposed Project Traffic

Trip Generation

Standard traffic generation characteristics compiled by the Institute of Transportation Engineers (ITE) in their report entitled Trip Generation Manual, 12th Edition, were applied to the proposed land use in order to estimate average daily traffic (ADT), AM Peak Hour, and PM Peak Hour vehicle trips. A vehicle trip is defined as a one-way vehicle movement from a point of origin to a point of destination.

The ITE land use code 210 (Single-Family Detached Housing) was used for estimating trip generation because of its best fit to the proposed land use description.

Trip generation rates used in this study are presented in Table 3.

Table 3 – Trip Generation Rates

			TRIP GENERATION RATES						
ITE			24	AM PEAK HOUR			PM PEAK HOUR		
CODE	LAND USE	UNIT	HOUR	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
210	Single-Family Detached Housing	DU	9.09	0.19	0.51	0.70	0.58	0.35	0.93

Key: DU = Dwelling Units.
Note: All data and calculations above are subject to being rounded to nearest value.

Table 4 illustrates projected ADT, AM Peak Hour, and PM Peak Hour traffic volumes likely generated by the proposed development upon build-out.

Table 4 – Trip Generation Summary

			TOTAL TRIPS GENERATED						
ITE			24	AM PEAK HOUR			PM PEAK HOUR		
CODE	LAND USE	SIZE	HOUR	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
210	Single-Family Detached Housing	14 DU	127	3	7	10	8	5	13
		Total:	*127*	*3*	*7*	*10*	*8*	*5*	*13*

Key: DU = Dwelling Units.
Note: All data and calculations above are subject to being rounded to nearest value.

Upon build-out, Table 4 illustrates that the proposed development has the potential to generate approximately 127 daily vehicle trips with 10 of those occurring during the morning peak hour and 13 during the afternoon peak hour.

Adjustments to Trip Generation Rates

A development of this type is not likely to attract trips from within area land uses nor pass-by or diverted link trips from the adjacent roadway system, therefore no trip reduction was taken in this analysis.

Trip Distribution

The overall directional distribution of site-generated traffic was determined based on the location of development site within the County, proposed and existing area land uses, allowed turning movements, available roadway network, and in reference to distribution patterns applied within the Flying Horse North Major PUD Amendment Master Traffic Impact Study[6].

Overall trip distribution patterns for the development are shown on Figure 5.

Trip Assignment

Traffic assignment is how generated and distributed vehicle trips are expected to be loaded onto the available roadway network.

Applying trip distribution patterns to site-generated traffic provides the overall site-generated trip assignments shown on Figure 5.

[6] Flying Horse North Major PUD Amendment: Master Traffic Impact Study, SM ROCHA, LLC, January 2026.

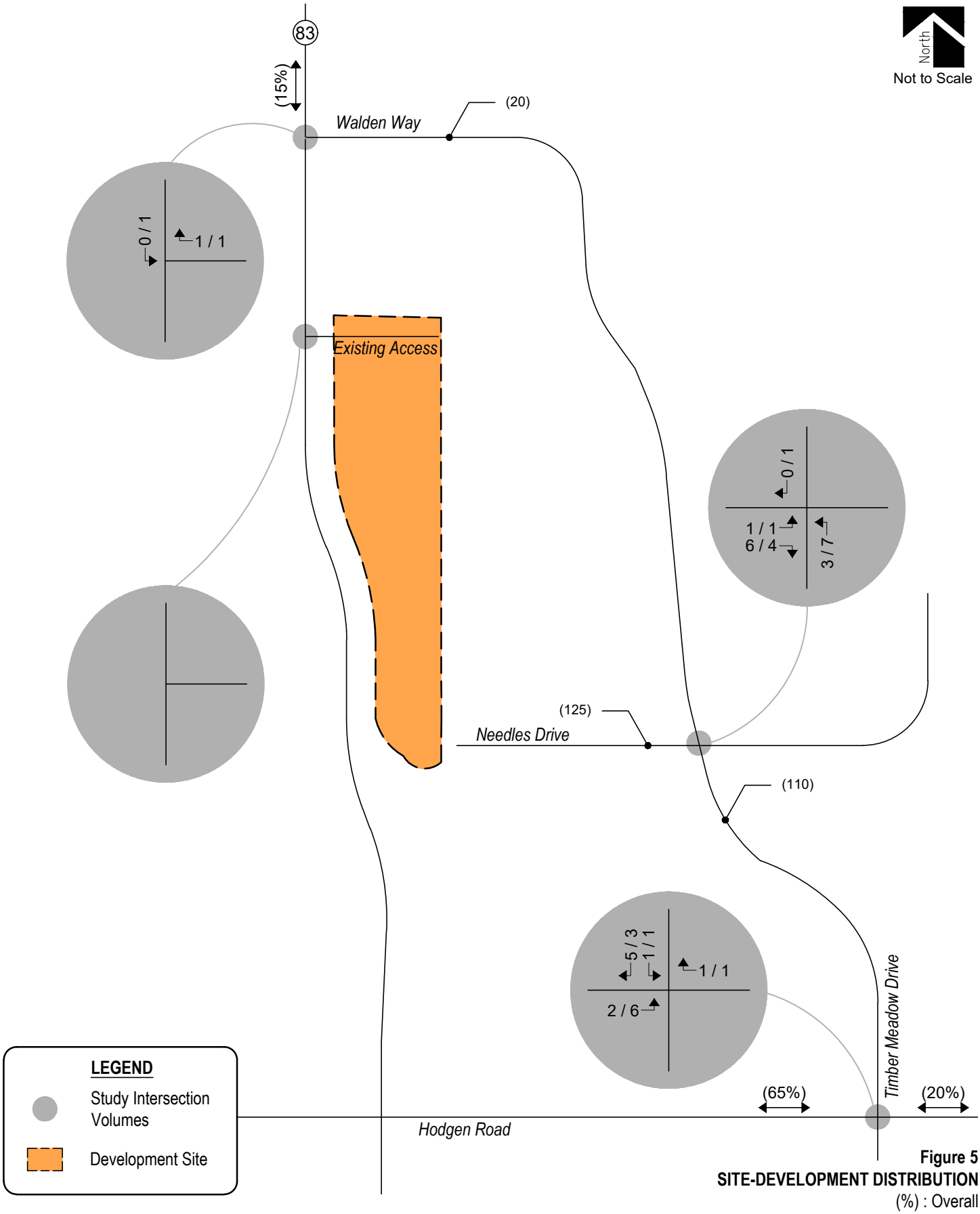


Figure 5
SITE-DEVELOPMENT DISTRIBUTION
(%) : Overall
SITE-GENERATED TRIPS
AM / PM Peak Hour
(ADT) : Average Daily Traffic

V. Future Traffic Conditions With Proposed Development

Total traffic is the traffic projected to be on area roadways with consideration of the proposed development. Total traffic includes background traffic projections for Years 2028 with consideration of site-generated traffic. For analysis purposes, it was assumed that development construction would be completed by end of Year 2028.

Pursuant to area roadway improvement discussions provided in Section III, Year 2028 total traffic conditions assume no roadway improvements to accommodate regional transportation demands. Roadway improvements associated with site development are expected to be limited to site access and frontage as required by the governing agency.

Total Traffic Auxiliary Lane Analysis

Auxiliary lanes for site development access drives were evaluated and are to be based on County's ECM and CDOT's State Highway Access Code (SHAC).

Considering development build-out, an evaluation of auxiliary lane requirements, pursuant to Section 2.3.7.D of the County's ECM, reveals that a northbound left turn deceleration lane at Needles Drive along Timber Meadow Drive is not required since the development's projected peak hour left turn ingress volume does exceed the County's threshold of 25 vehicles per hour.

Similarly, a southbound right turn deceleration lane is not required since the development's projected peak hour right turn ingress volume does not exceed the County's threshold of 50 vehicles per hour.

An evaluation of auxiliary lane requirements, pursuant to Section 3.8 of the State Highway Access Code, reveals a southbound left turn deceleration at Walden Way along State Highway 83 lane may be required since the development's projected peak hour left turn ingress volume exceeds the SHAC's threshold of 10 vehicles per hour.

Projected Year 2028 total traffic volumes and intersection geometry are shown in Figure 6.

Multi-Modal Assessment

In accordance with Section B.2.4.D of the County's ECM, an assessment to adequacy of pedestrian and bicycle facilities within the study area was considered.

Due to the rural characteristics of the development site and surrounding area, this area currently does not accommodate pedestrians nor bicyclists with detached sidewalks, trails, nor bike lanes. It is important to note that, pursuant to existing roadway characteristics provided in Section I, typical roadway cross-sections defined within the County's ECM, and per planned Year 2045 roadway functional classifications identified within the County's MTCP, Hodgen Road is not expected to provide sidewalks nor bicycle lanes adjacent the development area due to the County's plans to maintain the rural characteristic of the surrounding area roadways.

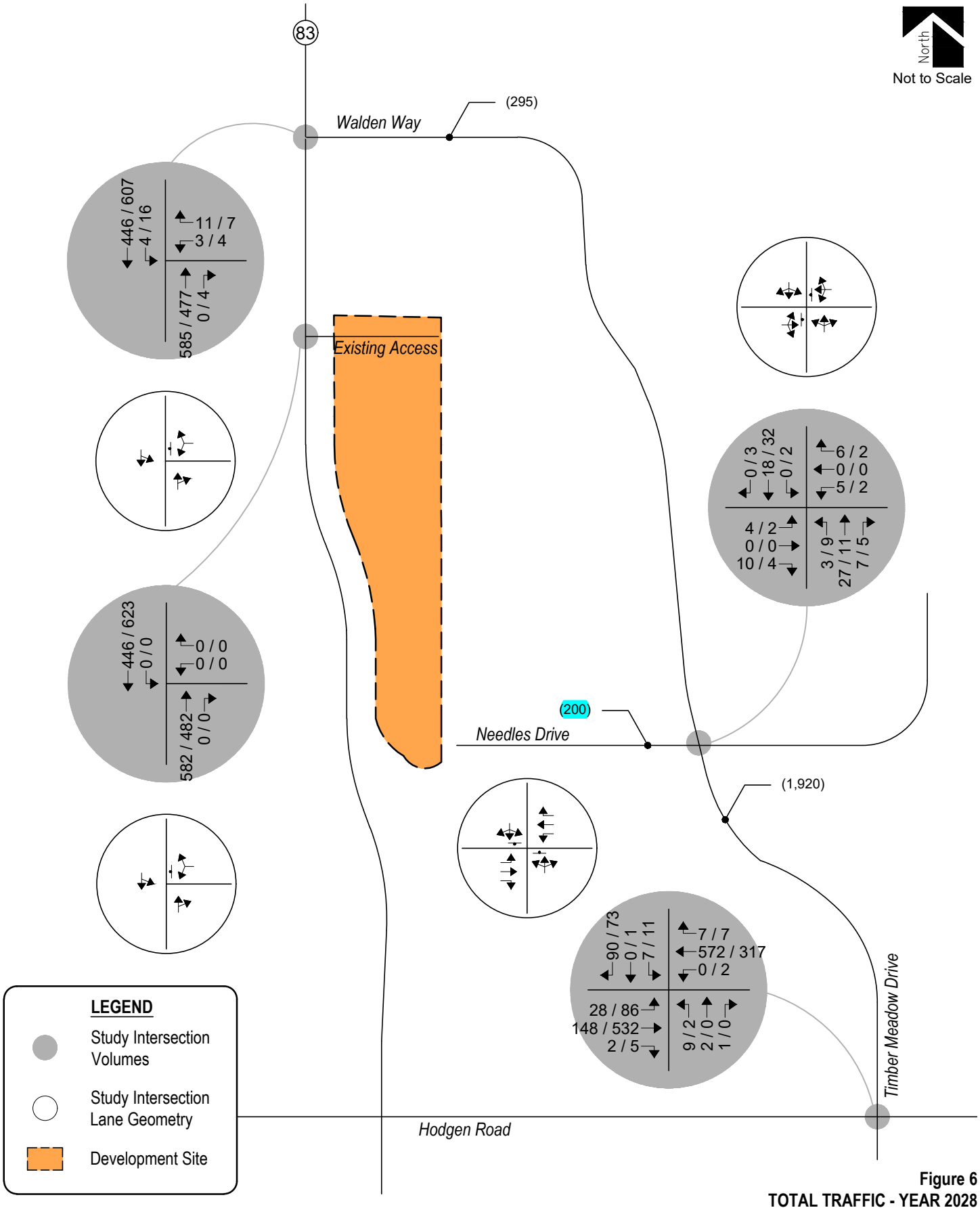


Figure 6
TOTAL TRAFFIC - YEAR 2028
Volumes & Intersection Geometry
AM / PM Peak Traffic Hour
(ADT) : Average Daily Traffic

Peak Hour Intersection Levels of Service – Total Traffic

As with background traffic, the operations of the study intersections were analyzed under projected total traffic conditions using the SYNCHRO computer program. The analyses and procedures were performed in accordance with the latest HCM and are based upon the worst-case conditions that occur during a typical weekday upon build-out of site development and analyzed land uses. Therefore, study intersections are likely to operate with traffic conditions better than those described within this study, which represent the peak hours of weekday operations only.

Total traffic level of service analysis results for Years 2028 are summarized in Table 5.

Definitions of levels of service are given in Appendix B. Intersection capacity worksheets are provided in Appendix C.

Table 5 – Intersection Capacity Analysis Summary – Total Traffic – Year 2028

INTERSECTION	LEVEL OF SERVICE	
LANE GROUPS	AM PEAK HOUR	PM PEAK HOUR
Hodgen Road / Timber Meadow Drive (Stop-Controlled)		
Eastbound Left	A	A
Westbound Left	A	A
Northbound Left, Through, and Right	C	D
Southbound Left, Through, and Right	C	B
Timber Meadow Drive / Needles Drive (Stop-Controlled)		
Eastbound Left, Through and Right	A	A
Westbound Left, Through and Right	A	A
Northbound Left, Through and Right	A	A
Southbound Left, Through, and Right	A	A
State Highway 83 / Walden Way (Stop-Controlled)		
Westbound Left and Right	B	C
Southbound Left and Through	A	A

Key: Stop-Controlled Intersection: Level of Service

Total Traffic Analysis Results Upon Development Build-Out

Table 7 illustrates how, by Year 2028 and upon development build-out, the stop-controlled intersection of Hodgen Road with Timber Meadow Drive continues to project turn movement operations at LOS C or better during the morning peak traffic hour and LOS D or better during the afternoon peak traffic hour.

The stop-controlled intersection of Timber Meadow Drive with Needles Drive continues to anticipate turn movement operations at LOS A during the morning and afternoon peak traffic hours.

The stop-controlled intersection of State Highway 83 with Walden Way continues to project turn movement operations at LOS B or better during the morning peak traffic hour and LOS C or better during the afternoon peak traffic hour.

These intersection operations are similar to background conditions.

VI. Project Impacts

It is emphasized that the analyses and procedures described in this study were performed in accordance with the latest HCM and are based upon the worst-case conditions that occur during a typical weekday upon build-out of site development and analyzed land uses. Therefore, study intersections are likely to operate with traffic conditions better than those described within this study, which represent the peak hours of weekday operations only.

Queue Length Analysis

Queue lengths for the study intersections were analyzed using Year 2028 background and total traffic conditions. The analysis yields estimate of 95th percentile queue lengths, which have only a five percent probability of being exceeded during the analysis time period. An average vehicle length of 25 feet was assumed. Queue lengths were modeled and are included with the Synchro worksheets in Appendix C.

In general, auxiliary lane lengths are recommended to accommodate CDOT's minimum turn lane lengths or accommodate long-term 95th percentile vehicle queues, whichever is greater.

Table 6 summarizes the 95th percentile queue results in comparison to the projected storage requirements for turn movements within study area for Year 2028.

Table 6 – Turn Lane Queues and Storage Requirements – Year 2028

Intersection	Turn Movement		Existing Turn Lane Length (feet)	Background 2028		Total 2028		Recommended Turn Lane Length (feet)
				AM Peak Hour (feet)	PM Peak Hour (feet)	AM Peak Hour (feet)	PM Peak Hour (feet)	
Stop-Controlled Intersections								
Hodgen Road / Timber Meadow Drive	EB	L	460'	3'	5'	3'	8'	460'
		T	-	0'	0'	0'	0'	-
		R	420'	0'	0'	0'	0'	420'
	WB	L	525'	0'	0'	0'	0'	525'
		T	-	0'	0'	0'	0'	-
		R	525'	0'	0'	0'	0'	525'
	NB	L,T,R	-	5'	0'	5'	0'	-
	SB	L,T,R	-	20'	15'	23'	18'	-
Timber Meadow Drive / Needles Drive	EB	L,T,R	-	0'	0'	0'	0'	-
	WB	L,T,R	-	0'	0'	0'	0'	-
	NB	L,T,R	-	0'	0'	0'	0'	-
	SB	L,T,R	-	0'	0'	0'	0'	-
State Highway 83 / Walden Way	WB	L,R	-	3'	3'	3'	3'	-
	NB	T,R	-	0'	0'	0'	0'	-
	SB	L,T	-	0'	0'	0'	3'	-

Note: Turn Lane Length does not include taper length.

As Table 6 shows, all turn lane lengths at stop-controlled intersections have sufficient storage to accommodate future traffic volumes.

Development Impacts

Analysis of future traffic conditions indicates that the addition of site-generated traffic is expected to create no negative impact to traffic operations for the existing and surrounding roadway system upon roadway and intersection control improvements assumed within this analysis. With all conservative assumptions defined in this analysis, the study intersections are projected to operate at future levels of service comparable to Year 2028 background traffic conditions.

Pursuant to Section 2.3.2, Table 2-5 of the County's ECM, rural, local, gravel roadways have a design ADT of 200 trips/day. Moreover, Section 2.2.7.2 of the ECM states how existing gravel roadways shall be paved only when a development causes an existing gravel roadway to exceed a projected ADT of 200. Therefore, since this threshold is not being exceeded, no roadway paving improvements are warranted.

with additional lots, please update and discuss paving requirements of the road network.

It is important to note that paving requirements will be re-evaluated at later stages of development once actual land uses, densities, or site plans become defined over time.

please update evaluation with revised lot count.

Recommended Improvements

Roadway and intersection improvement recommendations were assessed pursuant to roadway descriptions in Section I, projected peak hour traffic volumes, level of service results, projected 95th percentile queue lengths, and per requirements defined within the County's ECM.

When considering Year 2028 total traffic conditions, no public improvements to the surrounding roadway network were identified to be needed, therefore none are being recommended with this development.

VII. Conclusion

This traffic impact study addressed the capacity, geometric, and control requirements associated with the rezone application being referred to as State Highway 83 & Needles Subdivision. This proposed residential development consists of 14 single-family detached homes and is located near the northeast corner of State Highway 83 and Hodgen Road in El Paso County, Colorado.

The study area examined in this analysis encompassed the area bounded by State Highway 83 east to Timber Meadow Drive, and from Hodgen Road north to Walden Way.

Analysis was conducted for critical AM Peak Hour and PM Peak Hour traffic operations for existing traffic conditions, Year 2028 background traffic conditions, and Year 2028 total traffic conditions.

Analysis of existing traffic conditions indicates that all stop-controlled intersections operate with turn movements at or better than LOS D or better during their respective peak traffic periods.

Under Year 2028 background traffic conditions, operational analysis shows that all stop-controlled intersections anticipate turn movement operations at or better than LOS D during their respective peak traffic periods.

Analysis of future traffic conditions indicates that the addition of site-generated traffic is expected to create no negative impact to traffic operations for the existing and surrounding roadway system. With all conservative assumptions defined in this analysis, the study intersections are projected to operate at future levels of service comparable to Year 2028 background traffic conditions. Existing site accesses have operations at LOS B or better during peak traffic periods and upon build-out.

The submittal of a new CDOT access permit is anticipated with the development of this site and will be coordinated through CDOT staff.

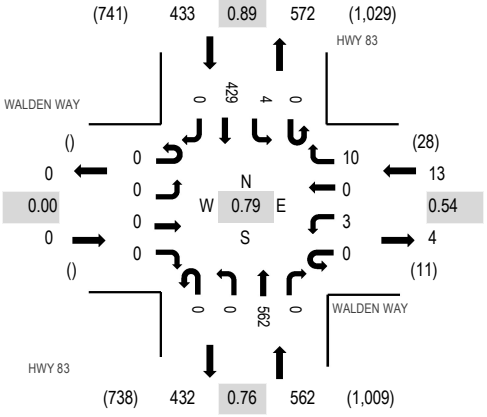
APPENDIX A

Traffic Count Data

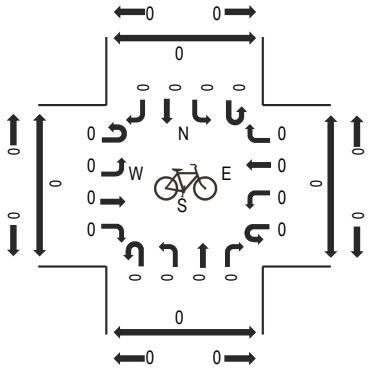
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 HWY 83 & WALDEN WAY AM
Date: Tuesday, April 28, 2026
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

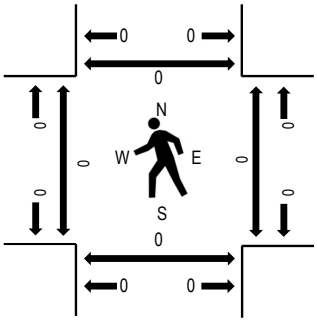
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	WALDEN WAY Eastbound				WALDEN WAY Westbound				HWY 83 Northbound				HWY 83 Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	2	0	0	0	0	113	0	0	0	64	0	179	985	0	0	0	0
7:15 AM	0	0	0	0	0	2	0	5	0	0	128	0	0	0	88	0	223	1,008	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	3	0	0	192	0	0	1	121	0	317	962	0	0	0	0
7:45 AM	0	0	0	0	0	1	0	2	0	0	147	0	0	2	114	0	266	850	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	95	0	0	1	106	0	202	793	0	0	0	0
8:15 AM	0	0	0	0	0	1	0	3	0	0	102	1	0	0	70	0	177		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	5	0	0	119	0	0	1	80	0	205		0	0	0	0
8:45 AM	0	0	0	0	0	1	0	3	0	0	112	0	0	5	88	0	209		0	0	0	0
Count Total	0	0	0	0	0	7	0	21	0	0	1,008	1	0	10	731	0	1,778		0	0	0	0
Peak Hour	0	0	0	0	0	3	0	10	0	0	562	0	0	4	429	0	1,008		0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
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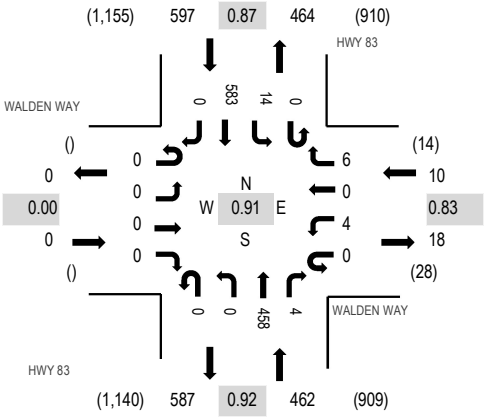
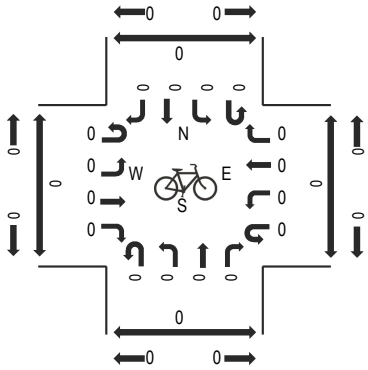
Location: 1 HWY 83 & WALDEN WAY PM
Date: Tuesday, April 28, 2026
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

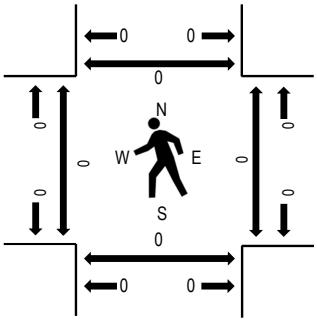
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

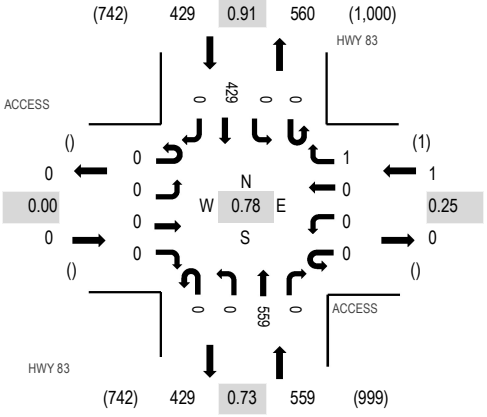
Traffic Counts - Motorized Vehicles

Interval Start Time	WALDEN WAY Eastbound				WALDEN WAY Westbound				HWY 83 Northbound				HWY 83 Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0	0	1	0	2	0	0	117	2	0	6	165	0	293	1,069	0	0	0	0
4:15 PM	0	0	0	0	0	2	0	1	0	0	125	1	0	3	145	0	277	1,041	0	0	0	0
4:30 PM	0	0	0	0	0	1	0	1	0	0	103	1	0	3	133	0	242	1,031	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	2	0	0	113	0	0	2	140	0	257	1,036	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	112	1	0	1	151	0	265	1,009	0	0	0	0
5:15 PM	0	0	0	0	0	1	0	1	0	0	107	1	0	0	157	0	267		0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	110	2	0	2	133	0	247		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	2	0	0	114	0	0	3	111	0	230		0	0	0	0
Count Total	0	0	0	0	0	5	0	9	0	0	901	8	0	20	1,135	0	2,078		0	0	0	0
Peak Hour	0	0	0	0	0	4	0	6	0	0	458	4	0	14	583	0	1,069		0	0	0	0

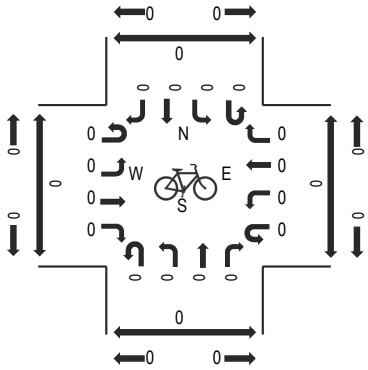
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 HWY 83 & ACCESS AM
Date: Tuesday, April 28, 2026
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

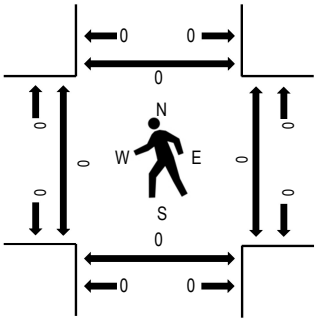
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	ACCESS Eastbound				ACCESS Westbound				HWY 83 Northbound				HWY 83 Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	0	0	0	0	0	113	0	0	0	64	0	177	978	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	125	0	0	0	91	0	217	989	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	201	0	0	0	118	0	319	949	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	147	0	0	0	118	0	265	823	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	86	0	0	0	102	0	188	764	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	101	0	0	0	76	0	177		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	115	0	0	0	78	0	193		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	111	0	0	0	95	0	206		0	0	0	0
Count Total	0	0	0	0	0	0	0	1	0	0	999	0	0	0	742	0	1,742		0	0	0	0
Peak Hour	0	0	0	0	0	0	0	1	0	0	559	0	0	0	429	0	989		0	0	0	0

ALL TRAFFIC DATA SERVICES
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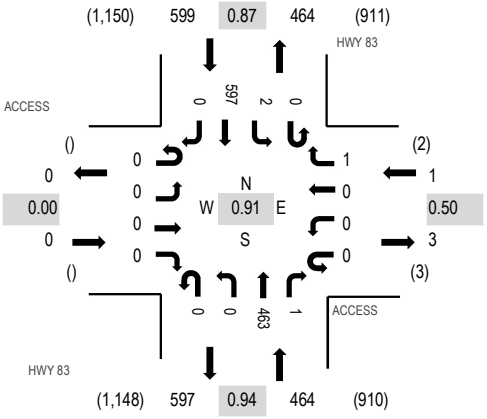
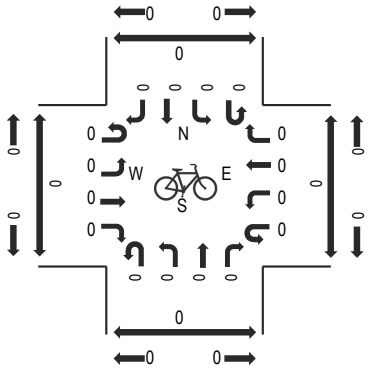
Location: 2 HWY 83 & ACCESS PM
Date: Tuesday, April 28, 2026
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

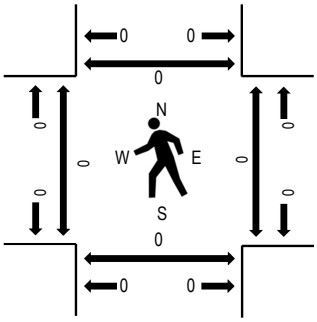
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	ACCESS Eastbound				ACCESS Westbound				HWY 83 Northbound				HWY 83 Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0	0	0	0	0	0	0	120	1	0	0	172	0	293	1,064	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	124	0	0	0	145	0	269	1,040	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	108	0	0	1	136	0	245	1,032	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	1	0	0	111	0	0	1	144	0	257	1,036	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	1	0	0	120	0	0	0	148	0	269	998	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	102	0	0	0	159	0	261		0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	113	0	0	0	136	0	249		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	111	0	0	0	108	0	219		0	0	0	0
Count Total	0	0	0	0	0	0	0	2	0	0	909	1	0	2	1,148	0	2,062		0	0	0	0
Peak Hour	0	0	0	0	0	0	0	1	0	0	463	1	0	2	597	0	1,064		0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
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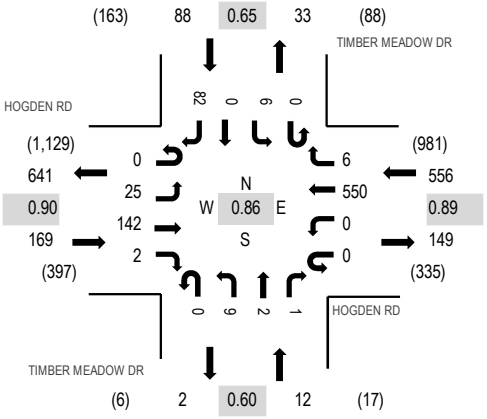
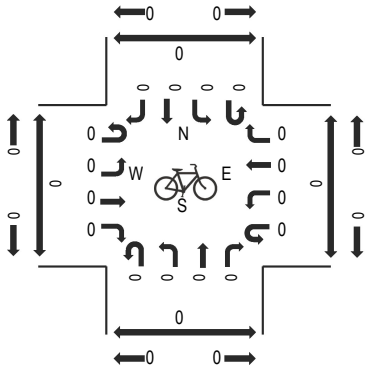
Location: 3 TIMBER MEADOW DR & HOGDEN RD AM
Date: Tuesday, April 28, 2026
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

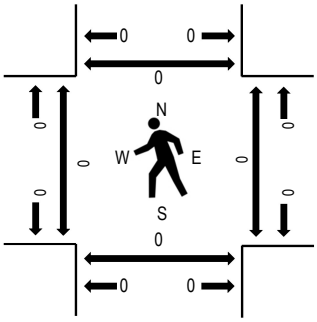
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	HOGDEN RD Eastbound				HOGDEN RD Westbound				TIMBER MEADOW DR Northbound				TIMBER MEADOW DR Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	9	30	1	0	0	135	1	0	1	0	0	0	1	0	18	196	825	0	0	0	0
7:15 AM	0	3	33	0	0	0	129	1	0	4	0	1	0	2	0	20	193	802	0	0	0	0
7:30 AM	0	6	38	1	0	0	154	3	0	3	1	0	0	2	0	32	240	794	0	0	0	0
7:45 AM	0	7	41	0	0	0	132	1	0	1	1	0	0	1	0	12	196	751	0	0	0	0
8:00 AM	0	17	41	2	0	0	96	0	0	1	0	0	0	2	0	14	173	733	0	0	0	0
8:15 AM	0	13	51	0	0	0	104	2	0	0	1	0	0	1	0	13	185		0	0	0	0
8:30 AM	0	8	48	2	0	0	112	3	0	1	1	0	0	3	0	19	197		0	0	0	0
8:45 AM	0	7	39	0	0	0	105	3	0	1	0	0	0	1	0	22	178		0	0	0	0
Count Total	0	70	321	6	0	0	967	14	0	12	4	1	0	13	0	150	1,558		0	0	0	0
Peak Hour	0	25	142	2	0	0	550	6	0	9	2	1	0	6	0	82	825		0	0	0	0

ALL TRAFFIC DATA SERVICES
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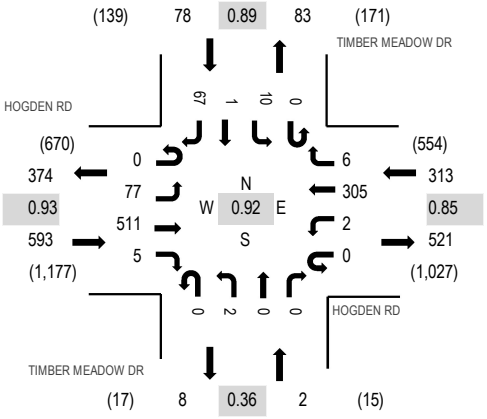
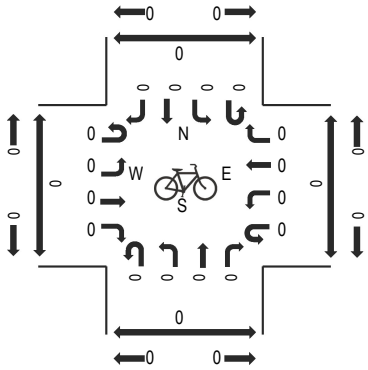
Location: 3 TIMBER MEADOW DR & HOGDEN RD PM
Date: Tuesday, April 28, 2026
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:15 PM - 04:30 PM

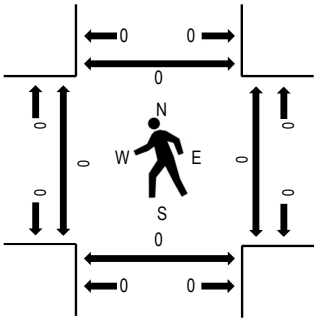
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

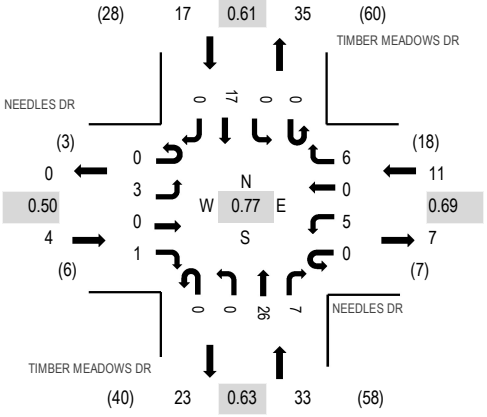
Traffic Counts - Motorized Vehicles

Interval Start Time	HOGDEN RD Eastbound				HOGDEN RD Westbound				TIMBER MEADOW DR Northbound				TIMBER MEADOW DR Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	25	131	3	0	1	72	2	0	1	0	0	0	5	0	17	257	986	0	0	0	0
4:15 PM	0	12	142	0	0	0	90	2	0	0	0	0	0	2	1	18	267	963	0	0	0	0
4:30 PM	0	15	123	1	0	0	65	0	0	1	0	0	0	2	0	13	220	920	0	0	0	0
4:45 PM	0	25	115	1	0	1	78	2	0	0	0	0	0	1	0	19	242	940	0	0	0	0
5:00 PM	0	20	119	1	0	1	68	2	0	7	1	1	0	0	0	14	234	899	0	0	0	0
5:15 PM	0	23	129	2	0	0	52	2	0	0	0	1	0	2	0	13	224		0	0	0	0
5:30 PM	0	24	131	0	0	0	66	1	0	1	0	0	0	2	0	15	240		0	0	0	0
5:45 PM	0	13	118	4	0	1	47	1	0	1	1	0	0	3	0	12	201		0	0	0	0
Count Total	0	157	1,008	12	0	4	538	12	0	11	2	2	0	17	1	121	1,885		0	0	0	0
Peak Hour	0	77	511	5	0	2	305	6	0	2	0	0	0	10	1	67	986		0	0	0	0

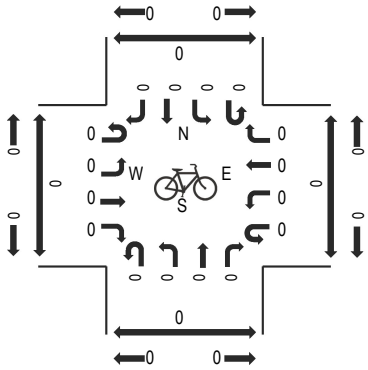
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 4 TIMBER MEADOWS DR & NEEDLES DR AM
Date: Tuesday, April 28, 2026
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

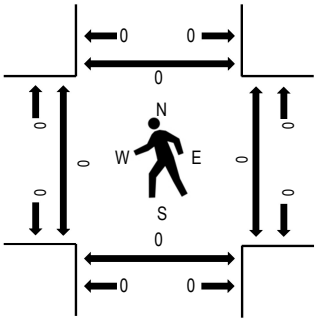
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

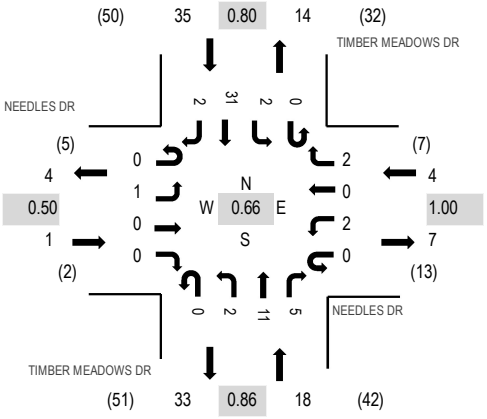
Traffic Counts - Motorized Vehicles

Interval Start Time	NEEDLES DR Eastbound				NEEDLES DR Westbound				TIMBER MEADOWS DR Northbound				TIMBER MEADOWS DR Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	1	0	0	0	1	0	0	0	1	1	0	0	0	1	0	5	45	0	0	0	0
7:15 AM	0	0	0	0	0	2	0	1	0	0	5	0	0	0	2	0	10	47	0	0	0	0
7:30 AM	0	0	0	1	0	2	0	0	0	1	7	0	0	0	1	1	13	58	0	0	0	0
7:45 AM	0	0	0	0	0	1	0	0	0	0	10	0	0	0	6	0	17	64	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	1	0	0	4	1	0	0	1	0	7	65	0	0	0	0
8:15 AM	0	0	0	0	0	2	0	1	0	0	14	1	0	0	3	0	21		0	0	0	0
8:30 AM	0	1	0	1	0	0	0	4	0	0	5	2	0	0	6	0	19		0	0	0	0
8:45 AM	0	2	0	0	0	3	0	0	0	0	3	3	0	0	7	0	18		0	0	0	0
Count Total	0	4	0	2	0	11	0	7	0	2	49	7	0	0	27	1	110		0	0	0	0
Peak Hour	0	3	0	1	0	5	0	6	0	0	26	7	0	0	17	0	65		0	0	0	0

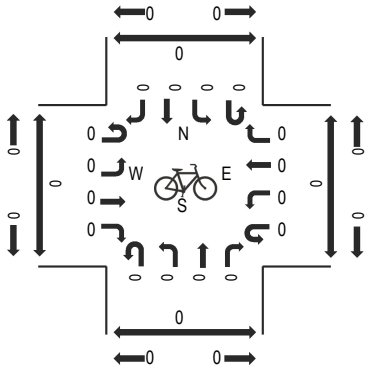
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 4 TIMBER MEADOWS DR & NEEDLES DR PM
Date: Tuesday, April 28, 2026
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

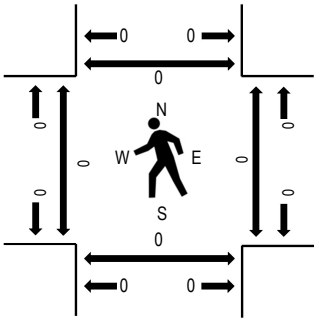
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	NEEDLES DR Eastbound				NEEDLES DR Westbound				TIMBER MEADOWS DR Northbound				TIMBER MEADOWS DR Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0	0	1	0	0	0	1	7	2	0	1	8	2	22	58	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	1	0	1	1	1	0	0	9	0	13	45	0	0	0	0
4:30 PM	0	0	0	0	0	1	0	0	0	0	1	1	0	0	5	0	8	42	0	0	0	0
4:45 PM	0	1	0	0	0	0	0	1	0	0	2	1	0	1	9	0	15	44	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	4	1	0	0	4	0	9	43	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	1	4	0	0	0	5	0	10		0	0	0	0
5:30 PM	0	0	1	0	0	1	0	0	0	0	5	2	0	0	1	0	10		0	1	0	0
5:45 PM	0	0	0	0	0	2	0	0	0	0	5	2	0	0	5	0	14		0	0	0	0
Count Total	0	1	1	0	0	5	0	2	0	3	29	10	0	2	46	2	101		0	1	0	0
Peak Hour	0	1	0	0	0	2	0	2	0	2	11	5	0	2	31	2	58		0	0	0	0

All Traffic Data Services

5 - WALDEN WAY EAST OF HWY 83

Time	EB	WB	Total
4/28/2026	0	0	0
4/28/2026 12:15:00 AM	0	0	0
4/28/2026 12:30:00 AM	1	0	1
4/28/2026 12:45:00 AM	0	0	0
4/28/2026 1:00:00 AM	0	0	0
4/28/2026 1:15:00 AM	0	0	0
4/28/2026 1:30:00 AM	0	0	0
4/28/2026 1:45:00 AM	1	0	1
4/28/2026 2:00:00 AM	0	0	0
4/28/2026 2:15:00 AM	0	0	0
4/28/2026 2:30:00 AM	0	0	0
4/28/2026 2:45:00 AM	0	0	0
4/28/2026 3:00:00 AM	0	0	0
4/28/2026 3:15:00 AM	0	0	0
4/28/2026 3:30:00 AM	0	1	1
4/28/2026 3:45:00 AM	0	0	0
4/28/2026 4:00:00 AM	0	0	0
4/28/2026 4:15:00 AM	0	0	0
4/28/2026 4:30:00 AM	0	0	0
4/28/2026 4:45:00 AM	0	1	1
4/28/2026 5:00:00 AM	0	1	1
4/28/2026 5:15:00 AM	0	0	0
4/28/2026 5:30:00 AM	0	3	3
4/28/2026 5:45:00 AM	0	2	2
4/28/2026 6:00:00 AM	1	0	1
4/28/2026 6:15:00 AM	1	2	3
4/28/2026 6:30:00 AM	0	3	3
4/28/2026 6:45:00 AM	0	1	1
4/28/2026 7:00:00 AM	0	2	2
4/28/2026 7:15:00 AM	0	7	7
4/28/2026 7:30:00 AM	1	3	4
4/28/2026 7:45:00 AM	2	3	5
4/28/2026 8:00:00 AM	1	0	1
4/28/2026 8:15:00 AM	1	4	5
4/28/2026 8:30:00 AM	1	5	6
4/28/2026 8:45:00 AM	5	4	9
4/28/2026 9:00:00 AM	0	3	3
4/28/2026 9:15:00 AM	0	3	3
4/28/2026 9:30:00 AM	1	2	3
4/28/2026 9:45:00 AM	3	4	7
4/28/2026 10:00:00 AM	4	5	9
4/28/2026 10:15:00 AM	5	4	9
4/28/2026 10:30:00 AM	0	1	1
4/28/2026 10:45:00 AM	2	1	3
4/28/2026 11:00:00 AM	1	2	3
4/28/2026 11:15:00 AM	0	2	2
4/28/2026 11:30:00 AM	2	1	3
4/28/2026 11:45:00 AM	1	2	3
Total	34	72	106
Percentage	32.1%	67.9%	
Peak Hour	9:30 AM	8:15 AM	9:30 AM
Volume	13	16	28
PHF	0.650	0.800	0.778

All Traffic Data Services

5 - WALDEN WAY EAST OF HWY 83

Time	EB	WB	Total
4/28/2026 12:00:00 PM	2	3	5
4/28/2026 12:15:00 PM	3	3	6
4/28/2026 12:30:00 PM	2	2	4
4/28/2026 12:45:00 PM	2	2	4
4/28/2026 1:00:00 PM	1	1	2
4/28/2026 1:15:00 PM	3	3	6
4/28/2026 1:30:00 PM	2	1	3
4/28/2026 1:45:00 PM	0	0	0
4/28/2026 2:00:00 PM	0	3	3
4/28/2026 2:15:00 PM	0	5	5
4/28/2026 2:30:00 PM	3	4	7
4/28/2026 2:45:00 PM	2	3	5
4/28/2026 3:00:00 PM	5	1	6
4/28/2026 3:15:00 PM	3	3	6
4/28/2026 3:30:00 PM	2	5	7
4/28/2026 3:45:00 PM	3	5	8
4/28/2026 4:00:00 PM	8	3	11
4/28/2026 4:15:00 PM	4	3	7
4/28/2026 4:30:00 PM	4	2	6
4/28/2026 4:45:00 PM	2	2	4
4/28/2026 5:00:00 PM	2	0	2
4/28/2026 5:15:00 PM	1	2	3
4/28/2026 5:30:00 PM	4	0	4
4/28/2026 5:45:00 PM	3	2	5
4/28/2026 6:00:00 PM	3	1	4
4/28/2026 6:15:00 PM	0	1	1
4/28/2026 6:30:00 PM	2	3	5
4/28/2026 6:45:00 PM	0	0	0
4/28/2026 7:00:00 PM	1	1	2
4/28/2026 7:15:00 PM	0	1	1
4/28/2026 7:30:00 PM	3	1	4
4/28/2026 7:45:00 PM	3	1	4
4/28/2026 8:00:00 PM	2	1	3
4/28/2026 8:15:00 PM	3	0	3
4/28/2026 8:30:00 PM	1	0	1
4/28/2026 8:45:00 PM	0	0	0
4/28/2026 9:00:00 PM	1	0	1
4/28/2026 9:15:00 PM	0	0	0
4/28/2026 9:30:00 PM	3	1	4
4/28/2026 9:45:00 PM	1	0	1
4/28/2026 10:00:00 PM	1	0	1
4/28/2026 10:15:00 PM	2	0	2
4/28/2026 10:30:00 PM	1	1	2
4/28/2026 10:45:00 PM	0	0	0
4/28/2026 11:00:00 PM	0	0	0
4/28/2026 11:15:00 PM	0	0	0
4/28/2026 11:30:00 PM	0	0	0
4/28/2026 11:45:00 PM	0	0	0
Total	88	70	158
Percentage	55.7%	44.3%	
Peak Hour	3:45 PM	3:15 PM	3:30 PM
Volume	19	16	33
PHF	0.594	0.800	0.750
Grand Total	122	142	264
Percentage	46.2%	53.8%	

All Traffic Data Services

6 - NEEDLES DR WEST OF TIMBER MEADOWS DR

Time	EB	WB	Total
4/28/2026	0	0	0
4/28/2026 12:15:00 AM	0	0	0
4/28/2026 12:30:00 AM	0	1	1
4/28/2026 12:45:00 AM	0	0	0
4/28/2026 1:00:00 AM	0	0	0
4/28/2026 1:15:00 AM	0	0	0
4/28/2026 1:30:00 AM	0	0	0
4/28/2026 1:45:00 AM	0	0	0
4/28/2026 2:00:00 AM	0	0	0
4/28/2026 2:15:00 AM	0	0	0
4/28/2026 2:30:00 AM	0	0	0
4/28/2026 2:45:00 AM	0	0	0
4/28/2026 3:00:00 AM	0	0	0
4/28/2026 3:15:00 AM	0	0	0
4/28/2026 3:30:00 AM	0	0	0
4/28/2026 3:45:00 AM	0	0	0
4/28/2026 4:00:00 AM	0	0	0
4/28/2026 4:15:00 AM	0	0	0
4/28/2026 4:30:00 AM	0	0	0
4/28/2026 4:45:00 AM	0	0	0
4/28/2026 5:00:00 AM	0	0	0
4/28/2026 5:15:00 AM	0	0	0
4/28/2026 5:30:00 AM	0	0	0
4/28/2026 5:45:00 AM	0	0	0
4/28/2026 6:00:00 AM	0	0	0
4/28/2026 6:15:00 AM	1	0	1
4/28/2026 6:30:00 AM	1	1	2
4/28/2026 6:45:00 AM	0	0	0
4/28/2026 7:00:00 AM	1	1	2
4/28/2026 7:15:00 AM	0	0	0
4/28/2026 7:30:00 AM	1	2	3
4/28/2026 7:45:00 AM	0	0	0
4/28/2026 8:00:00 AM	0	0	0
4/28/2026 8:15:00 AM	0	0	0
4/28/2026 8:30:00 AM	2	0	2
4/28/2026 8:45:00 AM	2	0	2
4/28/2026 9:00:00 AM	0	1	1
4/28/2026 9:15:00 AM	0	0	0
4/28/2026 9:30:00 AM	1	1	2
4/28/2026 9:45:00 AM	2	0	2
4/28/2026 10:00:00 AM	2	1	3
4/28/2026 10:15:00 AM	0	0	0
4/28/2026 10:30:00 AM	0	0	0
4/28/2026 10:45:00 AM	0	1	1
4/28/2026 11:00:00 AM	1	1	2
4/28/2026 11:15:00 AM	0	2	2
4/28/2026 11:30:00 AM	1	1	2
4/28/2026 11:45:00 AM	0	0	0
Total	15	13	28
Percentage	53.6%	46.4%	
Peak Hour	9:15 AM	10:45 AM	9:15 AM
Volume	5	5	7
PHF	0.625	0.625	0.583

All Traffic Data Services

6 - NEEDLES DR WEST OF TIMBER MEADOWS DR

Time	EB	WB	Total
4/28/2026 12:00:00 PM	0	1	1
4/28/2026 12:15:00 PM	2	1	3
4/28/2026 12:30:00 PM	0	1	1
4/28/2026 12:45:00 PM	0	0	0
4/28/2026 1:00:00 PM	1	0	1
4/28/2026 1:15:00 PM	2	1	3
4/28/2026 1:30:00 PM	0	0	0
4/28/2026 1:45:00 PM	0	0	0
4/28/2026 2:00:00 PM	0	0	0
4/28/2026 2:15:00 PM	0	1	1
4/28/2026 2:30:00 PM	2	1	3
4/28/2026 2:45:00 PM	1	0	1
4/28/2026 3:00:00 PM	0	0	0
4/28/2026 3:15:00 PM	1	0	1
4/28/2026 3:30:00 PM	0	1	1
4/28/2026 3:45:00 PM	2	1	3
4/28/2026 4:00:00 PM	0	3	3
4/28/2026 4:15:00 PM	0	1	1
4/28/2026 4:30:00 PM	0	0	0
4/28/2026 4:45:00 PM	1	0	1
4/28/2026 5:00:00 PM	0	0	0
4/28/2026 5:15:00 PM	0	1	1
4/28/2026 5:30:00 PM	1	0	1
4/28/2026 5:45:00 PM	0	0	0
4/28/2026 6:00:00 PM	0	0	0
4/28/2026 6:15:00 PM	2	2	4
4/28/2026 6:30:00 PM	0	1	1
4/28/2026 6:45:00 PM	1	1	2
4/28/2026 7:00:00 PM	0	0	0
4/28/2026 7:15:00 PM	0	0	0
4/28/2026 7:30:00 PM	0	1	1
4/28/2026 7:45:00 PM	1	0	1
4/28/2026 8:00:00 PM	0	1	1
4/28/2026 8:15:00 PM	0	2	2
4/28/2026 8:30:00 PM	1	0	1
4/28/2026 8:45:00 PM	1	0	1
4/28/2026 9:00:00 PM	0	1	1
4/28/2026 9:15:00 PM	0	0	0
4/28/2026 9:30:00 PM	0	0	0
4/28/2026 9:45:00 PM	0	1	1
4/28/2026 10:00:00 PM	0	0	0
4/28/2026 10:15:00 PM	0	0	0
4/28/2026 10:30:00 PM	0	0	0
4/28/2026 10:45:00 PM	0	0	0
4/28/2026 11:00:00 PM	0	0	0
4/28/2026 11:15:00 PM	0	0	0
4/28/2026 11:30:00 PM	0	0	0
4/28/2026 11:45:00 PM	0	0	0
Total	19	23	42
Percentage	45.2%	54.8%	
Peak Hour	2:30 PM	3:30 PM	3:15 PM
Volume	4	7	9
PHF	0.500	0.583	0.750
Grand Total	34	36	70
Percentage	48.6%	51.4%	

All Traffic Data Services

7 - TIMBER MEADOW DR NORTH OF HOGDEN RD

Time	NB	SB	Total
4/28/2026	0	0	0
4/28/2026 12:15:00 AM	0	0	0
4/28/2026 12:30:00 AM	0	0	0
4/28/2026 12:45:00 AM	0	0	0
4/28/2026 1:00:00 AM	0	0	0
4/28/2026 1:15:00 AM	0	0	0
4/28/2026 1:30:00 AM	0	0	0
4/28/2026 1:45:00 AM	1	1	2
4/28/2026 2:00:00 AM	0	0	0
4/28/2026 2:15:00 AM	0	0	0
4/28/2026 2:30:00 AM	0	0	0
4/28/2026 2:45:00 AM	0	0	0
4/28/2026 3:00:00 AM	0	0	0
4/28/2026 3:15:00 AM	0	0	0
4/28/2026 3:30:00 AM	0	0	0
4/28/2026 3:45:00 AM	0	0	0
4/28/2026 4:00:00 AM	0	2	2
4/28/2026 4:15:00 AM	2	2	4
4/28/2026 4:30:00 AM	1	2	3
4/28/2026 4:45:00 AM	0	1	1
4/28/2026 5:00:00 AM	1	1	2
4/28/2026 5:15:00 AM	2	5	7
4/28/2026 5:30:00 AM	0	5	5
4/28/2026 5:45:00 AM	4	1	5
4/28/2026 6:00:00 AM	1	4	5
4/28/2026 6:15:00 AM	1	13	14
4/28/2026 6:30:00 AM	4	9	13
4/28/2026 6:45:00 AM	8	14	22
4/28/2026 7:00:00 AM	10	19	29
4/28/2026 7:15:00 AM	4	22	26
4/28/2026 7:30:00 AM	10	34	44
4/28/2026 7:45:00 AM	9	13	22
4/28/2026 8:00:00 AM	17	16	33
4/28/2026 8:15:00 AM	16	14	30
4/28/2026 8:30:00 AM	12	22	34
4/28/2026 8:45:00 AM	10	23	33
4/28/2026 9:00:00 AM	14	16	30
4/28/2026 9:15:00 AM	9	14	23
4/28/2026 9:30:00 AM	6	17	23
4/28/2026 9:45:00 AM	13	16	29
4/28/2026 10:00:00 AM	13	22	35
4/28/2026 10:15:00 AM	13	8	21
4/28/2026 10:30:00 AM	12	16	28
4/28/2026 10:45:00 AM	14	9	23
4/28/2026 11:00:00 AM	19	17	36
4/28/2026 11:15:00 AM	14	20	34
4/28/2026 11:30:00 AM	9	13	22
4/28/2026 11:45:00 AM	20	17	37
Total	269	408	677
Percentage	39.7%	60.3%	
Peak Hour	11:00 AM	6:45 AM	8:00 AM
Volume	62	89	130
PHF	0.775	0.654	0.956

All Traffic Data Services

7 - TIMBER MEADOW DR NORTH OF HOGDEN RD

Time	NB	SB	Total
4/28/2026 12:00:00 PM	11	23	34
4/28/2026 12:15:00 PM	16	17	33
4/28/2026 12:30:00 PM	19	16	35
4/28/2026 12:45:00 PM	14	14	28
4/28/2026 1:00:00 PM	15	11	26
4/28/2026 1:15:00 PM	13	10	23
4/28/2026 1:30:00 PM	10	10	20
4/28/2026 1:45:00 PM	12	11	23
4/28/2026 2:00:00 PM	15	7	22
4/28/2026 2:15:00 PM	12	15	27
4/28/2026 2:30:00 PM	15	18	33
4/28/2026 2:45:00 PM	18	12	30
4/28/2026 3:00:00 PM	17	17	34
4/28/2026 3:15:00 PM	18	9	27
4/28/2026 3:30:00 PM	25	10	35
4/28/2026 3:45:00 PM	26	23	49
4/28/2026 4:00:00 PM	27	22	49
4/28/2026 4:15:00 PM	14	21	35
4/28/2026 4:30:00 PM	15	15	30
4/28/2026 4:45:00 PM	27	20	47
4/28/2026 5:00:00 PM	23	14	37
4/28/2026 5:15:00 PM	25	15	40
4/28/2026 5:30:00 PM	25	17	42
4/28/2026 5:45:00 PM	15	15	30
4/28/2026 6:00:00 PM	16	14	30
4/28/2026 6:15:00 PM	17	7	24
4/28/2026 6:30:00 PM	18	11	29
4/28/2026 6:45:00 PM	12	3	15
4/28/2026 7:00:00 PM	10	4	14
4/28/2026 7:15:00 PM	11	7	18
4/28/2026 7:30:00 PM	13	9	22
4/28/2026 7:45:00 PM	10	11	21
4/28/2026 8:00:00 PM	9	3	12
4/28/2026 8:15:00 PM	10	3	13
4/28/2026 8:30:00 PM	3	3	6
4/28/2026 8:45:00 PM	4	8	12
4/28/2026 9:00:00 PM	10	1	11
4/28/2026 9:15:00 PM	11	7	18
4/28/2026 9:30:00 PM	5	0	5
4/28/2026 9:45:00 PM	3	1	4
4/28/2026 10:00:00 PM	6	0	6
4/28/2026 10:15:00 PM	4	0	4
4/28/2026 10:30:00 PM	2	0	2
4/28/2026 10:45:00 PM	5	0	5
4/28/2026 11:00:00 PM	2	0	2
4/28/2026 11:15:00 PM	4	0	4
4/28/2026 11:30:00 PM	0	0	0
4/28/2026 11:45:00 PM	0	0	0
Total	612	454	1,066
Percentage	57.4%	42.6%	
Peak Hour	4:45 PM	3:45 PM	3:30 PM
Volume	100	81	168
PHF	0.926	0.880	0.857
Grand Total	881	862	1,743
Percentage	50.5%	49.5%	

APPENDIX B

Level of Service Definitions

The following information is referenced from the Highway Capacity Manual: A Guide for Multimodal Mobility Analysis, 7th Edition, Transportation Research Board, 2022: Chapter 19 – Signalized Intersections.

Motorized Vehicle Level of Service (LOS) for Signalized Intersections

Levels of service are defined to represent reasonable ranges in control delay.

LOS A Describes operations with a control delay of 10 s/veh or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

LOS B Describes operations with control delay between 10 and 20 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

LOS C Describes operations with control delay between 20 and 35 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual *cycle failures* (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.

LOS D Describes operations with control delay between 35 and 55 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

LOS E Describes operations with control delay between 55 and 80 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

LOS F Describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio[a]	
	$v/c \leq 1.0$	$v/c > 1.0$
≤ 10	A	F
> 10 – 20	B	F
> 20 – 35	C	F
> 35 – 55	D	F
> 55 – 80	E	F
> 80	F	F

Note: [a] For approach-based and intersectionwide assessments, LOS is defined solely by control delay.

The following information is referenced from the Highway Capacity Manual: A Guide for Multimodal Mobility Analysis, 7th Edition, Transportation Research Board, 2022: Chapter 20 – Two-Way Stop-Controlled Intersections, Chapter 21 – All-Way Stop-Controlled Intersections, and Chapter 22 - Roundabouts.

Motorized Vehicle Level of Service (LOS) for Unsignalized & Roundabout Intersections

LOS is a quantitative stratification of performance measure(s) representing quality of service. Quality of service describes how well a transportation facility or service operates from a traveler's perspective. LOS is measured on an A – F scale, with LOS A representing the best operating conditions from a traveler's perspective.

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio[a]	
	$v/c \leq 1.0$	$v/c > 1.0$
0 – 10	A	F
> 10 – 15	B	F
> 15 – 25	C	F
> 25 – 35	D	F
> 35 – 50	E	F
> 50	F	F

Note: The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole.

[a] For approaches and intersectionwide assessment, LOS is defined solely by control delay.

APPENDIX C

Capacity Worksheets

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	142	2	0	550	6	4	2	1	6	0	82
Future Vol, veh/h	25	142	2	0	550	6	4	2	1	6	0	82
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	460	-	420	525	-	525	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	154	2	0	598	7	4	2	1	7	0	89

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	604	0	0	157	0	0	807	813	154	808	809	598
Stage 1	-	-	-	-	-	-	209	209	-	598	598	-
Stage 2	-	-	-	-	-	-	598	604	-	210	211	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	973	-	-	1423	-	-	300	313	892	300	314	502
Stage 1	-	-	-	-	-	-	793	729	-	489	491	-
Stage 2	-	-	-	-	-	-	489	488	-	792	728	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	973	-	-	1423	-	-	240	304	892	289	306	502
Mov Cap-2 Maneuver	-	-	-	-	-	-	240	304	-	289	306	-
Stage 1	-	-	-	-	-	-	771	709	-	489	491	-
Stage 2	-	-	-	-	-	-	402	488	-	767	707	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.3	0	17.88	14.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	287	973	-	-	1423	-	-	478
HCM Lane V/C Ratio	0.026	0.028	-	-	-	-	-	0.2
HCM Ctrl Dly (s/v)	17.9	8.8	-	-	0	-	-	14.4
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	4	5	0	6	0	26	7	0	17	0
Future Vol, veh/h	3	0	4	5	0	6	0	26	7	0	17	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	4	5	0	7	0	28	8	0	18	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	47	54	18	51	51	32	18	0	0	36	0	0
Stage 1	18	18	-	32	32	-	-	-	-	-	-	-
Stage 2	28	36	-	18	18	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	954	837	1060	949	841	1042	1598	-	-	1575	-	-
Stage 1	1001	880	-	984	868	-	-	-	-	-	-	-
Stage 2	989	865	-	1001	880	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	948	837	1060	945	841	1042	1598	-	-	1575	-	-
Mov Cap-2 Maneuver	948	837	-	945	841	-	-	-	-	-	-	-
Stage 1	1001	880	-	984	868	-	-	-	-	-	-	-
Stage 2	983	865	-	997	880	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	8.59	8.66	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1598	-	-	1009	995	1575	-	-
HCM Lane V/C Ratio	-	-	-	0.008	0.012	-	-	-
HCM Ctrl Dly (s/v)	0	-	-	8.6	8.7	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	1	559	0	0	429
Future Vol, veh/h	0	1	559	0	0	429
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	608	0	0	466

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1074	608	0	0	608	0
Stage 1	608	-	-	-	-	-
Stage 2	466	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	243	496	-	-	971	-
Stage 1	544	-	-	-	-	-
Stage 2	631	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	243	496	-	-	971	-
Mov Cap-2 Maneuver	243	-	-	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	631	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	12.27	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	496	971	-
HCM Lane V/C Ratio	-	-	0.002	-	-
HCM Ctrl Dly (s/v)	-	-	12.3	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	10	562	0	4	429
Future Vol, veh/h	3	10	562	0	4	429
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	11	611	0	4	466

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1086	611	0	0	611	0
Stage 1	611	-	-	-	-	-
Stage 2	475	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	239	494	-	-	968	-
Stage 1	542	-	-	-	-	-
Stage 2	626	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	238	494	-	-	968	-
Mov Cap-2 Maneuver	238	-	-	-	-	-
Stage 1	542	-	-	-	-	-
Stage 2	622	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	14.43	0	0.08
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	396	17	-
HCM Lane V/C Ratio	-	-	0.036	0.004	-
HCM Ctrl Dly (s/v)	-	-	14.4	8.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	77	511	5	2	305	6	2	0	0	10	1	67
Future Vol, veh/h	77	511	5	2	305	6	2	0	0	10	1	67
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	460	-	420	525	-	525	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	84	555	5	2	332	7	2	0	0	11	1	73

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	338	0	0	561	0	0	1059	1065	555	1059	1064	332
Stage 1	-	-	-	-	-	-	723	723	-	336	336	-
Stage 2	-	-	-	-	-	-	336	342	-	723	728	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1221	-	-	1010	-	-	202	222	531	202	223	710
Stage 1	-	-	-	-	-	-	418	431	-	678	642	-
Stage 2	-	-	-	-	-	-	678	638	-	418	428	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1221	-	-	1010	-	-	168	207	531	188	207	710
Mov Cap-2 Maneuver	-	-	-	-	-	-	168	207	-	188	207	-
Stage 1	-	-	-	-	-	-	389	401	-	677	641	-
Stage 2	-	-	-	-	-	-	606	636	-	389	399	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.06	0.05	26.73	13.42
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	168	1221	-	-	1010	-	-	512
HCM Lane V/C Ratio	0.013	0.069	-	-	0.002	-	-	0.166
HCM Ctrl Dly (s/v)	26.7	8.2	-	-	8.6	-	-	13.4
HCM Lane LOS	D	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0.2	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	0	2	0	2	2	11	5	2	31	2
Future Vol, veh/h	1	0	0	2	0	2	2	11	5	2	31	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	0	2	0	2	2	12	5	2	34	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	55	61	35	57	59	15	36	0	0	17	0	0
Stage 1	39	39	-	19	19	-	-	-	-	-	-	-
Stage 2	16	22	-	38	40	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	942	830	1038	940	832	1065	1575	-	-	1600	-	-
Stage 1	976	862	-	1000	879	-	-	-	-	-	-	-
Stage 2	1003	877	-	977	861	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	938	828	1038	937	829	1065	1575	-	-	1600	-	-
Mov Cap-2 Maneuver	938	828	-	937	829	-	-	-	-	-	-	-
Stage 1	975	861	-	999	878	-	-	-	-	-	-	-
Stage 2	1000	876	-	976	860	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	8.84	8.63	0.81	0.41
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	188	-	-	938	997	102	-	-
HCM Lane V/C Ratio	0.001	-	-	0.001	0.004	0.001	-	-
HCM Ctrl Dly (s/v)	7.3	0	-	8.8	8.6	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	1	463	1	2	597
Future Vol, veh/h	0	1	463	1	2	597
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	503	1	2	649

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1157	504	0	0	504	0
Stage 1	504	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	217	568	-	-	1060	-
Stage 1	607	-	-	-	-	-
Stage 2	518	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	216	568	-	-	1060	-
Mov Cap-2 Maneuver	216	-	-	-	-	-
Stage 1	607	-	-	-	-	-
Stage 2	516	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	11.35	0	0.03
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	568	6	-
HCM Lane V/C Ratio	-	-	0.002	0.002	-
HCM Ctrl Dly (s/v)	-	-	11.4	8.4	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	6	458	4	14	583
Future Vol, veh/h	4	6	458	4	14	583
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	7	498	4	15	634

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1164	500	0	0	502	0
Stage 1	500	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	215	571	-	-	1062	-
Stage 1	609	-	-	-	-	-
Stage 2	512	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	210	571	-	-	1062	-
Mov Cap-2 Maneuver	210	-	-	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	500	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	15.99	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	338	42	-
HCM Lane V/C Ratio	-	-	0.032	0.014	-
HCM Ctrl Dly (s/v)	-	-	16	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	148	2	0	572	6	9	2	1	6	0	85
Future Vol, veh/h	26	148	2	0	572	6	9	2	1	6	0	85
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	460	-	420	525	-	525	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	161	2	0	622	7	10	2	1	7	0	92

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	628	0	0	163	0	0	839	846	161	840	841	622
Stage 1	-	-	-	-	-	-	217	217	-	622	622	-
Stage 2	-	-	-	-	-	-	622	628	-	218	220	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	954	-	-	1416	-	-	285	299	884	285	301	487
Stage 1	-	-	-	-	-	-	785	723	-	475	479	-
Stage 2	-	-	-	-	-	-	475	476	-	784	721	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	954	-	-	1416	-	-	224	290	884	274	292	487
Mov Cap-2 Maneuver	-	-	-	-	-	-	224	290	-	274	292	-
Stage 1	-	-	-	-	-	-	762	702	-	475	479	-
Stage 2	-	-	-	-	-	-	384	476	-	757	700	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.31	0	20.24	14.87
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	249	954	-	-	1416	-	-	463
HCM Lane V/C Ratio	0.052	0.03	-	-	-	-	-	0.214
HCM Ctrl Dly (s/v)	20.2	8.9	-	-	0	-	-	14.9
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.8

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	4	5	0	6	0	27	7	0	18	0
Future Vol, veh/h	3	0	4	5	0	6	0	27	7	0	18	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	4	5	0	7	0	29	8	0	20	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	49	57	20	53	53	33	20	0	0	37	0	0
Stage 1	20	20	-	33	33	-	-	-	-	-	-	-
Stage 2	29	37	-	20	20	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	951	835	1058	946	839	1040	1597	-	-	1574	-	-
Stage 1	999	879	-	983	867	-	-	-	-	-	-	-
Stage 2	988	864	-	999	879	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	945	835	1058	942	839	1040	1597	-	-	1574	-	-
Mov Cap-2 Maneuver	945	835	-	942	839	-	-	-	-	-	-	-
Stage 1	999	879	-	983	867	-	-	-	-	-	-	-
Stage 2	981	864	-	995	879	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	8.6	8.67	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1597	-	-	1007	993	1574	-	-
HCM Lane V/C Ratio	-	-	-	0.008	0.012	-	-	-
HCM Ctrl Dly (s/v)	0	-	-	8.6	8.7	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	1	582	0	0	446
Future Vol, veh/h	0	1	582	0	0	446
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	633	0	0	485

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1117	633	0	0	633	0
Stage 1	633	-	-	-	-	-
Stage 2	485	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	229	480	-	-	950	-
Stage 1	529	-	-	-	-	-
Stage 2	619	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	229	480	-	-	950	-
Mov Cap-2 Maneuver	229	-	-	-	-	-
Stage 1	529	-	-	-	-	-
Stage 2	619	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	12.52	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	480	950	-
HCM Lane V/C Ratio	-	-	0.002	-	-
HCM Ctrl Dly (s/v)	-	-	12.5	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	10	585	0	4	446
Future Vol, veh/h	3	10	585	0	4	446
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	11	636	0	4	485

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1129	636	0	0	636	0
Stage 1	636	-	-	-	-	-
Stage 2	493	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	226	478	-	-	948	-
Stage 1	527	-	-	-	-	-
Stage 2	614	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	224	478	-	-	948	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	527	-	-	-	-	-
Stage 2	610	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	14.87	0	0.08
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	379	16	-
HCM Lane V/C Ratio	-	-	0.037	0.005	-
HCM Ctrl Dly (s/v)	-	-	14.9	8.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	532	5	2	317	6	2	0	0	10	1	70
Future Vol, veh/h	80	532	5	2	317	6	2	0	0	10	1	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	460	-	420	525	-	525	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	87	578	5	2	345	7	2	0	0	11	1	76

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	351	0	0	584	0	0	1102	1108	578	1101	1107	345
Stage 1	-	-	-	-	-	-	752	752	-	349	349	-
Stage 2	-	-	-	-	-	-	349	355	-	752	758	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1208	-	-	991	-	-	189	210	515	189	210	698
Stage 1	-	-	-	-	-	-	402	418	-	667	634	-
Stage 2	-	-	-	-	-	-	667	629	-	402	415	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1208	-	-	991	-	-	155	194	515	175	195	698
Mov Cap-2 Maneuver	-	-	-	-	-	-	155	194	-	175	195	-
Stage 1	-	-	-	-	-	-	373	388	-	666	632	-
Stage 2	-	-	-	-	-	-	592	628	-	373	386	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.06	0.05	28.52	13.76
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	155	1208	-	-	991	-	-	499
HCM Lane V/C Ratio	0.014	0.072	-	-	0.002	-	-	0.177
HCM Ctrl Dly (s/v)	28.5	8.2	-	-	8.6	-	-	13.8
HCM Lane LOS	D	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0.2	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	0	2	0	2	2	11	5	2	32	2
Future Vol, veh/h	1	0	0	2	0	2	2	11	5	2	32	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	0	2	0	2	2	12	5	2	35	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	57	62	36	58	60	15	37	0	0	17	0	0
Stage 1	40	40	-	19	19	-	-	-	-	-	-	-
Stage 2	16	22	-	39	41	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	941	829	1037	938	831	1065	1574	-	-	1600	-	-
Stage 1	975	861	-	1000	879	-	-	-	-	-	-	-
Stage 2	1003	877	-	976	861	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	936	827	1037	936	828	1065	1574	-	-	1600	-	-
Mov Cap-2 Maneuver	936	827	-	936	828	-	-	-	-	-	-	-
Stage 1	973	860	-	999	878	-	-	-	-	-	-	-
Stage 2	1000	876	-	975	859	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	8.85	8.63	0.81	0.4
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	188	-	-	936	996	99	-	-
HCM Lane V/C Ratio	0.001	-	-	0.001	0.004	0.001	-	-
HCM Ctrl Dly (s/v)	7.3	0	-	8.9	8.6	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	1	482	1	2	621
Future Vol, veh/h	0	1	482	1	2	621
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	524	1	2	675

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1204	524	0	0	525	0
Stage 1	524	-	-	-	-	-
Stage 2	679	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	203	553	-	-	1042	-
Stage 1	594	-	-	-	-	-
Stage 2	504	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	203	553	-	-	1042	-
Mov Cap-2 Maneuver	203	-	-	-	-	-
Stage 1	594	-	-	-	-	-
Stage 2	502	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	11.52	0	0.03
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	553	6	-
HCM Lane V/C Ratio	-	-	0.002	0.002	-
HCM Ctrl Dly (s/v)	-	-	11.5	8.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	6	477	4	15	607
Future Vol, veh/h	4	6	477	4	15	607
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	7	518	4	16	660

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1213	521	0	0	523	0
Stage 1	521	-	-	-	-	-
Stage 2	692	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	201	556	-	-	1044	-
Stage 1	596	-	-	-	-	-
Stage 2	497	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	196	556	-	-	1044	-
Mov Cap-2 Maneuver	196	-	-	-	-	-
Stage 1	596	-	-	-	-	-
Stage 2	484	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	16.63	0	0.21
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	320	43	-
HCM Lane V/C Ratio	-	-	0.034	0.016	-
HCM Ctrl Dly (s/v)	-	-	16.6	8.5	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	148	2	0	572	7	9	2	1	7	0	90
Future Vol, veh/h	28	148	2	0	572	7	9	2	1	7	0	90
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	460	-	420	525	-	525	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	161	2	0	622	8	10	2	1	8	0	98

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	629	0	0	163	0	0	843	851	161	845	846	622
Stage 1	-	-	-	-	-	-	222	222	-	622	622	-
Stage 2	-	-	-	-	-	-	622	629	-	223	224	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	953	-	-	1416	-	-	283	297	884	283	299	487
Stage 1	-	-	-	-	-	-	781	720	-	475	479	-
Stage 2	-	-	-	-	-	-	475	475	-	780	718	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	953	-	-	1416	-	-	219	288	884	271	290	487
Mov Cap-2 Maneuver	-	-	-	-	-	-	219	288	-	271	290	-
Stage 1	-	-	-	-	-	-	756	697	-	475	479	-
Stage 2	-	-	-	-	-	-	379	475	-	752	695	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.4	0	20.58	15.12
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	244	953	-	-	1416	-	-	460
HCM Lane V/C Ratio	0.053	0.032	-	-	-	-	-	0.229
HCM Ctrl Dly (s/v)	20.6	8.9	-	-	0	-	-	15.1
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.9

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	10	5	0	6	3	27	7	0	18	0
Future Vol, veh/h	4	0	10	5	0	6	3	27	7	0	18	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	11	5	0	7	3	29	8	0	20	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	55	63	20	59	59	33	20	0	0	37	0	0
Stage 1	20	20	-	40	40	-	-	-	-	-	-	-
Stage 2	36	43	-	20	20	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	942	828	1058	937	832	1040	1597	-	-	1574	-	-
Stage 1	999	879	-	975	862	-	-	-	-	-	-	-
Stage 2	980	859	-	999	879	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	934	826	1058	925	830	1040	1597	-	-	1574	-	-
Mov Cap-2 Maneuver	934	826	-	925	830	-	-	-	-	-	-	-
Stage 1	999	879	-	973	860	-	-	-	-	-	-	-
Stage 2	972	857	-	989	879	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	8.58	8.7	0.59	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	140	-	-	1020	985	1574	-	-
HCM Lane V/C Ratio	0.002	-	-	0.015	0.012	-	-	-
HCM Ctrl Dly (s/v)	7.3	0	-	8.6	8.7	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	11	585	0	4	446
Future Vol, veh/h	3	11	585	0	4	446
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	12	636	0	4	485

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1129	636	0	0	636	0
Stage 1	636	-	-	-	-	-
Stage 2	493	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	226	478	-	-	948	-
Stage 1	527	-	-	-	-	-
Stage 2	614	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	224	478	-	-	948	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	527	-	-	-	-	-
Stage 2	610	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	14.75	0	0.08
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	385	16	-
HCM Lane V/C Ratio	-	-	0.04	0.005	-
HCM Ctrl Dly (s/v)	-	-	14.7	8.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	86	532	5	2	317	7	2	0	0	11	1	73
Future Vol, veh/h	86	532	5	2	317	7	2	0	0	11	1	73
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	460	-	420	525	-	525	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	93	578	5	2	345	8	2	0	0	12	1	79

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	352	0	0	584	0	0	1115	1122	578	1114	1120	345
Stage 1	-	-	-	-	-	-	765	765	-	349	349	-
Stage 2	-	-	-	-	-	-	349	357	-	765	771	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1207	-	-	991	-	-	185	206	515	185	207	698
Stage 1	-	-	-	-	-	-	396	412	-	667	634	-
Stage 2	-	-	-	-	-	-	667	629	-	396	410	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1207	-	-	991	-	-	150	190	515	171	190	698
Mov Cap-2 Maneuver	-	-	-	-	-	-	150	190	-	171	190	-
Stage 1	-	-	-	-	-	-	365	380	-	666	632	-
Stage 2	-	-	-	-	-	-	589	627	-	365	378	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.14	0.05	29.29	14.1
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	150	1207	-	-	991	-	-	488
HCM Lane V/C Ratio	0.014	0.077	-	-	0.002	-	-	0.189
HCM Ctrl Dly (s/v)	29.3	8.2	-	-	8.6	-	-	14.1
HCM Lane LOS	D	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0.3	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	4	2	0	2	9	11	5	2	32	3
Future Vol, veh/h	2	0	4	2	0	2	9	11	5	2	32	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	4	2	0	2	10	12	5	2	35	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	72	78	36	73	77	15	38	0	0	17	0	0
Stage 1	41	41	-	34	34	-	-	-	-	-	-	-
Stage 2	32	37	-	39	42	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	919	813	1036	917	814	1065	1572	-	-	1600	-	-
Stage 1	974	861	-	982	866	-	-	-	-	-	-	-
Stage 2	985	864	-	976	860	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	910	806	1036	906	807	1065	1572	-	-	1600	-	-
Mov Cap-2 Maneuver	910	806	-	906	807	-	-	-	-	-	-	-
Stage 1	973	860	-	976	861	-	-	-	-	-	-	-
Stage 2	977	859	-	970	858	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	8.66	8.69	2.63	0.39
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	610	-	-	990	979	96	-	-
HCM Lane V/C Ratio	0.006	-	-	0.007	0.004	0.001	-	-
HCM Ctrl Dly (s/v)	7.3	0	-	8.7	8.7	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	7	477	4	16	607
Future Vol, veh/h	4	7	477	4	16	607
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	8	518	4	17	660

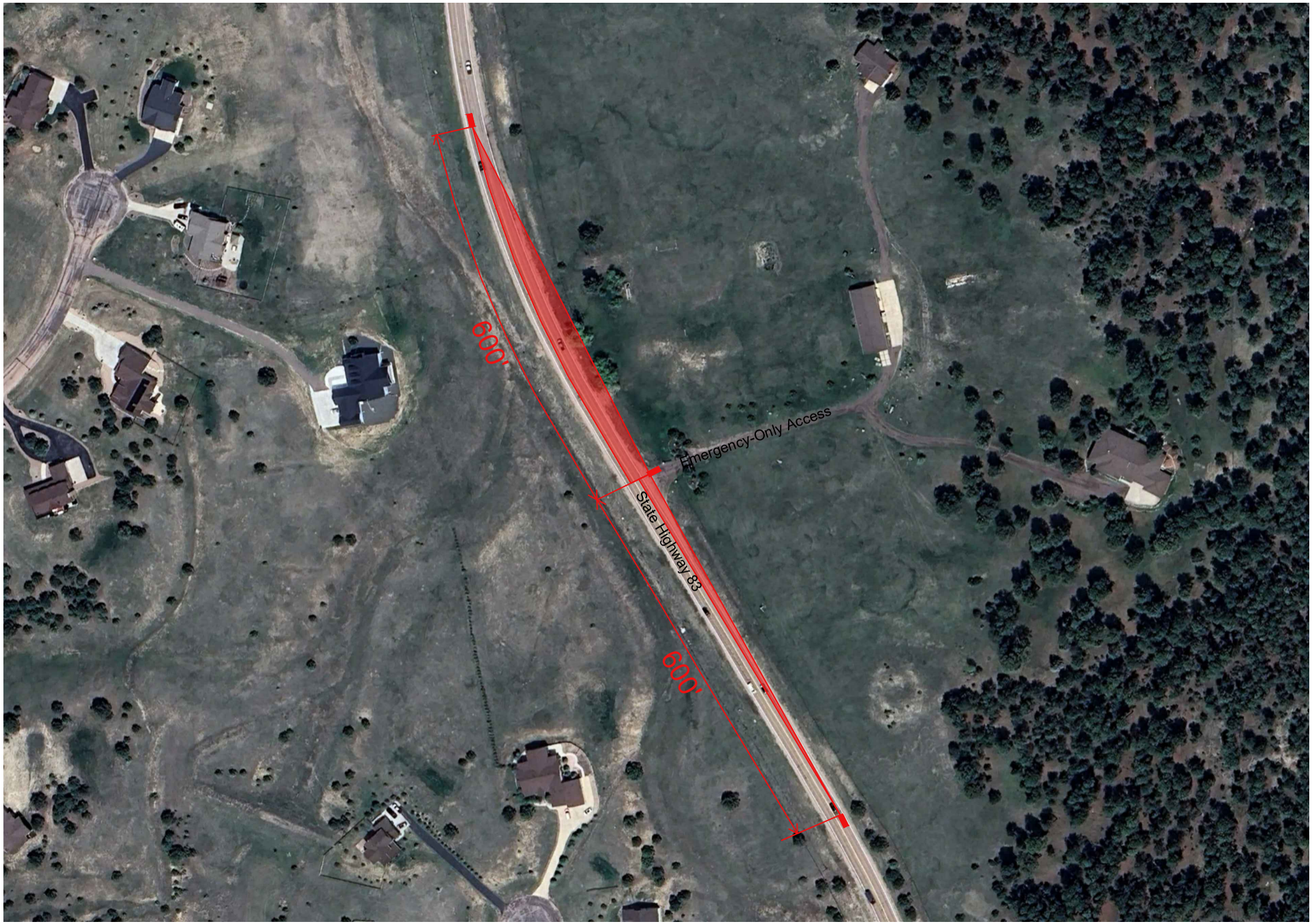
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1215	521	0	0	523	0
Stage 1	521	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	200	556	-	-	1044	-
Stage 1	596	-	-	-	-	-
Stage 2	495	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	195	556	-	-	1044	-
Mov Cap-2 Maneuver	195	-	-	-	-	-
Stage 1	596	-	-	-	-	-
Stage 2	482	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	16.24	0	0.22
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	332	46	-
HCM Lane V/C Ratio	-	-	0.036	0.017	-
HCM Ctrl Dly (s/v)	-	-	16.2	8.5	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

APPENDIX D

Sight Distance Exhibit



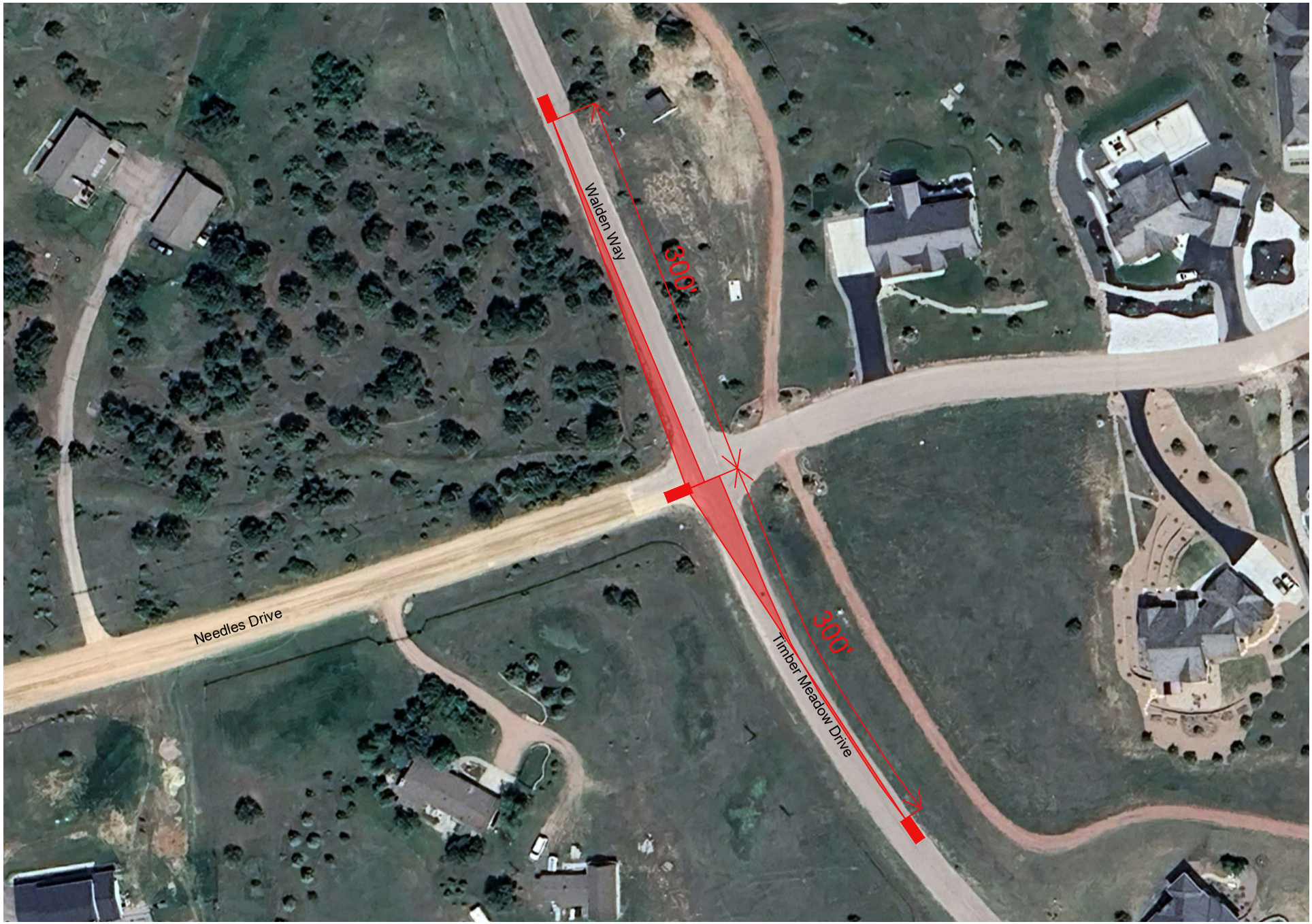
STATE HIGHWAY 83 & NEEDLES SUBDIVISION
Sight Distance Exhibit

July 2026

SM ROCHA, LLC
Traffic and Transportation Engineering

0 200

North



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