

**Traffic Impact Study**

**Osaca Subdivision, Northumberland  
County**

**D.M. Wills Project Number 22-11056**



**D.M. Wills Associates Limited**

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**Prepared for:  
Hillstreet Developments Inc.**

## Summary of Revisions

Revision No.	Revision Title	Date of Release	Summary of Revisions
1	Final Report	November 16, 2022	Final Report Submitted

This report has been formatted considering the requirements of the Accessibility for Ontarians with Disabilities Act.

## Executive Summary

D.M. Wills Associates Limited has been retained by Hillstreet Developments Inc. to prepare a Traffic Impact Study to support a proposed residential subdivision, which is located at 5868 County Road (CR) 65, Northumberland County.

The proposed development will consist of 59 dwelling units. Based on the characteristics of the development and the surrounding area, the study area included the entrance of the development on CR 65. This entrance is proposed to align with Mastwood Road forming a four-legged intersection.

This study reviews the development details and the existing traffic conditions of the study area including the investigation of the available traffic volumes. Based on this review and the development details, a traffic operation analysis has been conducted using Synchro 9.0 to investigate the impact of the traffic generated from the proposed development on the study area. This analysis is carried out for the traffic condition with the consideration of the development impact. The analysis has covered the a.m. and p.m. peaks, as well as the current (i.e., 2022) and horizon years (i.e., 2027 and 2032) scenarios. The study reviews the need for auxiliary turn lanes at the entrance of the development on CR 65.

Assuming a full build-out, the development is anticipated to generate about 12 entering and 33 exiting trips during the a.m. peak, and 37 and 21 entering and exiting trips during the p.m. peak, respectively. Based on the analysis, there is no impact of the development on the traffic operation of CR 65 at the entrances of the development. The Level of Service (LOS) within the study area remains the same before and after considering the impact of the development for all the scenarios and it will operate consistently at LOS "A". These LOS levels reflect that the intersection of CR 65 and Mastwood Road/Development Entrance will operate at acceptable traffic operation levels. Four auxiliary lanes warrant analysis, the results of the current and the horizon years show that there will be no need for any additional auxiliary lanes on the northbound or the southbound approaches at the entrance of the development.

Also, the sight distance and visibility requirements have been reviewed during a field visit to the development location. According to the Transportation Association of Canada (TAC) Manual, the review indicated that there is sufficient visibility for both sides (i.e., east, and west) at the south entrance of the development on CR 65. On the other hand, to fulfill the sight distance requirements at the north entrance and proactively enhance traffic safety in this area, the following should be considered:

- Maintain a lateral clearance (25 m) from the centerline of the curve's inner lane regardless of the development. Within this lateral clearance, any vegetation, hill, landscaping, parking, fencing, etc. should be removed to ensure no line-of-sight obstruction exists as shown in figure 3.2.10 in the TAC.
- Reduce the posted speed limit within this area to 40 km/hr.

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## 1.0 Introduction and Background

D.M. Wills Associates Limited (Wills) has been retained by Hillstreet Developments Inc. to undertake a Traffic Impact Study (TIS) to support a proposed residential subdivision, which is located at 5868 County Road (CR) 65, Northumberland County (County).

The purpose of this TIS Report is to assess the impact of the proposed residential subdivision on traffic operations of CR 65 for future conditions, as well as to examine the need for auxiliary lanes at the entrance of the proposed development on CR 65. This study will assess the traffic operations in terms of the Level of Service (LOS) at the intersection of development entrance/Mastwood Road and CR 65. Therefore, the study area is defined here to include this intersection with its current geometry (T-intersection) and its proposed geometry of a four-legged intersection after the construction of the internal road of the subdivision.

The land, where the subdivision is proposed is currently undeveloped. The proposed development is located on the west side of CR 65. The lands surrounding the proposed development are a mix of rural residential homes and farmlands. An aerial photo sketching the location plan of the proposed development is included in **Appendix A**.

The proposed development is planned to include 59 residential dwelling units as shown in **Appendix B**. The proposed development will directly access CR 65 which will align with Mastwood Road and will have another access to CR 65 north of the subdivision as shown in the conceptual site plan, which is included in **Appendix B**.

## 2.0 Background Traffic Analysis

### 2.1 Roadway Existing Conditions

Within the study area, CR 65 has a two-way two-lane rural cross-section with no shoulders and ditches on both sides of the road. The speed limit on CR 65 at the intersection with Mastwood Road is 80 km/hr; however, the speed limit is dropped to 60 km/hr close to the north of the development and before the horizontal curves on CR 65.

### 2.2 Existing and Future Background Traffic Conditions

This study uses the traffic counts that were collected by Ontario Traffic Inc. on June 23, 2022, at the intersections of CR 65 and Mastwood Road. The traffic counts collected at this intersection are included in **Appendix C**.

Based on the traffic data, the a.m. peak hour is identified between 7:15 a.m. and 8:15 a.m., while the p.m. peak hour occurs between 3:30 p.m. and 4:30 p.m. To obtain traffic volumes for the horizon years 2027 and 2032, the future traffic counts were estimated using an annual growth rate of 2%. This assumed annual growth rate is estimated to be

consistent with the traffic growth discussed in the Northumberland County Transportation Master Plan (NCTMP) in Tables 2.4 and 3.1.

Since the counts were collected during the summer, there is no need to apply a seasonal factor. However, the County has provided traffic data for CR 65 that was collected in 2018 and the AADT was 900 veh/day. To adjust the data recently collected with the County's records, the following assumptions were taken into consideration:

- Based on a 2% annual traffic growth rate, the anticipated AADT in 2022 is 974 veh/day.
- Based on the data provided by the County, the percentage of p.m. peak hour volume to the daily traffic count on Thursday is about 9.6%. The same percentage is assumed for the 2022 AADT. Accordingly, the p.m. peak hour traffic volume (for both directions) is about 94 veh/hr.
- Based on the 2022 traffic count, the p.m. peak hour is 61 veh/hr. Hence, the adjustment factor is estimated to be 1.53, which is the ratio between the traffic based on AADT calculations (94 veh/hr.) and the collected traffic (61 veh/hr.).

The collected traffic volumes during the peak hours and the adjusted volumes for the current year and horizon years are summarized in **Table 1**.

**Table 1 - Estimated Current and Anticipated Background Traffic Volumes at the Intersection of CR 65 and Mastwood Road**

	WBL	WBR	NBT	NBR	SBL	SBT
<b>a.m. Peak Hour</b>						
<b>2022 (Current)</b>	0	2	12	0	1	23
<b>2022 (Adjusted)</b>	0	3	18	0	2	35
<b>2027</b>	0	3	20	0	2	39
<b>2032</b>	0	4	22	0	2	43
<b>p.m. Peak Hour</b>						
<b>2022 (Current)</b>	4	2	31	2	0	22
<b>2022 (Adjusted)</b>	6	3	48	3	0	34
<b>2027</b>	7	3	52	3	0	37
<b>2032</b>	7	4	58	4	0	41

### 2.3 Existing and Future Background Traffic Operation

Synchro 9 software is used to review the existing and future traffic operation of the study area without the development (i.e., background traffic conditions). Traffic operations were investigated for the adjusted traffic conditions of 2022, and the horizon years 2027 and 2032 as presented in **Table 1**. The Level of Service (LOS) results of the existing and

future scenarios without the development impact (i.e., background traffic volumes) as well as the volume-to-capacity ratio (v/c ratio) are shown in **Table 2**. More details about the LOS definition and Synchro model results for these scenarios are presented in **Appendix D** and **Appendix E**, respectively.

**Table 2 - LOS and v/c ratio at the intersection of CR 65 and Mastwood Road based on the Total Background Traffic Condition**

	WB	NB	SBL
<b>a.m. Peak Hour</b>			
<b>2022 (Adjusted)</b>	A	-	A
<b>2027</b>	A	-	A
<b>2032</b>	A	-	A
<b>p.m. Peak Hour</b>			
<b>2022 (Adjusted)</b>	A	-	A
<b>2027</b>	A	-	A
<b>2032</b>	A	-	A

As shown in **Table 2**, the LOS's at the intersection of CR 65 and Mastwood Road are maintained over the study horizon at LOS "A". This reflects a smooth operation of the background traffic at this intersection.

### 3.0 Traffic Operation Conditions with the Development Consideration

#### 3.1 Trip Generation

The estimation of trips generated by the proposed development was derived from the *Trip Generation Manual, 11<sup>th</sup> Edition*<sup>1</sup>, published by the Institute of Transportation Engineers (ITE). The ITE code of the land use, which closely describes the development, and the corresponding trip generation rates are shown in **Table 3**. Also, the table shows the average trip generation rates for this land use for both the a.m. and the p.m. peaks and the percentages of entering and exiting.

<sup>1</sup> Trip Generation Manual, Vol. 1, 2, and 3, 11th ed. ITE, Washington, D.C., 2021.



**Table 3 - Trip Generation Rates during a.m. and p.m. Peak Hours of Generator**

Land Use	ITE Code	a.m. Peak			p.m. Peak		
		Avg. Rate	Entering	Exiting	Avg. Rate	Entering	Exiting
Single detached dwelling unit	210	0.75	26%	74%	0.99	64%	36%

The average trip generation rates provided by the ITE Manual for the peak hours of the generator (i.e., proposed subdivision) were used. Accordingly, the number of trips generated from the proposed development can be estimated as shown in **Table 4**.

**Table 4 - The Estimated Entering and Exiting Trips during a.m. and p.m. Peak Hours of Generator**

Land Use	Number of Dwelling units	a.m. Peak			p.m. Peak		
		Avg. Rate	Entering	Exiting	Avg. Rate	Entering	Exiting
Single detached dwelling unit	59	44	12	33	58	37	21
<b>Total</b>		44	12	33	58	37	21

### 3.2 Trip Distribution

Based on the existing turning movement ratios on CR 65, the trips generated from the development are distributed as shown in **Table 5**.

**Table 5 - Trip Distribution Ratios at the Intersection of CR 65 and Mastwood Road**

Traffic Direction	AM Peak Hour	
	Volume	Ratio
Northbound Traffic	12	0.316
Southbound Traffic	24	0.632
Westbound Traffic	2	0.053
Traffic Direction	PM Peak Hour	
	Volume	Ratio
Northbound Traffic	33	0.541
Southbound Traffic	22	0.361
Westbound Traffic	6	0.098

Based on the ratios in **Table 5** and the number of trips generated by the development shown in **Table 4**, the trip distribution at the entrance of the development is presented in **Table 6**.

**Table 6 - The Turning Movement Volumes Added to the Intersection of CR 65 and Mastwood Road due to the Development Impact**

Peak Hour	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
a.m.	10	2	21	0	1	0	4	0	0	0	0	7
p.m.	11	2	8	0	4	0	20	0	0	0	0	13

It is worth mentioning that it is assumed that the trip generated from the development will not increase over the horizon years since there is no expansion anticipated within the development.

The volumes reported in **Table 6** are then added to the total background traffic to further investigate the impact of the development on the traffic operation. The updated traffic volumes (rounded) at the entrance of the development with the consideration of the development are in **Table 7**.

**Table 7 - Estimated Future Traffic Volumes with the Development Consideration at the Intersection of CR 65 and Mastwood Road**

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>a.m. Peak Hour</b>												
<b>2022</b>	10	2	21	0	1	3	4	18	0	2	35	7
<b>2027</b>	10	2	21	0	1	3	4	20	0	2	39	7
<b>2032</b>	10	2	21	0	1	4	4	22	0	2	43	7
<b>p.m. Peak Hour</b>												
<b>2022</b>	11	2	8	6	4	3	20	48	3	0	34	13
<b>2027</b>	11	2	8	7	4	3	20	52	3	0	37	13
<b>2032</b>	11	2	8	7	4	4	20	58	4	0	41	13

### 3.3 Existing and Future Traffic Operation with the Development Consideration

Again, Synchro 9 software was used to model the traffic within the study area. The model aims at assessing the traffic operation within the study area including the intersection of CR 65 and Mastwood Road. Different scenarios with the consideration of the traffic generated from the development were assessed including the adjusted 2022 scenario and the horizon years (2027 and 2032) for both a.m. and p.m. peak hours. The traffic volumes used in this assessment are summarized in **Table 7**. The results summary is

presented in **Table 8**. The LOS definitions and the details of the simulation models and full results can be found in **Appendix E** and **Appendix F**, respectively.

Based on the traffic operation performance for the traffic with the development consideration, the traffic operation performance measure (i.e., LOS) at the intersection of CR 65 and Mastwood Road is consistently at LOS "A" over the study period. This reflects that the development will not have any impact on the traffic operation in this area of CR 65 as shown in the table below.

**Table 8 - LOS at the Intersection of CR 65 and Mastwood Road  
based on Future Traffic Condition with the Development Consideration**

	EB	WB	NBL	SBL
<b>a.m. Peak Hour</b>				
<b>2022 (Adjusted)</b>	A	A	A	A
<b>2027</b>	A	A	A	A
<b>2032</b>	A	A	A	A
<b>p.m. Peak Hour</b>				
<b>2022 (Adjusted)</b>	A	A	A	A
<b>2027</b>	A	A	A	A
<b>2032</b>	A	A	A	A

In summary, the proposed development will have no impact on the traffic operation in terms of LOS within the study area on CR 65 at the development entrances.

#### 4.0 Warrants for Auxiliary Lanes with Proposed Development

The warrants for auxiliary lanes were examined on CR 65 at the proposed entrance of the development in accordance with Appendix 9A of MTO's *Design Supplement for the 2017 Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads*<sup>2</sup>.

The need for a left-turn lane at an unsignalized intersection (i.e., at the intersection of CR 65 and Mastwood Road) as established by the Design Supplement, Chapter 9A is based on the advancing traffic volume ( $V_A$ ), the opposing traffic volume ( $V_O$ ), the left-turning traffic volume ( $V_L$ ), and the percentage of left-turning traffic in the advancing volume (LT%). As shown in **Table 7**, the southbound left turning traffic is significantly low (less than 5 vph), therefore, there is no need for a left turn lane and the warrant analysis

<sup>2</sup> Transportation Association of Canada (TAC). *Geometric Design Guide for Canadian Roads: Design Controls, Classification and Consistency*. Transportation Association of Canada, 2017.

is not carried out for this approach. For the northbound left-turn lane and as shown in **Table 9**, the left-turning volumes range from 4 to 20 vph in all the peak hours for the current and the horizon years. Based on the percentages shown in the table and for the 15% and 30% left-turning volume percentage charts in the design supplement, a left-turn lane installation on CR 65 at the intersection of CR 65 and Mastwood Road is not warranted for the highest anticipated traffic levels in 2032, as shown in **Appendix G**. It is assumed that the design speed is 80 km/h. This design speed is 20 km/h above the existing posted speed limit, which is 60 km/h within the study area.

**Table 9 - Left Turning Volume Calculations  
at the Intersection of CR 65 and Mastwood Road/Development Entrance**

	V <sub>L</sub>	V <sub>A</sub>	LT%	V <sub>O</sub>
<b>a.m. Peak</b>				
<b>2022 (Adjusted)</b>	4	22	16%	44
<b>2027</b>	4	24	15%	48
<b>2032</b>	4	26	14%	52
<b>p.m. Peak</b>				
<b>2022 (Adjusted)</b>	20	71	29%	47
<b>2027</b>	20	76	27%	51
<b>2032</b>	20	82	25%	55

For the right turn lanes, the TAC Manual specifies that right turn lanes should be considered “when the volume of decelerating or accelerating vehicles compared with through traffic volumes causes undue hazard.” For the entrances of the proposed development, the southbound right-turn volume is low, which is 7 vph and 13 vph during the AM and PM Peak hours, respectively. These volumes are not anticipated to impede the through movement traffic, which is relatively low as well, at the intersection of CR 65 and Mastwood Road/development entrance.

## 5.0 Sight Lines Review at Development Entrances

A site visit was conducted on Friday, September 2, 2022, to check the sight lines at the proposed entrance of the development. During the field visit, it was noticed that the geometric characteristics and both the horizontal and vertical alignments of the area shown in **Figure 1** may cause traffic safety issues with the existing speed limits. Therefore, it is recommended that the County review the speed limits within the shaded area as shown in the figure.

**Figure 1 - Recommended Speed Limit Review Area**



Given an environmental constraint, a north entrance is proposed for the north part of the subdivision which is anticipated to accommodate four dwelling units of the total 59 dwelling units. Due to the geometric characteristics of CR 65 at the north of the subdivision, the sight distance assessment includes two components; the first is related to the sight distances at the entrance (field review), and the second component is related to sight distances on the horizontal curves (desktop review).

**For the first component**, the location of the entrance was explored in the field to find an entrance location that can fulfill the sight distance requirements of the TAC. According to the TAC Geometric Design Guide for Canadian Roads (June 2017) and in conjunction with the latest "MTO Design Supplement For TAC Geometric Design Guide for Canadian Roads – April 2020" (MTO DS), the required sight distances for a left turn from stop and right turn from stop are 170 m and 145 m, respectively, for a design speed of 80 km/hr, which is 20 km/hr above the 60 km/hr posted speed limit within the area of the north entrance. During the field visit, a location of an entrance was selected to obtain the best sight distance, given the existing condition of dense vegetation and the alignment of CR 65. The location of the entrance being investigated in the field is shown in Error! Reference source not found..



**Figure 2 - Approximate Location of the North Entrance**



(For illustration purposes only and not to scale)

At this location, the available sight distances are 125 m and 120 m to the south of the entrance location and the north, respectively. Based on the existing posted speed limit (60 km/hr), these available sight distances will not fulfill the TAC requirements for sight distance. However, if the posted speed limit is lowered in this area to 40 km/hr, the required sight distance is 130 m for a design speed of 60 km/hr. This means that the sight distance at this entrance location will be close to being fulfilled. Given the dense vegetation that existed during the field visit as shown in **Figure 3**, it is anticipated that the sight distance may improve if the vegetation was removed/treated. The measurement of the sight lines assumed both the driver's eye and the object to be seen are 1.08 m above the roadway surface.

**Figure 3 - Pictures Taken in the Field at the Proposed Entrance Location on CR 65**



Heading north on CR 65

Heading south on CR 65

**For the second component**, a minimum distance of lateral clearance on horizontal curves should be fulfilled to ensure a sufficient sight distance is available for vehicles traveling through the curve as indicated in the TAC in **Figure 3.2.10**. The required lateral clearance calculations were conducted based on equation 3.2.23 in the TAC. Given a design speed of 80 km/hr for a posted speed limit of 60 km/hr and about 80 m radius for the horizontal curve, the lateral clearance is estimated to be about 25 m. This lateral clearance is measured from the centreline of the inside lane of the curve and towards the subdivision. Within this lateral clearance, any sight obstruction should be removed including vegetation and the hill should be graded. In the future after the full build-out of the subdivision, no fences, no landscaping, nor parking should be allowed within this lateral clearance.

For the south entrance, the available sight distance extends beyond 210 m, which is the design sight distance for 100 km/hr design speed as in Table 9.9.4 in the TAC Geometric Design Guide for Canadian Roads (June 2017) and in conjunction with the latest "MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads – April 2020" (MTO DS). It is assumed that the design speed is 100 km/h, which is 20 km/h above the existing 80 km/hr posted speed limit. This available sight distance is at a proposed south entrance that aligns with Mastwood Road.

## 6.0 Conclusions and Recommendations

This Traffic Impact Study investigates and evaluates the impact of the proposed subdivision on CR 65 in Osaca, Northumberland County. The background traffic operation and the traffic operation with the consideration of the traffic generated from the development at the intersection within the study area were assessed.

Based on the analysis completed in this study, the new trips generated by the development will have no impact on CR 65 at the entrances of the development in the existing or future scenarios. The LOS with the consideration of the development will remain at LOS "A" for all the scenarios, which reflect a smooth traffic operation in the area.

Additionally, this study examines the need for auxiliary turn lanes at the entrance of the development. The results show that there is no need for any right-turn or left-turn lanes at the entrance of the development on CR 65.

Also, the sight distance and visibility requirements have been reviewed during a field visit to the development location. According to the TAC Manual, the review indicated that there is a traffic safety concern within the area due to the geometric characteristics. Therefore, a speed limit review should be carried out for this entire section.

For the north entrance of the development, the existing site condition will not fulfill the sight distance either for the horizontal curve or for a proposed entrance as required by the TAC. Therefore, to fulfill the sight distance requirements and proactively enhance traffic safety in this area, the following should be considered:

- Maintain a lateral clearance for the inside of the horizontal curve regardless of the development. Within this lateral clearance, any vegetation, hill, landscaping, parking, fencing, etc. should be removed to ensure no line-of-sight obstruction exists as shown in figure 3.2.10 in the TAC.
- Reduce the posted speed limit within this area to 40 km/hr.

It is anticipated that the entrance of the development will be constructed according to Northumberland County's requirements.

Respectfully Submitted,



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MT/af

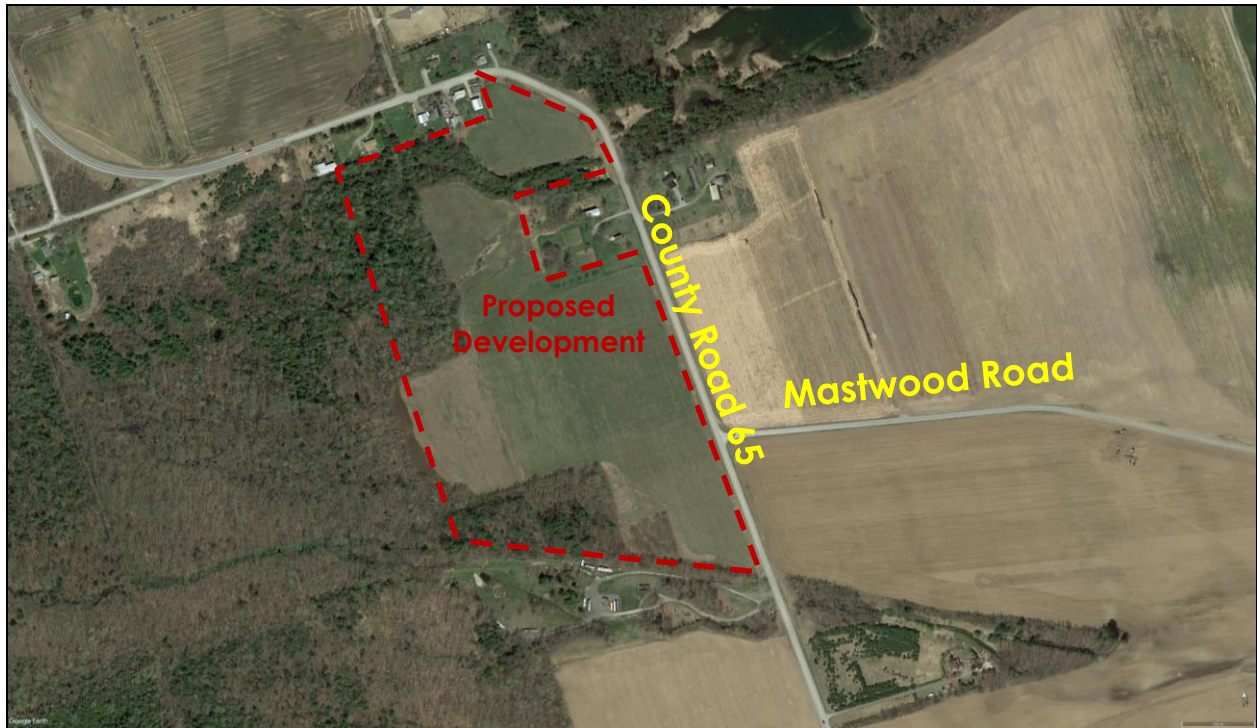


# Appendix A

Location Plan



**Figure A – Location Plan**



\*For illustration purposes only. Not to scale.

## **Appendix B**

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### **Conceptual Site Plan**









## **Appendix C**

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**Traffic Data**





## Project #22-211 - D.M. Wills Associates

### Intersection Count Report

**Intersection:** CR 65 & Mastwood Rd  
**Municipality:** Port Hope  
**Count Date:** Thursday, Jun 23, 2022  
**Site Code:** 2221100001  
**Count Categories:** Cars, Trucks, Bicycles, Pedestrians  
**Count Period:** 07:00-18:00  
**Weather:** Clear  
**Comments:**

## Traffic Count Map

Intersection: CR 65 & Mastwood Rd  
Site Code: 2221100001  
Municipality: Port Hope  
Count Date: Jun 23, 2022



## Traffic Count Summary

Intersection: CR 65 & Mastwood Rd  
 Site Code: 2221100001  
 Municipality: Port Hope  
 Count Date: Jun 23, 2022

### CR 65 - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
<b>07:00 - 08:00</b>	1	24	0	0	25	0	0	10	0	0	10	0	35
<b>08:00 - 09:00</b>	0	19	0	0	19	0	0	10	0	0	10	0	29
<b>09:00 - 10:00</b>	0	13	0	0	13	0	0	12	1	0	13	0	26
<b>10:00 - 11:00</b>	0	16	0	0	16	0	0	13	1	0	14	0	30
<b>11:00 - 12:00</b>	2	13	0	0	15	0	0	16	1	0	17	0	32
<b>12:00 - 13:00</b>	0	5	0	0	5	0	0	6	3	0	9	0	14
<b>13:00 - 14:00</b>	0	18	0	0	18	0	0	11	0	0	11	0	29
<b>14:00 - 15:00</b>	1	14	0	0	15	0	0	19	3	0	22	0	37
<b>15:00 - 16:00</b>	0	7	0	0	7	0	0	5	2	0	7	0	14
<b>16:00 - 17:00</b>	0	22	0	0	22	0	0	31	2	0	33	0	55
<b>17:00 - 18:00</b>	4	16	0	0	20	0	0	24	1	0	25	0	45
<b>GRAND TOTAL</b>	<b>8</b>	<b>167</b>	<b>0</b>	<b>0</b>	<b>175</b>	<b>0</b>	<b>0</b>	<b>157</b>	<b>14</b>	<b>0</b>	<b>171</b>	<b>0</b>	<b>346</b>







## Traffic Count Data

Intersection: CR 65 & Mastwood Rd  
 Site Code: 2221100001  
 Municipality: Port Hope  
 Count Date: Jun 23, 2022

### North Approach - CR 65

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	0
07:15	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	0
07:30	0	5	0	0	5	0	1	0	0	1	0	0	0	0	0	0
07:45	1	3	0	0	4	0	1	0	0	1	0	0	0	0	0	0
08:00	0	5	0	0	5	0	1	0	0	1	0	0	0	0	0	0
08:15	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
08:30	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
08:45	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	0
09:00	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
09:15	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
09:30	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
09:45	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
10:00	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
10:15	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
10:30	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
10:45	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
11:00	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
11:15	2	3	0	0	5	0	0	0	0	0	0	0	0	0	0	0
11:30	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
11:45	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0

Start Time	Cars					Trucks					Bicycles					Total Peds
	↶	↑	↷	↶	Total	↶	↑	↷	↶	Total	↶	↑	↷	↶	Total	
12:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
12:15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
12:30	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
12:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
13:00	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
13:15	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
13:30	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
13:45	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	0
14:00	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
14:15	1	4	0	0	5	0	0	0	0	0	0	0	0	0	0	0
14:30	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
14:45	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
15:00	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
15:15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
15:30	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
15:45	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
16:00	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	0
16:15	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	0
16:30	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
16:45	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
17:00	1	4	0	0	5	0	0	0	0	0	0	0	0	0	0	0
17:15	1	5	0	0	6	0	0	0	0	0	0	0	0	0	0	0
17:30	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
17:45	2	4	0	0	6	0	0	0	0	0	0	0	0	0	0	0
<b>SUBTOTAL</b>	8	163	0	0	171	0	4	0	0	4	0	0	0	0	0	0
<b>GRAND TOTAL</b>	8	163	0	0	171	0	4	0	0	4	0	0	0	0	0	0



Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
12:00	0	1	2	0	3	0	0	0	0	0	0	0	0	0	0	0
12:15	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
12:30	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	0
12:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
13:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
13:15	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
13:30	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
13:45	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
14:00	0	7	0	0	7	0	2	0	0	2	0	0	0	0	0	0
14:15	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	0
14:30	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
14:45	0	4	2	0	6	0	0	0	0	0	0	0	0	0	0	0
15:00	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0
15:15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
15:30	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	0
15:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
16:00	0	3	0	0	3	0	1	0	0	1	0	0	0	0	0	0
16:15	0	11	0	0	11	0	1	0	0	1	0	0	0	0	0	0
16:30	0	8	1	0	9	0	0	0	0	0	0	0	0	0	0	0
16:45	0	6	1	0	7	0	1	0	0	1	0	0	0	0	0	0
17:00	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	0
17:15	0	5	1	0	6	0	0	0	0	0	0	0	0	0	0	0
17:30	0	7	0	0	7	0	1	0	0	1	0	0	0	0	0	0
17:45	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
<b>SUBTOTAL</b>	0	148	14	0	162	0	9	0	0	9	0	0	0	0	0	0
<b>GRAND TOTAL</b>	0	148	14	0	162	0	9	0	0	9	0	0	0	0	0	0





## Peak Hour Diagram

### Specified Period

From: 07:00:00  
To: 10:00:00

### One Hour Peak

From: 07:15:00  
To: 08:15:00




**Intersection:** CR 65 & Mastwood Rd  
**Site Code:** 2221100001  
**Count Date:** Jun 23, 2022

**Weather conditions:** Clear




**\*\* Unsignalized Intersection \*\***

**Major Road:** CR 65 runs N/S

### North Approach

	Out	In	Total
	21	12	33
	3	2	5
	0	0	0
<b>Totals</b>	<b>24</b>	<b>14</b>	<b>38</b>

### CR 65

	0	0	0
	3	0	0
	20	1	0
<b>Totals</b>	<b>23</b>	<b>1</b>	<b>0</b>






Peds: 0

Peds: 0






Peds: 0

Peds: 0







<b>Totals</b>	<b>12</b>	<b>0</b>	<b>0</b>
	10	0	0
	2	0	0
	0	0	0

### CR 65




### East Approach

	Out	In	Total
	2	1	3
	0	0	0
	0	0	0
<b>Totals</b>	<b>2</b>	<b>1</b>	<b>3</b>


### Mastwood Rd

Totals			
	0	0	0
	2	2	0
	0	0	0

### South Approach

	Out	In	Total
	10	20	30
	2	3	5
	0	0	0
<b>Totals</b>	<b>12</b>	<b>23</b>	<b>35</b>

 - Cars

 - Trucks

 - Bicycles

### Comments





## Peak Hour Summary

Intersection: CR 65 & Mastwood Rd  
 Site Code: 2221100001  
 Count Date: Jun 23, 2022  
 Period: 07:00 - 10:00

### Peak Hour Data (07:15 - 08:15)

Start Time	North Approach CR 65						South Approach CR 65						East Approach Mastwood Rd						West Approach						Total Vehicles	
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total		
07:15	0	7		0	0	7		2	0	0	0	2	0		0	0	0	0					0		9	
07:30	0	6		0	0	6		1	0	0	0	1	0		2	0	0	2					0		9	
07:45	1	4		0	0	5		6	0	0	0	6	0		0	0	0	0					0		11	
08:00	0	6		0	0	6		3	0	0	0	3	0		0	0	0	0					0		9	
<b>Grand Total</b>	<b>1</b>	<b>23</b>		<b>0</b>	<b>0</b>	<b>24</b>		<b>12</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>0</b>		<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>					<b>0</b>	<b>0</b>	<b>38</b>	
Approach %	4.2	95.8		0	-	-	100	0	0		-	-	0		100	0		-					-		-	
Totals %	2.6	60.5		0	63.2	-	31.6	0	0		31.6	-	0		5.3	0		5.3					0		-	
<b>PHF</b>	<b>0.25</b>	<b>0.82</b>		<b>0</b>	<b>0.86</b>	-	<b>0.5</b>	<b>0</b>	<b>0</b>		<b>0.5</b>	-	<b>0</b>		<b>0.25</b>	<b>0</b>		<b>0.25</b>					<b>0</b>		<b>0.86</b>	
Cars	1	20		0	21	-	10	0	0		10	-	0		2	0		2					0		33	
% Cars	100	87		0	87.5	-	83.3	0	0		83.3	-	0		100	0		100					0		86.8	
Trucks	0	3		0	3	-	2	0	0		2	-	0		0	0		0					0		5	
% Trucks	0	13		0	12.5	-	16.7	0	0		16.7	-	0		0	0		0					0		13.2	
Bicycles	0	0		0	0	-	0	0	0		0	-	0		0	0		0					0		0	
% Bicycles	0	0		0	0	-	0	0	0		0	-	0		0	0		0					0		0	
Peds				0	-	-					0	-						0	-					0	-	0
% Peds				0	-	-					0	-						0	-					0	-	-

## Peak Hour Diagram

### Specified Period

From: 10:00:00  
To: 14:00:00

### One Hour Peak

From: 10:45:00  
To: 11:45:00




**Intersection:** CR 65 & Mastwood Rd  
**Site Code:** 2221100001  
**Count Date:** Jun 23, 2022

**Weather conditions:** Clear




**\*\* Unsignalized Intersection \*\***

**Major Road:** CR 65 runs N/S

### North Approach

	Out	In	Total
	17	20	37
	0	1	1
	0	0	0
<b>Totals</b>	<b>17</b>	<b>21</b>	<b>38</b>

### CR 65




	0	0	0
	0	0	0
	15	2	0
<b>Totals</b>	<b>15</b>	<b>2</b>	<b>0</b>



Peds: 0






Peds: 0







<b>Totals</b>	<b>16</b>	<b>2</b>	<b>0</b>
	15	2	0
	1	0	0
	0	0	0

### CR 65




### East Approach

	Out	In	Total
	5	4	9
	0	0	0
	0	0	0
<b>Totals</b>	<b>5</b>	<b>4</b>	<b>9</b>

### Mastwood Rd

Totals			
	0	0	0
	5	5	0
	0	0	0

### South Approach

	Out	In	Total
	17	15	32
	1	0	1
	0	0	0
<b>Totals</b>	<b>18</b>	<b>15</b>	<b>33</b>

 - Cars

 - Trucks

 - Bicycles

### Comments

## Peak Hour Summary

Intersection: CR 65 & Mastwood Rd  
 Site Code: 2221100001  
 Count Date: Jun 23, 2022  
 Period: 10:00 - 14:00

### Peak Hour Data (10:45 - 11:45)

Start Time	North Approach CR 65						South Approach CR 65						East Approach Mastwood Rd						West Approach						Total Vehicles	
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total		
10:45	0	5		0	0	5		4	1	0	0	5	0		2	0	0	2					0			12
11:00	0	3		0	0	3		6	0	0	0	6	0		1	0	0	1					0			10
11:15	2	3		0	0	5		2	0	0	0	2	0		1	0	0	1					0			8
11:30	0	4		0	0	4		4	1	0	0	5	0		1	0	0	1					0			10
<b>Grand Total</b>	<b>2</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>16</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>40</b>
Approach %	11.8	88.2	0	-	-	88.9	11.1	0	-	-	0	100	0	-	-	-	-	-	-	-	-	-	-	-	-	-
Totals %	5	37.5	0	42.5	-	40	5	0	45	-	0	12.5	0	12.5	-	-	-	-	-	-	-	-	-	-	-	0
<b>PHF</b>	<b>0.25</b>	<b>0.75</b>	<b>0</b>	<b>0.85</b>	<b>0.85</b>	<b>0.67</b>	<b>0.5</b>	<b>0</b>	<b>0.75</b>	<b>0.75</b>	<b>0</b>	<b>0.63</b>	<b>0</b>	<b>0.63</b>	<b>0.63</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.83</b>
Cars	2	15	0	17	-	15	2	0	17	-	0	5	0	5	-	-	-	-	-	-	-	-	-	-	-	39
% Cars	100	100	0	100	-	93.8	100	0	94.4	-	0	100	0	100	-	-	-	-	-	-	-	-	-	-	-	97.5
Trucks	0	0	0	0	-	1	0	0	1	-	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	1
% Trucks	0	0	0	0	-	6.3	0	0	5.6	-	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	2.5
Bicycles	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	0
% Bicycles	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	0
Peds				0	-				0	-				0	-				0	-				0	-	0
% Peds				0	-				0	-				0	-				0	-				0	-	0

## Peak Hour Diagram

### Specified Period

From: 14:00:00  
To: 18:00:00

### One Hour Peak

From: 16:00:00  
To: 17:00:00

**Intersection:** CR 65 & Mastwood Rd  
**Site Code:** 2221100001  
**Count Date:** Jun 23, 2022

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** CR 65 runs N/S

### North Approach

	Out	In	Total
	22	30	52
	0	3	3
	0	0	0
<b>Totals</b>	<b>22</b>	<b>33</b>	<b>55</b>

### CR 65

	0	0	0
	0	0	0
	22	0	0
<b>Totals</b>	<b>22</b>	<b>0</b>	<b>0</b>



Peds: 0



Peds: 0

	31	2	0
	28	2	0
	3	0	0
	0	0	0
<b>Totals</b>	<b>31</b>	<b>2</b>	<b>0</b>

### CR 65

### East Approach

	Out	In	Total
	6	2	8
	0	0	0
	0	0	0
<b>Totals</b>	<b>6</b>	<b>2</b>	<b>8</b>

### Mastwood Rd

Totals			
<b>0</b>	0	0	0
<b>2</b>	2	0	0
<b>4</b>	4	0	0

### South Approach

	Out	In	Total
	30	26	56
	3	0	3
	0	0	0
<b>Totals</b>	<b>33</b>	<b>26</b>	<b>59</b>

- Cars

- Trucks

- Bicycles

### Comments



## Peak Hour Summary

Intersection: CR 65 & Mastwood Rd  
 Site Code: 2221100001  
 Count Date: Jun 23, 2022  
 Period: 14:00 - 18:00

### Peak Hour Data (16:00 - 17:00)

Start Time	North Approach CR 65						South Approach CR 65						East Approach Mastwood Rd						West Approach						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
16:00	0	8		0	0	8		4	0	0	0	4	1		0	0	0	1					0		13
16:15	0	7		0	0	7		12	0	0	0	12	2		1	0	0	3					0		22
16:30	0	3		0	0	3		8	1	0	0	9	1		1	0	0	2					0		14
16:45	0	4		0	0	4		7	1	0	0	8	0		0	0	0	0					0		12
<b>Grand Total</b>	<b>0</b>	<b>22</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>22</b>	<b>31</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>33</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>61</b>
Approach %	0	100	0	-	-	-	93.9	6.1	0	-	-	66.7	33.3	0	-	-	-	-	-	-	-	-	-	-	-
Totals %	0	36.1	0	36.1	50.8	3.3	0	54.1	6.6	3.3	0	9.8	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>PHF</b>	<b>0</b>	<b>0.69</b>	<b>0</b>	<b>0.69</b>	<b>0.65</b>	<b>0.5</b>	<b>0</b>	<b>0.69</b>	<b>0.5</b>	<b>0.5</b>	<b>0</b>	<b>0.5</b>	<b>0</b>	<b>0.5</b>	<b>0</b>	<b>0.5</b>	<b>0</b>	<b>0.5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.69</b>
Cars	0	22	0	22	28	2	0	30	4	2	0	6	0	0	0	0	0	0	0	0	0	0	0	0	58
% Cars	0	100	0	100	90.3	100	0	90.9	100	100	0	100	0	0	0	0	0	0	0	0	0	0	0	0	95.1
Trucks	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
% Trucks	0	0	0	0	9.7	0	0	9.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.9
Bicycles	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
% Bicycles	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
Peds				0	-	-					0	-					0	-				0	-	-	0
% Peds				0	-	-					0	-					0	-				0	-	-	0

## **Appendix D**

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### **Level of Service Criteria for Unsignalized Intersections**



According to the HCM 2010, T-intersections with a stop sign on the stem of the T are considered two-way stop-controlled intersections and have the same Level of Service (LOS) definitions and criteria as any Two-way Stop-Controlled intersection. For this type of intersection, the LOS is determined based on the control delay and is determined for each minor road lane group and the left-turn movement of the major road. The control delay, in this case, includes the delay due to deceleration to stop from the free-flow speed at the back of a queue (formed because of the stop sign), the move-up time within the queue, stopped delay at the front of the queue, and delay due to acceleration back to free-flow speed. The calculation of the control delay of a specific movement is a function of the flow rate and the capacity of this specific movement.

The description and criteria of the LOS at two-way stop-controlled intersections are summarized in the table below.

**Table D - LOS for Two-Way Stop-Controlled Intersections**

Description of Conditions	Control Delay (sec/veh)	LOS by v/c Ratio	
		v/c ≤ 1.0	v/c > 1.0
No delay for stop-controlled approaches	0 - 10	A	F
Operations with minor delay	> 10 - 15	B	F
Operations with moderate delay	> 15 - 25	C	F
Operations with some delay	> 25 - 35	D	F
Operations with high delay	> 35 - 50	E	F
Operation with extreme congestion with very high delay	> 50	F	F

## **Appendix E**

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**Synchro Reports for the Background Traffic Conditions**





Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	3	18	0	2	35
Future Vol, veh/h	0	3	18	0	2	35
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	25	25	50	50	86	86
Heavy Vehicles, %	0	0	17	17	13	13
Mvmt Flow	0	12	36	0	2	41

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	81	36	0	0	36
Stage 1	36	-	-	-	-
Stage 2	45	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.23
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.317
Pot Cap-1 Maneuver	926	1042	-	-	1507
Stage 1	992	-	-	-	-
Stage 2	983	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	925	1042	-	-	1507
Mov Cap-2 Maneuver	925	-	-	-	-
Stage 1	992	-	-	-	-
Stage 2	982	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1042	1507
HCM Lane V/C Ratio	-	-	0.012	0.002
HCM Control Delay (s)	-	-	8.5	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	3	20	0	2	39
Future Vol, veh/h	0	3	20	0	2	39
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	25	25	50	50	86	86
Heavy Vehicles, %	0	0	17	17	13	13
Mvmt Flow	0	12	40	0	2	45

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	89	40	0	0	40
Stage 1	40	-	-	-	-
Stage 2	49	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.23
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.317
Pot Cap-1 Maneuver	917	1037	-	-	1502
Stage 1	988	-	-	-	-
Stage 2	979	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	916	1037	-	-	1502
Mov Cap-2 Maneuver	916	-	-	-	-
Stage 1	988	-	-	-	-
Stage 2	978	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1037	1502
HCM Lane V/C Ratio	-	-	0.012	0.002
HCM Control Delay (s)	-	-	8.5	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	4	22	0	2	43
Future Vol, veh/h	0	4	22	0	2	43
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	25	25	50	50	86	86
Heavy Vehicles, %	0	0	17	17	13	13
Mvmt Flow	0	16	44	0	2	50

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	98	44	0	0	44
Stage 1	44	-	-	-	-
Stage 2	54	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.23
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.317
Pot Cap-1 Maneuver	906	1032	-	-	1496
Stage 1	984	-	-	-	-
Stage 2	974	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	905	1032	-	-	1496
Mov Cap-2 Maneuver	905	-	-	-	-
Stage 1	984	-	-	-	-
Stage 2	973	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1032	1496
HCM Lane V/C Ratio	-	-	0.016	0.002
HCM Control Delay (s)	-	-	8.5	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

HCM 2010 TWSC  
 3: County Road 65 & Mastwood Road

2022 - PM Peak - Background Condition

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	3	48	3	0	34
Future Vol, veh/h	6	3	48	3	0	34
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	50	50	69	69	69	69
Heavy Vehicles, %	0	0	9	9	0	0
Mvmt Flow	12	6	70	4	0	49

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	121	72	0	0	74
Stage 1	72	-	-	-	-
Stage 2	49	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	879	996	-	-	1538
Stage 1	956	-	-	-	-
Stage 2	979	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	879	996	-	-	1538
Mov Cap-2 Maneuver	879	-	-	-	-
Stage 1	956	-	-	-	-
Stage 2	979	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	915	1538
HCM Lane V/C Ratio	-	-	0.02	-
HCM Control Delay (s)	-	-	9	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

HCM 2010 TWSC  
 3: County Road 65 & Mastwood Road

2027 - PM Peak - Background Condition

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	3	52	3	0	37
Future Vol, veh/h	7	3	52	3	0	37
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	50	50	69	69	69	69
Heavy Vehicles, %	0	0	9	9	0	0
Mvmt Flow	14	6	75	4	0	54

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	131	77	0	0	79
Stage 1	77	-	-	-	-
Stage 2	54	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	868	990	-	-	1532
Stage 1	951	-	-	-	-
Stage 2	974	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	868	990	-	-	1532
Mov Cap-2 Maneuver	868	-	-	-	-
Stage 1	951	-	-	-	-
Stage 2	974	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	901	1532
HCM Lane V/C Ratio	-	-	0.022	-
HCM Control Delay (s)	-	-	9.1	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	7	4	58	4	0	41
Future Vol, veh/h	7	4	58	4	0	41
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	50	50	69	69	69	69
Heavy Vehicles, %	0	0	9	9	0	0
Mvmt Flow	14	8	84	6	0	59

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	146	87	0	0	90
Stage 1	87	-	-	-	-
Stage 2	59	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	851	977	-	-	1518
Stage 1	941	-	-	-	-
Stage 2	969	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	851	977	-	-	1518
Mov Cap-2 Maneuver	851	-	-	-	-
Stage 1	941	-	-	-	-
Stage 2	969	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	893	1518
HCM Lane V/C Ratio	-	-	0.025	-
HCM Control Delay (s)	-	-	9.1	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

## **Appendix F**

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**Synchro Reports for the Traffic Conditions with the  
Development**



HCM 2010 TWSC

3: County Road 65 & Subdivision Entrance/Mastwood Road 2022 - AM Peak - Development Impact Condition

**Intersection**

Int Delay, s/veh 3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	2	21	0	1	3	4	18	0	2	35	7
Future Vol, veh/h	10	2	21	0	1	3	4	18	0	2	35	7
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	25	92	25	92	50	50	86	86	92
Heavy Vehicles, %	2	2	2	0	2	0	2	17	17	13	13	2
Mvmt Flow	11	2	23	0	1	12	4	36	0	2	41	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	100	93	45	106	97	36	49	0	0	36	0	0
Stage 1	49	49	-	44	44	-	-	-	-	-	-	-
Stage 2	51	44	-	62	53	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.2	4.12	-	-	4.23	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.317	-	-
Pot Cap-1 Maneuver	881	797	1025	878	793	1042	1558	-	-	1507	-	-
Stage 1	964	854	-	975	858	-	-	-	-	-	-	-
Stage 2	962	858	-	954	851	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	867	794	1025	854	790	1042	1558	-	-	1507	-	-
Mov Cap-2 Maneuver	867	794	-	854	790	-	-	-	-	-	-	-
Stage 1	961	853	-	972	855	-	-	-	-	-	-	-
Stage 2	947	855	-	929	850	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	8.9			8.6			0.8			0.3		
HCM LOS	A			A								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1558	-	-	955	1015	1507	-	-
HCM Lane V/C Ratio	0.003	-	-	0.038	0.013	0.002	-	-
HCM Control Delay (s)	7.3	0	-	8.9	8.6	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-



HCM 2010 TWSC

3: County Road 65 & Subdivision Entrance/Mastwood Road 2027 - AM Peak - Development Impact Condition

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	2	21	0	1	3	4	20	0	2	39	7
Future Vol, veh/h	10	2	21	0	1	3	4	20	0	2	39	7
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	25	92	25	92	50	50	86	86	92
Heavy Vehicles, %	2	2	2	0	2	0	2	17	17	13	13	2
Mvmt Flow	11	2	23	0	1	12	4	40	0	2	45	8

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	108	101	49	114	105	40	53	0	0	40	0	0
Stage 1	53	53	-	48	48	-	-	-	-	-	-	-
Stage 2	55	48	-	66	57	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.2	4.12	-	-	4.23	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.317	-	-
Pot Cap-1 Maneuver	871	789	1020	868	785	1037	1553	-	-	1502	-	-
Stage 1	960	851	-	971	855	-	-	-	-	-	-	-
Stage 2	957	855	-	950	847	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	857	786	1020	845	782	1037	1553	-	-	1502	-	-
Mov Cap-2 Maneuver	857	786	-	845	782	-	-	-	-	-	-	-
Stage 1	957	850	-	968	852	-	-	-	-	-	-	-
Stage 2	942	852	-	925	846	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.9		8.6		0.7		0.3	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1553	-	-	948	1010	1502	-	-
HCM Lane V/C Ratio	0.003	-	-	0.038	0.013	0.002	-	-
HCM Control Delay (s)	7.3	0	-	8.9	8.6	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

HCM 2010 TWSC

3: County Road 65 & Subdivision Entrance/Mastwood Road 2032 - AM Peak - Development Impact Condition

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	2	21	0	1	4	4	22	0	2	43	7
Future Vol, veh/h	10	2	21	0	1	4	4	22	0	2	43	7
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	25	92	25	92	50	50	86	86	92
Heavy Vehicles, %	2	2	2	0	2	0	2	17	17	13	13	2
Mvmt Flow	11	2	23	0	1	16	4	44	0	2	50	8

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	119	110	54	123	114	44	58	0	0	44	0	0
Stage 1	58	58	-	52	52	-	-	-	-	-	-	-
Stage 2	61	52	-	71	62	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.2	4.12	-	-	4.23	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.317	-	-
Pot Cap-1 Maneuver	857	780	1013	856	776	1032	1546	-	-	1496	-	-
Stage 1	954	847	-	966	852	-	-	-	-	-	-	-
Stage 2	950	852	-	944	843	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	840	777	1013	832	773	1032	1546	-	-	1496	-	-
Mov Cap-2 Maneuver	840	777	-	832	773	-	-	-	-	-	-	-
Stage 1	951	846	-	963	849	-	-	-	-	-	-	-
Stage 2	931	849	-	919	842	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9		8.6		0.7		0.3	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1546	-	-	937	1010	1496	-	-
HCM Lane V/C Ratio	0.003	-	-	0.038	0.017	0.002	-	-
HCM Control Delay (s)	7.3	0	-	9	8.6	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

HCM 2010 TWSC

3: County Road 65 & Subdivision Entrance/Mastwood Road 2022 - PM Peak - Development Impact Condition

**Intersection**

Int Delay, s/veh 2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	11	2	8	6	4	3	20	48	3	0	34	13
Future Vol, veh/h	11	2	8	6	4	3	20	48	3	0	34	13
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	50	92	50	92	69	69	69	69	92
Heavy Vehicles, %	2	2	2	0	2	0	2	9	9	0	0	2
Mvmt Flow	12	2	9	12	4	6	22	70	4	0	49	14

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	177	174	56	178	179	72	63	0	0	74	0	0
Stage 1	56	56	-	116	116	-	-	-	-	-	-	-
Stage 2	121	118	-	62	63	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	785	719	1011	789	715	996	1540	-	-	1538	-	-
Stage 1	956	848	-	894	800	-	-	-	-	-	-	-
Stage 2	883	798	-	954	842	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	768	708	1011	772	704	996	1540	-	-	1538	-	-
Mov Cap-2 Maneuver	768	708	-	772	704	-	-	-	-	-	-	-
Stage 1	942	848	-	881	788	-	-	-	-	-	-	-
Stage 2	860	786	-	943	842	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.4		9.6		1.7		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1540	-	-	838	806	1538	-	-
HCM Lane V/C Ratio	0.014	-	-	0.027	0.028	-	-	-
HCM Control Delay (s)	7.4	0	-	9.4	9.6	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

HCM 2010 TWSC

3: County Road 65 & Subdivision Entrance/Mastwood Road 2027 - PM Peak - Development Impact Condition

**Intersection**

Int Delay, s/veh 2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	11	2	8	7	4	3	20	52	3	0	37	13
Future Vol, veh/h	11	2	8	7	4	3	20	52	3	0	37	13
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	50	92	50	92	69	69	69	69	92
Heavy Vehicles, %	2	2	2	0	2	0	2	9	9	0	0	2
Mvmt Flow	12	2	9	14	4	6	22	75	4	0	54	14

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	187	184	61	188	189	77	68	0	0	79	0	0
Stage 1	61	61	-	121	121	-	-	-	-	-	-	-
Stage 2	126	123	-	67	68	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	774	710	1004	777	706	990	1533	-	-	1532	-	-
Stage 1	950	844	-	888	796	-	-	-	-	-	-	-
Stage 2	878	794	-	948	838	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	757	699	1004	760	695	990	1533	-	-	1532	-	-
Mov Cap-2 Maneuver	757	699	-	760	695	-	-	-	-	-	-	-
Stage 1	936	844	-	875	784	-	-	-	-	-	-	-
Stage 2	855	782	-	937	838	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.5		9.7		1.6		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1533	-	-	828	792	1532	-	-
HCM Lane V/C Ratio	0.014	-	-	0.028	0.031	-	-	-
HCM Control Delay (s)	7.4	0	-	9.5	9.7	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

HCM 2010 TWSC

3: County Road 65 & Subdivision Entrance/Mastwood Road 2032 - PM Peak - Development Impact Condition

**Intersection**

Int Delay, s/veh 2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	11	2	8	7	4	4	20	58	4	0	41	13
Future Vol, veh/h	11	2	8	7	4	4	20	58	4	0	41	13
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	50	92	50	92	69	69	69	69	92
Heavy Vehicles, %	2	2	2	0	2	0	2	9	9	0	0	2
Mvmt Flow	12	2	9	14	4	8	22	84	6	0	59	14

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	203	200	66	203	204	87	73	0	0	90	0	0
Stage 1	66	66	-	131	131	-	-	-	-	-	-	-
Stage 2	137	134	-	72	73	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	755	696	998	759	692	977	1527	-	-	1518	-	-
Stage 1	945	840	-	877	788	-	-	-	-	-	-	-
Stage 2	866	785	-	943	834	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	737	686	998	742	682	977	1527	-	-	1518	-	-
Mov Cap-2 Maneuver	737	686	-	742	682	-	-	-	-	-	-	-
Stage 1	931	840	-	864	776	-	-	-	-	-	-	-
Stage 2	841	773	-	932	834	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.6		9.7		1.4		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1527	-	-	812	788	1518	-	-
HCM Lane V/C Ratio	0.014	-	-	0.028	0.033	-	-	-
HCM Control Delay (s)	7.4	0	-	9.6	9.7	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

# Appendix G

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## Left Turn Lane Warrants Charts



Figure G1 - AM Peak (2032)

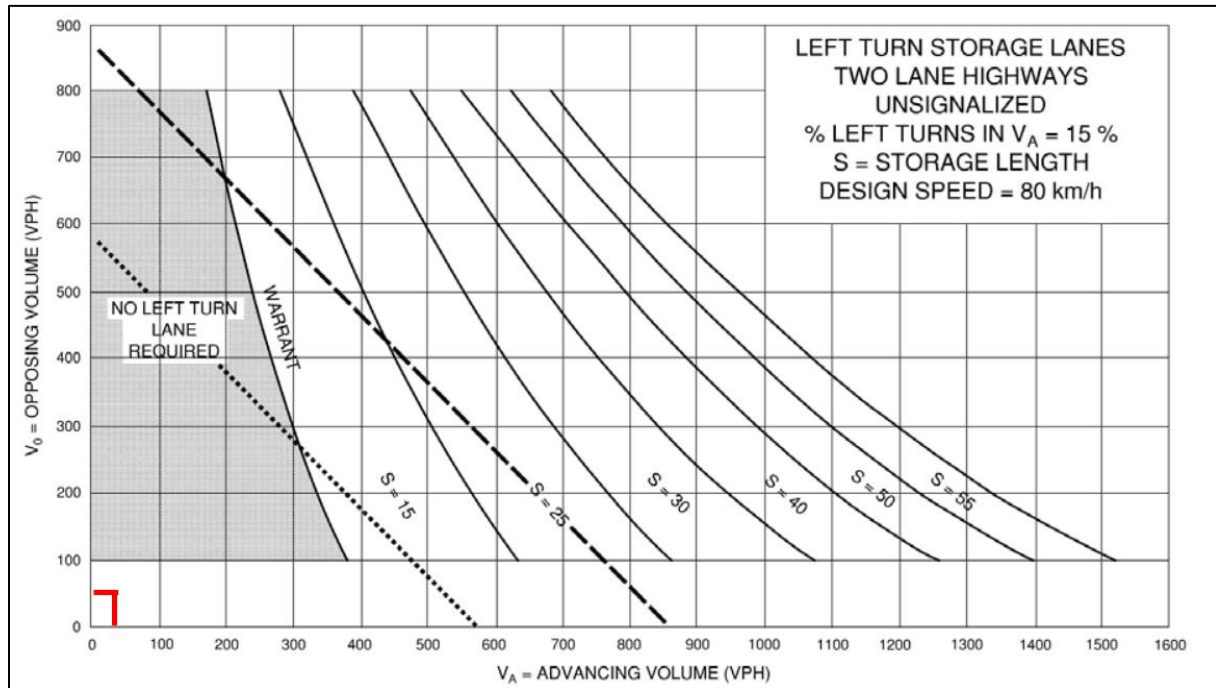


Figure G2 - PM Peak (2032)

