

**RESOLUTION NO. 2022-53
(5/16/2022)**

**A RESOLUTION OF THE VILLAGE BOARD OF THE VILLAGE OF
CALEDONIA APPROVING A TRAFFIC IMPACT ANALYSIS FOR THE
RACINE COUNTY YOUTH DEVELOPMENT AND CARE CENTER
PROPOSED ON PARCELS LOCATED DIRECTLY EAST OF 2525 3 MILE
ROAD**

WHEREAS, the Village Board approved Ordinance 2022-03 adopting an amendment to the Multi-Jurisdictional Comprehensive Plan for Racine County: 2035 for a Land Use Plan Amendment for the parcels from Commercial to Governmental & Institutional at their February 21, 2022 meeting.

WHEREAS, the Village Board approved Ordinance 2022-04 approving a request for Rezoning the parcels from M-3 Heavy Industrial District to P-1 Park Institutional District at their February 21, 2022 meeting.

WHEREAS, the Village Board approved Resolution 2022-11 approving a Payment in Lieu of Taxes Agreement between the Village of Caledonia and Racine County for the development of the parcels at their February 21, 2022 meeting.

WHEREAS, the Village Board approved Resolution 2022-12 approving a request for a Conditional Use Permit to allow the Operation of a Youth Development and Care Facility for the parcels subject to conditions at their February 21, 2022 meeting.

WHEREAS, a condition of approval of the Conditional Use Permit (Condition 4. A.) for the parcels is that a Traffic Impact Analysis shall be performed and submitted to the Village for review prior to the submission of applications to the Plan Commission for review of Site, Building, Landscape and similar plans.

WHEREAS, Racine County contracted with Traffic Analysis and Design, Inc. (TADI) to perform the Traffic Impact Analysis which was submitted to the Village of Caledonia on April 21, 2022.

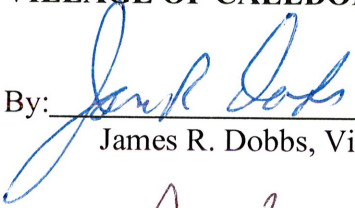
WHEREAS, the Traffic Impact Analysis was reviewed by the Engineering Department and a memo dated May 3, 2022 (**Exhibit A**) was prepared for the Public Works Committee and Village Board recommending conditional approval of the Traffic Impact Analysis for the Racine County Youth Development and Care Center.

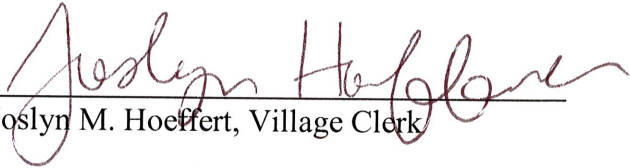
WHEREAS, the Public Works Committee moved to recommend approval of the Traffic Impact Analysis for the Racine County Youth Development and Care Center to the Village Board at their May 9, 2022 meeting.

NOW, THEREFORE, BE IT RESOLVED by the Village Board of the Village of Caledonia that the Traffic Impact Analysis for the Racine County Youth Development and Care Center is hereby approved subject to the condition in Exhibit A as recommended by the Public Works Committee and set forth within.

Adopted by the Village Board of the Village of Caledonia, Racine County, Wisconsin, this 16
day of May 2022.

VILLAGE OF CALEDONIA

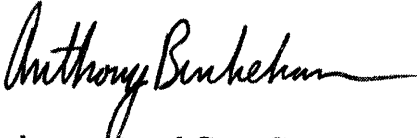
By: 
James R. Dobbs, Village President

Attest: 
Joslyn M. Hoeffert, Village Clerk

MEMORANDUM

DATE: May 3rd, 2022

TO: Public Works Committee
Village Board

FROM: Anthony A. Bunkelman
Public Services Director 

RE: Racine County Youth Development and Care Center - TIA

BACKGROUND INFORMATION

As part of the proposed Racine County Youth Development and Care Center on 3 Mile Road, the Village of Caledonia required a Traffic Impact Analysis (TIA) per Resolution 2011-06 and Village Ordinance for High/Moderate Impact Development as defined in Title 16.

Traffic Analysis and Design, Inc. (TADI) performed and submitted the TIA to Village Staff in April for approval. The study area included 3 Mile Road from STH 32/Douglas Ave. to the intersection at Wyoming Way. The TIA documents the peak hour traffic impacts expected at the aforementioned intersections along 3 Mile Road with the volume expected to be added by the proposed development. The TIA also analyzed and evaluated the sight distance for vehicles at the proposed access to the development due to the nature of the topography along 3 Mile Road.

With a range of 55-65 staff being employed over 3 different daily shifts, the study showed that all traffic movements operated at a Level of Service B or better during peak traffic hours with the proposed buildout. The TIA also recommended that no changes to the existing geometrics occur on 3 Mile Road. The proposed access is recommended to be located 75-145 feet east of the existing gravel driveway to meet the proper intersection and stopping sight distance requirements.

RECOMMENDATION

Move to approve the Traffic Impact Analysis performed by TADI for the Racine County Youth Development and Care Center on the condition that the final driveway location is surveyed, cross-checked, and verified for all applicable sight distance requirements by the developer.



TRAFFIC IMPACT ANALYSIS

DATE: April 13, 2022

TO: Julie Anderson
Racine County

FROM: Tammi Czewski, P.E., PTOE
Traffic Analysis & Design, Inc.

SUBJECT: Racine County Youth Development & Care Center Traffic Impact Analysis
Caledonia, WI

INTRODUCTION

A 70,000-square foot Racine County Youth Development and Care Center that can house up to 48 youths is being proposed on about 29 acres south of 3 Mile Road in Caledonia, Racine County, Wisconsin. A range of 55-65 staff will be employed over three different daily shifts.

The development site is located on the north side of the John H. Batten Airport property, and so a portion of the 29 acres on site are within the airport clear zone/no development area. Development is expected to begin in 2022 with completion in 2024. The location of the site with respect to the surrounding roadway system is shown on Exhibit 1. The conceptual site plan is shown on Exhibit 2.

This traffic impact analysis (TIA) technical memorandum was prepared to document the peak hour traffic impacts expected at adjacent intersections along 3 Mile Road with the existing traffic volumes and with additional traffic from the proposed development. The TIA also evaluates the sight distance for vehicles at the proposed site driveway to 3 Mile Road.

STUDY AREA

Study Intersections

The study area for this traffic study includes the following intersections:

- 3 Mile Road & Wyoming Way
- 3 Mile Road & Douglas Avenue (STH 32)
- 3 Mile Road & the proposed site driveway

The 3 Mile Road intersection with Douglas Avenue operates with traffic signal control and the 3 Mile Road intersection with Wyoming Way operates with stop sign control on Wyoming Way. A transportation detail illustrating existing intersection lane configurations, speed limits, and approximate intersection spacing is shown in Exhibit 3.

Study Area Roadways

Douglas Avenue (STH 32) is a north/south Principal Arterial with a four-lane undivided cross-section and a 35-mph speed limit. Douglas Avenue has sidewalks along both sides of the roadway, south of 3 Mile Road, but no sidewalks north of 3 Mile Road. The 2021 WisDOT annual average daily traffic (AADT) on Douglas Avenue was 14,200 vehicles per day (vpd) north of 3 Mile Road and 15,800 vpd south of 3 Mile Road.

3 Mile Road is an east/west Minor Arterial with a two-lane undivided rural cross-section, no sidewalks, and 35-mph speed limit. 3 Mile Road widens to a four-lane cross-section about 400 feet west of Douglas Avenue. The 2021 WisDOT AADT on 3 Mile Road was 5,600 vpd east of Wyoming Way.

Wyoming Way is a north/south local road with a two-lane undivided cross-section, no sidewalks, and 25-mph speed limit. Wyoming Way is part of the roadway network for the residential neighborhood on the south side of 3 Mile Road.

DATA COLLECTION/EXISTING TRAFFIC VOLUMES

TADI collected weekday turning movement traffic counts at the study intersections on March 31 and April 1, 2022. The traffic counts were collected from 6:00-9:00 a.m. and from 3:00-6:00 p.m. Based on the traffic count data, the peak traffic hours occur from 8:00-9:00 a.m. (AM peak hour) and from 4:00-5:00 p.m. (PM peak hour). The traffic volumes were compiled for these peak hours and are shown on Exhibit 4. All traffic count data collected for the study intersections and roadways are in Appendix A.

FUTURE TRAFFIC VOLUMES

The expected traffic volumes generated by the proposed youth development and care center were calculated based on trip rates or fitted curve equations published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*. The trip generation was based on the ITE land use #571 – Adult Detention Facility as it is the ITE land use that is most closely related to the use type (juvenile detention facility) of the proposed site. The trip generation for the site was based on number of employees as the size of this independent variable (65 total employees) was within the range of data for land use #571.

The trip generation table for the proposed youth development and care center is on Exhibit 5. As shown, the proposed development is expected to generate about 200 trips on a typical weekday, with 20 trips (10 in/10 out) during the weekday AM peak hour and 15 trips (5 in/10 out) during the weekday PM peak hour. The new site trips were distributed to the study intersections based on existing peak hour traffic patterns at the study intersections. The site trip distribution is listed below:

- 10% to/from the west on 3 Mile Road
- 20% to/from the east on 3 Mile Road
- 35% to/from the north on Douglas Avenue
- 35% to/from the south on Douglas Avenue

The new trips were assigned to the study intersections based on these trip distribution percentages. The site traffic assignment is shown on Exhibit 6. The on-site development new trips were added to the Existing traffic volumes to generate the Build traffic volumes, as shown on Exhibit 7.

PEAK HOUR TRAFFIC OPERATIONS & QUEUES

The study intersections were analyzed using the Synchro 11 traffic analysis model (outputs based on the Highway Capacity Manual, 6th Edition) and the peak hour turning movement volumes developed for each intersection. Intersection operation is defined by “level of service”. Level of Service (LOS) is a quantitative measure that refers to the overall quality of flow at an intersection ranging from very good, represented by LOS ‘A’, to very poor, represented by LOS ‘F’. For the purposes of this study, LOS D or better was used to define acceptable peak hour operating conditions. The descriptions of each LOS are in Table 1.

Table 1. LOS Descriptions – Unsignalized Intersections

LOS	Signalized Intersections Control Delay/Vehicle (sec/veh)	Unsignalized Intersections Avg. Control Delay (sec/veh)	Relative Delay
A	≤10	≤10	Short Delays
	Free-flow traffic operations at average travel speeds. Vehicles completely unimpeded in ability to maneuver. Minimal delay at signalized intersections		
B	> 10 - 20	> 10 - 15	
	Reasonably unimpeded traffic operations at average travel speeds. Vehicle maneuverability slightly restricted. Low traffic delays.		
C	> 20 - 35	> 15 - 25	
	Stable traffic operations. Lane changes becoming more restricted. Travel speeds reduced to half of average free flow travel speeds. Longer intersection delays.		
D	> 35 - 55	> 25 - 35	Moderate Delays
	Small increases in traffic flow can cause increased delays. Delays likely attributable to increased traffic, reduced signal progression, and adverse timing.		
E	> 55 - 80	> 35 - 50	
	Significant delays. Travel speeds reduced to one-third of average free flow travel speed.		
F	> 80	> 50	Long Delays
	Extremely low speeds. Intersection congestion. Long delays. Extensive traffic queues at intersections.		

Source: Highway Capacity Manual, Transportation Research Board, Washington, D.C., 2010

For both the Existing and Build traffic volume scenarios, the study intersections were modeled with the existing geometrics and traffic control, signal timings, peak hour factors, and heavy vehicle percentages. The proposed site driveway to 3 Mile Road was evaluated with no changes to 3 Mile Road and a single, shared left-turn/right-turn lane with stop sign control on the site driveway approach. The base saturation flow rates for the signalized intersection were calculated using WisDOT researched methodologies (saturation flow calculation worksheet is in Appendix A).

The capacity analysis tables showing the peak hour LOS, delays (in seconds per vehicle), and queues (in feet) are shown on Exhibit 8 for the Existing and Build traffic analysis. The Synchro

capacity analysis worksheets for the existing traffic volumes are in Appendix B. The Synchro capacity analysis worksheets for the build traffic volumes are in Appendix C.

As shown on Exhibit 8, all study intersections are expected to operate acceptably at LOS B or better for each turning movement during weekday AM and PM peak hours. Very little difference in peak hour delays and queues are expected with the buildout of the proposed development.

DRIVEWAY SIGHT DISTANCE EVALUATION

Based on the site plan, the primary entrance for the proposed youth development and care center is located at the existing property driveway, which is approximately 1,080 feet east of Wyoming Way. The driveway is at the top of a rise on 3 Mile Road. Therefore, a sight distance evaluation was completed for both passenger cars and single-unit trucks (delivery vehicles) to determine the adequacy of vehicle visibility at this location.

Driveways should be designed for intersection sight distance (ISD) and stopping sight distance (SSD) in accordance with the latest edition of the American Association of State Highway Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Streets*. Based on AASHTO requirements for two-lane undivided roadways with no turn lanes and a 35-mph speed limit (40-mph design speed), the required SSD on 3 Mile Road for all vehicles is 305 feet. The ISD to the left of the site driveway (for right-turn movements) is 385 feet for passenger cars and 500 feet for single-unit trucks. The ISD to the right of the site driveway (for left-turn movements) is 445 feet for passenger cars and 560 feet for single-unit trucks. Worksheets and tables for ISD and SSD are in Appendix D.

The ISD and SSD for the site driveway were measured using elevation profiles and aerial view images from Google Earth. Per AASHTO, the evaluations used a passenger car eye height of 3.5 feet, a single-unit truck eye height of 7.6 feet, an ISD target of 3.5 feet, and an SSD target of two feet. The SSD evaluation was completed only for passenger cars as this is the controlling/worst-case condition for that analysis.

The ISD and SSD for the site driveway at the existing property driveway location is shown on Exhibit 9. The placement of the proposed site driveway at this location results in inadequate visibility for both design vehicles that are turning from the site driveway onto 3 Mile Road as well as for passenger cars that are approaching the site driveway from 3 Mile Road. Positioning the site driveway about 75-145 feet east of the existing location would improve visibility to acceptable levels for both design vehicles. The ISD and SSD evaluation for the proposed driveway location is shown on Exhibit 10.

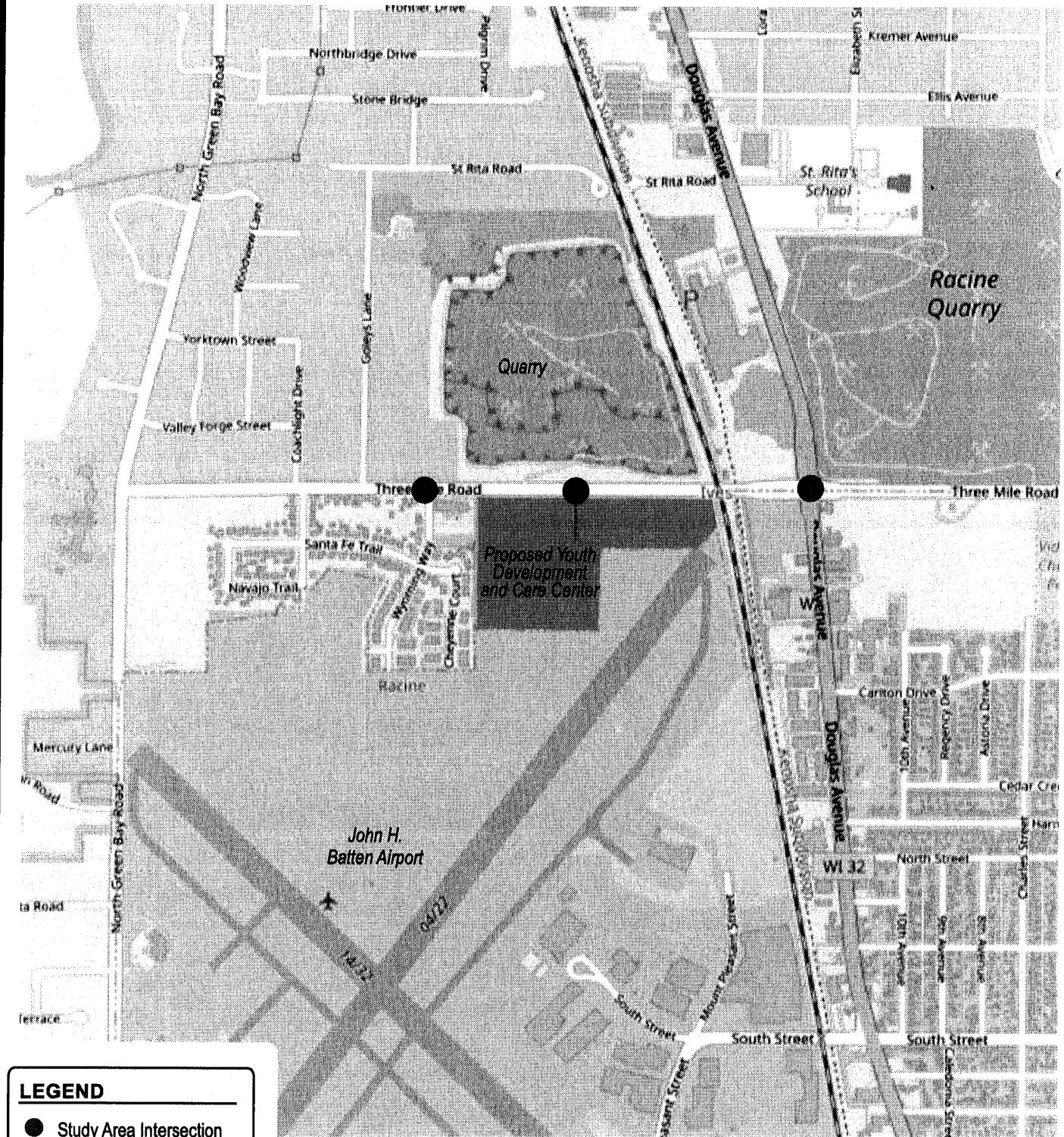
RECOMMENDATIONS/CONCLUSIONS

Based on the traffic analysis, the study intersections are expected to operate acceptably with all traffic movements at LOS B or better during the weekday AM and PM peak traffic hours with full buildout of the proposed Racine County Youth Development and Care Center on 3 Mile Road. A single shared left-turn/right-turn approach lane with stop sign control is recommended for the primary site driveway intersection with 3 Mile Road. No changes to the existing geometrics (no left or right-turn lanes) are recommended on 3 Mile Road.

With placement of the exiting lanes for the primary site driveway approximately 75-145 feet east of the existing gravel drive on the property, both intersection and stopping sight distance requirements are met for passenger cars and single-unit trucks. Note that the sight distance

measurements and photographs discussed in this report are based on the proposed placement of the site driveways and on-line aerial and street view photography. Surveyed profiles of 3 Mile Road may result in suitable driveway placement that varies from what was presented in this report and at other locations further east and west of the primary entrance shown on the development site plan. The party responsible for designing the intersection is responsible for cross-checking, verifying and designing for all applicable sight distances.

The recommendations for the study area are shown on Exhibit 11.



LEGEND

- Study Area Intersection
- Development Site
- Proposed Site Driveway

TADI
 TRAFFIC ANALYSIS & DESIGN, INC.
 2857 4-13-2022



**EXHIBIT 1
 PROJECT LOCATION MAP**

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LANDSCAPE ARCHITECTURE
PLANNING & DESIGN

WISCONSIN
STATE LICENSE NO. 1000000000

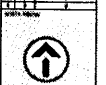
PROJECT
MADISON COUNTY
YOUTH DEVELOPMENT AND
CARE CENTER

LOCATION
CALEDONIA,
WISCONSIN

DATE
11/2021

SCALE
PRELIMINARY

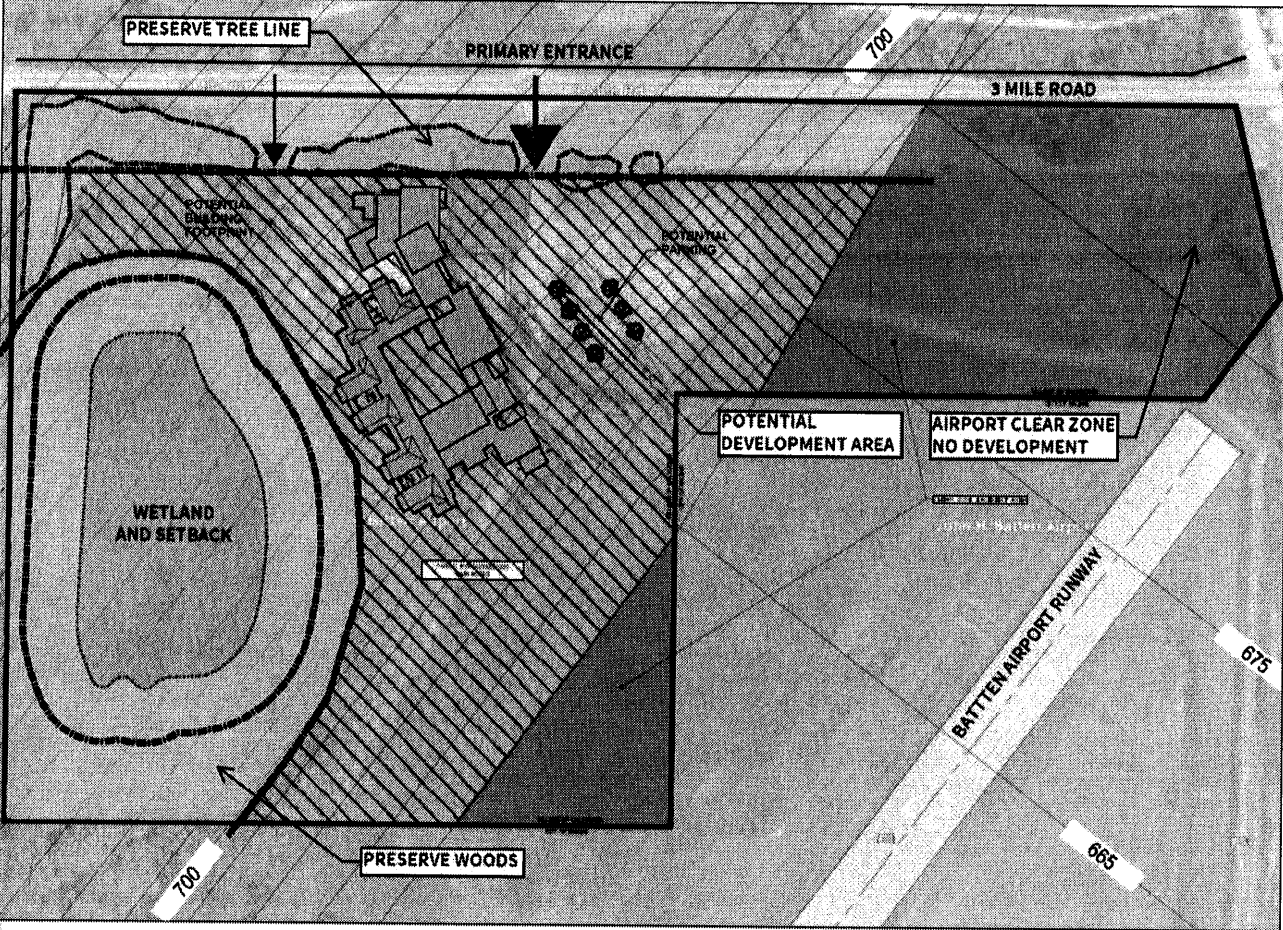
NO.	DATE	REVISION



PROJECT
BATTEN
INTERNATIONAL
AIRPORT
PRIORITY EXHIBIT

DATE PREPARED: 11/2021
DATE REVISION: 11/2021
DRAWN BY: JAC
CHECKED BY: JAC

SHEET NO.
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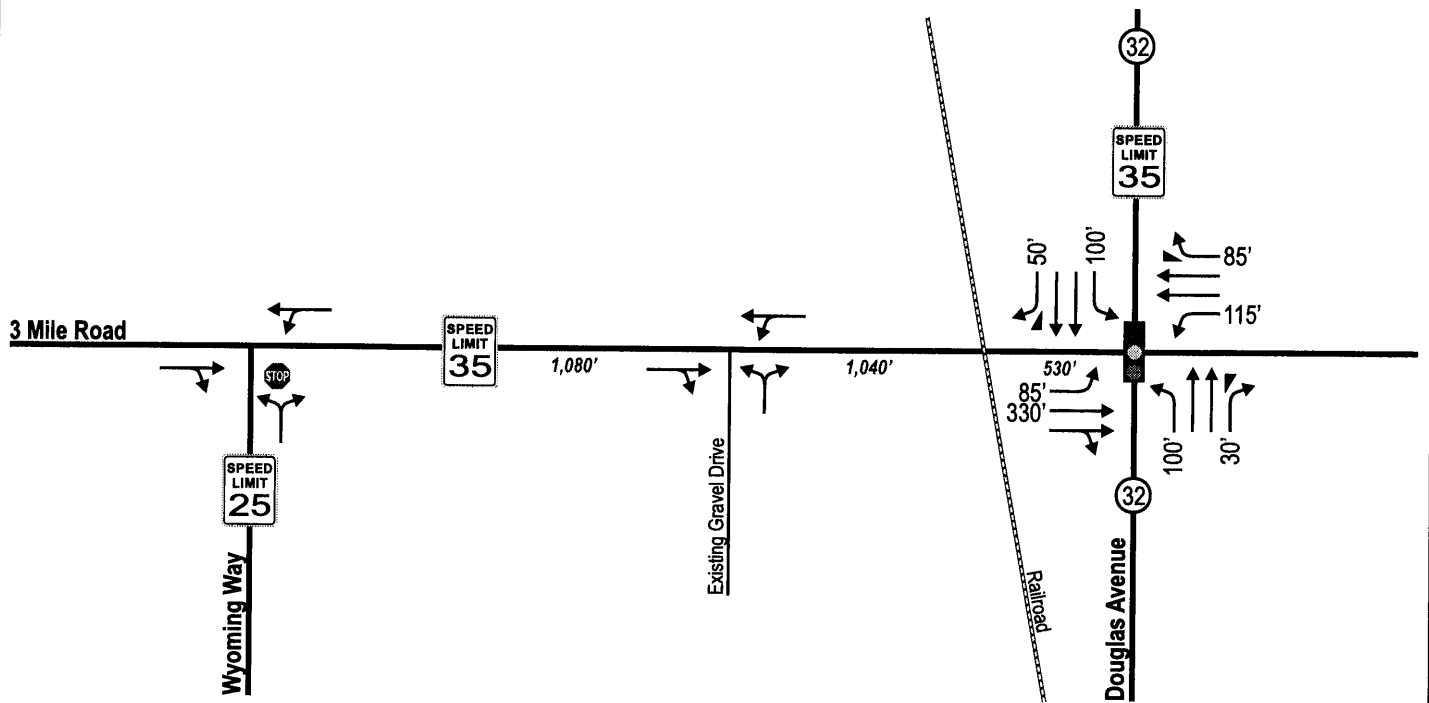


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**EXHIBIT 2
CONCEPTUAL SITE PLAN**

CALEDONIA, WISCONSIN



LEGEND

- Traffic Signal
- STOP Stop Sign
- Lane Configuration
- XX' Turn Bay Length (In Feet)
- XX' Centerline Distance Between Intersections (in Feet)



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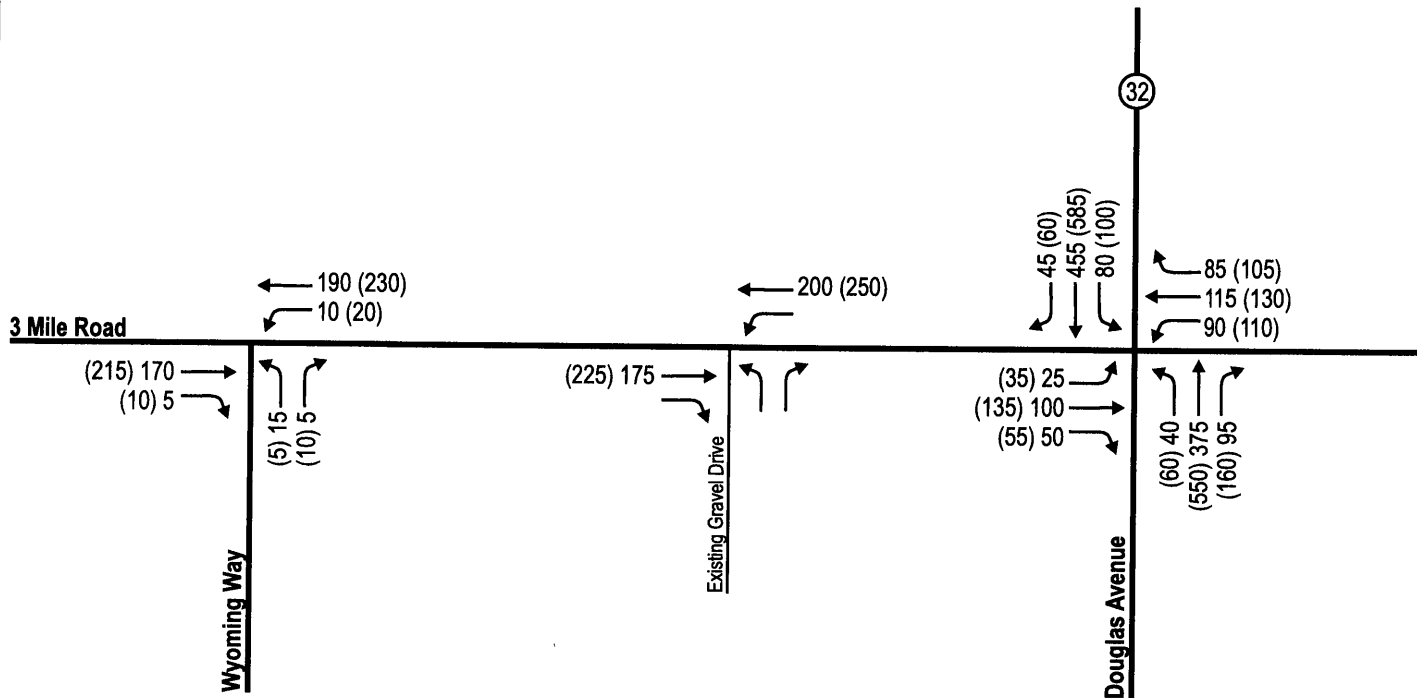
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NOT TO SCALE

**EXHIBIT 3
EXISTING TRANSPORTATION SYSTEM**

CALEDONIA, WISCONSIN



LEGEND

XX Weekday Morning Peak Hour Traffic (8:00-9:00 AM)
 (XX) Weekday Evening Peak Hour Traffic (4:00-5:00 PM)
 - Fewer than 3 vehicles per hour



**EXHIBIT 4
 EXISTING TRAFFIC VOLUMES**

CALEDONIA, WISCONSIN

Trip Generation Table ¹

Land Use	ITE Code	Proposed Size	Weekday Daily	AM Peak			PM Peak		
				In	Out	Total	In	Out	Total
Youth Development & Care Center <i>ITE Adult Detention Facility</i>	571	65 Employees	200 (3.04)	10 (59%)	10 (41%)	20 (0.34)	5 (18%)	10 (82%)	15 (0.25)
Total New Trips			200	10	10	20	5	10	15

¹ ITE Trip Rates (X.XX) and/or Fitted Curve Equations (FCE) are from the ITE Trip Generation Manual, 10th Edition.

TRIP DISTRIBUTION (New Trips)

W. on 3 Mile Road	10%	20	0	0	0	0
E. on 3 Mile Road	20%	40	0	0	0	0
N. on Douglas Avenue	35%	70	5	5	0	5
S. on Douglas Avenue	35%	70	5	5	5	5
	100%	200	10	10	5	10

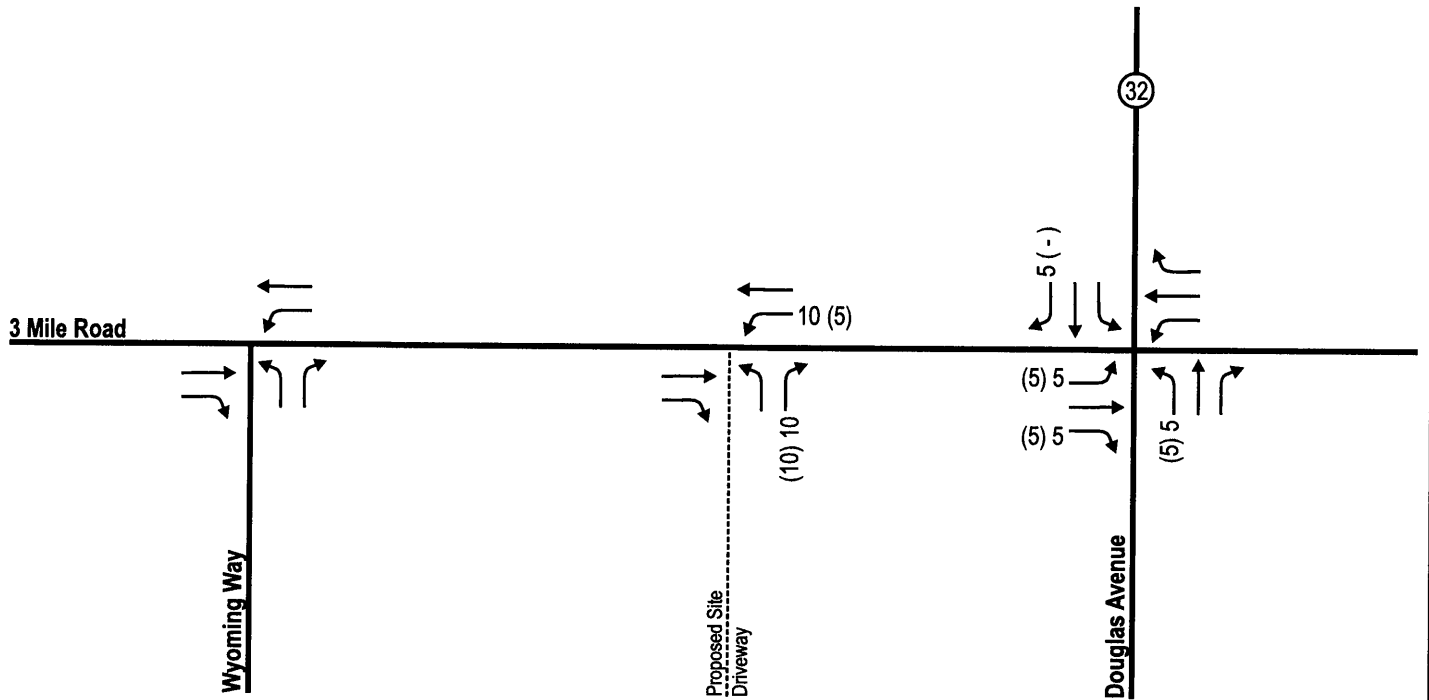


TRAFFIC ANALYSIS & DESIGN, INC.

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**EXHIBIT 5
ON-SITE DEVELOPMENT TRIP GENERATION TABLE**

CALEDONIA, WISCONSIN



LEGEND	
XX	Weekday Morning Peak Hour Traffic (8:00-9:00 AM)
(XX)	Weekday Evening Peak Hour Traffic (4:00-5:00 PM)
-	Fewer than 3 vehicles per hour



TRAFFIC ANALYSIS & DESIGN, INC.

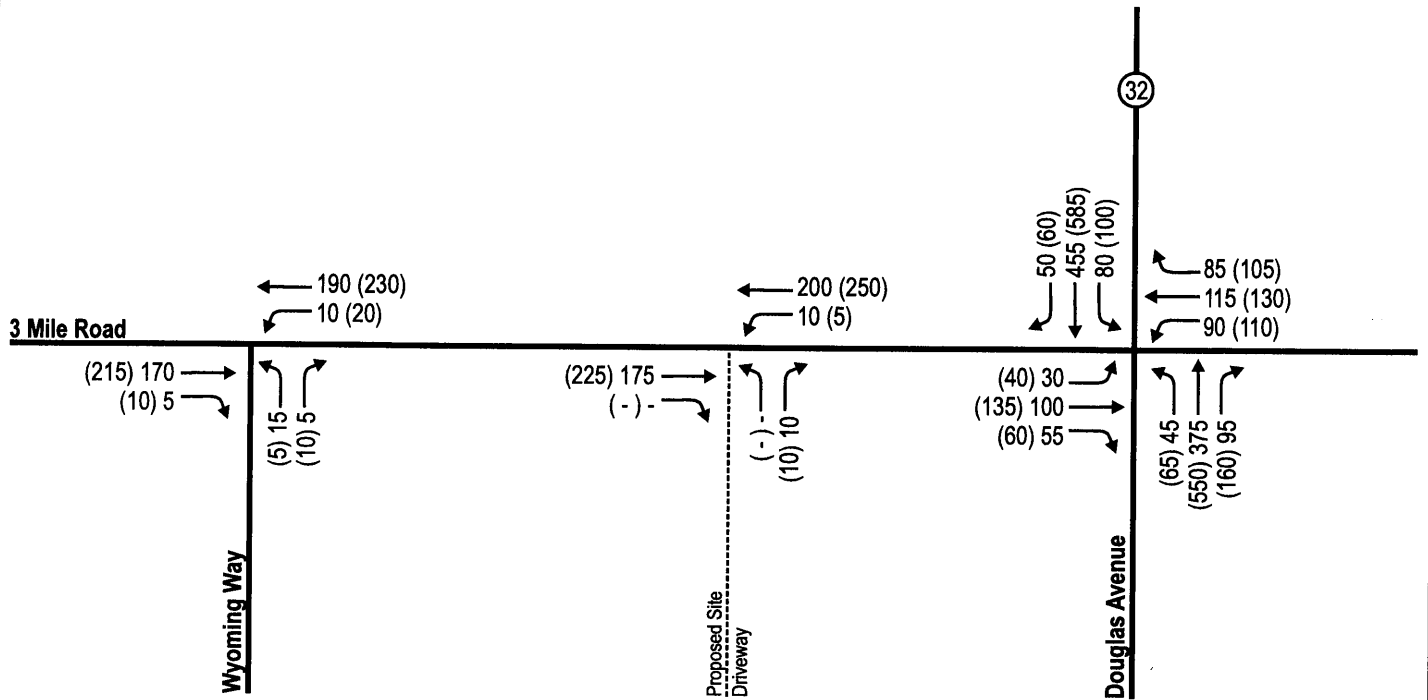
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NOT TO SCALE

**EXHIBIT 6
ON-SITE DEVELOPMENT NEW TRIPS**

CALEDONIA, WISCONSIN



LEGEND

XX Weekday Morning Peak Hour Traffic (8:00-9:00 AM)
 (XX) Weekday Evening Peak Hour Traffic (4:00-5:00 PM)
 - Fewer than 3 vehicles per hour



**EXHIBIT 7
 BUILD TRAFFIC VOLUMES**

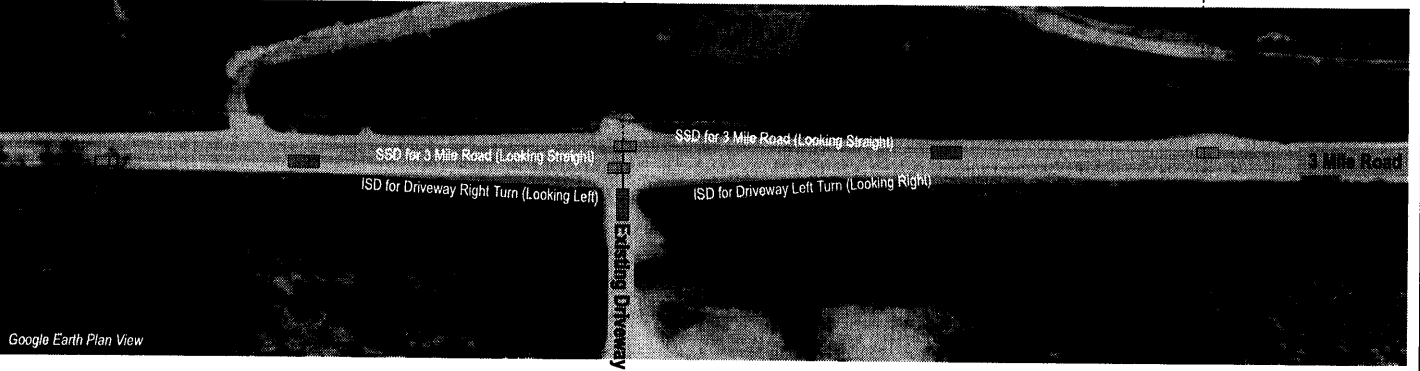
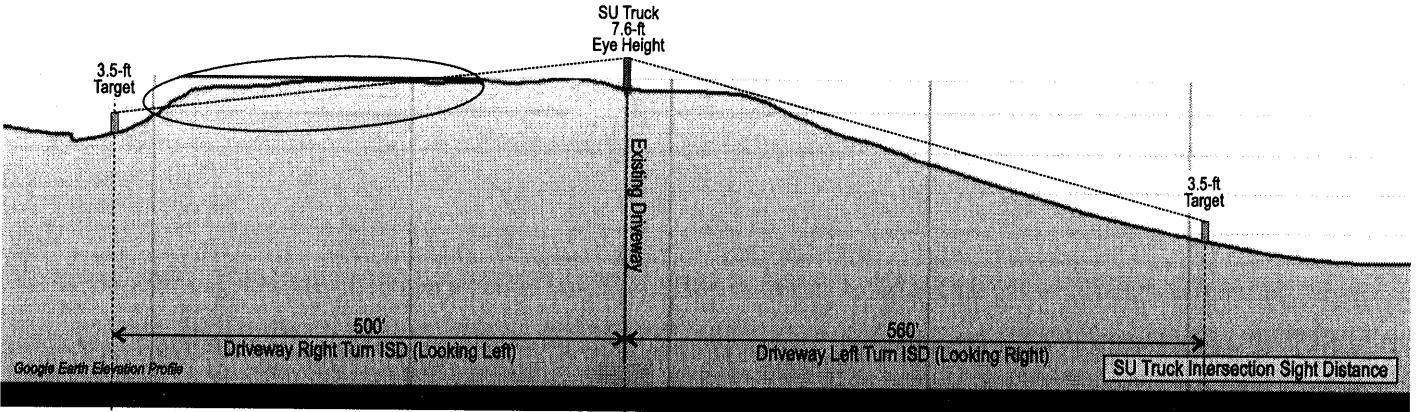
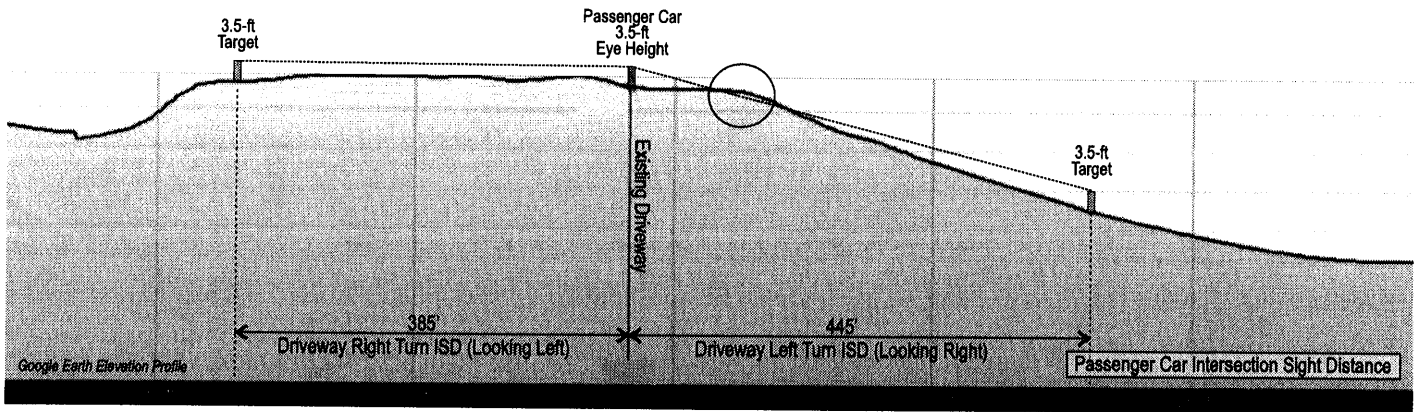
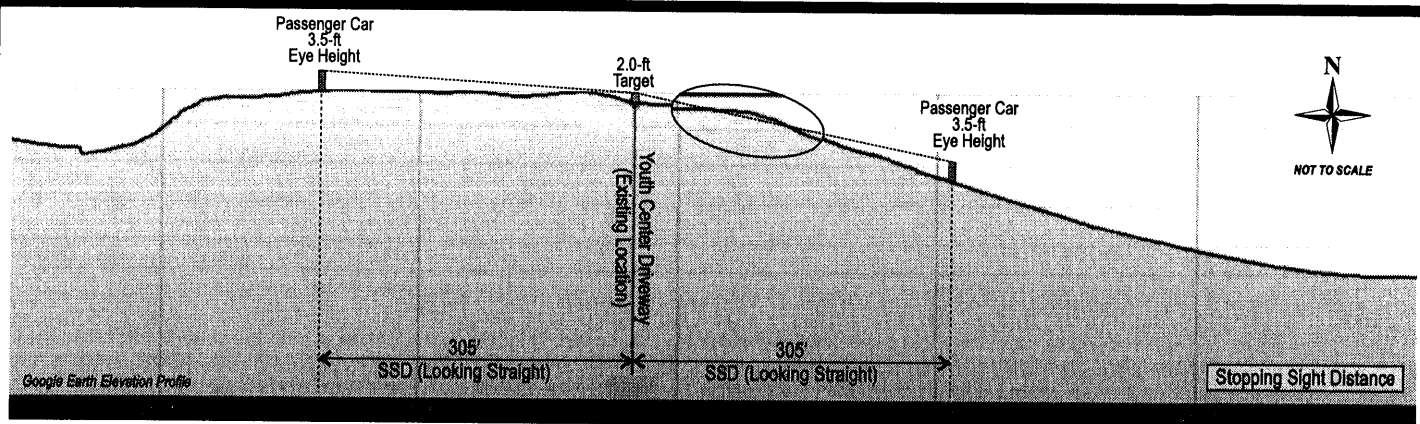
**Existing Peak Hour Traffic Operations
Existing Geometrics & Traffic Control**

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↓	→	↑	↓	←	↑	←	↑	→	→	↓	←	
#100: 3 Mile Road & Wyoming Way Stop Sign Control (NB)	AM	Lanes->	-	1		1	-		1						
		LOS	-	*		A	-		B						A
		Delay	-	*		7	-		10						0.7
	Queue	-	*		0'	-		5'							
	PM	LOS	-	*		A	-		B						A
		Delay	-	*		7	-		10						0.6
Queue		-	*		0'	-		5'							
#200: 3 Mile Road & Douglas Avenue (STH 32) Traffic Signal Control	AM	Lanes->	1	2	>	1	2	1	1	2	1	1	2	1	
		LOS	B	B	B	B	B	B	B	B	B	A	B	B	B
		Delay	16	15	15	18	15	15	10	13	12	9	12	10	13.4
	Queue	25'	45'	45'	65'	35'	40'	15'	85'	40'	25'	100'	20'		
	PM	LOS	B	B	B	B	B	B	B	B	B	A	B	B	B
		Delay	16	16	16	19	15	15	10	14	12	9	13	11	14.2
Queue		35'	60'	60'	90'	45'	55'	25'	135'	60'	35'	140'	30'		

**Build Peak Hour Traffic Operations
Existing Geometrics & Traffic Control**

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↓	→	↑	↓	←	↑	←	↑	→	→	↓	←	
#100: 3 Mile Road & Wyoming Way Stop Sign Control (NB)	AM	Lanes->	-	1		1	-		1						
		LOS	-	*		A	-		B						A
		Delay	-	*		7	-		10						0.7
	Queue	-	*		0'	-		5'							
	PM	LOS	-	*		A	-		B						A
		Delay	-	*		7	-		10						0.6
Queue		-	*		0'	-		5'							
#200: 3 Mile Road & Douglas Avenue (STH 32) Traffic Signal Control	AM	Lanes->	1	2	>	1	2	1	1	2	1	1	2	1	
		LOS	B	B	B	B	B	B	A	B	B	A	B	B	B
		Delay	16	15	15	18	15	15	9	13	12	9	12	10	13.5
	Queue	25'	45'	45'	65'	35'	40'	20'	85'	40'	30'	105'	25'		
	PM	LOS	B	B	B	B	B	B	B	B	B	A	B	B	B
		Delay	16	16	16	19	15	15	10	14	12	9	13	11	14.2
Queue		40'	65'	65'	90'	45'	55'	25'	140'	60'	35'	145'	30'		
#300: 3 Mile Road & Site Driveway Stop Sign Control (NB)	AM	Lanes->	-	1		1	-		1						
		LOS	-	*		A	-		A					A	
		Delay	-	*		7	-		9					0.5	
	Queue	-	*		0'	-		0'							
	PM	LOS	-	*		A	-		A					A	
		Delay	-	*		7	-		9					0.3	
Queue		-	*		0'	-		0'							

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement.
Where zero is shown for the volume at a particular movement, a minimum value of 1 was used in the model.

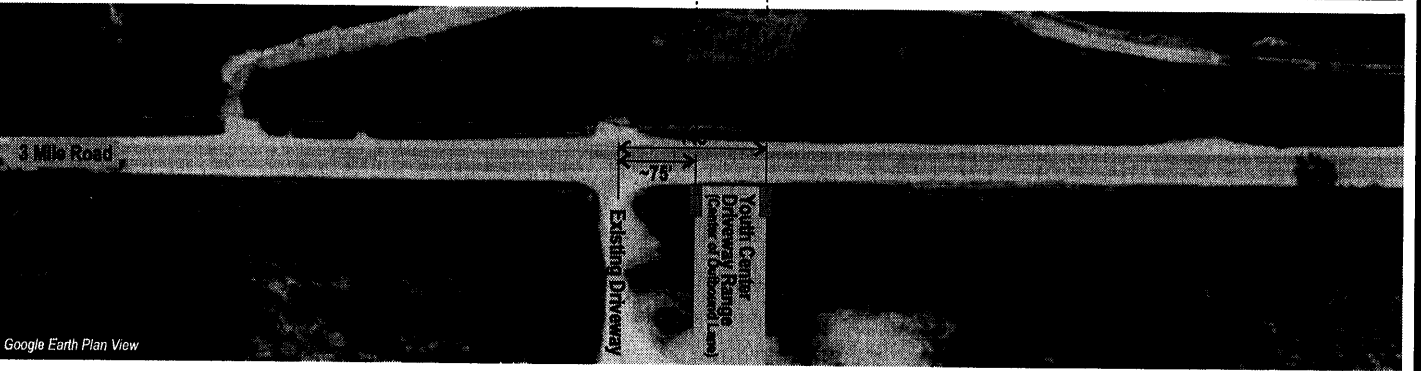
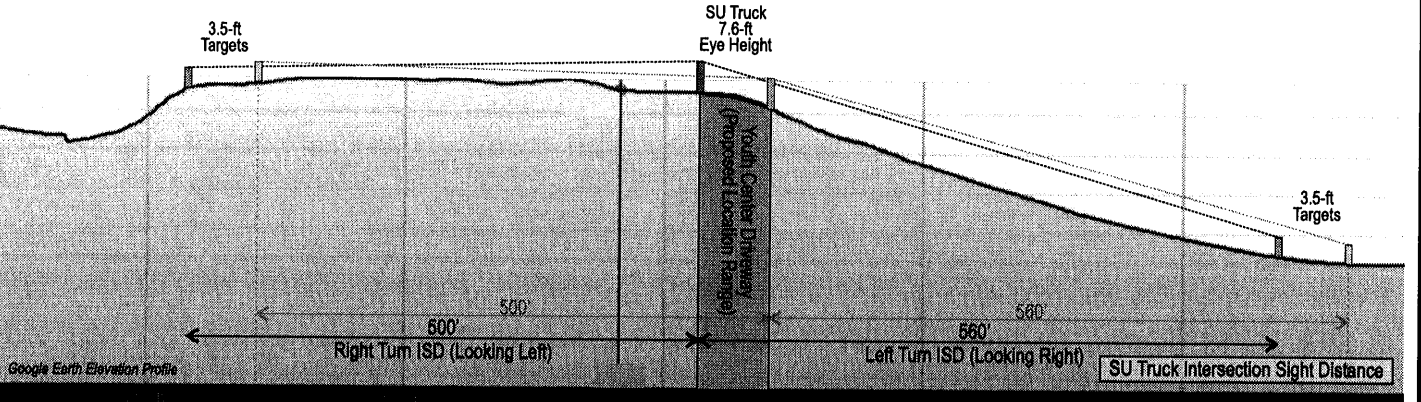
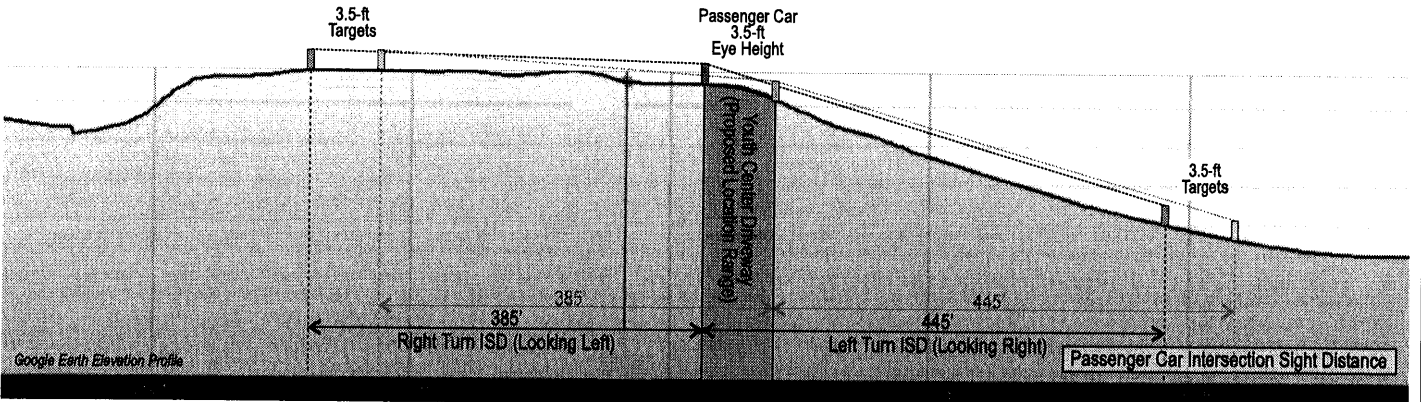
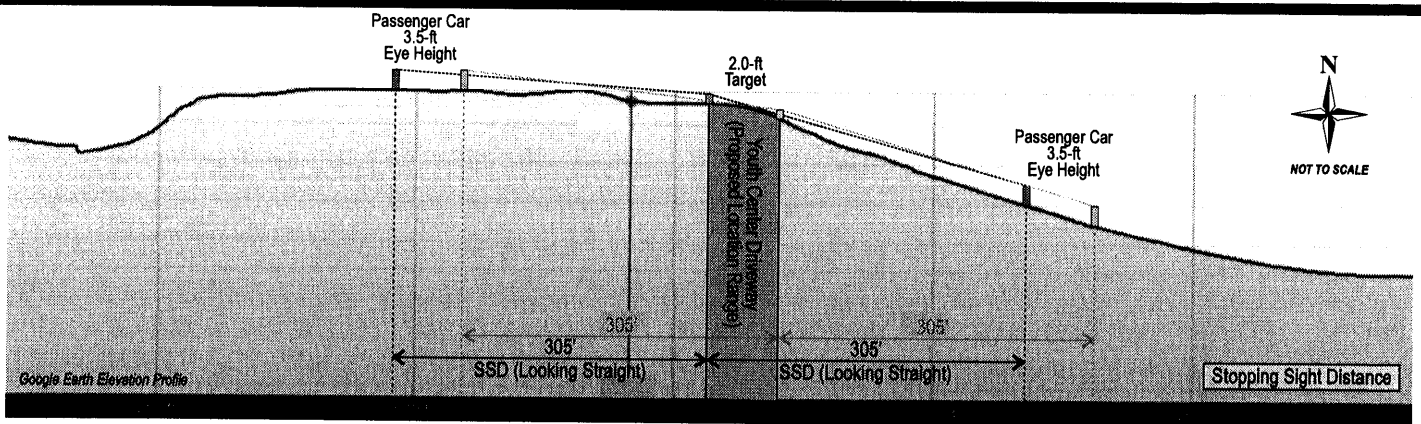


LEGEND

- Viewpoint (from Vehicle)
- Target (Oncoming or Downstream Vehicle)
- Line of Sight
- Blocked View

EXHIBIT 9
SIGHT DISTANCE EVALUATION
EXISTING SITE DRIVEWAY LOCATION

CALEDONIA, WISCONSIN

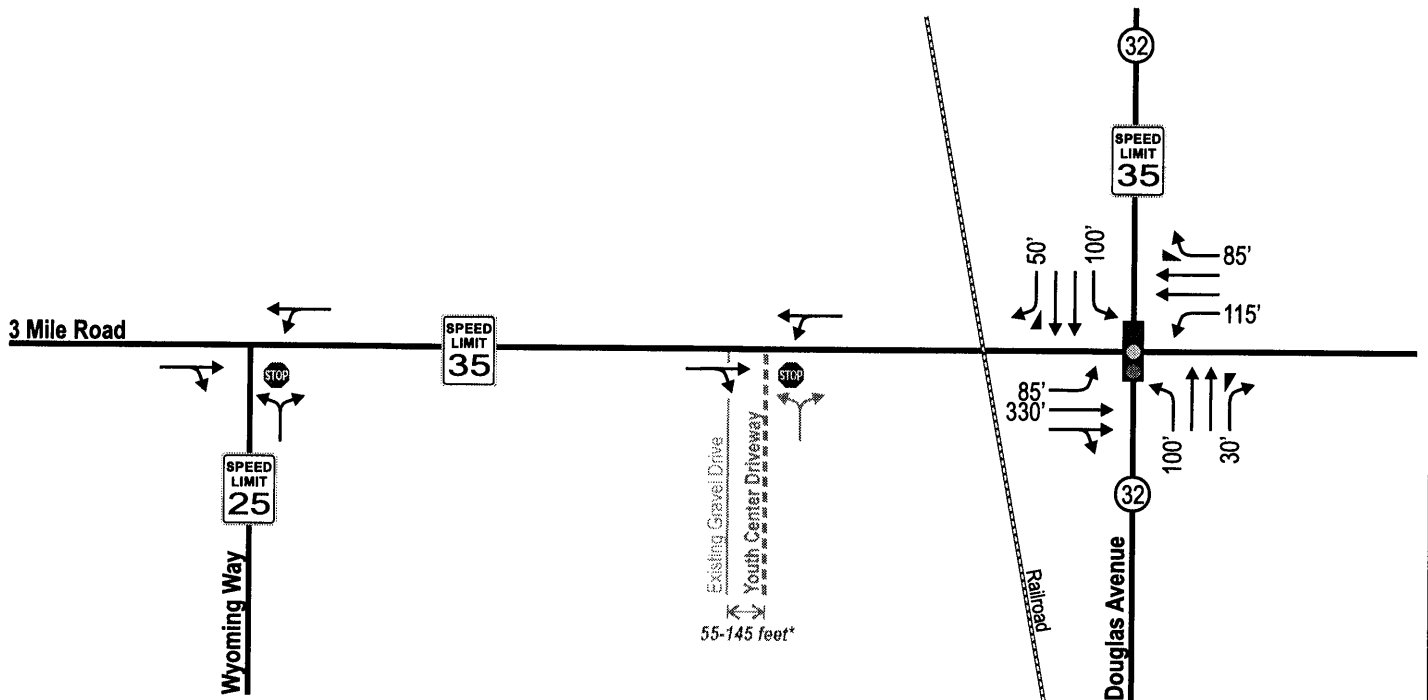


LEGEND

- Viewpoint (from Vehicle)
- Target (Oncoming or Downstream Vehicle)
- Line of Sight
- Blocked View

**EXHIBIT 10
SIGHT DISTANCE EVALUATION
RECOMMENDED DRIVEWAY LOCATION**

CALEDONIA, WISCONSIN



LEGEND

- Traffic Signal
- STOP Stop Sign
- Lane Configuration
- XX' Turn Bay Length (In Feet)
- XX' Centerline Distance Between Intersections (In Feet)

Recommendations are shown in GREEN

*Note: Driveway location based on sight distance estimated from Google Earth imagery, and only for locations immediately adjacent to the driveway location shown on the development site plan. Other suitable locations may exist further east or west on the property. The party responsible for designing the intersection is responsible for cross-checking, verifying, and designing for all applicable sight distances.



TRAFFIC ANALYSIS & DESIGN, INC.

2857 4-13-2022



NOT TO SCALE

**EXHIBIT 11
RECOMMENDATIONS**

CALEDONIA, WISCONSIN

APPENDIX A

TRAFFIC COUNT DATA

**Intersection Turning Movement Counts
Saturation Flow Rate Calculation**

Intersection Traffic Volume Report

Count Basics		Version 2019.14.1		Page 1 of 19	
Start Date:	Thursday, March 31, 2022	Weekday	Schools in Session		
Total Number of Hours Counted:	6	Non-Holiday	No Special Events		

Base Information, Observed (6) Hour and Estimated (24) Hour Volume Summaries

Intersection of: Wyoming Way and 3 Mile Road

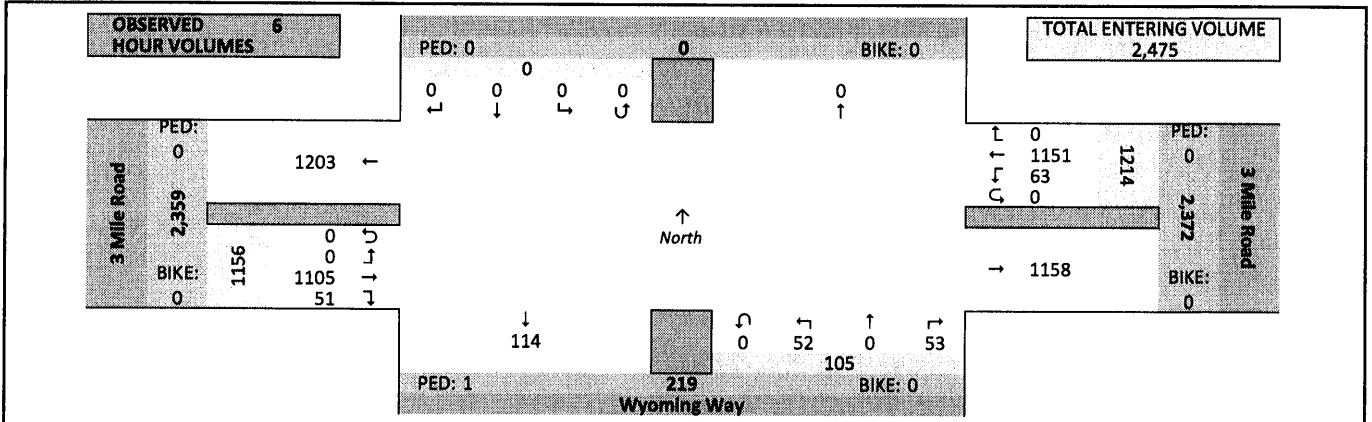
Site Information

Municipality	Village of Caledonia		
County	Racine	WisDOT Region	SE
Traffic Control	Partial Stop Control		
Roadway Names	North Direction ↑		
North Leg			
East Leg	3 Mile Road		
South Leg	Wyoming Way		
West Leg	3 Mile Road		
Special Considerations			
Schools	In Session		
Holidays	None		
Special Events	None		
Special Pedestrians Observed			
	Pre-school children	None	
	Elementary school age children	None	
	Visually impaired (white cane/helper dog)	None	
	Elderly/disabled (except wheelchairs)	None	
	Wheelchairs/electric scooters	None	
Other (describe)	None	None	

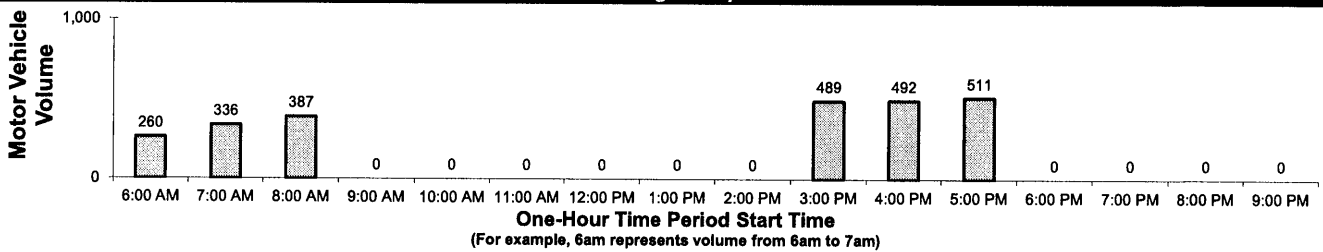
Count Information

Hrs Counted:	6:00 AM-9:00 AM and 3:00 PM-6:00 PM		
1st Day of Count	Thursday, March 31, 2022	Weather	
AM Peak Period	Friday, April 1, 2022	Clear & Dry	
Midday Peak Period	Thursday, March 31, 2022	Clear & Dry	
PM Peak Period	Thursday, March 31, 2022	Clear & Dry	
Calculated Peak Hours			
	AM 8:00-9:00am	MD	PM 4:15-5:15pm
Peak Hours Selected for Analysis			
	AM 8:00-9:00am	MD	PM 4:00-5:00pm
Daily/Seasonal Adjustment Group	(2) Urban Arterials & Collectors		
Count Expansion Group	(2) Urban Arterials & Collectors		
Daily/Seasonal Adjustment Factor	0.936	Count Expansion Factor	2.520
Company Name	TADI, Inc	Manual Adj.	1.000
Observers	AM Peak Period	Jane Fait	
	Midday Peak Period	None	
	PM Peak Period	Jane Fait	
Comments	2019 DOT Seasonal Factors		

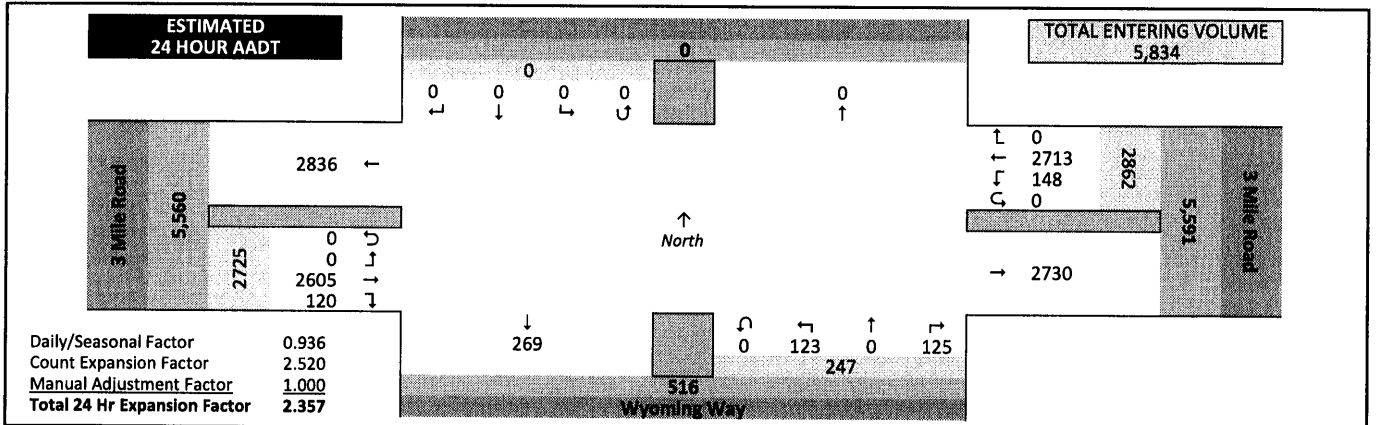
Observed 6 Hour Volume Summary



Total Entering Hourly Volume



Estimated 24 Hour AADT

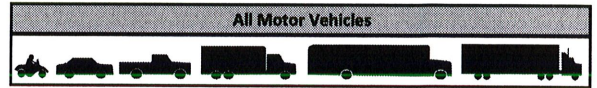


Intersection Traffic Volume Report

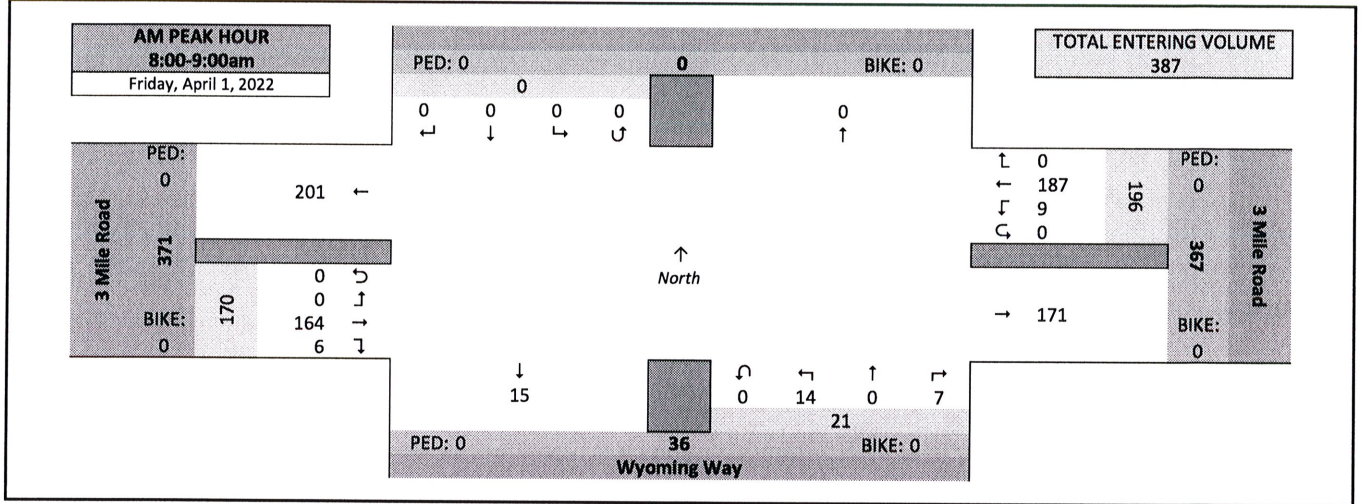
Count Basics		Page 2 of 13	
Start Date:	Thursday, March 31, 2022	Weekday	Schools in Session
Total Number of Hours Counted:	6	Non-Holiday	No Special Events

Peak Hour Volume Graphical Summary

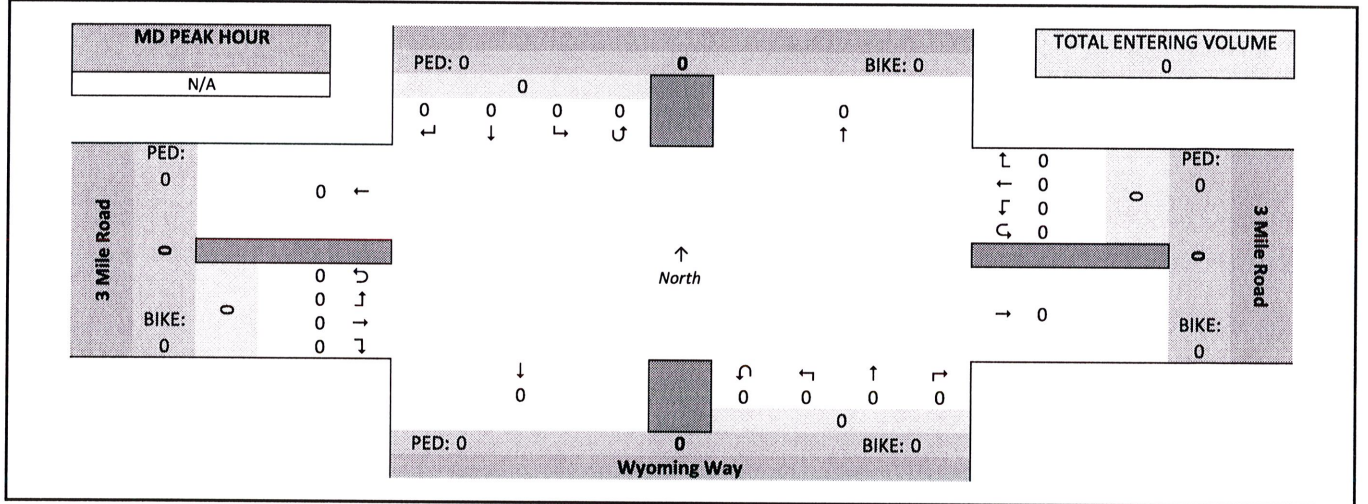
Wyoming Way and 3 Mile Road



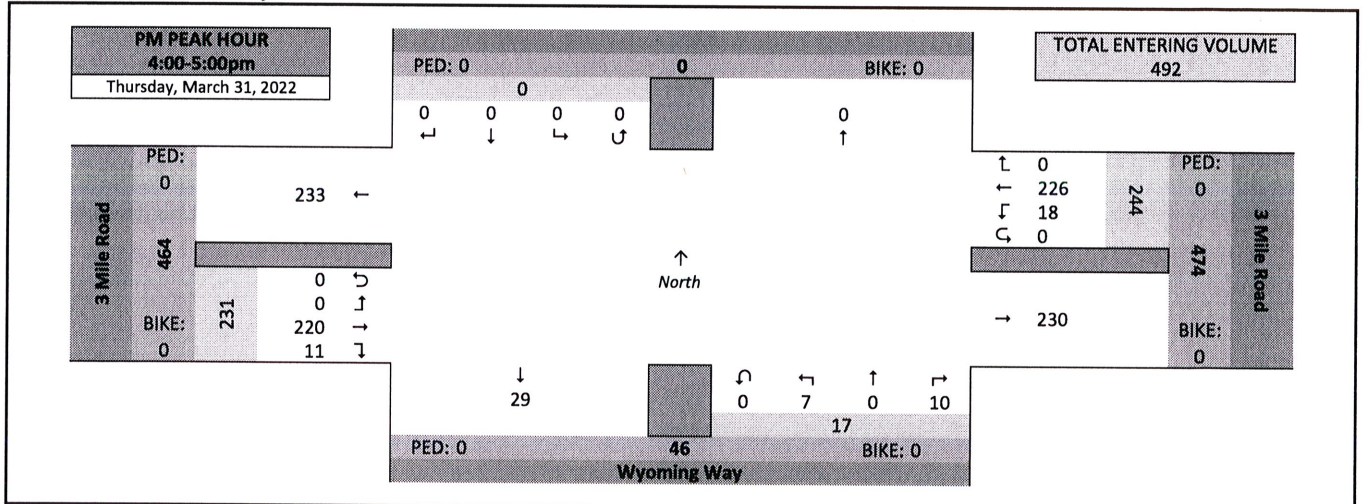
AM Peak Hour Summary



Midday (MD) Peak Hour Summary



PM Peak Hour Summary



Intersection Traffic Volume Report

Count Basics			Page 3 of 13
Start Date:	Thursday, March 31, 2022	Weekday	Schools in Session
Total Number of Hours Counted:	6	Non-Holiday	No Special Events

Peak Hour Volume Summary

Wyoming Way and 3 Mile Road



Peak Hour Volumes, Truck Percentages, and PHFs

Friday, April 1, 2022		From North					From East					From South					From West					Totals		
AM Peak Hour		3 Mile Road					Wyoming Way					3 Mile Road												
Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total				
8:00 AM	0	0	0	0	0	0	53	2	0	55	1	0	4	0	5	0	43	0	0	43	0	0	43	103
8:15 AM	0	0	0	0	0	0	36	2	0	38	2	0	2	0	4	4	2	36	0	0	38	80		
8:30 AM	0	0	0	0	0	0	48	2	0	50	2	0	4	0	6	4	43	0	0	47	103			
8:45 AM	0	0	0	0	0	0	50	3	0	53	2	0	4	0	6	0	42	0	0	42	101			
Peak Hour Volume	0	0	0	0	0	0	187	9	0	196	7	0	14	0	21	6	164	0	0	170	387			
Rounded Hourly Volume	0	0	0	0	0	0	185	10	0	195	5	0	15	0	20	5	165	0	0	170	385			
% Single Unit Trucks	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	0.0	4.6	0.0	0.0	7.1	0.0	4.8	0.0	4.3	0.0	0.0	4.1	4.4			
% Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
% Trucks (Total)	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	0.0	4.6	0.0	0.0	7.1	0.0	4.8	0.0	4.3	0.0	0.0	4.1	4.4			
Peak Hour Factor (PHF)	0.00	0.00	0.00	0.00	0.00	0.00	0.88	0.75	0.00	0.89	0.87	0.00	0.87	0.00	0.87	0.37	0.95	0.00	0.00	0.90	0.94			

N/A		From North					From East					From South					From West					Totals		
Midday (MD) Peak Hour		3 Mile Road					Wyoming Way					3 Mile Road												
Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total				
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rounded Hourly Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Single Unit Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% Trucks (Total)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Peak Hour Factor (PHF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Thursday, March 31, 2022		From North					From East					From South					From West					Totals
PM Peak Hour		3 Mile Road					Wyoming Way					3 Mile Road										
Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total		
4:00 PM	0	0	0	0	0	0	57	1	0	58	2	0	4	0	6	2	55	0	0	57	121	
4:15 PM	0	0	0	0	0	0	51	7	0	58	2	0	1	0	3	3	62	0	0	65	126	
4:30 PM	0	0	0	0	0	0	59	4	0	63	4	0	1	0	5	2	47	0	0	49	117	
4:45 PM	0	0	0	0	0	0	59	6	0	65	2	0	1	0	3	4	56	0	0	60	128	
Peak Hour Volume	0	0	0	0	0	0	226	18	0	244	10	0	7	0	17	11	220	0	0	231	492	
Rounded Hourly Volume	0	0	0	0	0	0	225	20	0	245	10	0	5	0	15	10	220	0	0	230	490	
% Single Unit Trucks	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	
% Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
% Trucks (Total)	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	
Peak Hour Factor (PHF)	0.00	0.00	0.00	0.00	0.00	0.00	0.96	0.64	0.00	0.94	0.62	0.00	0.44	0.00	0.71	0.69	0.89	0.00	0.00	0.89	0.96	

Peak Hour Pedestrian and Bicyclist Volumes

Pedestrians and Bicyclists	Crossing North Approach			Crossing East Approach			Crossing South Approach			Crossing West Approach			Total Ped & Bike Volume
	3 Mile Road			Wyoming Way			3 Mile Road						
	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	
15-Minute Start Time													
AM													
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
MD													
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
PM													
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Traffic Volume Report

Count Basics		Version 2019.J4.1		Page 1 of 13	
Start Date:	Thursday, March 31, 2022	Weekday	Schools in Session		
Total Number of Hours Counted:	6	Non-Holiday	No Special Events		

Base Information, Observed (6) Hour and Estimated (24) Hour Volume Summaries

Intersection of: **Douglas Avenue and 3 Mile Road**

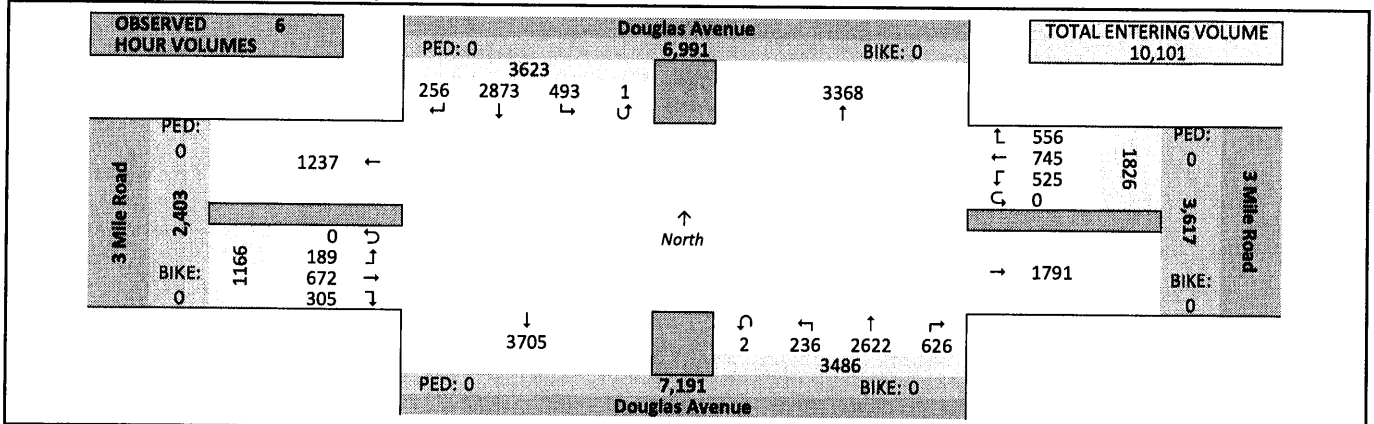
Site Information

Municipality	Village of Caledonia
County	Racine
WisDOT Region	SE
Traffic Control	Traffic Signal
Roadway Names	North Direction ↑
North Leg	Douglas Avenue
East Leg	3 Mile Road
South Leg	Douglas Avenue
West Leg	3 Mile Road
Special Considerations	
Schools	In Session
Holidays	None
Special Events	None
Special Pedestrians Observed	
	Pra-school children None
	Elementary school age children None
	Visually impaired (white cane/helper dog) None
	Elderly/disabled (except wheelchairs) None
	Wheelchairs/electric scooters None
Other (describe)	None None

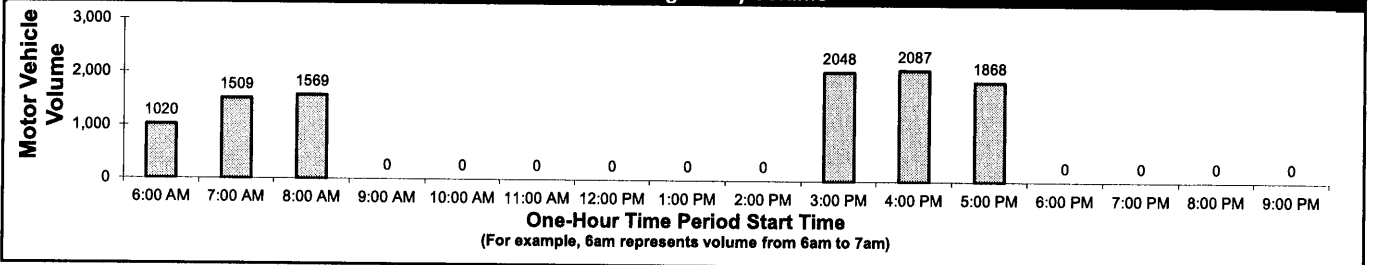
Count Information

Hrs Counted:	6:00 AM-9:00 AM and 3:00 PM-6:00 PM		
1st Day of Count	Thursday, March 31, 2022	Weather	
AM Peak Period	Friday, April 1, 2022	Clear & Dry	
Midday Peak Period	Thursday, March 31, 2022	Clear & Dry	
PM Peak Period	Thursday, March 31, 2022	Clear & Dry	
Calculated Peak Hours			
	AM 8:00-9:00am	MD	PM 3:45-4:45pm
Peak Hours Selected for Analysis			
	AM 8:00-9:00am	MD	PM 4:00-5:00pm
Daily/Seasonal Adjustment Group	(2) Urban Arterials & Collectors		
Count Expansion Group	(2) Urban Arterials & Collectors		
Daily/Seasonal Adjustment Factor	0.936	Count Expansion Factor	2.520
Company Name	TADI, Inc	Manual Adj.	1.000
Observers	AM Peak Period	Amy Scheuerlein	
	Midday Peak Period	None	
	PM Peak Period	Amy Scheuerlein	
Comments	2019 DOT Seasonal Factors		

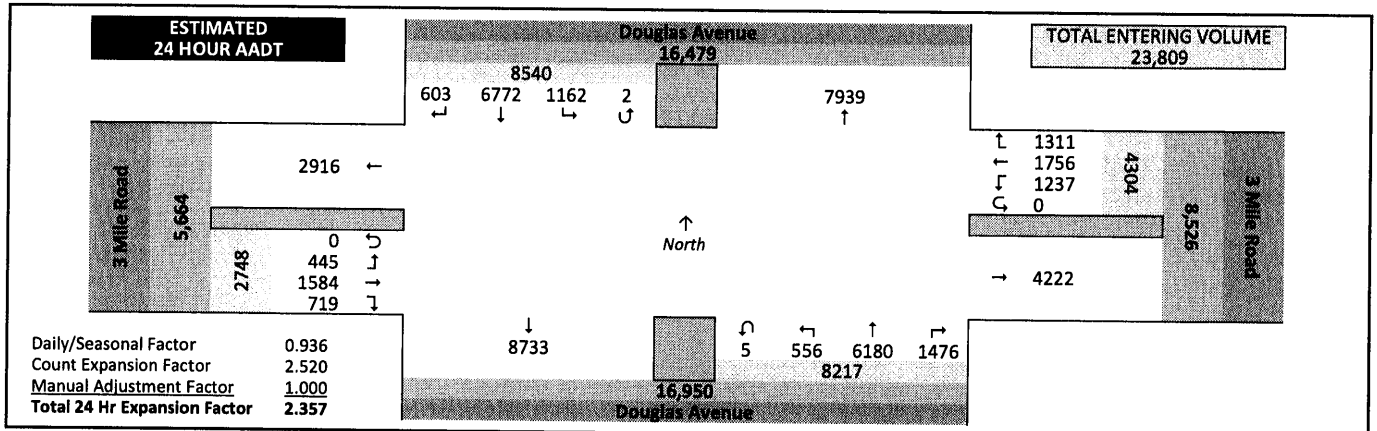
Observed 6 Hour Volume Summary



Total Entering Hourly Volume



Estimated 24 Hour AADT



Intersection Traffic Volume Report

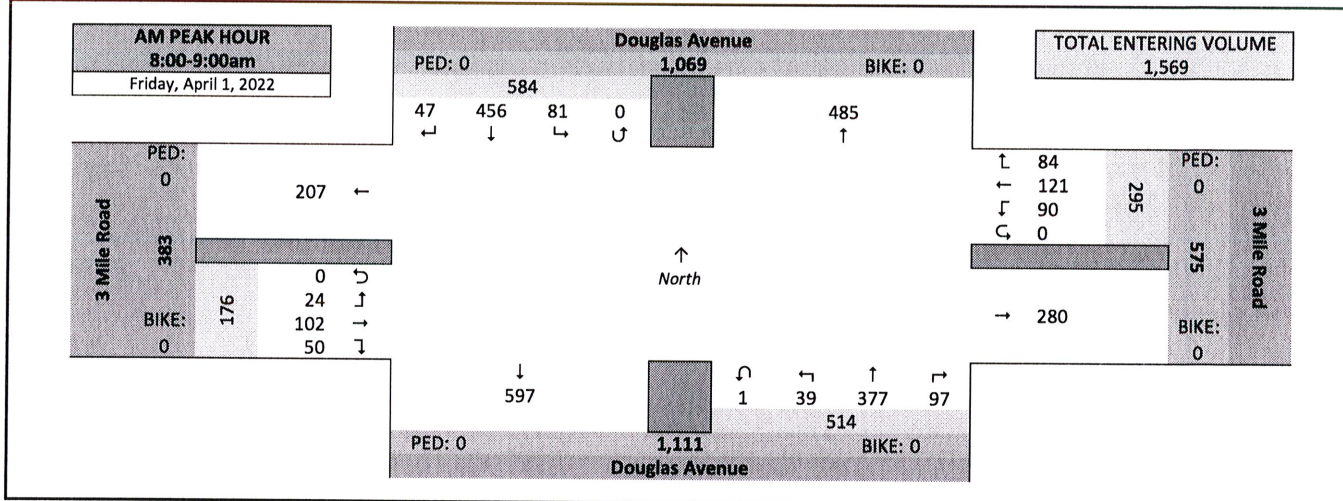
Count Basics			Page 2 of 13
Start Date:	Thursday, March 31, 2022	Weekday	Schools in Session
Total Number of Hours Counted:	6	Non-Holiday	No Special Events

Peak Hour Volume Graphical Summary

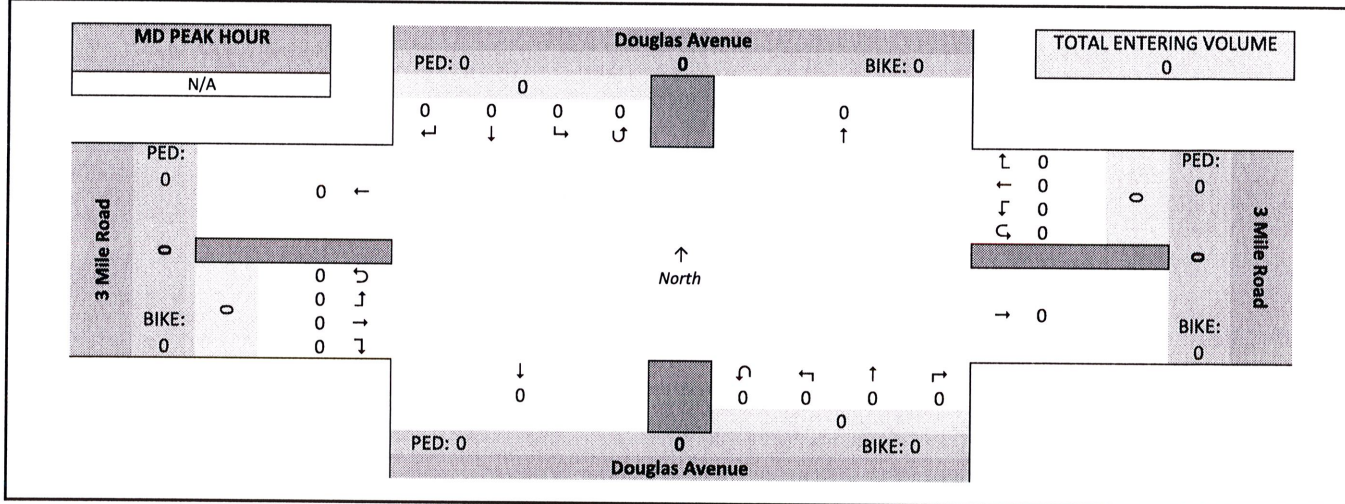
Douglas Avenue and 3 Mile Road



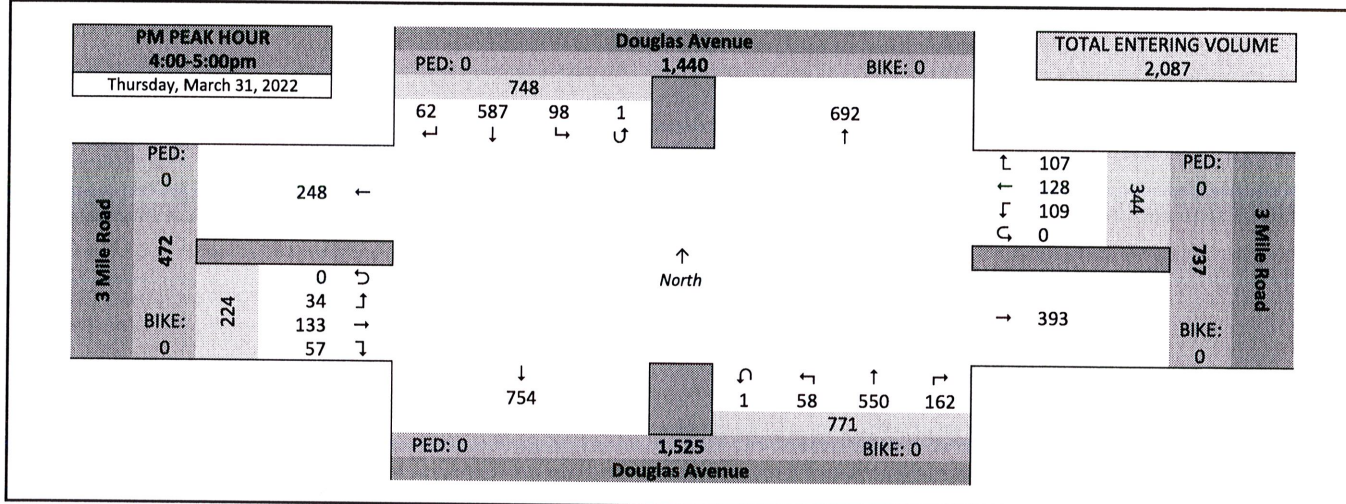
AM Peak Hour Summary



Midday (MD) Peak Hour Summary



PM Peak Hour Summary



Urbanized Area/Cluster Population
133,700
#200: STH 32 & 3 Mile Road
Existing Transportation System

Speed Limit:	35
--------------	----

Sat. Flow Rate (pc/h/ln)		
1750	1829	1750



Number of Lanes		
1	2	1
↶	↓	↷

Speed Limit:
35

Sat. Flow (pc/h/ln)	1750
	1809

Number of Lanes	1	↑
	2	→
		↓

Traffic Signal		
↶	↑	↷
1	2	1
Number of Lanes		

↑	1	Number of Lanes
←	2	
↵	1	

1750	Sat. Flow (pc/h/ln)
1829	
1750	

Speed Limit:
35



Bureau of Traffic Operations
11/14/2019

↶	↑	↷
1	2	1
Number of Lanes		

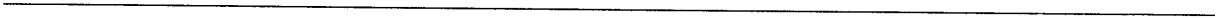
1750	1829	1750
Sat. Flow Rate (pc/h/ln)		

Speed Limit:	35
--------------	----

APPENDIX B

SYNCHRO INTERSECTION CAPACITY ANALYSIS

Existing Traffic Volumes



Lanes, Volumes, Timings
100: Wyoming Way & 3 Mile Road

Existing Traffic
AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (vph)	170	5	10	190	15	5
Future Volume (vph)	170	5	10	190	15	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			100		100	
Link Speed (mph)	35			35	25	
Link Distance (ft)	389			1085	441	
Travel Time (s)	7.6			21.1	12.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	186	0	0	213	21	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

HCM 6th TWSC
100: Wyoming Way & 3 Mile Road

Existing Traffic
AM Peak Hour

Intersection

Int Delay, s/veh 0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗		↖		↘	
Traffic Vol, veh/h	170	5	10	190	15	5
Future Vol, veh/h	170	5	10	190	15	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	4	4	5	5	5	5
Mvmt Flow	181	5	11	202	16	5
























Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	186	0	408
Stage 1	-	-	-	-	184
Stage 2	-	-	-	-	224
Critical Hdwy	-	-	4.15	-	6.45
Critical Hdwy Stg 1	-	-	-	-	5.45
Critical Hdwy Stg 2	-	-	-	-	5.45
Follow-up Hdwy	-	-	2.245	-	3.545
Pot Cap-1 Maneuver	-	-	1371	-	594
Stage 1	-	-	-	-	840
Stage 2	-	-	-	-	806
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1371	-	589
Mov Cap-2 Maneuver	-	-	-	-	589
Stage 1	-	-	-	-	840
Stage 2	-	-	-	-	799

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	638	-	-	1371	-
HCM Lane V/C Ratio	0.033	-	-	0.008	-
HCM Control Delay (s)	10.8	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lanes, Volumes, Timings
200: Douglas Avenue & 3 Mile Road

Existing Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	100	50	90	115	85	40	375	95	80	455	45
Future Volume (vph)	25	100	50	90	115	85	40	375	95	80	455	45
Ideal Flow (vphpl)	1750	1809	1750	1750	1829	1750	1750	1829	1750	1750	1829	1750
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	85		0	115		85	100		30	100		50
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Right Turn on Red			No			No			No			No
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		350			644			491			584	
Travel Time (s)		6.8			12.5			9.6			11.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	62%	100%	100%	62%	100%	100%	62%
Heavy Vehicles (%)	7%	7%	7%	11%	11%	11%	4%	4%	4%	6%	6%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	159	0	96	122	56	43	399	63	85	484	30
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		18			18			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.07	1.11	1.11	1.05	1.11	1.11	1.05	1.11	1.11	1.05	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0	15.0	6.0	20.0	20.0	6.0	20.0	20.0
Minimum Split (s)	21.0	21.0		21.0	21.0	21.0	10.0	26.0	26.0	10.0	26.0	26.0
Total Split (s)	46.0	46.0		46.0	46.0	46.0	29.0	96.0	96.0	29.0	96.0	96.0
Total Split (%)	26.9%	26.9%		26.9%	26.9%	26.9%	17.0%	56.1%	56.1%	17.0%	56.1%	56.1%
Maximum Green (s)	40.0	40.0		40.0	40.0	40.0	25.0	90.0	90.0	25.0	90.0	90.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	4.0	4.0	2.0	4.0	4.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lanes, Volumes, Timings
200: Douglas Avenue & 3 Mile Road

Existing Traffic
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.09	0.19		0.35	0.14	0.15	0.09	0.33	0.12	0.17	0.34	0.05
Control Delay	17.6	17.6		22.1	17.3	18.2	6.2	14.7	14.1	6.7	12.1	11.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	17.6		22.1	17.3	18.2	6.2	14.7	14.1	6.7	12.1	11.5
Queue Length 50th (ft)	7	22		27	16	15	6	51	14	12	43	4
Queue Length 95th (ft)	25	44		66	36	41	16	87	38	27	101	21
Internal Link Dist (ft)		270			564			411			504	
Turn Bay Length (ft)	85			115		85	100		30	100		50
Base Capacity (vph)	798	2208		742	2266	969	809	3341	1430	791	3278	1403
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.07		0.13	0.05	0.06	0.05	0.12	0.04	0.11	0.15	0.02

Intersection Summary

Area Type: Other

Cycle Length: 171

Actuated Cycle Length: 55.7

Natural Cycle: 60

Control Type: Actuated-Uncoordinated
























Description: Runs Free

Splits and Phases: 200: Douglas Avenue & 3 Mile Road

29 s	96 s	46 s
29 s	96 s	46 s

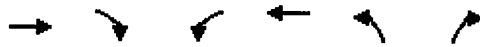
HCM 6th Signalized Intersection Summary
200: Douglas Avenue & 3 Mile Road

Existing Traffic
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	100	50	90	115	85	40	375	95	80	455	45
Future Volume (veh/h)	25	100	50	90	115	85	40	375	95	80	455	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1654	1710	1654	1600	1672	1600	1695	1772	1695	1668	1743	1668
Adj Flow Rate, veh/h	27	106	53	96	122	56	43	399	63	85	484	30
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	11	11	11	4	4	4	6	6	6
Cap, veh/h	401	580	274	372	860	367	449	1216	519	498	1285	548
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.05	0.36	0.36	0.08	0.39	0.39
Sat Flow, veh/h	1123	2142	1011	1050	3177	1356	1615	3367	1437	1589	3312	1414
Grp Volume(v), veh/h	27	79	80	96	122	56	43	399	63	85	484	30
Grp Sat Flow(s), veh/h/ln	1123	1625	1528	1050	1588	1356	1615	1683	1437	1589	1656	1414
Q Serve(g_s), s	1.0	2.1	2.2	4.3	1.6	1.7	0.9	4.8	1.6	1.8	5.8	0.7
Cycle Q Clear(g_c), s	2.6	2.1	2.2	6.5	1.6	1.7	0.9	4.8	1.6	1.8	5.8	0.7
Prop In Lane	1.00		0.66	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	401	440	414	372	860	367	449	1216	519	498	1285	548
V/C Ratio(X)	0.07	0.18	0.19	0.26	0.14	0.15	0.10	0.33	0.12	0.17	0.38	0.05
Avail Cap(c_a), veh/h	909	1174	1104	846	2295	980	1093	5473	2336	1089	5385	2298
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.3	15.5	15.5	18.0	15.3	15.4	10.0	12.8	11.8	9.4	12.1	10.6
Incr Delay (d2), s/veh	0.1	0.2	0.2	0.4	0.1	0.2	0.0	0.2	0.1	0.1	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.7	0.7	1.0	0.5	0.5	0.3	1.6	0.5	0.5	1.8	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.4	15.7	15.8	18.4	15.4	15.5	10.0	13.0	12.0	9.4	12.4	10.7
LnGrp LOS	B	B	B	B	B	B	A	B	B	A	B	B
Approach Vol, veh/h		186			274			505			599	
Approach Delay, s/veh		15.8			16.5			12.6			11.9	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.4	26.0		21.0	6.9	27.5		21.0				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	25.0	90.0		40.0	25.0	90.0		40.0				
Max Q Clear Time (g_c+I1), s	3.8	6.8		4.6	2.9	7.8		8.5				
Green Ext Time (p_c), s	0.1	4.6		1.0	0.0	5.4		1.4				
Intersection Summary												
HCM 6th Ctrl Delay	13.4											
HCM 6th LOS	B											

Lanes, Volumes, Timings
100: Wyoming Way & 3 Mile Road

Existing Traffic
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩			↩	↩	
Traffic Volume (vph)	215	10	20	230	5	10
Future Volume (vph)	215	10	20	230	5	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			100		100	
Link Speed (mph)	35			35	25	
Link Distance (ft)	389			1085	441	
Travel Time (s)	7.6			21.1	12.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	3%	3%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	234	0	0	261	15	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

HCM 6th TWSC
100: Wyoming Way & 3 Mile Road

Existing Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕		↕		↕	
Traffic Vol, veh/h	215	10	20	230	5	10
Future Vol, veh/h	215	10	20	230	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	3	3	1	1
Mvmt Flow	224	10	21	240	5	10
























Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	234	0	511
Stage 1	-	-	-	-	229
Stage 2	-	-	-	-	282
Critical Hdwy	-	-	4.13	-	6.41
Critical Hdwy Stg 1	-	-	-	-	5.41
Critical Hdwy Stg 2	-	-	-	-	5.41
Follow-up Hdwy	-	-	2.227	-	3.509
Pot Cap-1 Maneuver	-	-	1328	-	524
Stage 1	-	-	-	-	811
Stage 2	-	-	-	-	768
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1328	-	515
Mov Cap-2 Maneuver	-	-	-	-	515
Stage 1	-	-	-	-	811
Stage 2	-	-	-	-	754

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	10.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	682	-	-	1328	-
HCM Lane V/C Ratio	0.023	-	-	0.016	-
HCM Control Delay (s)	10.4	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lanes, Volumes, Timings
200: Douglas Avenue & 3 Mile Road

Existing Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	135	55	110	130	105	60	550	160	100	585	60
Future Volume (vph)	35	135	55	110	130	105	60	550	160	100	585	60
Ideal Flow (vphpl)	1750	1809	1750	1750	1829	1750	1750	1829	1750	1750	1829	1750
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	85		0	115		85	100		30	100		50
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Right Turn on Red			No			No			No			No
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		350			644			491			584	
Travel Time (s)		6.8			12.5			9.6			11.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	62%	100%	100%	62%	100%	100%	62%
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	198	0	115	135	68	63	573	103	104	609	39
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		18			18			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.07	1.11	1.11	1.05	1.11	1.11	1.05	1.11	1.11	1.05	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0	15.0	6.0	20.0	20.0	6.0	20.0	20.0
Minimum Split (s)	21.0	21.0		21.0	21.0	21.0	10.0	26.0	26.0	10.0	26.0	26.0
Total Split (s)	46.0	46.0		46.0	46.0	46.0	29.0	96.0	96.0	29.0	96.0	96.0
Total Split (%)	26.9%	26.9%		26.9%	26.9%	26.9%	17.0%	56.1%	56.1%	17.0%	56.1%	56.1%
Maximum Green (s)	40.0	40.0		40.0	40.0	40.0	25.0	90.0	90.0	25.0	90.0	90.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	4.0	4.0	2.0	4.0	4.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lanes, Volumes, Timings
200: Douglas Avenue & 3 Mile Road

Existing Traffic
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.12	0.23		0.40	0.15	0.17	0.14	0.45	0.19	0.23	0.47	0.07
Control Delay	19.7	19.1		24.8	18.7	20.0	6.7	16.1	15.0	7.3	15.8	13.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.7	19.1		24.8	18.7	20.0	6.7	16.1	15.0	7.3	15.8	13.2
Queue Length 50th (ft)	9	28		33	18	18	9	80	24	15	84	9
Queue Length 95th (ft)	33	61		88	44	54	24	137	61	36	142	28
Internal Link Dist (ft)		270			564			411			504	
Turn Bay Length (ft)	85			115		85	100		30	100		50
Base Capacity (vph)	801	2261		739	2342	1002	798	3407	1458	791	3374	1444
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.09		0.16	0.06	0.07	0.08	0.17	0.07	0.13	0.18	0.03

Intersection Summary

Area Type: Other

Cycle Length: 171

Actuated Cycle Length: 58.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated
























Description: Runs Free

Splits and Phases: 200: Douglas Avenue & 3 Mile Road

Ø1	Ø2	Ø4
29 s	96 s	45 s
Ø5	Ø6	Ø8
29 s	95 s	45 s

HCM 6th Signalized Intersection Summary
 200: Douglas Avenue & 3 Mile Road

Existing Traffic
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	135	55	110	130	105	60	550	160	100	585	60
Future Volume (veh/h)	35	135	55	110	130	105	60	550	160	100	585	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1736	1795	1736	1709	1786	1709	1723	1800	1723	1709	1786	1709
Adj Flow Rate, veh/h	36	141	57	115	135	68	62	573	103	104	609	39
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	3	3	3	2	2	2	3	3	3
Cap, veh/h	407	646	250	368	912	389	419	1226	523	445	1283	548
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.07	0.36	0.36	0.09	0.38	0.38
Sat Flow, veh/h	1165	2402	930	1082	3394	1448	1641	3421	1460	1628	3394	1448
Grp Volume(v), veh/h	36	98	100	115	135	68	62	573	103	104	609	39
Grp Sat Flow(s), veh/h/ln	1165	1705	1627	1082	1697	1448	1641	1710	1460	1628	1697	1448
Q Serve(g_s), s	1.4	2.5	2.7	5.2	1.7	2.0	1.3	7.2	2.7	2.1	7.6	1.0
Cycle Q Clear(g_c), s	3.0	2.5	2.7	7.8	1.7	2.0	1.3	7.2	2.7	2.1	7.6	1.0
Prop In Lane	1.00		0.57	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	407	458	437	368	912	389	419	1226	523	445	1283	548
V/C Ratio(X)	0.09	0.21	0.23	0.31	0.15	0.17	0.15	0.47	0.20	0.23	0.47	0.07
Avail Cap(c_a), veh/h	929	1222	1167	853	2433	1038	1045	5518	2355	1034	5474	2336
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.7	15.8	15.9	18.9	15.5	15.7	10.0	13.8	12.4	9.7	13.2	11.1
Incr Delay (d2), s/veh	0.1	0.2	0.3	0.5	0.1	0.2	0.1	0.4	0.3	0.1	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.9	0.9	1.2	0.6	0.6	0.4	2.4	0.8	0.6	2.5	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.8	16.1	16.2	19.4	15.6	15.9	10.1	14.2	12.6	9.8	13.5	11.2
LnGrp LOS	B	B	B	B	B	B	B	B	B	A	B	B
Approach Vol, veh/h		234			318			738			752	
Approach Delay, s/veh		16.2			17.0			13.6			12.9	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	26.0		21.0	7.7	27.1		21.0				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	25.0	90.0		40.0	25.0	90.0		40.0				
Max Q Clear Time (g_c+l1), s	4.1	9.2		5.0	3.3	9.6		9.8				
Green Ext Time (p_c), s	0.1	7.1		1.3	0.1	7.2		1.5				
Intersection Summary												
HCM 6th Ctrl Delay				14.2								
HCM 6th LOS				B								

APPENDIX C

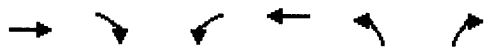
SYNCHRO INTERSECTION CAPACITY ANALYSIS

Build Traffic Volumes



Lanes, Volumes, Timings
100: Wyoming Way & 3 Mile Road

Build Traffic
AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩			↩	↩	
Traffic Volume (vph)	170	5	10	190	15	5
Future Volume (vph)	170	5	10	190	15	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			100		100	
Link Speed (mph)	35			35	25	
Link Distance (ft)	389			1085	441	
Travel Time (s)	7.6			21.1	12.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	186	0	0	213	21	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

HCM 6th TWSC
100: Wyoming Way & 3 Mile Road

Build Traffic
AM Peak Hour

Intersection

Int Delay, s/veh 0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	170	5	10	190	15	5
Future Vol, veh/h	170	5	10	190	15	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	4	4	5	5	5	5
Mvmt Flow	181	5	11	202	16	5
























Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	186
Stage 1	-	-	184
Stage 2	-	-	224
Critical Hdwy	-	4.15	6.45
Critical Hdwy Stg 1	-	-	5.45
Critical Hdwy Stg 2	-	-	5.45
Follow-up Hdwy	-	2.245	3.545
Pot Cap-1 Maneuver	-	1371	594
Stage 1	-	-	840
Stage 2	-	-	806
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1371	589
Mov Cap-2 Maneuver	-	-	589
Stage 1	-	-	840
Stage 2	-	-	799

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	638	-	-	1371	-
HCM Lane V/C Ratio	0.033	-	-	0.008	-
HCM Control Delay (s)	10.8	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lanes, Volumes, Timings
200: Douglas Avenue & 3 Mile Road

Build Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	100	55	90	115	85	45	375	95	80	455	50
Future Volume (vph)	30	100	55	90	115	85	45	375	95	80	455	50
Ideal Flow (vphpl)	1750	1809	1750	1750	1829	1750	1750	1829	1750	1750	1829	1750
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	85		0	115		85	100		30	100		50
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Right Turn on Red			No			No			No			No
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		350			644			491			584	
Travel Time (s)		6.8			12.5			9.6			11.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	62%	100%	100%	62%	100%	100%	62%
Heavy Vehicles (%)	7%	7%	7%	11%	11%	11%	4%	4%	4%	6%	6%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	165	0	96	122	56	48	399	63	85	484	33
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		18			18			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.07	1.11	1.11	1.05	1.11	1.11	1.05	1.11	1.11	1.05	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0	15.0	6.0	20.0	20.0	6.0	20.0	20.0
Minimum Split (s)	21.0	21.0		21.0	21.0	21.0	10.0	26.0	26.0	10.0	26.0	26.0
Total Split (s)	46.0	46.0		46.0	46.0	46.0	29.0	96.0	96.0	29.0	96.0	96.0
Total Split (%)	26.9%	26.9%		26.9%	26.9%	26.9%	17.0%	56.1%	56.1%	17.0%	56.1%	56.1%
Maximum Green (s)	40.0	40.0		40.0	40.0	40.0	25.0	90.0	90.0	25.0	90.0	90.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	4.0	4.0	2.0	4.0	4.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lanes, Volumes, Timings
200: Douglas Avenue & 3 Mile Road

Build Traffic
AM Peak Hour



Lane Group	EBL	EBT	E&R	WBL	WBT	W&R	NBL	NBT	N&R	SBL	SBT	S&R
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.11	0.20		0.35	0.14	0.15	0.10	0.33	0.12	0.17	0.37	0.06
Control Delay	17.8	17.6		22.1	17.3	18.2	6.3	14.7	14.1	6.7	13.7	12.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.8	17.6		22.1	17.3	18.2	6.3	14.7	14.1	6.7	13.7	12.7
Queue Length 50th (ft)	8	23		27	16	15	7	51	14	12	64	7
Queue Length 95th (ft)	27	46		66	35	41	18	87	38	28	103	23
Internal Link Dist (ft)		270			564			411			504	
Turn Bay Length (ft)	85			115		85	100		30	100		50
Base Capacity (vph)	798	2197		738	2264	968	809	3341	1430	794	3278	1403
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.08		0.13	0.05	0.06	0.06	0.12	0.04	0.11	0.15	0.02

Intersection Summary

Area Type: Other

Cycle Length: 171

Actuated Cycle Length: 55.7

Natural Cycle: 60

Control Type: Actuated-Uncoordinated
























Description: Runs Free

Splits and Phases: 200: Douglas Avenue & 3 Mile Road

29 s	96 s	46 s
29 s	96 s	46 s

HCM 6th Signalized Intersection Summary
200: Douglas Avenue & 3 Mile Road

Build Traffic
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	100	55	90	115	85	45	375	95	80	455	50
Future Volume (veh/h)	30	100	55	90	115	85	45	375	95	80	455	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1654	1710	1654	1600	1672	1600	1695	1772	1695	1668	1743	1668
Adj Flow Rate, veh/h	32	106	59	96	122	56	48	399	63	85	484	33
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	11	11	11	4	4	4	6	6	6
Cap, veh/h	401	559	292	369	860	367	451	1216	519	498	1271	542
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.06	0.36	0.36	0.08	0.38	0.38
Sat Flow, veh/h	1123	2063	1078	1044	3177	1356	1615	3367	1437	1589	3312	1414
Grp Volume(v), veh/h	32	82	83	96	122	56	48	399	63	85	484	33
Grp Sat Flow(s),veh/h/ln	1123	1625	1516	1044	1588	1356	1615	1683	1437	1589	1656	1414
Q Serve(g_s), s	1.2	2.1	2.3	4.3	1.6	1.7	1.0	4.8	1.6	1.8	5.8	0.8
Cycle Q Clear(g_c), s	2.8	2.1	2.3	6.7	1.6	1.7	1.0	4.8	1.6	1.8	5.8	0.8
Prop In Lane	1.00		0.71	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	401	440	410	369	860	367	451	1216	519	498	1271	542
V/C Ratio(X)	0.08	0.19	0.20	0.26	0.14	0.15	0.11	0.33	0.12	0.17	0.38	0.06
Avail Cap(c_a), veh/h	909	1174	1095	840	2295	980	1089	5473	2336	1089	5385	2298
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.4	15.5	15.6	18.1	15.3	15.4	9.9	12.8	11.8	9.4	12.3	10.8
Incr Delay (d2), s/veh	0.1	0.2	0.2	0.4	0.1	0.2	0.0	0.2	0.1	0.1	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.7	0.7	1.0	0.5	0.5	0.3	1.6	0.5	0.5	1.9	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.5	15.7	15.8	18.5	15.4	15.5	9.9	13.0	12.0	9.4	12.6	10.8
LnGrp LOS	B	B	B	B	B	B	A	B	B	A	B	B
Approach Vol, veh/h		197			274			510			602	
Approach Delay, s/veh		15.9			16.5			12.6			12.0	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.4	26.0		21.0	7.1	27.2		21.0				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	25.0	90.0		40.0	25.0	90.0		40.0				
Max Q Clear Time (g_c+I1), s	3.8	6.8		4.8	3.0	7.8		8.7				
Green Ext Time (p_c), s	0.1	4.6		1.1	0.0	5.5		1.4				
Intersection Summary												
HCM 6th Ctrl Delay				13.5								
HCM 6th LOS				B								

Lanes, Volumes, Timings
300: Site Driveway & 3 Mile Road

Build Traffic
AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Volume (vph)	175	1	10	200	1	10
Future Volume (vph)	175	1	10	200	1	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			100		100	
Link Speed (mph)	35			35	25	
Link Distance (ft)	1085			1335	456	
Travel Time (s)	21.1			26.0	12.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	5%	5%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	187	0	0	224	12	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	175	1	10	200	1	10
Future Vol, veh/h	175	1	10	200	1	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	4	4	5	5	2	2
Mvmt Flow	186	1	11	213	1	11

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	187	0	422
Stage 1	-	-	-	-	187
Stage 2	-	-	-	-	235
Critical Hdwy	-	-	4.15	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.245	-	3.518
Pot Cap-1 Maneuver	-	-	1369	-	588
Stage 1	-	-	-	-	845
Stage 2	-	-	-	-	804
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1369	-	583
Mov Cap-2 Maneuver	-	-	-	-	583
Stage 1	-	-	-	-	845
Stage 2	-	-	-	-	797

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	820	-	-	1369	-
HCM Lane V/C Ratio	0.014	-	-	0.008	-
HCM Control Delay (s)	9.5	-	-	7.7	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Lanes, Volumes, Timings
100: Wyoming Way & 3 Mile Road

Build Traffic
PM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↘			↖	↗	
Traffic Volume (vph)	215	10	20	230	5	10
Future Volume (vph)	215	10	20	230	5	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			100		100	
Link Speed (mph)	35			35	25	
Link Distance (ft)	389			1085	441	
Travel Time (s)	7.6			21.1	12.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	3%	3%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	234	0	0	261	15	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	215	10	20	230	5	10
Future Vol, veh/h	215	10	20	230	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	3	3	1	1
Mvmt Flow	224	10	21	240	5	10
























Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	234
Stage 1	-	-	229
Stage 2	-	-	282
Critical Hdwy	-	4.13	6.41
Critical Hdwy Stg 1	-	-	5.41
Critical Hdwy Stg 2	-	-	5.41
Follow-up Hdwy	-	2.227	3.509
Pot Cap-1 Maneuver	-	1328	524
Stage 1	-	-	811
Stage 2	-	-	768
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1328	515
Mov Cap-2 Maneuver	-	-	515
Stage 1	-	-	811
Stage 2	-	-	754

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	682	-	-	1328	-
HCM Lane V/C Ratio	0.023	-	-	0.016	-
HCM Control Delay (s)	10.4	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lanes, Volumes, Timings
200: Douglas Avenue & 3 Mile Road

Build Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	135	60	110	130	105	65	550	160	100	585	60
Future Volume (vph)	40	135	60	110	130	105	65	550	160	100	585	60
Ideal Flow (vphpl)	1750	1809	1750	1750	1829	1750	1750	1829	1750	1750	1829	1750
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	85		0	115		85	100		30	100		50
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Right Turn on Red			No			No			No			No
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		350			644			491			584	
Travel Time (s)		6.8			12.5			9.6			11.4	
Conf. Peds. (#/hr)												
Conf. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	62%	100%	100%	62%	100%	100%	62%
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	204	0	115	135	68	68	573	103	104	609	39
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		18			18			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.07	1.11	1.11	1.05	1.11	1.11	1.05	1.11	1.11	1.05	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0	15.0	6.0	20.0	20.0	6.0	20.0	20.0
Minimum Split (s)	21.0	21.0		21.0	21.0	21.0	10.0	26.0	26.0	10.0	26.0	26.0
Total Split (s)	46.0	46.0		46.0	46.0	46.0	29.0	96.0	96.0	29.0	96.0	96.0
Total Split (%)	26.9%	26.9%		26.9%	26.9%	26.9%	17.0%	56.1%	56.1%	17.0%	56.1%	56.1%
Maximum Green (s)	40.0	40.0		40.0	40.0	40.0	25.0	90.0	90.0	25.0	90.0	90.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	2.0	4.0	4.0	2.0	4.0	4.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lanes, Volumes, Timings
200: Douglas Avenue & 3 Mile Road

Build Traffic
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.13	0.23		0.40	0.15	0.17	0.15	0.45	0.19	0.23	0.48	0.07
Control Delay	20.0	19.2		24.9	18.8	20.1	6.8	16.1	15.0	7.3	16.0	13.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.0	19.2		24.9	18.8	20.1	6.8	16.1	15.0	7.3	16.0	13.3
Queue Length 50th (ft)	11	28		33	18	18	9	80	24	15	84	9
Queue Length 95th (ft)	38	63		88	44	54	26	138	62	36	143	28
Internal Link Dist (ft)		270			564			411			504	
Turn Bay Length (ft)	85			115		85	100		30	100		50
Base Capacity (vph)	800	2251		734	2339	1001	797	3407	1458	790	3374	1444
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.09		0.16	0.06	0.07	0.09	0.17	0.07	0.13	0.18	0.03

Intersection Summary

Area Type: Other

Cycle Length: 171

Actuated Cycle Length: 58.7

Natural Cycle: 60

Control Type: Actuated-Uncoordinated
























Description: Runs Free

Splits and Phases: 200: Douglas Avenue & 3 Mile Road

Ø1	Ø2	Ø4
29 s	96 s	45 s
Ø5	Ø6	Ø8
29 s	96 s	45 s

HCM 6th Signalized Intersection Summary
 200: Douglas Avenue & 3 Mile Road

Build Traffic
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	135	60	110	130	105	65	550	160	100	585	60
Future Volume (veh/h)	40	135	60	110	130	105	65	550	160	100	585	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1736	1795	1736	1709	1786	1709	1723	1800	1723	1709	1786	1709
Adj Flow Rate, veh/h	42	141	62	115	135	68	68	573	103	104	609	39
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	3	3	3	2	2	2	3	3	3
Cap, veh/h	407	629	264	366	912	389	422	1226	523	445	1271	542
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.07	0.36	0.36	0.09	0.37	0.37
Sat Flow, veh/h	1165	2340	983	1077	3394	1448	1641	3421	1460	1628	3394	1448
Grp Volume(v), veh/h	42	101	102	115	135	68	68	573	103	104	609	39
Grp Sat Flow(s),veh/h/ln	1165	1705	1618	1077	1697	1448	1641	1710	1460	1628	1697	1448
Q Serve(g_s), s	1.6	2.6	2.7	5.2	1.7	2.0	1.4	7.2	2.7	2.1	7.6	1.0
Cycle Q Clear(g_c), s	3.3	2.6	2.7	8.0	1.7	2.0	1.4	7.2	2.7	2.1	7.6	1.0
Prop In Lane	1.00		0.61	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	407	458	435	366	912	389	422	1226	523	445	1271	542
V/C Ratio(X)	0.10	0.22	0.23	0.31	0.15	0.17	0.16	0.47	0.20	0.23	0.48	0.07
Avail Cap(c_a), veh/h	929	1222	1160	848	2433	1038	1042	5518	2355	1034	5474	2336
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.8	15.9	15.9	19.0	15.5	15.7	10.0	13.8	12.4	9.7	13.3	11.2
Incr Delay (d2), s/veh	0.1	0.2	0.3	0.5	0.1	0.2	0.1	0.4	0.3	0.1	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.9	0.9	1.2	0.6	0.6	0.4	2.4	0.8	0.6	2.5	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.9	16.1	16.2	19.5	15.6	15.9	10.0	14.2	12.6	9.8	13.7	11.3
LnGrp LOS	B	B	B	B	B	B	B	B	B	A	B	B
Approach Vol, veh/h		245			318			744			752	
Approach Delay, s/veh		16.3			17.1			13.6			13.0	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	26.0		21.0	7.9	26.9		21.0				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	25.0	90.0		40.0	25.0	90.0		40.0				
Max Q Clear Time (g_c+I1), s	4.1	9.2		5.3	3.4	9.6		10.0				
Green Ext Time (p_c), s	0.1	7.1		1.3	0.1	7.2		1.5				
Intersection Summary												
HCM 6th Ctrl Delay				14.2								
HCM 6th LOS				B								

Lanes, Volumes, Timings
 300: Site Driveway & 3 Mile Road

Build Traffic
 PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→		←		↔	
Traffic Volume (vph)	225	1	5	250	1	10
Future Volume (vph)	225	1	5	250	1	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%		0%	
Storage Length (ft)	0		0		0	
Storage Lanes	0		0		1	
Taper Length (ft)			100		100	
Link Speed (mph)	35		35		25	
Link Distance (ft)	1085		1335		456	
Travel Time (s)	21.1		26.0		12.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	3%	3%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	235	0	0	265	11	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0		0		12	
Link Offset(ft)	0		0		0	
Crosswalk Width(ft)	16		16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		15		15	
Sign Control	Free		Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

HCM 6th TWSC
 300: Site Driveway & 3 Mile Road

Build Traffic
 PM Peak Hour

Intersection

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	↕
Traffic Vol, veh/h	225	1	5	250	1	10
Future Vol, veh/h	225	1	5	250	1	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	3	3	2	2
Mvmt Flow	234	1	5	260	1	10

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	235	0	505 235
Stage 1	-	-	-	-	235 -
Stage 2	-	-	-	-	270 -
Critical Hdwy	-	-	4.13	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.227	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1326	-	527 804
Stage 1	-	-	-	-	804 -
Stage 2	-	-	-	-	775 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1326	-	525 804
Mov Cap-2 Maneuver	-	-	-	-	525 -
Stage 1	-	-	-	-	804 -
Stage 2	-	-	-	-	772 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	767	-	-	1326	-
HCM Lane V/C Ratio	0.015	-	-	0.004	-
HCM Control Delay (s)	9.8	-	-	7.7	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

APPENDIX D

INTERSECTION AND STOPPING SIGHT DISTANCE TABLES/WORKSHEETS

3 Mile Road & Site Driveway

ISD CALCULATIONS (TWSC)

Performed by: TADI - TSC Date: 4/7/2022
 Intersection: 3 Mile Road & Youth Center Driveway
 Community: Caledonia, Racine County, WI

Mainline Name: 3 Mile Road
 Sidestreet Name: Youth Center Driveway

Left-In Allowed?	Yes	
Left-Out Allowed?	Yes	
Right-In Allowed?	Yes	
Right-Out Allowed?	Yes	
Through-Out Allowed?	No	
Design Speed from Left:	40	mph
Design Speed from Right:	40	mph
Median Width:	0	feet
Minor Street Approach Grade:	0.0%	If a minor street vehicle approaches the major street at greater than 3%, enter grade.
Number of Near Side Right & Bike:	0.00	equivalent 12-ft lanes. Include tapers, auxiliary lanes, parking lanes, and bicycle accommodations.
Number of Near Side Thru:	1.00	equivalent 12-ft lanes.
Number of Far Side Thru:	1.00	equivalent 12-ft lanes.
Number of Far Side Right & Bike:	0.00	equivalent 12-ft lanes. Include tapers, auxiliary lanes, parking lanes, and bicycle accommodations.
AASHTO or WisDOT:	AASHTO	

P-vehicle Design Length:	19.0	feet (P = 19.0. Overwrite if other design veh)
SU-vehicle Design Length:	39.5	feet (SU-40 = 39.5. Overwrite if other design veh)
WB-vehicle Design Length:	73.5	feet (WB-67 = 73.5. Overwrite if other design veh)

Design Vehicles:	P	SU	WB	(place an "X")
	X	X		

ISD CASE B1: Left Turn from Minor Street or Median (driver looking right)

	AASHTO MINIMUM ISD			WISDOT UPPER MINIMUM ISD		
	P	SU	WB	P	SU	WB
Base Time Gap, sec:	7.50	9.50	11.50	15.00	17.00	19.00
Additional Time Gap 1, sec:	0.00	0.00	0.00	0.00	0.00	0.00
Additional Time Gap 2, sec:	0.00	0.00	0.00	0.00	0.00	0.00
Total Time Gap, sec:	7.50	9.50	11.50	15.00	17.00	19.00
Case B1 ISD, feet:	440.0	557.3	674.7	556.7	704.0	767.7
Rounded Case B1 ISD, feet:	445	560	675	560	705	768

ISD CASE B2: Right Turn from Minor Street (driver looking left)

	AASHTO MINIMUM ISD			WISDOT UPPER MINIMUM ISD		
	P	SU	WB	P	SU	WB
Base Time Gap, sec:	6.50	8.50	10.50	8.00	10.00	12.00
Additional Time Gap 1, sec:	0.00	0.00	0.00	0.00	0.00	0.00
Additional Time Gap 2, sec:	0.00	0.00	0.00	0.00	0.00	0.00
Total Time Gap, sec:	6.50	8.50	10.50	8.00	10.00	12.00
Case B2 ISD, feet:	381.3	498.7	616.0	459.1	585.7	704.0
Rounded Case B2 ISD, feet:	385	500	620	475	600	715

ISD CASE B3a: Crossing from Minor Street Traffic from Left (driver looking left)

	AASHTO MINIMUM ISD			WISDOT UPPER MINIMUM ISD		
	P	SU	WB	P	SU	WB
Base Time Gap, sec:	6.50	8.50	10.50	7.00	10.00	13.00
Additional Time Gap 1, sec:	0.00	0.00	0.00	0.00	0.00	0.00
Additional Time Gap 2, sec:	0.00	0.00	0.00	0.00	0.00	0.00
Total Time Gap, sec:	6.50	8.50	10.50	7.00	10.00	13.00
Case B3a ISD, feet:	381.3	498.7	616.0	470.7	585.7	767.7
Rounded Case B3a ISD, feet:	385	500	620	475	590	765

ISD CASE B3b: Crossing from Minor Street or Median (driver looking right)

	AASHTO MINIMUM ISD			WISDOT UPPER MINIMUM ISD		
	P	SU	WB	P	SU	WB
Base Time Gap, sec:	6.50	8.50	10.50	7.00	10.00	13.00
Additional Time Gap 1, sec:	-6.50	-8.50	-10.50	-7.00	-10.00	-13.00
Additional Time Gap 2, sec:	0.00	0.00	0.00	0.00	0.00	0.00
Total Time Gap, sec:	0.00	0.00	0.00	0.00	0.00	0.00
Case B3b ISD, feet:	0.0	0.0	0.0	0.0	0.0	0.0
Rounded Case B3b ISD, feet:	0	0	0	0	0	0

ISD CASE F: Left from Major to Minor (driver looking to left of access towards oncoming traffic)

	AASHTO MINIMUM ISD			WISDOT UPPER MINIMUM ISD		
	P	SU	WB	P	SU	WB
Base Time Gap, sec:	5.50	6.50	7.50	8.00	8.00	8.00
Additional Time Gap 1, sec:	0.00	0.00	0.00	0.00	0.00	0.00
Additional Time Gap 2, sec:	N/A	N/A	N/A	N/A	N/A	N/A
Total Time Gap, sec:	5.50	6.50	7.50	8.00	8.00	8.00
Case F ISD, feet:	322.7	381.3	440.0	470.7	470.7	470.7
Rounded Case F ISD, feet:	325	385	445	470	470	470

ISD CONTROLLING DISTANCES:

	AASHTO MINIMUM ISD			WISDOT UPPER MINIMUM ISD		
	P	SU	WB	P	SU	WB
To Left of Access:	385'	500'	620'	470'	590'	765'
To Right of Access:	445'	560'	675'	560'	705'	765'
Left-Turn from Mainline:	325'	385'	445'	470'	470'	470'

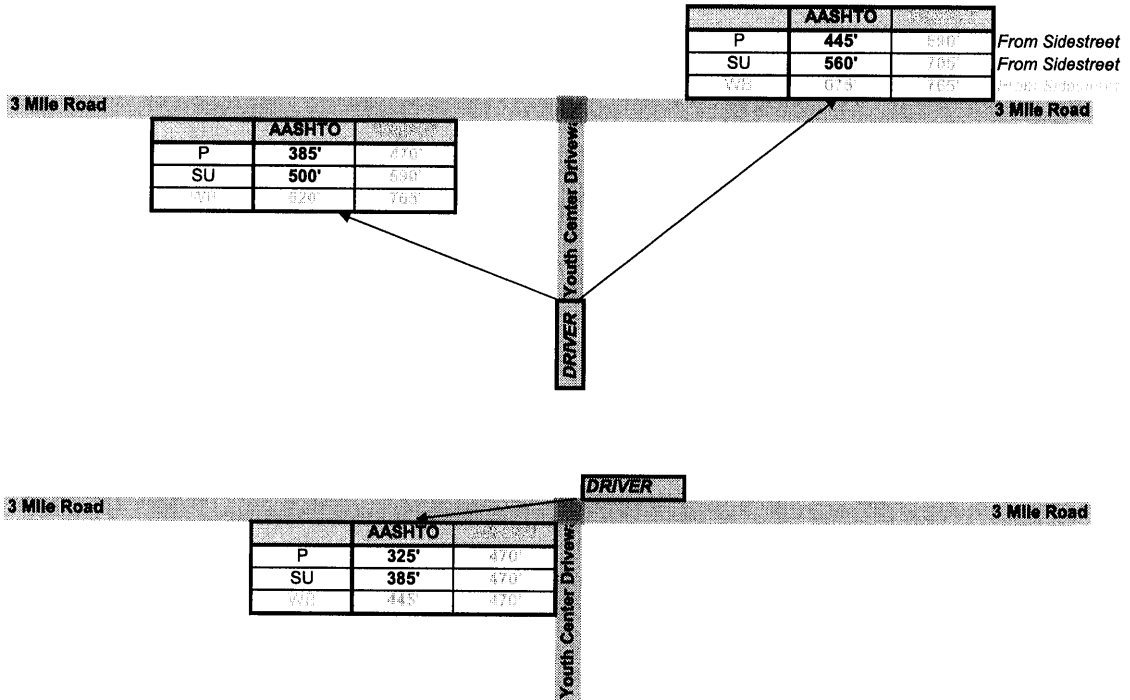
ISD CALCULATIONS (TWSC)

Performed by: TADI - TSC Date: 4/7/2022
 Intersection: 3 Mile Road & Youth Center Driveway
 Community: Caledonia, Racine County, WI

North

Eye Height (start of Arrows): 3.5-ft for P, 7.6-ft for SU & WB
 Object Height (head of Arrows): 3.5-ft
 Eye Location: 14.5-ft from edge of traveled way

Special Instructions



SSD CALCULATIONS

	EB	WB	NB	SB	
Design Speed:	35	35	35	35	
Deceleration (ft/s ²):	11.2	11.2	11.2	11.2	Default rate is 11.2 ft/s ² per AASHTO GDHS
Estimated Grade (%):	0.0%	0.0%	0.0%	0.0%	Positive is uphill, negative is downhill
Brake Reaction Time (s):	2.5	2.5	2.5	2.5	Default rate is 2.5s per AASHTO GDHS
Brake Reaction (ft):	0.0	0.0	0.0	0.0	
Braking Distance (ft):	0.0	0.0	0.0	0.0	
Calculated SSD (ft):	82.5	82.5	82.5	82.5	
Rounded SSD (ft):	80	80	80	80	

Eye Height (upstream of object to be seen): 3.5-ft
 Object Height (downstream of motorist): 2.0-ft

Special Instructions

Sight Distance Values⁵

DESIGN SPEED MPH	SIGHT DISTANCE - FEET							PASSING SIGHT DISTANCE ^{1, 3, 4}
	STOPPING SIGHT DISTANCE ¹	DECISION SIGHT DISTANCE ¹						
		AVOIDANCE MANEUVER ²						
		A	B	C	D	E		
25	155	---	---	---	---	---	900	
30	200	220	490	450	535	620	1090	
35	250	275	590	525	625	720	1280	
40	305	330	690	600	715	825	1470	
45	360	395	800	675	800	930	1625	
50	425	465	910	750	890	1030	1835	
55	495	535	1030	865	980	1135	1985	
60	570	610	1150	990	1125	1280	2135	
65	645	695	1275	1050	1220	1365	2285	
70	730	780	1410	1105	1275	1445	2480	

Notes

- 1 From Chapter 3, GDHS 2001 and GDHS 2004 (values are identical in both editions).
- 2 Avoidance maneuver A: Stop on rural road - t = 3.0 s
 Avoidance maneuver B: Stop on urban road - t = 9.1s
 Avoidance maneuver C: Speed/path/direction change on rural road - t varies between 10.2 and 11.2 s
 Avoidance maneuver D: Speed/path/direction change on suburban road - t varies between 12.1 and 12.9 s
 Avoidance maneuver E: Speed/path/direction change on urban road - t varies between 14.0 and 14.5 s
- 3 See Chapter 3 of the Wisconsin Traffic Engineering, Operations and Safety Manual (TEOpS) for No passing zone standards.
- 4 See [Attachment 5.8](#) for vertical curve design for Passing Sight Distance.
- 5 See [Attachment 5.2](#) for Sight Distance Categories and Application