

# Corseed & Moco Residential Subdivision

Town of Grand Valley  
County of Dufferin

## Traffic Impact Study for Moco Farms Ltd., Corseed Inc.

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## Legal Notification

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## Executive Summary

This report summarizes the traffic impact study prepared for the two proposed residential developments. The first site [Moco Subdivision] is located east of County Road 25 (Water Street), south of Industrial Drive. The second site [Corseed Subdivision] is located west of County Road 25 across from Industrial Drive. The report assesses the impact of traffic related to the developments on the adjacent roadways and provides recommendations to accommodate this traffic in a safe and efficient manner.

The Moco Subdivision site is 34.4 hectares in area and the Corseed Subdivision site is 14.9 hectares in area.

The proposed Moco Subdivision will include the following:

• Single Detached	111 units
• Future Mixed Use blocks	<u>TBD</u>
Total	111 units

The proposed Corseed Subdivision will include the following:

• Single Detached	73 units
• Future Mixed Use blocks	<u>TBD</u>
Total	73 units

Development plans for the mixed-use blocks for the Moco Subdivision and Corseed Subdivision have not been finalized at this time. Since development of the mixed-use blocks will not commence within 10 years of the current proposed development, the traffic generation from the mixed-use blocks within the Moco Subdivisions and Corseed Subdivision have not be considered in this study. Subsequent studies will be completed for the mixed-use blocks closer to the planned development date.

Access to the Moco Subdivision is provided via two t-intersections with County Road 25 at Street 'A' [Moco North Access and Moco South Access]. Access to the Corseed Subdivision is provided via Street 'C' with connection to County Road 25 [Corseed Access].

The scope of this analysis includes a review of the existing intersections of County Road 25 / Melody Lane, County Road 25 / County Road 109 and proposed intersections Moco North Access / County Road 25, Moco South Access / County Road 25, and Corseed Access / County Road 25 / Industrial Drive.

## Conclusions

1. The proposed Moco Subdivision is expected to generate a total of 88 AM and 115 PM peak hour trips and the proposed Corseed Subdivision is expected to generate a total of 61 AM and 79 PM peak hour trips.
2. Background traffic and pedestrian counts were completed for the existing intersections of County Road 25 / Melody Lane and County Road 25 / County Road 109 on Tuesday August 19<sup>th</sup>, 2014.

3. Level-of-service [LOS] analysis was completed at the study area intersections, using the existing (2014) and projected (2020 & 2025) traffic volumes without the proposed development. This enabled a review of existing and future traffic deficiencies that would be present without the influence of the proposed development. No geometric or traffic signage improvements were required at the existing intersections as a result of the existing or projected (2020 & 2025) traffic volumes without the proposed development. It is recommended that the County review the northbound left turn warrant on County Road 25 at Melody Lane prior to 2025, using updated traffic count data in order to confirm the traffic projections identified in this report.
4. An estimate of the amount of traffic that would be generated by the Subject Site was prepared and assigned to the study area streets and intersections.
5. LOS analysis was completed under total (2020 & 2025) traffic volumes with the proposed development operational at the study area intersections.
6. No geometric or traffic signage improvements were required at the existing intersections in the study area result of the total (2020 & 2025) traffic volumes with the proposed development. As noted above, an updated review of the northbound left turn warrant on County Road 25 at Melody Lane is recommended prior to 2025 (by the County).
7. The proposed Corseed Access & Industrial Drive / County Road 25 intersection will operate efficiently using unsignalized control with two-way stop control for westbound and eastbound traffic at County Road 25. One lane for egress traffic and one lane for ingress traffic for the west leg of the intersection will provide the necessary capacity for the proposed development.
8. The Moco North Access / County Road 25 and Moco South Access / County Road 25 intersections will operate efficiently using unsignalized control with one-way stop control for westbound traffic at County Road 25. One lane for egress traffic and one lane for ingress traffic for the east leg of the intersections will provide the necessary capacity for the proposed development.

In summary, the proposed development will not cause any operational issues and will not add significant delay or congestion to the local roadway network.

# Table of Contents

<b>1</b>	<b>Introduction</b> .....	<b>1</b>
1.1	Background.....	1
1.2	Study Area .....	1
1.3	Study Scope and Objectives .....	1
1.4	Horizon Year and Analysis Periods .....	4
<b>2</b>	<b>Information Gathering</b> .....	<b>4</b>
2.1	Street and Intersection Characteristics .....	4
2.2	Transit Access .....	6
2.3	Local Road Improvements.....	6
2.4	Other Developments within the Study Area .....	6
2.1	Traffic Generation from Other Developments within the Study Area .....	8
2.2	Traffic Distribution for Other Developments within the Study Area .....	8
2.3	Traffic Counts .....	10
2.4	Horizon Year Traffic Volumes.....	12
<b>3</b>	<b>Existing Year LOS without Proposed Development</b> .....	<b>15</b>
3.1	Introduction .....	15
3.2	Existing (2015) LOS .....	16
3.3	Total Background (2020) LOS without Proposed Development .....	17
3.4	Total Background (2025) LOS without Proposed Development .....	17
<b>4</b>	<b>Proposed Development Traffic Generation and Assignment</b> .....	<b>18</b>
4.1	Traffic Generation.....	18
4.2	Traffic Assignment.....	18
4.3	Total Horizon Year Traffic Volumes with the Proposed Development .....	24
<b>5</b>	<b>Horizon Year LOS with Development</b> .....	<b>27</b>
5.1	2020 Horizon Year LOS with Full Development.....	27
5.2	2025 Horizon Year LOS with Full Development.....	28
<b>6</b>	<b>Summary</b> .....	<b>29</b>

## List of Tables

Table 1 – Estimated Traffic Generation from Adjacent Thomasfield Subdivision .....	8
Table 2 – Traffic Count Data Collection Information .....	10
Table 3 – Level of Service Criteria for Intersections.....	16
Table 4 – Existing (2015) LOS .....	16
Table 5 – Total Background (2020) LOS.....	17
Table 6 – Total Background (2025) LOS.....	17
Table 7 – Estimated Traffic Generation from Proposed Development.....	18
Table 8 – Traffic Distribution Summary .....	19
Table 9 – Projected (2020) and Proposed LOS .....	27
Table 10 – Projected (2025) and Proposed LOS .....	28

## List of Figures

Figure 1 – Proposed Site Location and Study Area .....	3
Figure 2 – Existing Lane Configuration for Study Area Intersections.....	5
Figure 3 – Thomasfield Subdivision Location.....	7
Figure 4 – Additional Thomasfield Subdivision (2020 and 2025) Peak Hour Traffic Volumes .....	9
Figure 5 – Existing (2015) Peak Hour Traffic Volumes .....	11
Figure 6 – Total Background (2020) Peak Hour Traffic Volumes .....	13
Figure 7 – Total Background (2025) Peak Hour Traffic Volumes .....	14
Figure 8 – Traffic Distribution for the Proposed Development Moco Development .....	20
Figure 9 – Traffic Distribution for the Proposed Corseed Development.....	21
Figure 10 – Traffic Assignment for Proposed Moco Development.....	22
Figure 11 – Traffic Assignment for Corseed Development .....	23
Figure 12 – Projected (2020) Peak Hour Traffic Volumes with Moco and Corseed Development.....	25
Figure 13 – Projected (2025) Peak Hour Traffic Volumes with Moco and Corseed Development.....	26

## List of Appendices

APPENDIX A – Draft Plan of Subdivision	
APPENDIX B – Traffic Counts	
APPENDIX C – Synchro Analysis Output – Existing Conditions	
APPENDIX D – Synchro Analysis Output – Projected Traffic Volumes	
APPENDIX E – Transportation Tomorrow Survey Excerpt	
APPENDIX F – Synchro Analysis Output – Projected and Proposed Traffic Volumes	
APPENDIX G – MTO GDSOH Left Turn Lane Warrant Graphs	
APPENDIX H – OTM Book 12 – Traffic Signal Justification Sheets	

# 1 Introduction

## 1.1 Background

**Moco Farms Ltd.** is proposing to develop a 34.4 hectare site [Moco Subdivision] located east of County Road 25 and south of Industrial Drive,

**Corseed Inc.** is proposing to develop a 14.9 hectare site [Corseed Subdivision] located west of Dufferin County Road 25 [County Road 25], south of the Upper Grand Trailway. Both of the above-noted developments are located within the Town of Grand Valley [Town], County of Dufferin [County].

The proposed Moco Subdivision will include 111 single-family detached residential units, three future mixed use blocks (combined area of 6.62 hectares) and 6.9 hectares of future development lands.

The proposed Corseed Subdivision will include 73 single detached residential units and two future mixed use blocks (combined area of 1.35 hectares).

Moco Farms Ltd. and Corseed Inc. have retained **JD Northcote Engineering Inc.** [JD Engineering] to prepare this traffic impact study in support of the Draft Plan Application.

## 1.2 Study Area

**Figure 1** shows the location of the subject site and study area intersections in relation to the surrounding area. The Draft Plan of Subdivision (by IPS Consulting Inc.) for each property is shown in **Appendix A**.

The Moco Subdivision is bound by County Road 25 to the west, existing employment land to the north, and existing agricultural lands to the south and east. The subject site includes two t-intersections with County Road 25, [Moco North Access] and [Moco South Access].

The Corseed Subdivision is bound by existing residential lands to the north, County Road 25 to the east, and existing agricultural lands to the west and south. The subject site includes a single access [Corseed Access] connection with County Road 25, across from Industrial Drive.

Through consultation with the Town and County, the following intersections are included in the Study:

- Moco North Access / County Road 25;
- Moco South Access / County Road 25;
- Corseed Access / County Road 25 / Industrial Drive;
- County Road 25 / Melody Lane; and
- County Road 25 / County Road 109.

## 1.3 Study Scope and Objectives

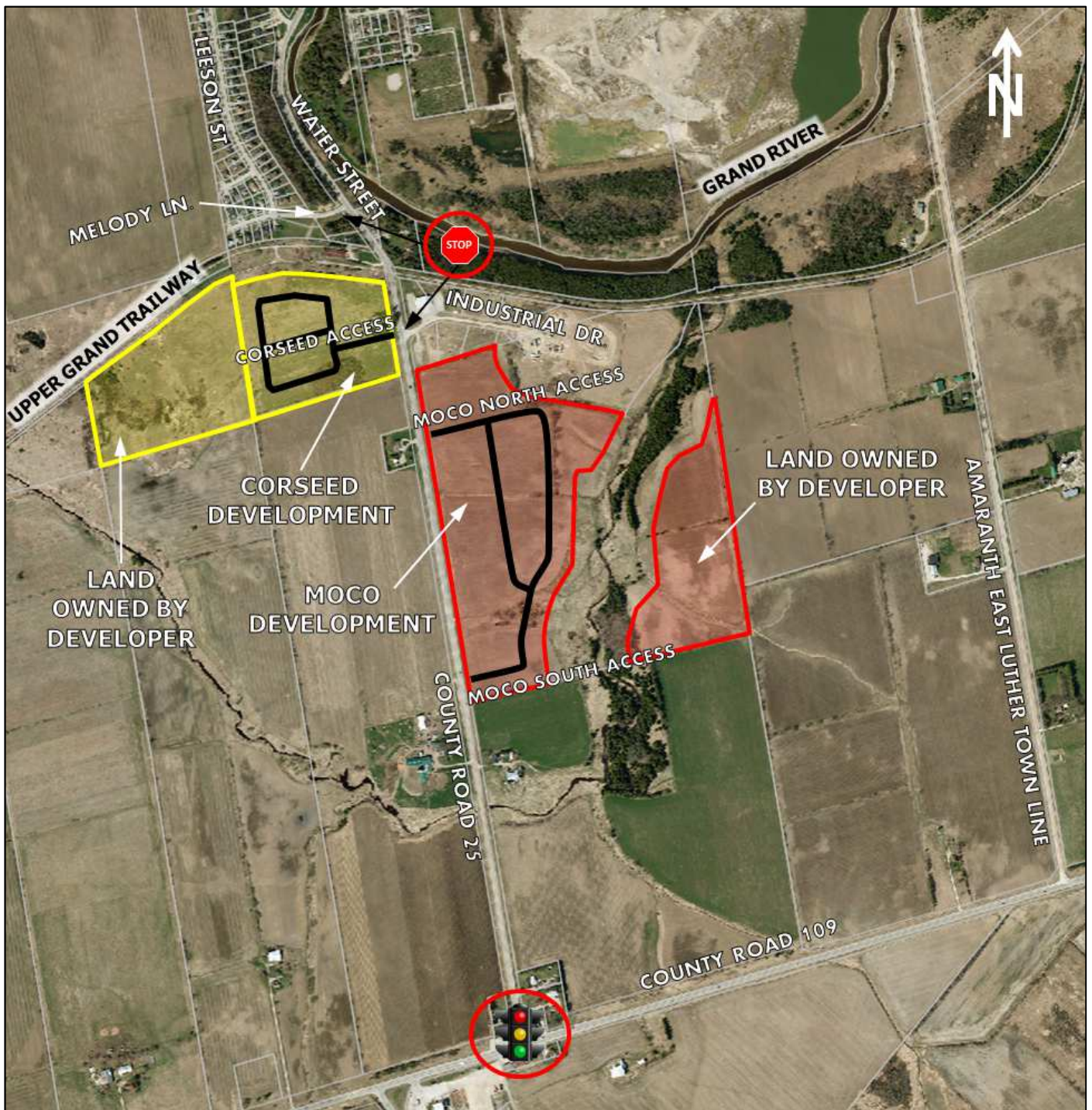
The purpose of this study is to identify the potential impacts to traffic flow at the site access and on the surrounding roadway network. The study analysis includes the following tasks:

- Consult with the Town and County to address any transportation related issues or concerns they have with the proposed development;
- Determine existing traffic volumes and circulation patterns;

- Estimate future traffic volumes if the proposed development was not constructed, including the impact of additional proposed developments in the area;
- Complete level-of-service [LOS] analysis of horizon year traffic conditions and identify operational deficiencies;
- Estimate the amount of traffic that would be generated by the proposed Moco Subdivision and Corseed Subdivision and assign to the roadway network;
- Complete LOS analysis of horizon year traffic conditions (with the proposed Moco Subdivision and Corseed Subdivision) and identify additional operational deficiencies;
- Identify improvement options to address operational deficiencies; and
- Document findings and recommendations in a final report.



Figure 1 – Proposed Site Location and Study Area



## 1.4 Horizon Year and Analysis Periods

It has been assumed that, should all approvals be granted, the single-detached units [Phase 1] within the Moco Subdivision and Corseed Subdivision will be built-out by 2020. The existing year traffic (2015), Phase 1 build-out year (2020), as well as 5-year post Phase 1 build-out year (2025) scenarios were selected for analysis of traffic operations in the study area. The weekday morning [AM] and afternoon [PM] peak hour have been selected as the analysis periods for this study.

# 2 Information Gathering

## 2.1 Street and Intersection Characteristics

**County Road 109** is a two-lane county road with a posted speed limit of 80km/h in the study area. County Road 109 has a rural cross-section with shoulders and ditch on both sides of the road. County Road 109 includes a westbound right turn lane and an eastbound left turn lane at County road 25. County Road 109 and is under the jurisdiction of the County.

**County Road 25 (Water Street):** South of the Upper Grand Trailway, County Road 25 is a two-lane road with a posted speed limit of 80km/h in the study area. County Road 25 has a rural cross-section with shoulders and ditch on both sides of the road and is under the jurisdiction of the County. North of the Upper Grand Trailway, County Road 25 becomes Water Street, which is a two-lane primary road with a posted speed limit of 50km/h in the study area. Water Street has a rural cross-section with a sidewalk on the west side of the street, starting just south of Melody Lane. Water Street is under jurisdiction of the Town.

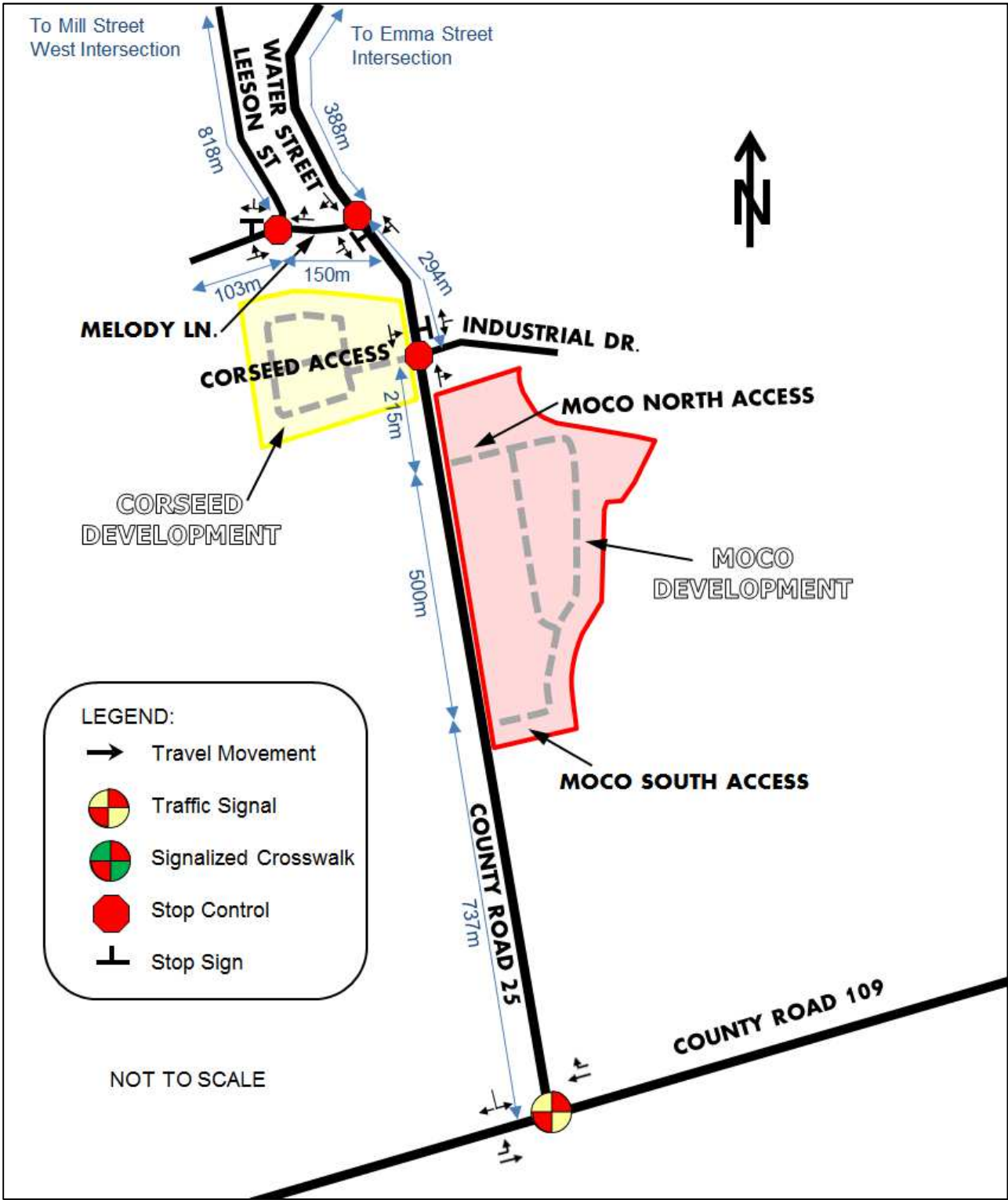
**Melody Lane** is a two-lane primary road with unsigned (assumed) speed limit of 50km/h in the study area. Melody Lane has an urban cross-section with a sidewalk on the north side of the street. Melody Lane is under jurisdiction of the Town.

**Leeson Street** is a two-lane primary road with unsigned (assumed) speed limit of 50km/h in the study area. Leeson Street has an urban cross-section with a sidewalk on the west side of the street. Leeson Street is under jurisdiction of the Town.

**Industrial Drive** is a two-lane road primary road with a rural cross-section. Currently, Industrial Drive provides access to a parking lot for the Grand Valley and District Fire Department and a separate parking lot for users of the Grand Valley Trailway. Industrial Drive is under the jurisdiction of the Town.

The existing lane configuration for all study area intersections can be seen in **Figure 2**.

Figure 2 – Existing Lane Configuration for Study Area Intersections



## 2.2 Transit Access

No local public transit falls within our subject site or surrounding area.

## 2.3 Local Road Improvements

Based on our discussions with the Town and County Engineering staff, no geometric or road capacity improvements are currently planned within the study area.

## 2.4 Other Developments within the Study Area

There is currently one development under construction within the study area, known as the Thomasfield Subdivision. The location of this development is illustrated in **Figure 3**<sup>1</sup>. Phase 1 of this development is currently under construction. Phase 1 includes a connection with Amaranth Street West at the north end and Melody Lane at the south end. The developer of the Thomasfield Subdivision also owns lands located west of the Phase 1 lands; however, there are currently no plans for the development of these lands.

There are a number of other developments in the village of Grand Valley at various stages of the planning process. The majority of these developments are located north of the existing built boundary of the village.

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<sup>1</sup> Excerpt from the Traffic Impact Study (dated April 2011) for the Thomasfield Subdivision (Fig. 1.1)

Figure 3 – Thomasfield Subdivision Location



## 2.1 Traffic Generation from Other Developments within the Study Area

Through our discussions with the Town and County, a background traffic growth rate of 2.2% has been applied to the traffic volumes on County Road 25 and 109. This background traffic growth will account for increased traffic volumes as a result of small infill developments close to the study area, or larger developments beyond the study area.

The traffic generation for the Thomasfield Subdivision has been included in addition to the background traffic growth noted above. **Table 1**<sup>2</sup> summarizes the estimated trip generation for each phase of the development. Phase 1 was approximately 75% built-out in 2014 at the time the traffic counts were completed for this report. In order to avoid double counting this traffic, we have reduced the overall traffic generation by 37.5%<sup>3</sup>. It is anticipated that the remaining units will be built-out prior to the 2020 horizon year.

**Table 1 – Estimated Traffic Generation from Adjacent Thomasfield Subdivision**

Development Phase	Land Use	Size	AM Peak Hour			PM Peak Hour		
			IN	OUT	TOTAL	IN	OUT	TOTAL
Phase 1	Single-Family Detached	98 units	18	55	73	62	37	99
	Low-Rise Condominium / Townhouse	52 units	9	26	35	24	17	41
	TOTAL		27	81	108	86	54	140
Phase 2	Single-Family Detached	142 units	27	80	107	90	53	143
	Low-Rise Condominium / Townhouse	29 units	5	15	20	13	10	23
	TOTAL		32	95	127	103	63	166

## 2.2 Traffic Distribution for Other Developments within the Study Area

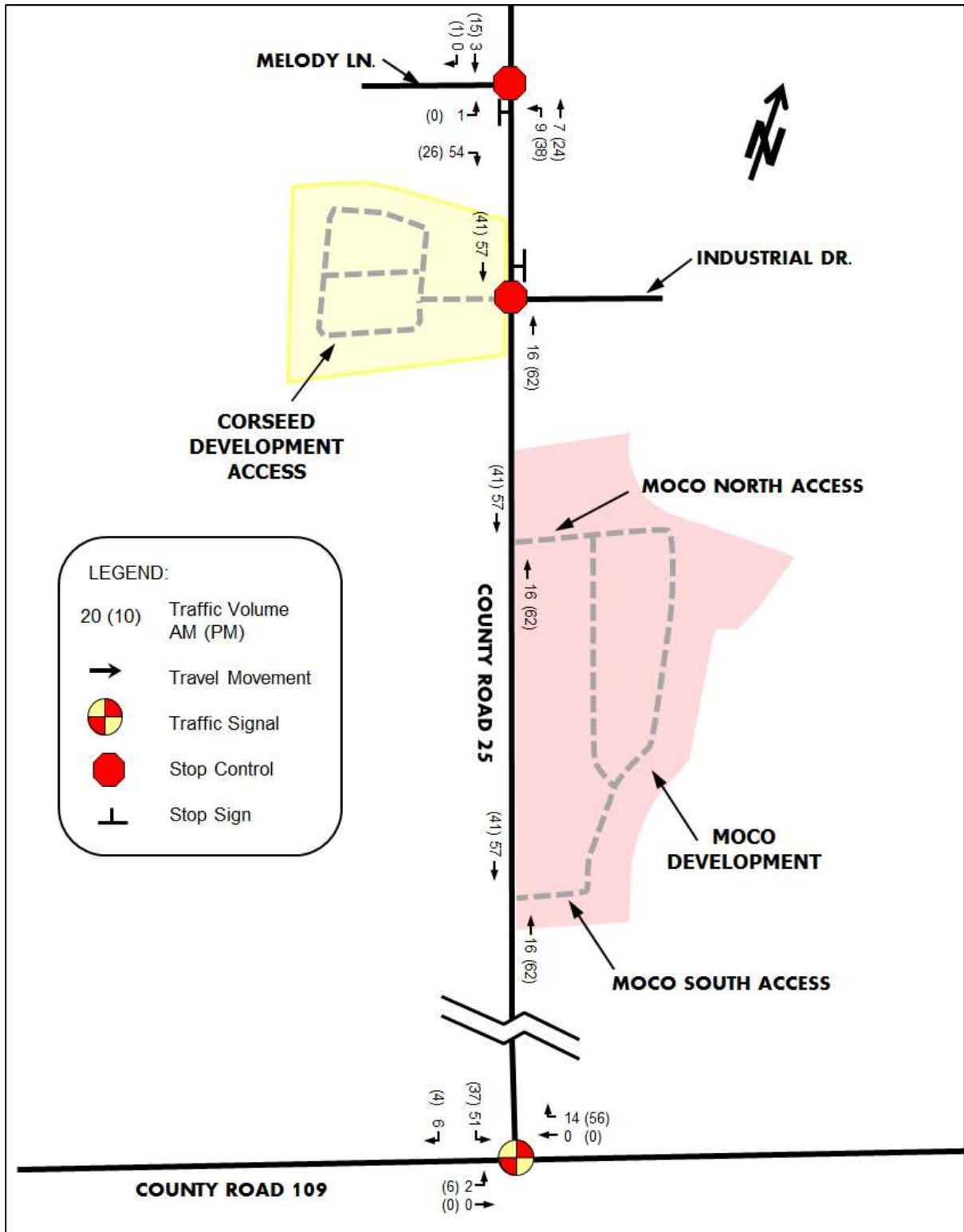
The distribution of traffic for the Thomasfield Subdivisions has been taken directly from the 2011 Traffic Impact Study for the development.

**Figure 4** illustrates the additional (2020 and 2025) traffic volumes in the study area generated by the Thomasfield Subdivision during the AM and PM peak hour.

<sup>2</sup> Excerpt from the Traffic Impact Study (dated April 2011) for the Thomasfield Subdivision (Table 4.3)

<sup>3</sup> Since the traffic generated by Phase 1 and 2 is relatively equal, we have taken 75% of phase 1 to be equal to 37.5% of the total traffic generation.

Figure 4 – Additional Thomasfield Subdivision (2020 and 2025) Peak Hour Traffic Volumes



## 2.3 Traffic Counts

Detailed turning movement traffic and pedestrian counts were completed at the two existing intersections within the study area. **Table 2** summarizes the traffic count data collection information.

**Table 2 – Traffic Count Data Collection Information**

Intersection	Count Date	AM Peak Hour	PM Peak Hour	Source
County Road 25 / Melody Lane	Thursday October 9 <sup>th</sup> , 2014	07:45 – 08:45	17:15 – 18:15	JD Eng.
County Road 25 / County Road 109	Wednesday October 9 <sup>th</sup> , 2014	07:30 – 08:30	16:45 – 17:45	JD Eng.

Detailed traffic count data can be found in **Appendix B**. These peaks hours generally aligned with the anticipated peak hour of traffic generation by the proposed development. Although the AM and PM peak periods at the two intersections did not exactly align, for the purpose of this report, we have assumed that the AM and PM peak hours are concurrent.

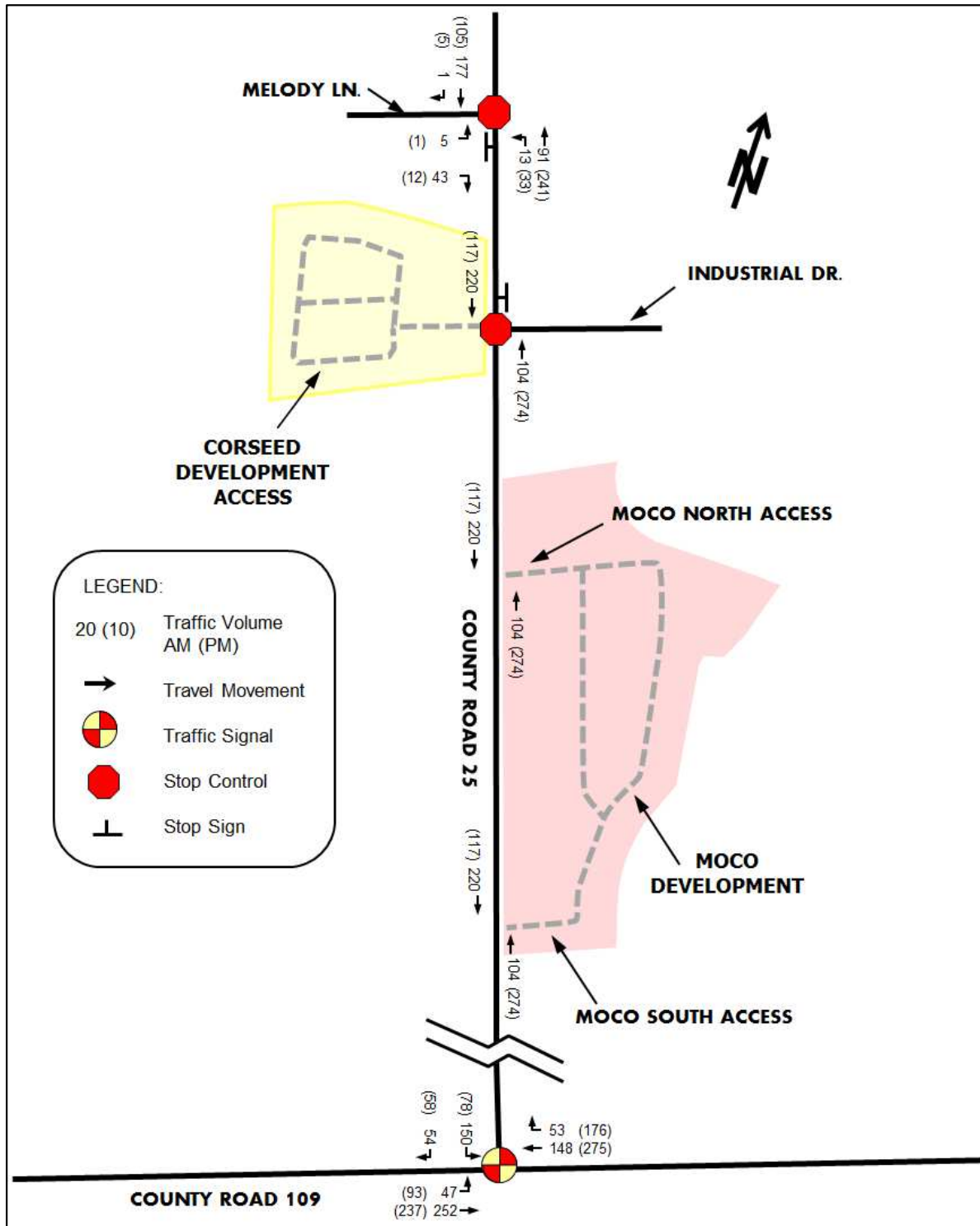
Heavy vehicle percentages and pedestrian crossings from the traffic count data have also been included in the Synchro analysis.

The traffic counts have been factored by the annual background traffic growth rate (2.2% - as calculated in Section 2.1) to estimate the existing (2015) traffic volumes.

**Figure 5** illustrates the existing (2015) AM and PM peak hour traffic volumes at the site access and study area intersections.



Figure 5 – Existing (2015) Peak Hour Traffic Volumes



## 2.4 Horizon Year Traffic Volumes

Future horizon year traffic volumes without the proposed development were estimated to provide base case scenarios to compare to horizon year traffic scenarios with the proposed development operational.

The background traffic growth rate and the Thomasfield Subdivision traffic volumes calculated in Section 2.3 have been applied to the existing traffic counts to estimate the total background traffic volume within the study area.

**Figure 6** and **Figure 7** illustrate the 2020 and 2025 total background AM and PM peak hour traffic volumes in the study area.

Figure 6 – Total Background (2020) Peak Hour Traffic Volumes

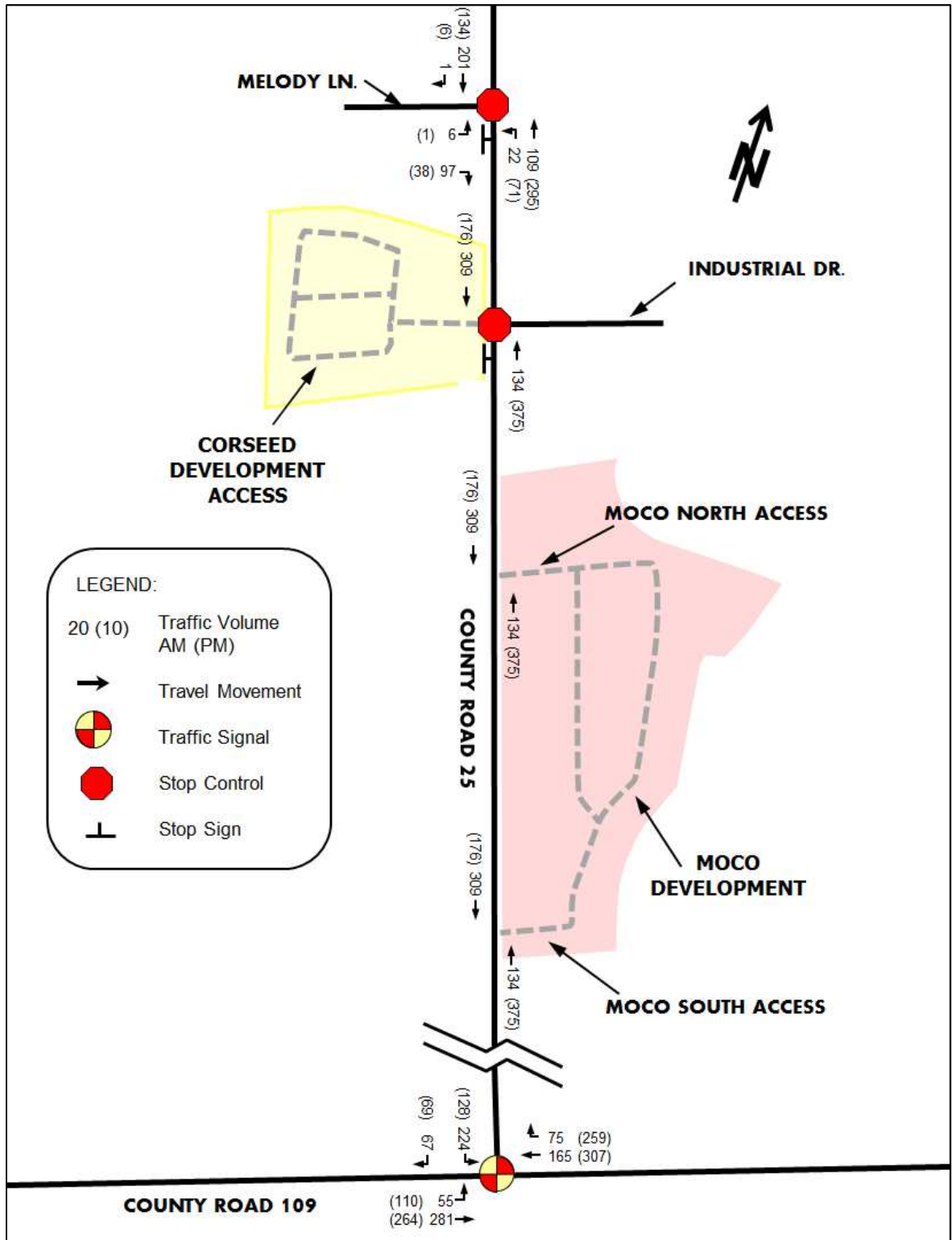
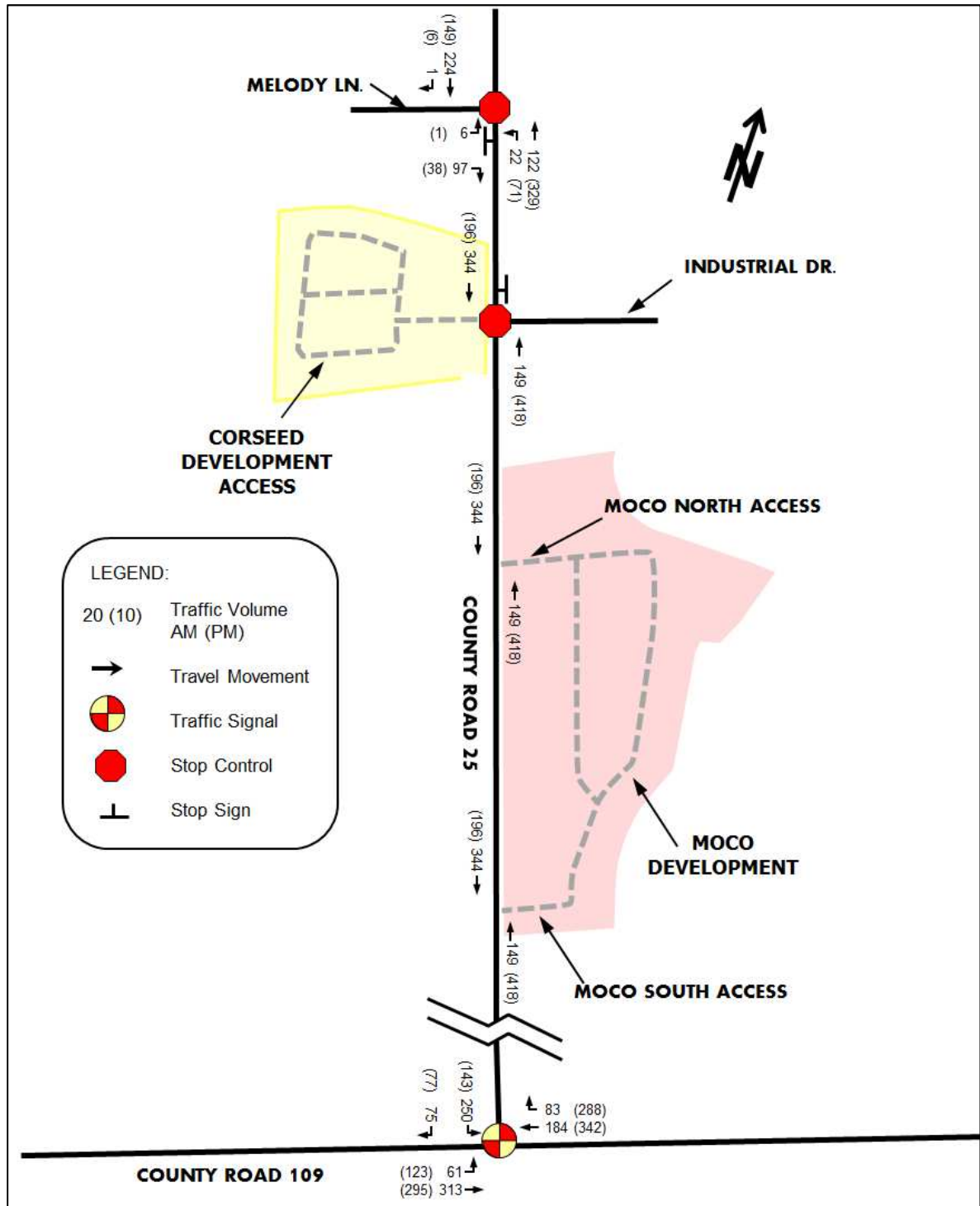


Figure 7 – Total Background (2025) Peak Hour Traffic Volumes



## 3 Existing Year LOS without Proposed Development

### 3.1 Introduction

Existing year operational conditions were established to determine how the street network within the study area is currently functioning without the proposed development. This provides a base case scenario to compare with future development scenarios. Traffic operations within the study area were evaluated using the 2015 traffic volumes with the existing road configuration and traffic control. The intersection performance was measured using the traffic analysis software, Synchro 9, a deterministic model that employs Highway Capacity Manual and Intersection Capacity Utilization methodologies for analyzing intersection operations. These procedures are accepted by provincial and municipal agencies throughout North America.

Synchro 9 enables the study area to be graphically defined in terms of streets and intersections, along with their geometric and traffic control characteristics. The user is able to evaluate both signalized and unsignalized intersections in relation to each other, thus not only providing level of service for the individual intersections, but also enabling an assessment of the impact the various intersections in a network have on each other in terms of spacing, traffic congestion, delay, and queuing.

Individual turning movements with a volume-to-capacity [V/C] ratio of 0.85 or greater are considered to be critical movements. Turning movements with a V/C ratio approaching this threshold and have been highlighted in the LOS tables.

The intersection operations were also evaluated in terms of the LOS. LOS is a common measure of the quality of performance at an intersection and is defined in terms of vehicular delay. This delay includes deceleration delay, queue move-up time, stopped delay, and acceleration delay. LOS is expressed on a scale of A through F, where LOS A represents very little delay (i.e. less than 10 seconds per vehicle) and LOS F represents very high delay (i.e. greater than 50 seconds per vehicle for a stop sign controlled intersection and greater than 80 seconds per vehicle for a signalized intersection).

The LOS criteria for signalized and stop sign controlled intersections are shown in **Table 3**. A description of traffic performance characteristics is included for each LOS.

**Table 3 – Level of Service Criteria for Intersections**

LOS	LOS Description	Control Delay (seconds per vehicle)	
		Signalized Intersections	Stop Controlled Intersections
A	Very low delay; most vehicles do not stop ( <b>Excellent</b> )	less than 10.0	less than 10.0
B	Higher delay; more vehicles stop ( <b>Very Good</b> )	between 10.0 and 20.0	between 10.0 and 15.0
C	Higher level of congestion; number of vehicles stopping is significant, although many still pass through intersection without stopping ( <b>Good</b> )	between 20.0 and 35.0	between 15.0 and 25.0
D	Congestion becomes noticeable; vehicles must sometimes wait through more than one red light; many vehicles stop ( <b>Satisfactory</b> )	between 35.0 and 55.0	between 25.0 and 35.0
E	Vehicles must often wait through more than one red light; considered by many agencies to be the limit of <b>acceptable</b> delay	between 55.0 and 80.0	between 35.0 and 50.0
F	This level is considered to be unacceptable to most drivers; occurs when arrival flow rates exceed the capacity of the intersection ( <b>Unacceptable</b> )	greater than 80.0	greater than 50.0

### 3.2 Existing (2015) LOS

The results of the LOS analysis under existing (2015) traffic volumes during the AM and PM peak hour can be found below in **Table 4**. Existing intersection geometry and traffic control have been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix C**.

**Table 4 – Existing (2015) LOS**

Location (E-W Street / N-S Street)	Weekday AM Peak Hour			Weekday PM Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Melody Lane / County Road 25	-	1.8	A	-	1.0	A
EB	0.07	9.9	A	0.02	9.0	A
County Road 109 / County Road 25	0.36	13.8	B	0.31	11.1	B
SB	0.47	26.1	C	0.26	22.6	C

The results of the LOS analysis indicate that the study area intersections are operating at a good LOS for all turning movements.

For right turn movements, the criteria outlined in Section E.7 of the Ontario Ministry of Transportation [MTO] Geometric Design Guidelines for Ontario Highways [GDGOH] were applied. Based on the above-noted criteria, right turn lanes are not warranted at any of the study area intersections.

An analysis was completed for left turn movement on Melody Lane at County Road 25. Based on the criteria outlined in Section E.B.1 of the MTO GDGOH left turn lanes are not warranted at the above-noted intersection<sup>4</sup>. MTO GDGOH left turn warrant graphs are provided in **Appendix G**.

No additional improvements are required at the existing intersections.

<sup>4</sup> A design speed of 60km/h was assumed for all roads in the study area for this analysis.

### 3.3 Total Background (2020) LOS without Proposed Development

The results of the LOS analysis for the total background (2020) traffic volumes during the AM and PM peak hour can be found below in **Table 5**. Existing intersection geometry and traffic control have been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix D**.

**Table 5 – Total Background (2020) LOS**

Location (E-W Street / N-S Street)	Weekday AM Peak Hour			Weekday PM Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Melody Lane / County Road 25	-	2.9	A	-	1.9	A
EB	0.15	10.5	B	0.05	9.3	A
County Road 109 / County Road 25	0.45	17.1	B	0.39	12.1	B
SB	0.70	32.9	C	0.45	25.6	C

The results of the LOS analysis indicate that the study area intersections are operating at a good LOS for all turning movements.

For right turn movements, the criteria outlined in Section E.7 of the MTO GDSOH were applied. Based on the above-noted criteria, a right turn lane is not warranted at the Melody Lane / County Road 25 intersection.

An analysis was completed for left turn movement on Melody Lane at County Road 25. Based on the criteria outlined in Section E.B.1 of the MTO GDGOH left turn lanes are marginally below the warrant<sup>5</sup>. MTO GDGOH left turn warrant graphs are provided in **Appendix G**.

No additional improvements are required at the existing intersections.

### 3.4 Total Background (2025) LOS without Proposed Development

The results of the LOS analysis for the total background (2025) traffic volumes during the AM and PM peak hour can be found below in **Table 6**. Existing intersection geometry and traffic control have been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix D**.

**Table 6 – Total Background (2025) LOS**

Location (E-W Street / N-S Street)	Weekday AM Peak Hour			Weekday PM Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Melody Lane / County Road 25	-	2.8	A	-	1.8	A
EB	0.16	10.7	B	0.05	9.4	A
County Road 109 / County Road 25	0.50	18.8	B	0.44	12.6	B
SB	0.78	37.7	D	0.51	26.9	C

The results of the LOS analysis indicate that the study area intersections are operating at a good LOS for all turning movements.

For right turn movements, the criteria outlined in Section E.7 of the MTO GDSOH were applied. Based on the above-noted criteria, right turn lanes are not warranted at the Melody Lane / County Road 25 intersection.

<sup>5</sup> A design speed of 60km/h was assumed for all roads in the study area for this analysis.

An analysis was completed for left turn movement on Melody Lane at County Road 25. Based on the criteria outlined in Section E.B.1 of the MTO GDGOH a left turn lane is warranted at this intersection<sup>6</sup> with a 15 metre storage length. MTO GDGOH left turn warrant graphs are provided in **Appendix G**.

No additional improvements are required at the existing intersections.

## 4 Proposed Development Traffic Generation and Assignment

### 4.1 Traffic Generation

The traffic generation for this area has been based on the ITE *Trip Generation* data. The following ITE land uses have been applied to estimate the traffic from the proposed development (traffic generation from the townhouse and semi-detached units has been calculated using the same ITE land use category):

- ITE land use 210 (Single-Family Detached Housing)
- ITE land use 230 (Residential Condominium / Townhouse)

Development plans for the mixed-use blocks for the Moco Subdivision and Corseed Subdivision have not been finalized at this time. Since development of the mixed-use blocks will not commence within 10 years of the current proposed development, the traffic generation from the mixed-use blocks within the Moco Subdivisions and Corseed Subdivision have not be considered in this study. Subsequent studies will be completed for the mixed-use blocks closer to the planned development date.

The estimated trip generation of the proposed development is illustrated below in **Table 7**. The AM and PM peak traffic generation for the subject site generally aligns with the AM and PM peak hour in the traffic counts.

**Table 7 – Estimated Traffic Generation from Proposed Development**

Subdivision	Land Use	Size	AM Peak Hour			PM Peak Hour		
			IN	OUT	TOTAL	IN	OUT	TOTAL
Moco	Single-Family Detached Housing ITE Land Use: 210	111 units	22	66	88	72	43	115
Corseed	Single-Family Detached Housing ITE Land Use: 210	73 units	15	46	61	50	29	79
<b>TOTAL</b>		<b>184 units</b>	<b>37</b>	<b>112</b>	<b>149</b>	<b>122</b>	<b>72</b>	<b>194</b>

In order to be conservative, no transportation modal split has been applied to the above-noted traffic generation calculation.

### 4.2 Traffic Assignment

For the purposes of this study, it has been assumed that all traffic generated by the proposed development will be new traffic and would not be in the study area if the development was not constructed. The ITE data provides the anticipated percentage of new traffic entering and exiting during the peak hour. The ITE data provides the anticipated percentage of new traffic entering and exiting during the peak hour. Beyond the local area the distribution of traffic from the Moco Subdivision and Corseed Subdivision have been estimated based on the 2006 Transportation

<sup>6</sup> A design speed of 60km/h was assumed for all roads in the study area for this analysis.



Tomorrow Survey [TTS] data for the County (excerpt attached as **Appendix E**). TTS data provides historical origin and destination work trip percentages for specific areas within the County and the Greater Toronto and Hamilton Area [GTHA].

All of the trips generated by the Moco Subdivision and Corseed Subdivision are residential and the critical case reviewed in this analysis is the AM and PM peak hour. Consequently, traffic distribution for the trips generated by the subject site is expected to generally follow commuter travel patterns. Our analysis is based on the egressing traffic and the work trip destination percentages. Logically, the distribution of ingress traffic will follow the inverse of the exiting traffic distribution. For each of the individual areas identified in the TTS data, we have selected the probable route of travel, assuming that people will select their route primarily based on travel time.

We have also distributed the utilization of each of the internal roads based on the ultimate destination in conjunction with the proposed subject site layout.

**Table 8** summarizes the trip distribution for the Moco Subdivision and Corseed Subdivision.

**Table 8 – Traffic Distribution Summary**

Travel Direction (to/from)	Percent of Total Traffic Generation
North	20%
Southwest	8%
Southeast	72%
<b>Total</b>	<b>100%</b>

**Figures 8** and **9** illustrate the additional traffic volumes in the study area generated during the AM and PM peak hour by the Moco Subdivision and Corseed Subdivision respectively.

Using this traffic distribution pattern, the development traffic assignment for the AM and PM peak hour was calculated and has been illustrated in **Figure 10** and **11**.

Figure 8 – Traffic Distribution for the Proposed Development Moco Development

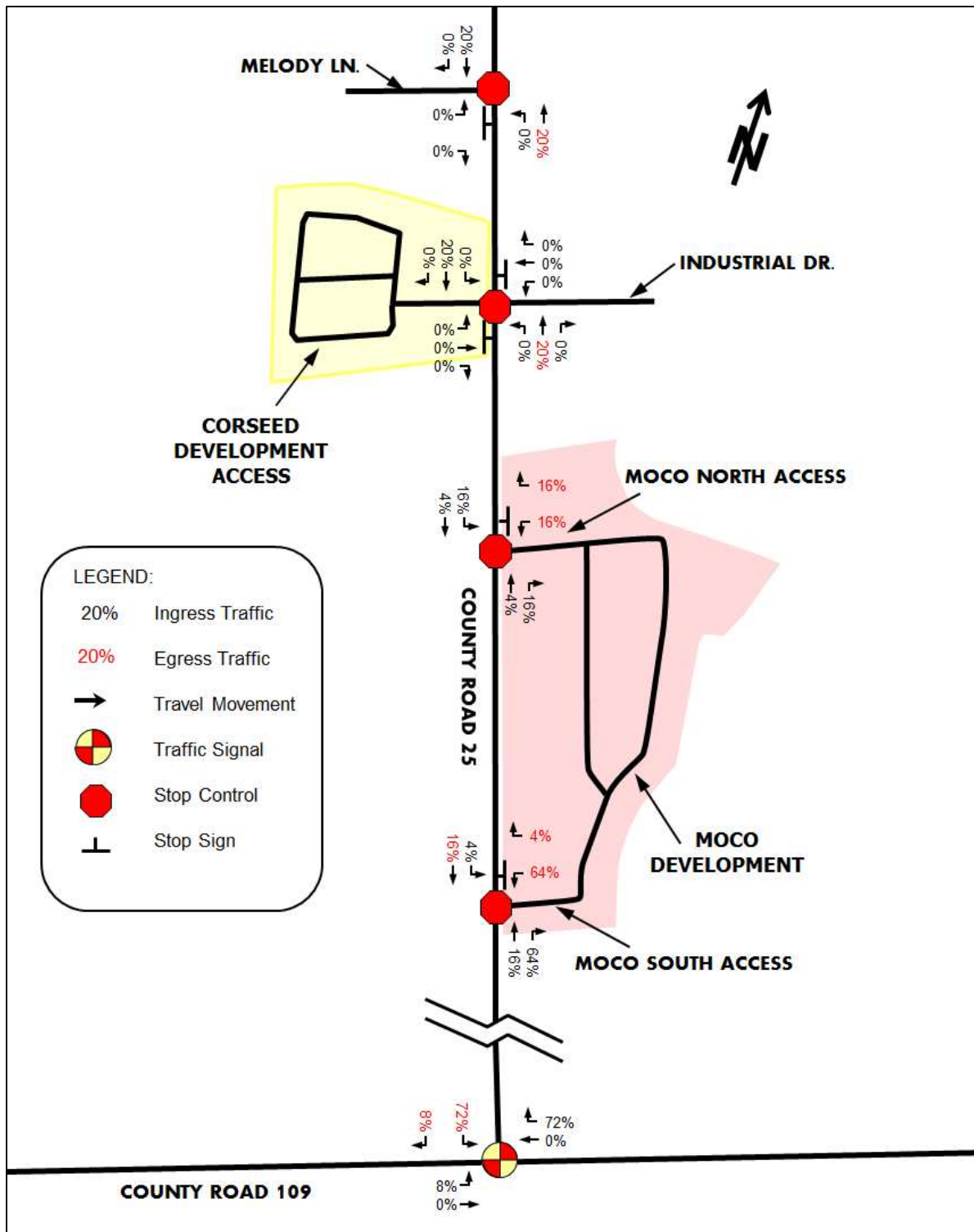


Figure 9 – Traffic Distribution for the Proposed Corseed Development

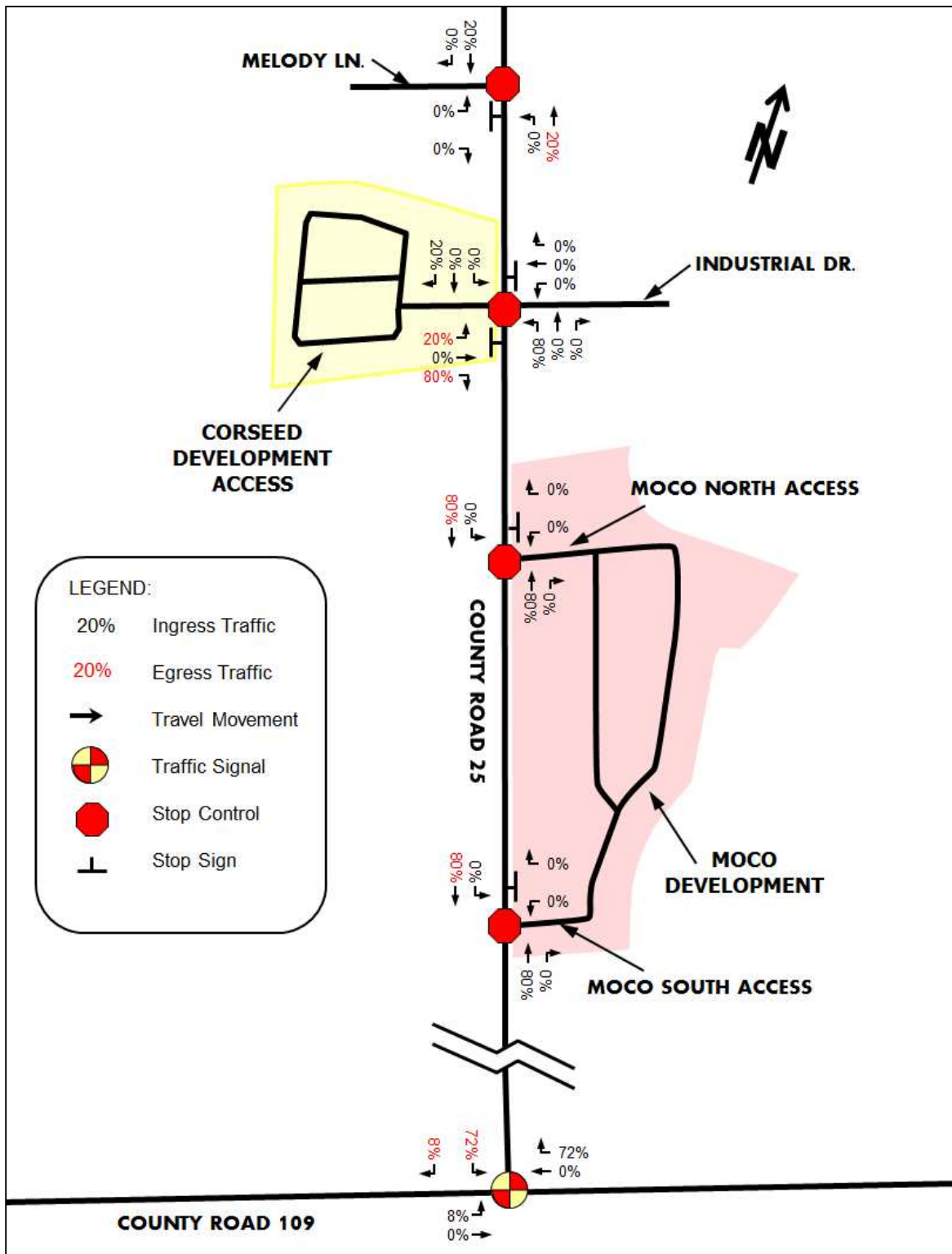


Figure 10 – Traffic Assignment for Proposed Moco Development

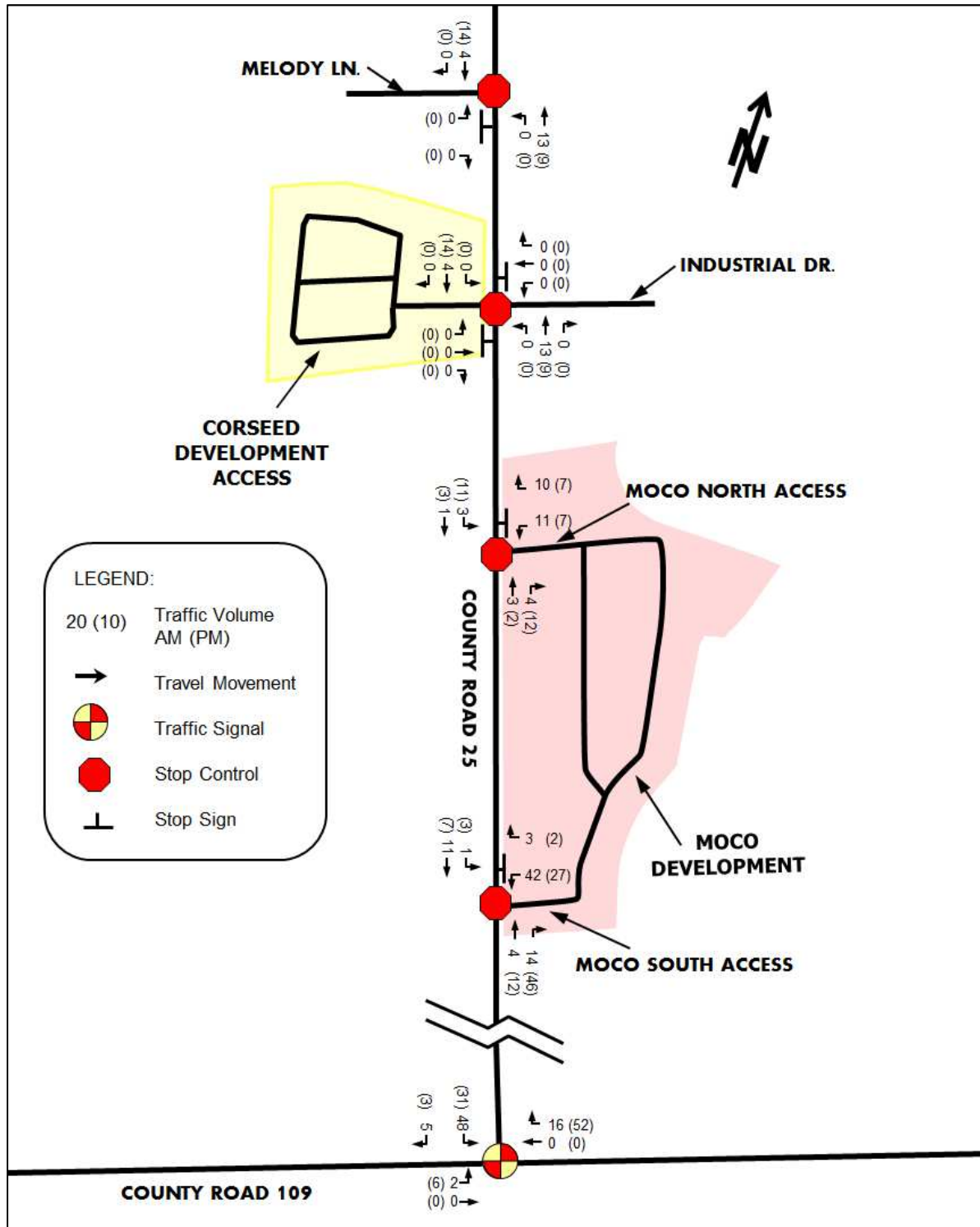
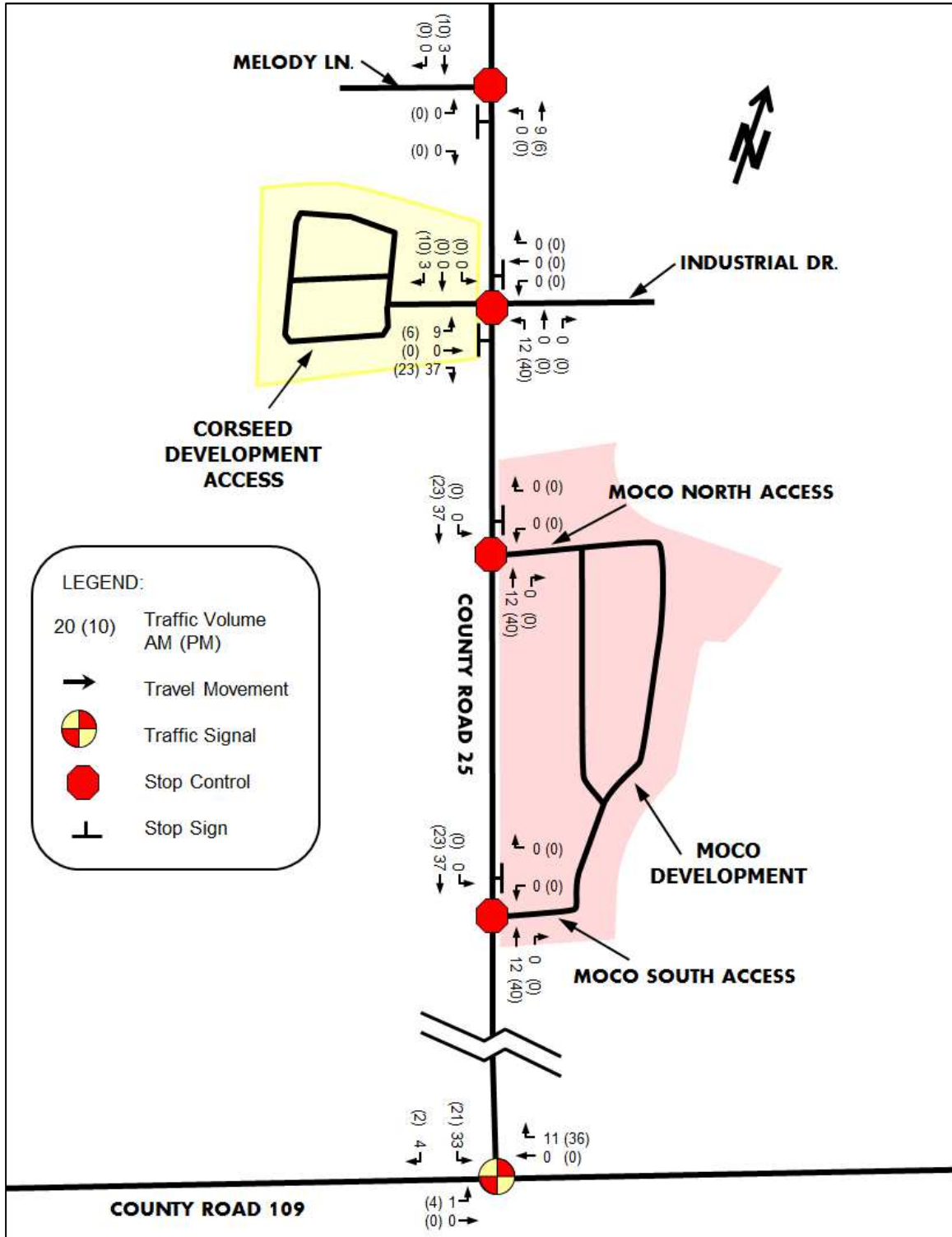


Figure 11 – Traffic Assignment for Corseed Development



#### 4.3 Total Horizon Year Traffic Volumes with the Proposed Development

For the total (2020) and (2025) horizon year traffic volumes, the proposed development traffic was added to the projected (2020) and (2025) traffic volumes. The resulting total (2020) and (2025) horizon year total traffic volume for the AM and PM peak hour can be found in **Figure 12** and **13**.

Figure 12 – Projected (2020) Peak Hour Traffic Volumes with Moco and Corseed Development

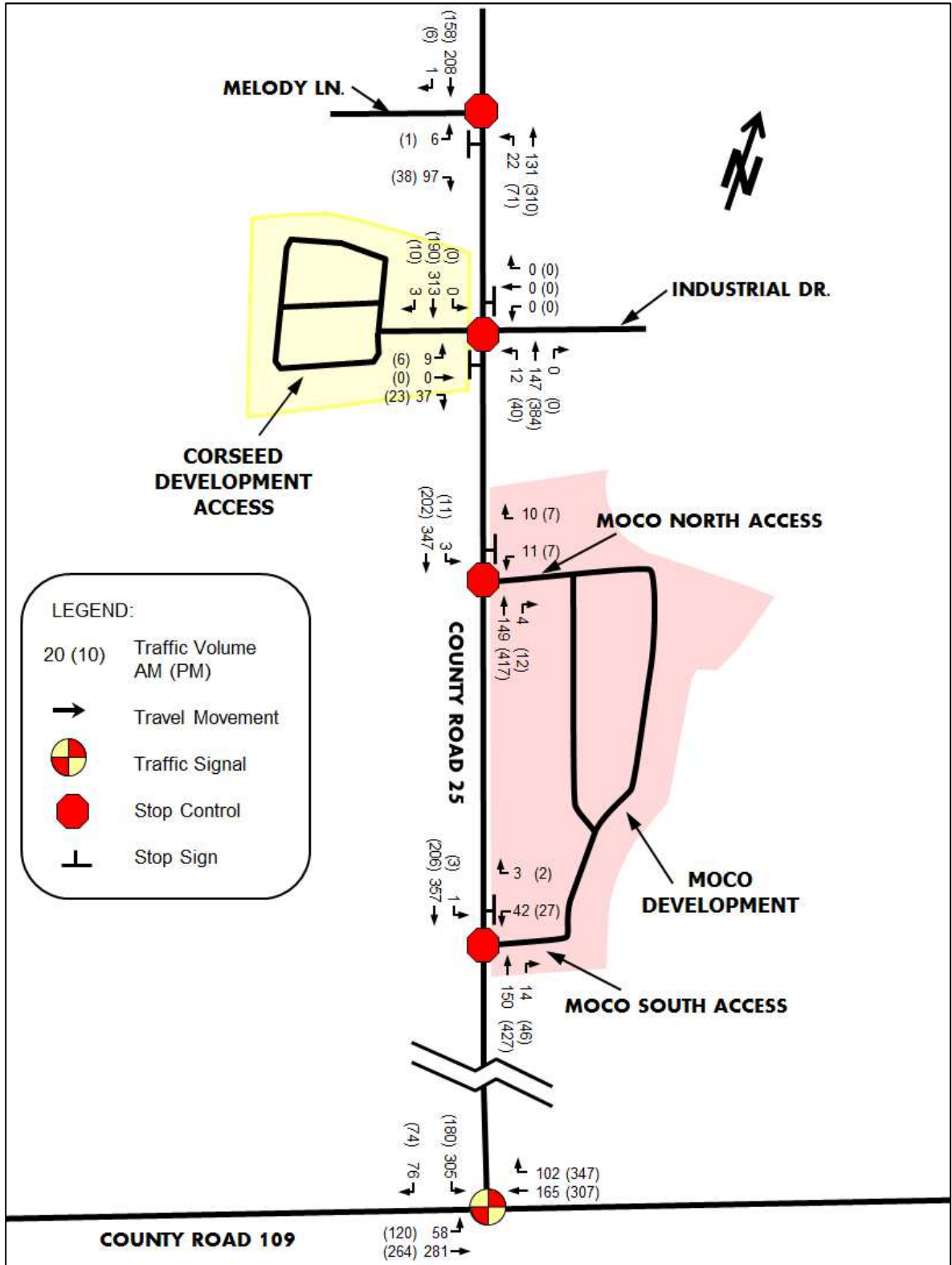
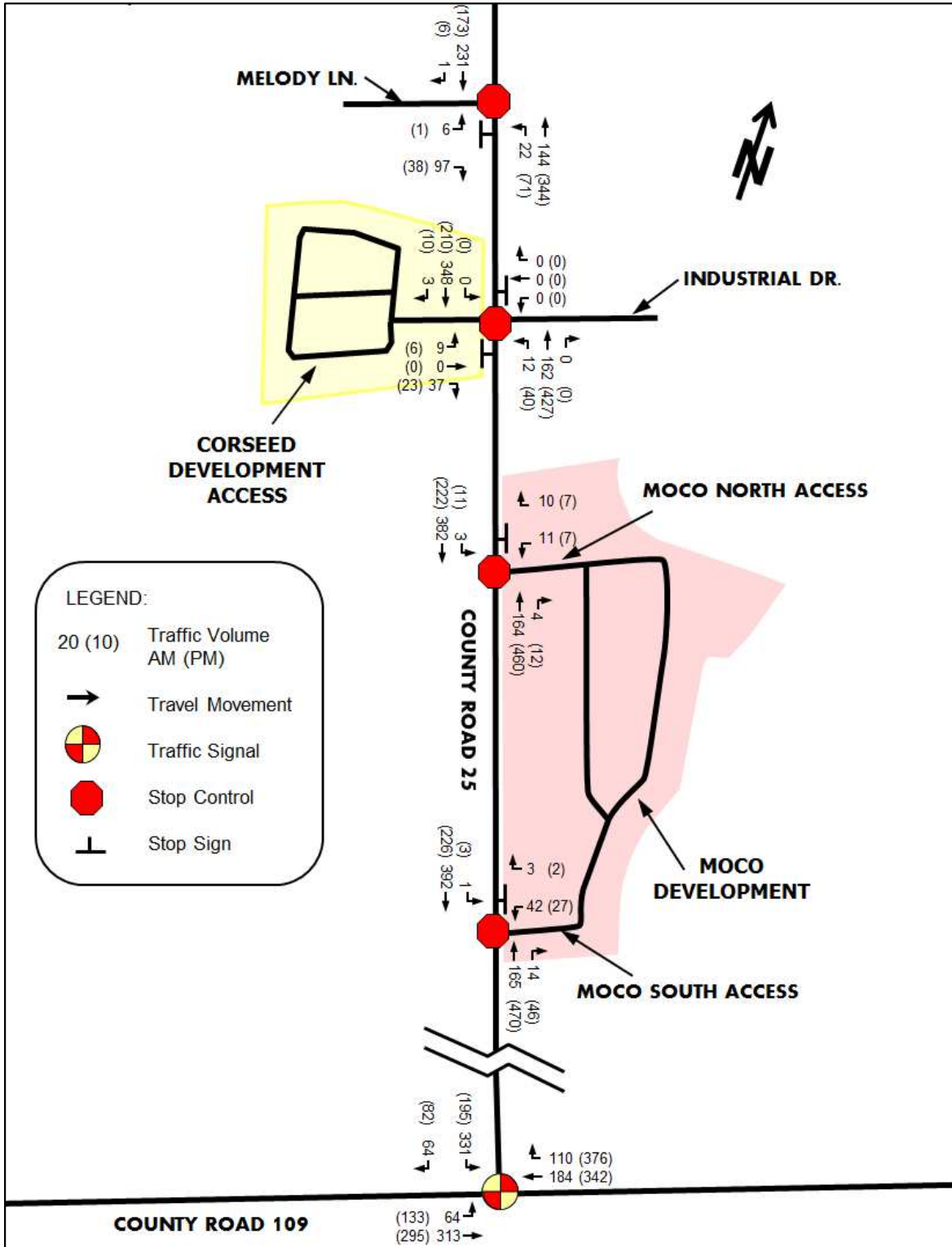


Figure 13 – Projected (2025) Peak Hour Traffic Volumes with Moco and Corseed Development





## 5 Horizon Year LOS with Development

### 5.1 2020 Horizon Year LOS with Full Development

The 2020 horizon year was evaluated to determine how the study area would function at build-out of the proposed development. In this scenario, existing intersection geometry and traffic control have been utilized. Proposed intersection of Corseed Access & Industrial Drive / County Road 25 was assumed to be unsignalized with two-way stop control for eastbound and westbound movements. Proposed intersections of Moco North Access / County Road 25 and Moco South Access / County Road 25 were assumed to be unsignalized with one-way stop control for westbound movements.

The results of the LOS analysis under projected (2020) and proposed traffic volumes during the AM and PM peak hour can be found below in **Table 9**. Detailed output of the Synchro analysis can be found in **Appendix F**.

**Table 9 – Projected (2020) and Proposed LOS**

Location (E-W Street / N-S Street)	Weekday AM Peak Hour			Weekday PM Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Melody Lane / County Road 25	-	2.8	A	-	1.8	A
EB	0.16	10.5	B	0.05	9.4	A
Corseed Access & Industrial Drive / County Road 25	-	1.1	A	-	1.2	A
EB	0.08	11.4	B	0.05	10.9	B
Moco North Access / County Road 25	-	0.5	A	-	0.5	A
WB	0.04	11.2	B	0.03	12.6	B
Moco South Access / County Road 25	-	1.0	A	-	0.6	A
WB	0.10	13.4	A	0.08	14.4	B
County Road 109 / County Road 25	0.52	26.1	C	0.44	13.4	B
SB	0.61	25.3	C	0.61	29.7	C

The results of the LOS analysis indicate that all intersection in the study area will operate at an good LOS for all turning movements.

For right turn movements, the criteria outlined in Section E.7 of the MTO GDSOH was applied. Based on the above-noted criteria, right turn lanes are not warranted at the unsignalized intersections in the study area.

An analysis was completed for left turn movements on Melody Lane at County Road 25, Corseed Access & Industrial Drive at County Road 25, Moco North Access at County Road 25, and Moco South Access at County Road 25. Based on the criteria outlined in Section E.B.1 of the MTO GDGOH left turn lanes are right at the warrant for the intersection of Melody Lane / County Road 25.

Based on the exiting speed limit on County Road 25 at the Corseed Access (80km/h), a left turn lane is warranted, however, based on the proposed development, it is recommended that the speed limit on County Road 25 be reduced to 50km/h from south of the Moco South Access. Based on this change, a left turn lane is not warranted on County Road 25 at the Corseed Access.

No additional improvements are required at the existing or proposed intersections.

## 5.2 2025 Horizon Year LOS with Full Development

The 2025 horizon year was evaluated to determine how the study area would function five years following build-out of the proposed development. In this scenario, existing intersection geometry and traffic control have been utilized.

The results of the LOS analysis under projected (2025) and proposed traffic volumes during the AM and PM peak hour can be found below in **Table 10**. Detailed output of the Synchro analysis can be found in **Appendix F**.

**Table 10 – Projected (2025) and Proposed LOS**

Location (E-W Street / N-S Street)	Weekday AM Peak Hour			Weekday PM Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Melody Lane / County Road 25	-	2.6	A	-	1.7	A
EB	0.16	10.8	B	0.05	9.5	A
Corseed Access & Industrial Drive / County Road 25	-	1.1	A	-	1.1	A
EB	0.09	11.9	B	0.05	11.3	B
Moco North Access / County Road 25	-	0.4	A	-	0.4	A
WB	0.04	11.6	B	0.04	13.2	B
Moco South Access / County Road 25	-	1.0	A	-	0.6	A
WB	0.11	14.1	B	0.08	15.4	C
County Road 109 / County Road 25	0.55	20.2	C	0.49	14.0	B
SB	0.66	26.9	C	0.66	31.8	C

The results of the LOS analysis indicate that all intersection in the study area will operate at a good LOS for all turning movements.

For right turn movements, the criteria outlined in Section E.7 of the MTO GDSOH was applied. Based on the above-noted criteria, right turn lanes are not warranted at the unsignalized intersections in the study area.

An analysis was completed for left turn movements on Melody Lane at County Road 25, Corseed Access & Industrial Drive at County Road 25, Moco North Access at County Road 25, and Moco South Access at County Road 25. Based on the criteria outlined in Section E.B.1 of the MTO GDGOH the traffic volume at the intersection of Melody Lane / County Road 25 is at the warrant line for a northbound left turn lane on County Road 25. Since the left turn lane is only marginally warranted in both the 2025 Background (noted in Section 3.4) and 2025 Total traffic scenarios, it is recommended that the County complete a review of the warrant for a northbound left turn lane on County Road 25 at Melody Lane prior to 2025 using updated traffic counts to confirm the warrant.

A left turn lane is not warranted on County Road 25 at the Corseed Access for the recommended revised design speed of 60km/h.

The proposed Corseed Access & Industrial Drive / County Road 25 intersection will operate efficiently using unsignalized control with two-way stop control for westbound and eastbound traffic at County Road 25. One lane for egress traffic and one lane for ingress traffic for the west leg of the intersection will provide the necessary capacity for the proposed development.

The Moco North Access / County Road 25 and Moco South Access / County Road 25 intersections will operate efficiently using unsignalized control with one-way stop control for westbound traffic at County Road 25. One lane for egress traffic and one lane for ingress traffic for the east leg of the intersections will provide the necessary capacity for the proposed development.

No additional improvements are required at the existing or proposed intersections

## 6 Summary

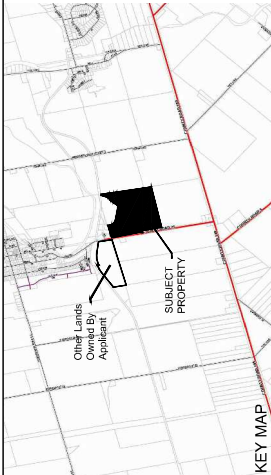
**Moco Farms Ltd. and Corseed Inc.** have retained **JD Engineering** to prepare this traffic impact study in support of the Draft Plan Application for a two residential developments in the Town of Grand Valley, County of Dufferin. The proposed site plan is shown in **Appendix A**. This chapter summarizes the conclusions and recommendations from the study.

1. Moco Farms Ltd. is proposing to construct a residential development consisting of 111 single detached residential units and Corseed Inc. is proposing to construct a residential development with 73 single detached residential units.
2. Development plans for the mixed-use blocks for the Moco Subdivision and Corseed Subdivision have not been finalized at this time. Since development of the mixed-use blocks will not commence within 10 years of the current proposed development, the traffic generation from the mixed-use blocks within the Moco Subdivisions and Corseed Subdivision have not be considered in this study. Subsequent studies will be completed for the mixed-use blocks closer to the planned development date.
3. The proposed Moco Subdivision is expected to generate a total of 88 AM and 115 PM peak hour trips and the proposed Corseed Subdivision is expected to generate a total of 61 AM and 79 PM peak hour trips.
4. Background traffic and pedestrian counts were completed for the existing intersections of County Road 25 / Melody Lane and County Road 25 / County Road 109 on Tuesday August 19<sup>th</sup>, 2014.
5. Level-of-service [LOS] analysis was completed at the study area intersections, using the existing (2014) and projected (2020 & 2025) traffic volumes without the proposed development. This enabled a review of existing and future traffic deficiencies that would be present without the influence of the proposed development. No geometric or traffic signage improvements were required at the existing intersections as a result of the existing or projected (2020 & 2025) traffic volumes without the proposed development. It is recommended that the County review the northbound left turn warrant on County Road 25 at Melody Lane prior to 2025, using updated traffic count data in order to confirm the traffic projections identified in this report.
6. An estimate of the amount of traffic that would be generated by the Subject Site was prepared and assigned to the study area streets and intersections.
7. LOS analysis was completed under total (2020 & 2025) traffic volumes with the proposed development operational at the study area intersections.
8. No geometric or traffic signage improvements were required at the existing intersections in the study area result of the total (2020 & 2025) traffic volumes with the proposed development. As noted above, an updated review of the northbound left turn warrant on County Road 25 at Melody Lane is recommended prior to 2025 (by the County).
9. The proposed Corseed Access & Industrial Drive / County Road 25 intersection will operate efficiently using unsignalized control with two-way stop control for westbound and eastbound traffic at County Road 25. One lane for egress traffic and one lane for ingress traffic for the west leg of the intersection will provide the necessary capacity for the proposed development.

10. The Moco North Access / County Road 25 and Moco South Access / County Road 25 intersections will operate efficiently using unsignalized control with one-way stop control for westbound traffic at County Road 25. One lane for egress traffic and one lane for ingress traffic for the east leg of the intersections will provide the necessary capacity for the proposed development.

In summary, the proposed development will not cause any operational issues and will not add significant delay or congestion to the local roadway network.

## **Appendix A – Draft Plan of Subdivision**



**DRAFT PLAN OF SUBDIVISION**  
 PART OF NORTH HALF OF LOT 31,  
 CONCESSION 1  
 FORMERLY IN THE TOWNSHIP OF EAST LUTHER  
 COUNTY OF DUFFERIN  
 2015



**OWNER'S CERTIFICATE**  
 I HEREBY AUTHORIZE INNOVATIVE PLANNING SOLUTIONS TO PREPARE THIS DRAFT PLAN OF SUBDIVISION AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION FOR APPROVAL.

**SURVEYOR'S CERTIFICATE**  
 I CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE: \_\_\_\_\_  
 MOCO FARMS LTD.  
 \_\_\_\_\_  
 PIER DE ROSA, O.L.S.

**ADDITIONAL INFORMATION REQUIRED UNDER SECTION 5(17) OF THE PLANNING ACT**  
 1) SHOWN ON PLAN  
 2) MUNICIPAL WATER  
 3) SEWER PLAN  
 4) SHOWING UTILITIES  
 5) SHOWING STORMWATER MANAGEMENT  
 6) SHOWING STORMWATER SERVICES  
 7) SHOWING OTHER PLAN  
 8) SHOWING OTHER PLAN

**LAND USE STATISTICS**

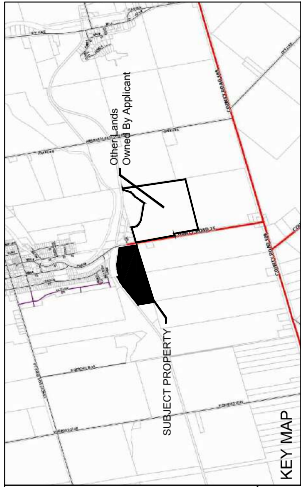
Land Use	Lot / Block No.	Area (ha)	Units
RESIDENTIAL LOTS (40)	1-27	3.20	27
RESIDENTIAL LOTS (50)	28-111	2.02	34
PARKLAND	103-104	0.17	
ROADWAY	107	0.49	
STORMWATER MANAGEMENT	115	1.08	
ENVIRONMENTAL PROTECTION	116	11.16	
OTHER LANDS OWNED BY APPLICANT	119	6.89	
WALKWAY	118	0.01	
STORMWATER	113	1.92	
<b>TOTAL</b>		<b>34.42</b>	<b>111</b>

**INNOVATIVE PLANNING SOLUTIONS**  
 PLANNERS • PROJECT MANAGERS • LAND DEVELOPMENT  
 150 DUNDAS STREET EAST, SUITE 201, BARRIE, ONTARIO, L4M 1B2  
 TEL: (705) 813-2833 FAX: (705) 813-2438  
 EMAIL: info@innovativeplanning.com  
 DATE: JULY 13, 2015



**MOCO FARMS- DRAFT PLAN OF SUBDIVISION**  
**TOWN OF GRAND VALLEY**

FILE NAME: 10-301 MOCO - 010615.rdg PROJECT: 10-301 CORTEL GRAND VALLEY



**DRAFT PLAN OF SUBDIVISION**  
 PART OF LOT 30, CONCESSION 2  
 FORMERLY IN THE  
 TOWNSHIP OF EAST LUTHER  
 NOW IN THE  
 TOWNSHIP OF EAST LUTHER - GRAND  
 VALLEY  
 COUNTY OF DUFFERIN  
 2014



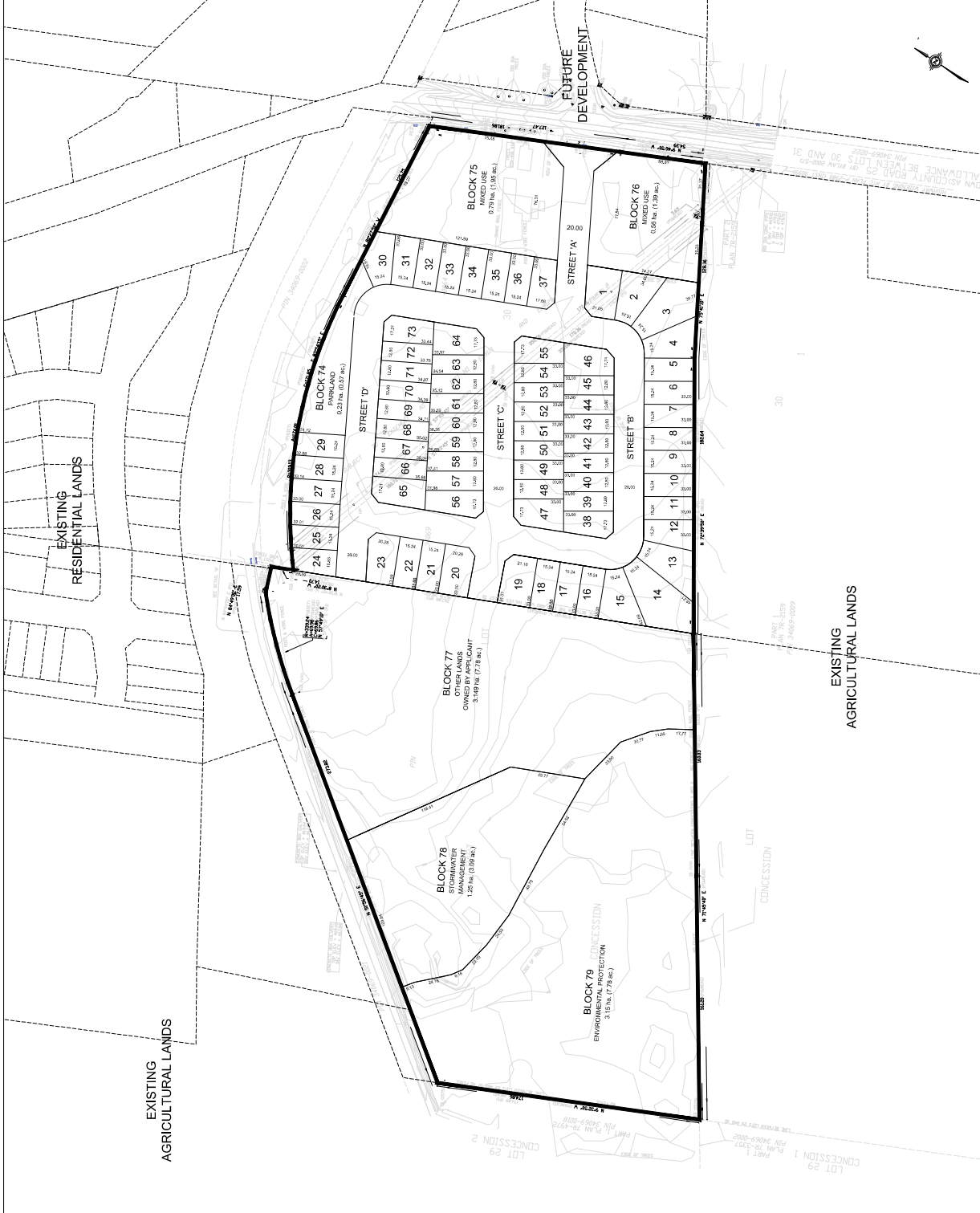
**OWNER'S CERTIFICATE**  
 I HEREBY AUTHORIZE INNOVATIVE PLANNING SOLUTIONS TO PREPARE THIS DRAFT PLAN OF SUBDIVISION AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION FOR APPROVAL.

**SURVEYOR'S CERTIFICATE**  
 I CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

**ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT**  
 1. NAME OF APPLICANT: PIER DE ROSA OLIS  
 2. ADDRESS: 10000 HWY 10, UNIT 10, MISSISSAUGA, ONTARIO L4V 1P2  
 3. PHONE: (905) 876-1111  
 4. EMAIL: pier@rosasolis.com  
 5. TYPE OF DEVELOPMENT: RESIDENTIAL DEVELOPMENT  
 6. TYPE OF PROJECT: SUBDIVISION  
 7. TYPE OF PROJECT: CONVERSION  
 8. TYPE OF PROJECT: REDEVELOPMENT  
 9. TYPE OF PROJECT: RECONSTRUCTION  
 10. TYPE OF PROJECT: REPAIRS  
 11. TYPE OF PROJECT: MAINTENANCE  
 12. TYPE OF PROJECT: OTHER

**LAND USE STATISTICS**

Land Use	Lot / Block No.	Area (ha)	Units
RESIDENTIAL (LAMB 107)	3003	1.00	36
RESIDENTIAL (LAMB 107)	1-97	2.176	37
MIXED USE	76,76	1.05	
PARKLAND	74	0.25	
STORMWATER MANAGEMENT	78	0.25	
ENVIRONMENTAL PROTECTION	79	3.15	
OTHER LANDS OWNED BY APPLICANT	77	5.16	
TOTAL		10.91	73



**CORSEED FARM- DRAFT PLAN OF SUBDIVISION**  
**TOWN OF GRAND VALLEY**

## **Appendix B – Traffic Counts**



# Ontario Traffic Inc

## Morning Peak Diagram

### Specified Period

**From:** 7:00:00  
**To:** 10:00:00

### One Hour Peak

**From:** 7:45:00  
**To:** 8:45:00

**Municipality:** Grand Valley  
**Site #:** 1422800002  
**Intersection:** Water St (CR 25) & Melody Lane  
**TFR File #:** 5  
**Count date:** 9-Oct-14

**Weather conditions:**  
**Person(s) who counted:**

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Water St (CR 25) runs N/S

North Leg Total: 268  
North Entering: 174  
North Peds: 0  
Peds Cross:  $\times$

Heavys 0    0 Trucks 0    18 Cars 1    155 Totals 1    173	0	↑	Heavys 0 Trucks 14 Cars 80 Totals 94
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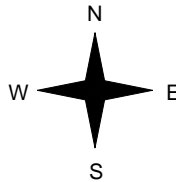
Heavys	Trucks	Cars	Totals
0	2	12	14



Water St (CR 25)



Melody Lane



Heavys	Trucks	Cars	Totals
0	2	3	5
0	1	41	42
0	3	44	



Water St (CR 25)



Peds Cross:  $\times$   
West Peds: 0  
West Entering: 47  
West Leg Total: 61

Cars 196 Trucks 19 Heavys 0 Totals 215	↓	Cars 11    77 Trucks 2    12 Heavys 0    0 Totals 13    89	88 14 0
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Peds Cross:  $\times$   
South Peds: 0  
South Entering: 102  
South Leg Total: 317

## Comments

# Ontario Traffic Inc

## Afternoon Peak Diagram

### Specified Period

**From:** 16:00:00

**To:** 19:00:00

### One Hour Peak

**From:** 17:15:00

**To:** 18:15:00

**Municipality:** Grand Valley  
**Site #:** 1422800002  
**Intersection:** Water St (CR 25) & Melody Lane  
**TFR File #:** 5  
**Count date:** 9-Oct-14

**Weather conditions:**  
**Person(s) who counted:**

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Water St (CR 25) runs N/S

North Leg Total: 345  
 North Entering: 108  
 North Peds: 0  
 Peds Cross:  $\nabla$

Heavys	0	0	0
Trucks	0	5	5
Cars	5	98	103
<b>Totals</b>	<b>5</b>	<b>103</b>	



Heavys	0
Trucks	9
Cars	228
<b>Totals</b>	<b>237</b>

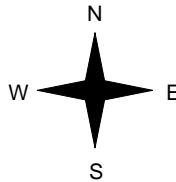
Heavys	0	Trucks	1	Cars	36	<b>Totals</b>	<b>37</b>
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Water St (CR 25)



Melody Lane



Heavys	0	Trucks	0	Cars	1	<b>Totals</b>	<b>1</b>
0	0	0	0	12	12		
0	0	0	0	13			



Water St (CR 25)



Peds Cross:  $\nabla$   
 West Peds: 0  
 West Entering: 13  
 West Leg Total: 50

Cars	110
Trucks	5
Heavys	0
<b>Totals</b>	<b>115</b>



Cars	31	227	258
Trucks	1	9	10
Heavys	0	0	0
<b>Totals</b>	<b>32</b>	<b>236</b>	

Peds Cross:  $\nabla$   
 South Peds: 0  
 South Entering: 268  
 South Leg Total: 383

## Comments

# Ontario Traffic Inc

## Total Count Diagram

**Municipality:** Grand Valley  
**Site #:** 1422800002  
**Intersection:** Water St (CR 25) & Melody Lane  
**TFR File #:** 5  
**Count date:** 9-Oct-14

**Weather conditions:**  
**Person(s) who counted:**

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Water St (CR 25) runs N/S

North Leg Total: 1634  
 North Entering: 763  
 North Peds: 0  
 Peds Cross:  $\nabla$

Heavys	0	0	0
Trucks	2	58	60
Cars	25	678	703
Totals	27	736	

Heavys	0
Trucks	70
Cars	801
Totals	871



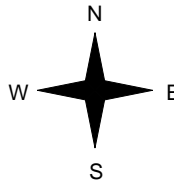
Heavys	0
Trucks	7
Cars	145
Totals	152



Water St (CR 25)



Melody Lane



Heavys	0
Trucks	3
Cars	12
Totals	15
<hr/>	
0	5
0	8
	141
	153
Totals	146



Water St (CR 25)

Peds Cross:  $\nabla$   
 West Peds: 1  
 West Entering: 161  
 West Leg Total: 313

Cars	819
Trucks	63
Heavys	0
Totals	882



Cars	120	789	909
Trucks	5	67	72
Heavys	0	0	0
Totals	125	856	

Peds Cross:  $\nabla$   
 South Peds: 0  
 South Entering: 981  
 South Leg Total: 1863

### Comments

# Ontario Traffic Inc

## Morning Peak Diagram

### Specified Period

**From:** 7:00:00  
**To:** 10:00:00

### One Hour Peak

**From:** 7:30:00  
**To:** 8:30:00

**Municipality:** Grand Valley  
**Site #:** 1422800001  
**Intersection:** County Rd 109 & Water St (CR 25)  
**TFR File #:** 21  
**Count date:** 9-Oct-14

**Weather conditions:**  
**Person(s) who counted:**

**\*\* Signalized Intersection \*\***

**Major Road:** County Rd 109 runs W/E

North Leg Total: 298  
North Entering: 200  
North Peds: 2  
Peds Cross:  $\times$

Heavys	0	0	0
Trucks	10	2	12
Cars	43	145	188
<b>Totals</b>	<b>53</b>	<b>147</b>	



Heavys 0  
Trucks 16  
Cars 82  
Totals 98

East Leg Total: 591  
East Entering: 197  
East Peds: 0  
Peds Cross:  $\times$

Heavys	Trucks	Cars	Totals
0	49	149	198



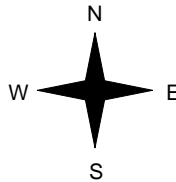
Water St (CR 25)



Cars	Trucks	Heavys	Totals
44	8	0	52
106	39	0	145
<b>150</b>	<b>47</b>	<b>0</b>	



County Rd 109



Heavys	Trucks	Cars	Totals
0	8	38	46
0	37	210	247
<b>0</b>	<b>45</b>	<b>248</b>	



County Rd 109



Cars	Trucks	Heavys	Totals
355	39	0	394

Peds Cross:  $\times$   
West Peds: 0  
West Entering: 293  
West Leg Total: 491

## Comments

# Ontario Traffic Inc

## Afternoon Peak Diagram

### Specified Period

**From:** 16:00:00

**To:** 19:00:00

### One Hour Peak

**From:** 16:45:00

**To:** 17:45:00

**Municipality:** Grand Valley  
**Site #:** 1422800001  
**Intersection:** County Rd 109 & Water St (CR 25)  
**TFR File #:** 21  
**Count date:** 9-Oct-14

**Weather conditions:**  
**Person(s) who counted:**

**\*\* Signalized Intersection \*\***

**Major Road:** County Rd 109 runs W/E

North Leg Total: 396

North Entering: 133

North Peds: 0

Peds Cross:  $\times$

Heavys	0	0	0
Trucks	6	4	10
Cars	51	72	123
<b>Totals</b>	<b>57</b>	<b>76</b>	



Heavys 0

Trucks 19

Cars 244

Totals 263

East Leg Total: 749

East Entering: 441

East Peds: 0

Peds Cross:  $\times$

Heavys	Trucks	Cars	Totals
0	41	285	326



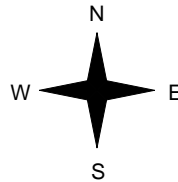
Water St (CR 25)



Cars	Trucks	Heavys	Totals
165	7	0	172
234	35	0	269
<b>399</b>	<b>42</b>	<b>0</b>	



County Rd 109



Heavys	Trucks	Cars	Totals
0	12	79	91
0	36	196	232
<b>0</b>	<b>48</b>	<b>275</b>	



County Rd 109



Cars	Trucks	Heavys	Totals
268	40	0	308

Peds Cross:  $\times$

West Peds: 0

West Entering: 323

West Leg Total: 649

## Comments

# Ontario Traffic Inc

## Total Count Diagram

**Municipality:** Grand Valley  
**Site #:** 1422800001  
**Intersection:** County Rd 109 & Water St (CR 25)  
**TFR File #:** 21  
**Count date:** 9-Oct-14

**Weather conditions:**  
**Person(s) who counted:**

**\*\* Signalized Intersection \*\***

**Major Road:** County Rd 109 runs W/E

North Leg Total: 1827  
 North Entering: 913  
 North Peds: 3  
 Peds Cross:  $\times$

Heavys	0	0	0
Trucks	36	29	65
Cars	300	548	848
<b>Totals</b>	<b>336</b>	<b>577</b>	



Heavys	0
Trucks	91
Cars	823
<b>Totals</b>	<b>914</b>

East Leg Total: 3451  
 East Entering: 1657  
 East Peds: 0  
 Peds Cross:  $\times$

Heavys	Trucks	Cars	Totals
0	242	1214	1456



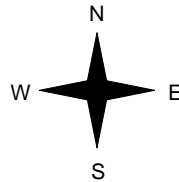
Water St (CR 25)



Cars	Trucks	Heavys	Totals
494	42	0	536
914	206	0	1120
<b>1409</b>	<b>248</b>	<b>0</b>	



County Rd 109



Heavys	Trucks	Cars	Totals
0	49	329	378
0	207	1010	1217
<b>0</b>	<b>256</b>	<b>1339</b>	



County Rd 109



Cars	Trucks	Heavys	Totals
1558	236	0	1794










Peds Cross:  $\times$   
 West Peds: 0  
 West Entering: 1595  
 West Leg Total: 3051

### Comments













## **Appendix C – Synchro Analysis Output – Existing Conditions**

Corseed & Moco Residential  
1: CR 25 & Melody Ln

HCM Unsignalized Intersection Capacity Analysis  
Existing (2015) AM Peak Hour










						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	43	13	91	177	1
Future Volume (Veh/h)	5	43	13	91	177	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	6	50	15	106	206	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	342	206	207			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	342	206	207			
tC, single (s)	6.8	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.9	3.3	2.3			
p0 queue free %	99	94	99			
cM capacity (veh/h)	577	834	1290			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	56	121	207			
Volume Left	6	15	0			
Volume Right	50	0	1			
cSH	796	1290	1700			
Volume to Capacity	0.07	0.01	0.12			
Queue Length 95th (m)	1.7	0.3	0.0			
Control Delay (s)	9.9	1.1	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.9	1.1	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization		25.7%		ICU Level of Service		A
Analysis Period (min)			15			















						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	47	252	148	53	150	54
Future Volume (vph)	47	252	148	53	150	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Fr <sub>t</sub>	1.00	1.00	1.00	0.85	0.96	
Fl <sub>t</sub> Protected	0.95	1.00	1.00	1.00	0.96	
Satd. Flow (prot)	1526	1634	1479	1389	1652	
Fl <sub>t</sub> Permitted	0.66	1.00	1.00	1.00	0.96	
Satd. Flow (perm)	1057	1634	1479	1389	1652	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	49	265	156	56	158	57
RTOR Reduction (vph)	0	0	0	26	19	0
Lane Group Flow (vph)	49	265	156	30	196	0
Heavy Vehicles (%)	17%	15%	27%	15%	1%	19%
Turn Type	Perm	NA	NA	Perm	Prot	
Protected Phases		4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	37.6	37.6	37.6	37.6	17.6	
Effective Green, g (s)	37.6	37.6	37.6	37.6	17.6	
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.25	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	4.0	
Lane Grp Cap (vph)	567	877	794	746	415	
v/s Ratio Prot		c0.16	0.11		c0.12	
v/s Ratio Perm	0.05			0.02		
v/c Ratio	0.09	0.30	0.20	0.04	0.47	
Uniform Delay, d <sub>1</sub>	7.9	9.0	8.4	7.7	22.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d <sub>2</sub>	0.1	0.4	0.3	0.0	3.8	
Delay (s)	8.0	9.4	8.6	7.7	26.1	
Level of Service	A	A	A	A	C	
Approach Delay (s)		9.1	8.4		26.1	
Approach LOS		A	A		C	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			13.8		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.36			
Actuated Cycle Length (s)			70.0		Sum of lost time (s)	14.8
Intersection Capacity Utilization			75.0%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Corseed & Moco Residential  
1: CR 25 & Melody Ln

HCM Unsignalized Intersection Capacity Analysis  
Existing (2015) PM Peak Hour










						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	12	33	241	105	5
Future Volume (Veh/h)	1	12	33	241	105	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	1	13	34	251	109	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	430	112	114			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	430	112	114			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	98			
cM capacity (veh/h)	572	947	1469			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	14	285	114			
Volume Left	1	34	0			
Volume Right	13	0	5			
cSH	905	1469	1700			
Volume to Capacity	0.02	0.02	0.07			
Queue Length 95th (m)	0.4	0.5	0.0			
Control Delay (s)	9.0	1.1	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.0	1.1	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization		31.2%		ICU Level of Service		A
Analysis Period (min)			15			













						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	93	237	275	176	78	58
Future Volume (vph)	93	237	275	176	78	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.94	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1580	1620	1663	1536	1600	
Flt Permitted	0.58	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	966	1620	1663	1536	1600	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	99	252	293	187	83	62
RTOR Reduction (vph)	0	0	0	87	38	0
Lane Group Flow (vph)	99	252	293	100	107	0
Heavy Vehicles (%)	13%	16%	13%	4%	5%	11%
Turn Type	Perm	NA	NA	Perm	Prot	
Protected Phases		4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	37.6	37.6	37.6	37.6	17.6	
Effective Green, g (s)	37.6	37.6	37.6	37.6	17.6	
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.25	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	4.0	
Lane Grp Cap (vph)	518	870	893	825	402	
v/s Ratio Prot		0.16	c0.18		c0.07	
v/s Ratio Perm	0.10			0.07		
v/c Ratio	0.19	0.29	0.33	0.12	0.27	
Uniform Delay, d1	8.4	8.9	9.1	8.0	21.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	0.4	0.5	0.1	1.6	
Delay (s)	8.7	9.3	9.6	8.2	22.6	
Level of Service	A	A	A	A	C	
Approach Delay (s)		9.1	9.0		22.6	
Approach LOS		A	A		C	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			11.1		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.31			
Actuated Cycle Length (s)			70.0		Sum of lost time (s)	14.8
Intersection Capacity Utilization			95.8%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

## Appendix D – Synchro Analysis Output – Projected Traffic Volumes

Corseed & Moco Residential  
1: CR 25 & Melody Ln










HCM Unsignalized Intersection Capacity Analysis  
Background (2020) AM Peak Hour













						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	97	22	109	201	1
Future Volume (Veh/h)	6	97	22	109	201	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	7	113	26	127	234	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	414	234	235			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	414	234	235			
tC, single (s)	6.8	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.9	3.3	2.3			
p0 queue free %	99	86	98			
cM capacity (veh/h)	518	805	1260			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	120	153	235			
Volume Left	7	26	0			
Volume Right	113	0	1			
cSH	779	1260	1700			
Volume to Capacity	0.15	0.02	0.14			
Queue Length 95th (m)	4.1	0.5	0.0			
Control Delay (s)	10.5	1.5	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.5	1.5	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay	2.9					
Intersection Capacity Utilization	33.9%			ICU Level of Service	A	
Analysis Period (min)	15					

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	55	281	165	75	224	67
Future Volume (vph)	55	281	165	75	224	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.97	
Flt Protected	0.95	1.00	1.00	1.00	0.96	
Satd. Flow (prot)	1526	1634	1479	1389	1667	
Flt Permitted	0.65	1.00	1.00	1.00	0.96	
Satd. Flow (perm)	1040	1634	1479	1389	1667	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	58	296	174	79	236	71
RTOR Reduction (vph)	0	0	0	37	16	0
Lane Group Flow (vph)	58	296	174	42	291	0
Heavy Vehicles (%)	17%	15%	27%	15%	1%	19%
Turn Type	Perm	NA	NA	Perm	Prot	
Protected Phases		4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	37.6	37.6	37.6	37.6	17.6	
Effective Green, g (s)	37.6	37.6	37.6	37.6	17.6	
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.25	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	4.0	
Lane Grp Cap (vph)	558	877	794	746	419	
v/s Ratio Prot		c0.18	0.12		c0.17	
v/s Ratio Perm	0.06			0.03		
v/c Ratio	0.10	0.34	0.22	0.06	0.70	
Uniform Delay, d1	7.9	9.2	8.5	7.7	23.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.5	0.3	0.1	9.2	
Delay (s)	8.1	9.6	8.8	7.8	32.9	
Level of Service	A	A	A	A	C	
Approach Delay (s)		9.4	8.5		32.9	
Approach LOS		A	A		C	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			17.1		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.45			
Actuated Cycle Length (s)			70.0		Sum of lost time (s)	14.8
Intersection Capacity Utilization			75.0%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Corseed & Moco Residential  
1: CR 25 & Melody Ln

HCM Unsignalized Intersection Capacity Analysis  
Background (2020) PM Peak Hour










						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	38	71	295	134	6
Future Volume (Veh/h)	1	38	71	295	134	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	1	40	74	307	140	6
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	598	143	146			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	598	143	146			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	95			
cM capacity (veh/h)	444	910	1430			
Direction, Lane #						
	EB 1	NB 1	SB 1			
Volume Total	41	381	146			
Volume Left	1	74	0			
Volume Right	40	0	6			
cSH	887	1430	1700			
Volume to Capacity	0.05	0.05	0.09			
Queue Length 95th (m)	1.1	1.2	0.0			
Control Delay (s)	9.3	1.9	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.3	1.9	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization		40.2%		ICU Level of Service		A
Analysis Period (min)			15			

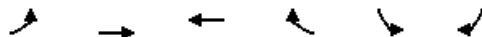
						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	110	264	307	259	128	69
Future Volume (vph)	110	264	307	259	128	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.95	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1580	1620	1663	1536	1619	
Flt Permitted	0.56	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	936	1620	1663	1536	1619	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	117	281	327	276	136	73
RTOR Reduction (vph)	0	0	0	128	28	0
Lane Group Flow (vph)	117	281	327	148	181	0
Heavy Vehicles (%)	13%	16%	13%	4%	5%	11%
Turn Type	Perm	NA	NA	Perm	Prot	
Protected Phases		4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	37.6	37.6	37.6	37.6	17.6	
Effective Green, g (s)	37.6	37.6	37.6	37.6	17.6	
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.25	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	4.0	
Lane Grp Cap (vph)	502	870	893	825	407	
v/s Ratio Prot		0.17	c0.20		c0.11	
v/s Ratio Perm	0.12			0.10		
v/c Ratio	0.23	0.32	0.37	0.18	0.45	
Uniform Delay, d1	8.6	9.1	9.3	8.3	22.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.5	0.5	0.2	3.5	
Delay (s)	9.1	9.5	9.9	8.5	25.6	
Level of Service	A	A	A	A	C	
Approach Delay (s)		9.4	9.3		25.6	
Approach LOS		A	A		C	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			12.1		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.39			
Actuated Cycle Length (s)			70.0		Sum of lost time (s)	14.8
Intersection Capacity Utilization			95.8%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						



Corseed & Moco Residential  
1: CR 25 & Melody Ln

HCM Unsignalized Intersection Capacity Analysis  
Background (2025) AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	97	22	122	224	1
Future Volume (Veh/h)	6	97	22	122	224	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	7	113	26	142	260	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	454	260	261			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	454	260	261			
tC, single (s)	6.8	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.9	3.3	2.3			
p0 queue free %	99	85	98			
cM capacity (veh/h)	489	778	1232			
<b>Direction, Lane #</b>						
	EB 1	NB 1	SB 1			
Volume Total	120	168	261			
Volume Left	7	26	0			
Volume Right	113	0	1			
cSH	752	1232	1700			
Volume to Capacity	0.16	0.02	0.15			
Queue Length 95th (m)	4.3	0.5	0.0			
Control Delay (s)	10.7	1.4	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.7	1.4	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			2.8			
Intersection Capacity Utilization			35.8%	ICU Level of Service		A
Analysis Period (min)			15			












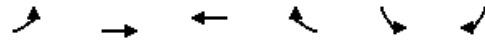
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↶	↷	↶	↷
Traffic Volume (vph)	61	313	184	83	250	75
Future Volume (vph)	61	313	184	83	250	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.97	
Flt Protected	0.95	1.00	1.00	1.00	0.96	
Satd. Flow (prot)	1526	1634	1479	1389	1667	
Flt Permitted	0.64	1.00	1.00	1.00	0.96	
Satd. Flow (perm)	1021	1634	1479	1389	1667	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	64	329	194	87	263	79
RTOR Reduction (vph)	0	0	0	40	16	0
Lane Group Flow (vph)	64	329	194	47	326	0
Heavy Vehicles (%)	17%	15%	27%	15%	1%	19%
Turn Type	Perm	NA	NA	Perm	Prot	
Protected Phases		4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	37.6	37.6	37.6	37.6	17.6	
Effective Green, g (s)	37.6	37.6	37.6	37.6	17.6	
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.25	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	4.0	
Lane Grp Cap (vph)	548	877	794	746	419	
v/s Ratio Prot		c0.20	0.13		c0.20	
v/s Ratio Perm	0.06			0.03		
v/c Ratio	0.12	0.38	0.24	0.06	0.78	
Uniform Delay, d1	8.0	9.4	8.6	7.8	24.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.6	0.3	0.1	13.3	
Delay (s)	8.2	10.0	9.0	7.8	37.7	
Level of Service	A	A	A	A	D	
Approach Delay (s)		9.7	8.6		37.7	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.8
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Corseed & Moco Residential  
1: CR 25 & Melody Ln

HCM Unsignalized Intersection Capacity Analysis  
Background (2025) PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	38	71	329	149	6
Future Volume (Veh/h)	1	38	71	329	149	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	1	40	74	343	155	6
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	649	158	161			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	649	158	161			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	95			
cM capacity (veh/h)	415	893	1412			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	41	417	161			
Volume Left	1	74	0			
Volume Right	40	0	6			
cSH	868	1412	1700			
Volume to Capacity	0.05	0.05	0.09			
Queue Length 95th (m)	1.1	1.3	0.0			
Control Delay (s)	9.4	1.8	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.4	1.8	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			1.8			
Intersection Capacity Utilization			42.8%	ICU Level of Service		A
Analysis Period (min)			15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	123	295	342	288	143	77
Future Volume (vph)	123	295	342	288	143	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Fr <sub>t</sub>	1.00	1.00	1.00	0.85	0.95	
Fl <sub>t</sub> Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1580	1620	1663	1536	1619	
Fl <sub>t</sub> Permitted	0.53	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	885	1620	1663	1536	1619	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	131	314	364	306	152	82
RTOR Reduction (vph)	0	0	0	142	28	0
Lane Group Flow (vph)	131	314	364	164	206	0
Heavy Vehicles (%)	13%	16%	13%	4%	5%	11%
Turn Type	Perm	NA	NA	Perm	Prot	
Protected Phases		4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	37.6	37.6	37.6	37.6	17.6	
Effective Green, g (s)	37.6	37.6	37.6	37.6	17.6	
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.25	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	4.0	
Lane Grp Cap (vph)	475	870	893	825	407	
v/s Ratio Prot		0.19	c0.22		c0.13	
v/s Ratio Perm	0.15			0.11		
v/c Ratio	0.28	0.36	0.41	0.20	0.51	
Uniform Delay, d <sub>1</sub>	8.8	9.3	9.6	8.4	22.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d <sub>2</sub>	0.7	0.5	0.6	0.2	4.5	
Delay (s)	9.5	9.8	10.2	8.6	26.9	
Level of Service	A	A	B	A	C	
Approach Delay (s)		9.7	9.5		26.9	
Approach LOS		A	A		C	

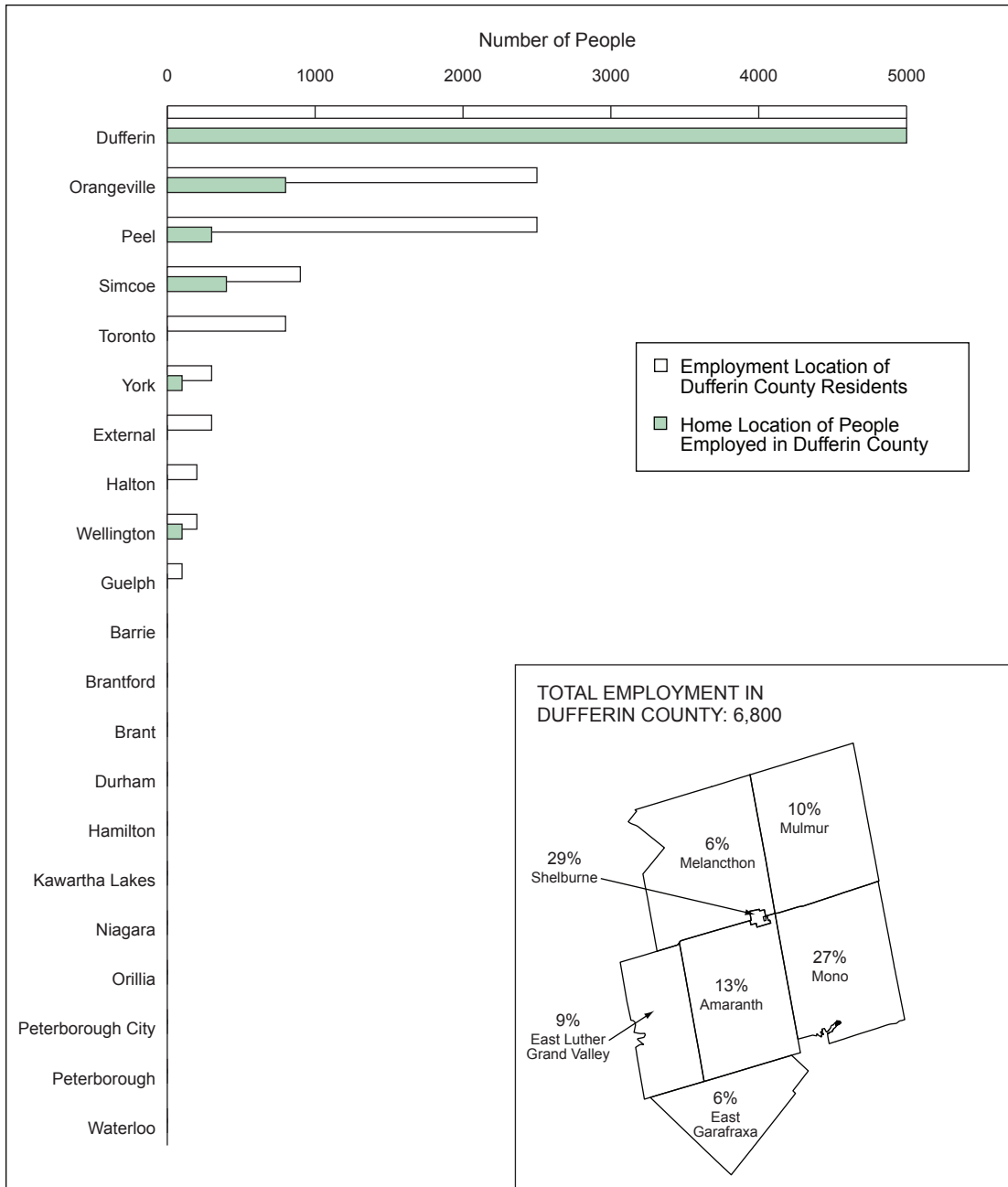
Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.8
Intersection Capacity Utilization	95.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

## **Appendix E – Transportation Tomorrow Survey Excerpt**

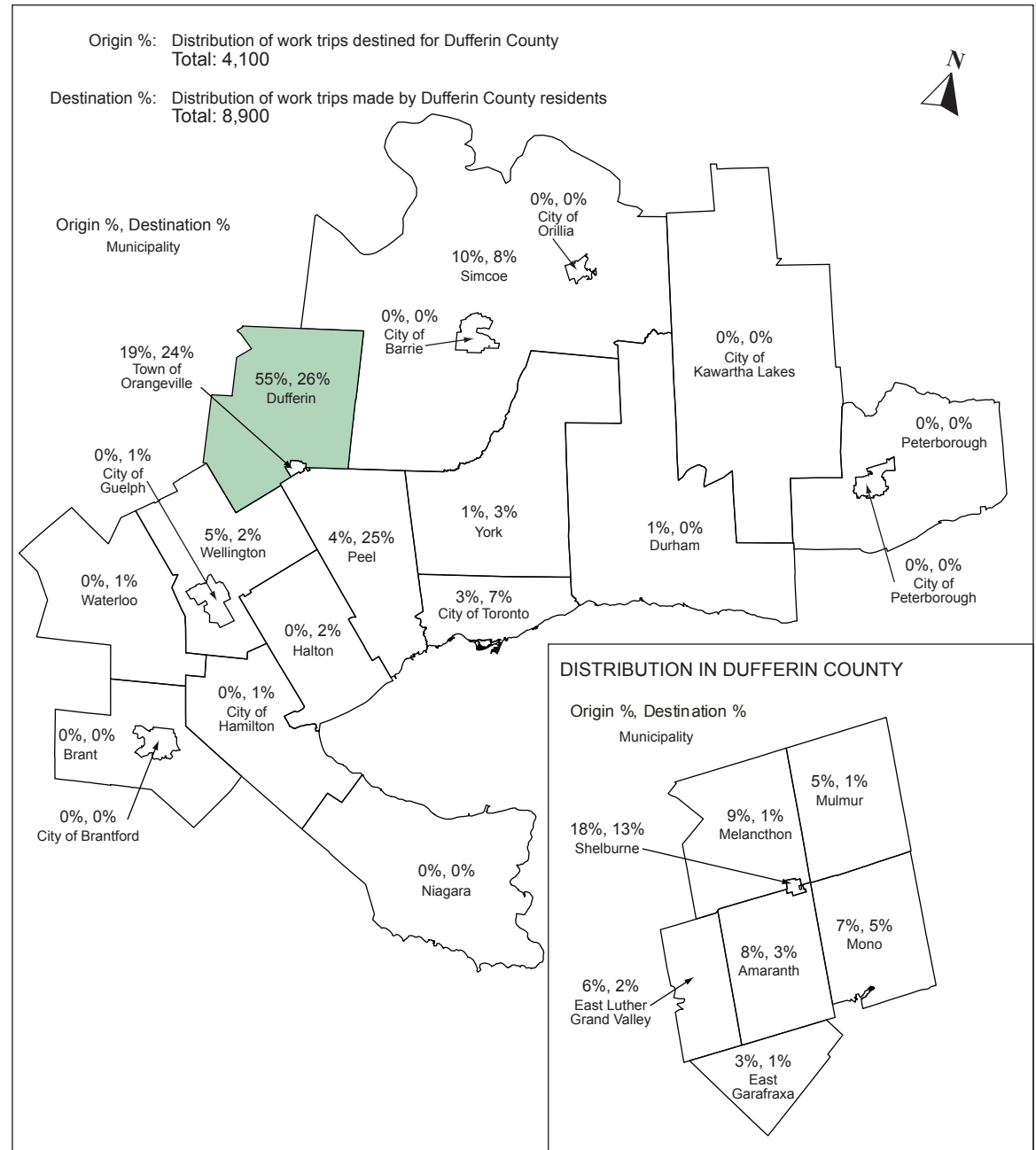
# COUNTY OF DUFFERIN

## 2006 STATISTICS

### EMPLOYMENT












### WORK TRIP ORIGINS AND DESTINATIONS



## **Appendix F – Synchro Analysis Output – Projected and Proposed Traffic Volumes**

Corseed & Moco Residential  
1: CR 25 & Melody Ln













HCM Unsignalized Intersection Capacity Analysis  
Total (2020) AM Peak Hour










						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	97	22	131	208	1
Future Volume (Veh/h)	6	97	22	131	208	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	7	113	26	152	242	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	446	242	243			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	446	242	243			
tC, single (s)	6.8	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.9	3.3	2.3			
p0 queue free %	99	86	98			
cM capacity (veh/h)	494	796	1251			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	120	178	243			
Volume Left	7	26	0			
Volume Right	113	0	1			
cSH	769	1251	1700			
Volume to Capacity	0.16	0.02	0.14			
Queue Length 95th (m)	4.2	0.5	0.0			
Control Delay (s)	10.5	1.3	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.5	1.3	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay	2.8					
Intersection Capacity Utilization	35.5%			ICU Level of Service	A	
Analysis Period (min)	15					



Corseed & Moco Residential  
2: CR 25 & Corseed Access/Industrial Dr










HCM Unsignalized Intersection Capacity Analysis  
Total (2020) AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	9	0	37	0	0	0	12	147	0	0	313	3
Future Volume (Veh/h)	9	0	37	0	0	0	12	147	0	0	313	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.86	0.92	0.92	0.86	0.92
Hourly flow rate (vph)	10	0	40	0	0	0	13	171	0	0	364	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	562	562	366	602	564	171	367			171		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	562	562	366	602	564	171	367			171		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	94	100	100	100	99			100		
cM capacity (veh/h)	435	432	682	385	431	875	1197			1412		
Direction, Lane #												
	EB 1	WB 1	NB 1	SB 1								
Volume Total	50	0	184	367								
Volume Left	10	0	13	0								
Volume Right	40	0	0	3								
cSH	612	1700	1197	1412								
Volume to Capacity	0.08	0.00	0.01	0.00								
Queue Length 95th (m)	2.0	0.0	0.3	0.0								
Control Delay (s)	11.4	0.0	0.7	0.0								
Lane LOS	B	A	A									
Approach Delay (s)	11.4	0.0	0.7	0.0								
Approach LOS	B	A										
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization			27.6%		ICU Level of Service					A		
Analysis Period (min)			15									

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	10	149	4	3	347
Future Volume (Veh/h)	11	10	149	4	3	347
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.86	0.92	0.92	0.86
Hourly flow rate (vph)	12	11	173	4	3	403
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	584	175			177	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	584	175			177	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	99			100	
cM capacity (veh/h)	475	871			1405	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	23	177	406			
Volume Left	12	0	3			
Volume Right	11	4	0			
cSH	607	1700	1405			
Volume to Capacity	0.04	0.10	0.00			
Queue Length 95th (m)	0.9	0.0	0.0			
Control Delay (s)	11.2	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	11.2	0.0	0.1			
Approach LOS	B					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			30.7%	ICU Level of Service		A
Analysis Period (min)			15			













Corseed & Moco Residential  
4: CR 25 & Moco S

HCM Unsignalized Intersection Capacity Analysis  
Total (2020) AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	42	3	150	14	1	357
Future Volume (Veh/h)	42	3	150	14	1	357
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.86	0.92	0.92	0.86
Hourly flow rate (vph)	46	3	174	15	1	415
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	598	182			189	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	598	182			189	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	100			100	
cM capacity (veh/h)	466	864			1391	
<b>Direction, Lane #</b>						
	WB 1	NB 1	SB 1			
Volume Total	49	189	416			
Volume Left	46	0	1			
Volume Right	3	15	0			
cSH	480	1700	1391			
Volume to Capacity	0.10	0.11	0.00			
Queue Length 95th (m)	2.6	0.0	0.0			
Control Delay (s)	13.4	0.0	0.0			
Lane LOS	B		A			
Approach Delay (s)	13.4	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			1.0			
Intersection Capacity Utilization			29.6%	ICU Level of Service	A	
Analysis Period (min)			15			










Corseed & Moco Residential  
5: CR 109 & CR 25

HCM Signalized Intersection Capacity Analysis  
Total (2020) AM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	58	281	165	102	305	76
Future Volume (vph)	58	281	165	102	305	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.97	
Flt Protected	0.95	1.00	1.00	1.00	0.96	
Satd. Flow (prot)	1526	1634	1479	1389	1681	
Flt Permitted	0.65	1.00	1.00	1.00	0.96	
Satd. Flow (perm)	1040	1634	1479	1389	1681	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	61	296	174	107	321	80
RTOR Reduction (vph)	0	0	0	60	10	0
Lane Group Flow (vph)	61	296	174	47	391	0
Heavy Vehicles (%)	17%	15%	27%	15%	1%	19%
Turn Type	Perm	NA	NA	Perm	Prot	
Protected Phases		4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	37.6	37.6	37.6	37.6	32.6	
Effective Green, g (s)	37.6	37.6	37.6	37.6	32.6	
Actuated g/C Ratio	0.44	0.44	0.44	0.44	0.38	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	4.0	
Lane Grp Cap (vph)	460	722	654	614	644	
v/s Ratio Prot		c0.18	0.12		c0.23	
v/s Ratio Perm	0.06			0.03		
v/c Ratio	0.13	0.41	0.27	0.08	0.61	
Uniform Delay, d1	14.0	16.1	15.0	13.7	21.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	0.8	0.5	0.1	4.2	
Delay (s)	14.3	16.9	15.4	13.8	25.3	
Level of Service	B	B	B	B	C	
Approach Delay (s)		16.5	14.8		25.3	
Approach LOS		B	B		C	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			19.4		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.50			
Actuated Cycle Length (s)			85.0		Sum of lost time (s)	14.8
Intersection Capacity Utilization			82.1%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						













Corseed & Moco Residential  
1: CR 25 & Melody Ln










HCM Unsignalized Intersection Capacity Analysis  
Total (2020) PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	38	71	310	158	6
Future Volume (Veh/h)	1	38	71	310	158	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	1	40	74	323	165	6
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	639	168	171			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	639	168	171			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	95	95			
cM capacity (veh/h)	420	881	1400			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	41	397	171			
Volume Left	1	74	0			
Volume Right	40	0	6			
cSH	858	1400	1700			
Volume to Capacity	0.05	0.05	0.10			
Queue Length 95th (m)	1.1	1.3	0.0			
Control Delay (s)	9.4	1.8	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.4	1.8	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization			42.3%	ICU Level of Service	A	
Analysis Period (min)			15			

Corseed & Moco Residential  
2: CR 25 & Corseed Access/Industrial Dr










HCM Unsignalized Intersection Capacity Analysis  
Total (2020) PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	6	0	23	0	0	0	40	384	0	0	190	10
Future Volume (Veh/h)	6	0	23	0	0	0	40	384	0	0	190	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.92	0.94	0.92
Hourly flow rate (vph)	7	0	25	0	0	0	43	409	0	0	202	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	702	702	208	728	708	409	213			409		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	702	702	208	728	708	409	213			409		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	97	100	100	100	97			100		
cM capacity (veh/h)	345	352	835	322	349	645	1363			1155		
Direction, Lane #												
	EB 1	WB 1	NB 1	SB 1								
Volume Total	32	0	452	213								
Volume Left	7	0	43	0								
Volume Right	25	0	0	11								
cSH	638	1700	1363	1155								
Volume to Capacity	0.05	0.00	0.03	0.00								
Queue Length 95th (m)	1.2	0.0	0.7	0.0								
Control Delay (s)	10.9	0.0	1.0	0.0								
Lane LOS	B	A	A									
Approach Delay (s)	10.9	0.0	1.0	0.0								
Approach LOS	B	A										
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization			46.4%		ICU Level of Service					A		
Analysis Period (min)			15									

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	7	417	12	11	202
Future Volume (Veh/h)	7	7	417	12	11	202
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.94	0.92	0.92	0.94
Hourly flow rate (vph)	8	8	444	13	12	215
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	690	450			457	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	690	450			457	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	99			99	
cM capacity (veh/h)	408	611			1109	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	16	457	227			
Volume Left	8	0	12			
Volume Right	8	13	0			
cSH	489	1700	1109			
Volume to Capacity	0.03	0.27	0.01			
Queue Length 95th (m)	0.8	0.0	0.2			
Control Delay (s)	12.6	0.0	0.5			
Lane LOS	B		A			
Approach Delay (s)	12.6	0.0	0.5			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.5			
Intersection Capacity Utilization			32.7%	ICU Level of Service		A
Analysis Period (min)			15			

Corseed & Moco Residential  
4: CR 25 & Moco S













HCM Unsignalized Intersection Capacity Analysis  
Total (2020) PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	27	2	427	46	3	206
Future Volume (Veh/h)	27	2	427	46	3	206
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.94	0.92	0.92	0.94
Hourly flow rate (vph)	29	2	454	50	3	219
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	704	479			504	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	704	479			504	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	100			100	
cM capacity (veh/h)	404	589			1066	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	31	504	222			
Volume Left	29	0	3			
Volume Right	2	50	0			
cSH	412	1700	1066			
Volume to Capacity	0.08	0.30	0.00			
Queue Length 95th (m)	1.8	0.0	0.1			
Control Delay (s)	14.4	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	14.4	0.0	0.1			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.6			
Intersection Capacity Utilization			35.3%	ICU Level of Service	A	
Analysis Period (min)			15			












Corseed & Moco Residential  
5: CR 109 & CR 25

HCM Signalized Intersection Capacity Analysis  
Total (2020) PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	120	264	307	347	180	74
Future Volume (vph)	120	264	307	347	180	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Flt	1.00	1.00	1.00	0.85	0.96	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1580	1620	1663	1536	1633	
Flt Permitted	0.56	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	936	1620	1663	1536	1633	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	128	281	327	369	191	79
RTOR Reduction (vph)	0	0	0	171	21	0
Lane Group Flow (vph)	128	281	327	198	249	0
Heavy Vehicles (%)	13%	16%	13%	4%	5%	11%
Turn Type	Perm	NA	NA	Perm	Prot	
Protected Phases		4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	37.6	37.6	37.6	37.6	17.6	
Effective Green, g (s)	37.6	37.6	37.6	37.6	17.6	
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.25	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	4.0	
Lane Grp Cap (vph)	502	870	893	825	410	
v/s Ratio Prot		0.17	c0.20		c0.15	
v/s Ratio Perm	0.14			0.13		
v/c Ratio	0.25	0.32	0.37	0.24	0.61	
Uniform Delay, d1	8.7	9.1	9.3	8.6	23.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.5	0.5	0.3	6.5	
Delay (s)	9.3	9.5	9.9	8.9	29.7	
Level of Service	A	A	A	A	C	
Approach Delay (s)		9.4	9.4		29.7	
Approach LOS		A	A		C	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			13.4		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.44			
Actuated Cycle Length (s)			70.0		Sum of lost time (s)	14.8
Intersection Capacity Utilization			95.8%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						













Corseed & Moco Residential  
1: CR 25 & Melody Ln










HCM Unsignalized Intersection Capacity Analysis  
Total (2025) AM Peak Hour










						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	97	22	144	231	1
Future Volume (Veh/h)	6	97	22	144	231	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	7	113	26	167	269	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	488	270	270			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	488	270	270			
tC, single (s)	6.8	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.9	3.3	2.3			
p0 queue free %	98	85	98			
cM capacity (veh/h)	466	769	1222			
<b>Direction, Lane #</b>						
	EB 1	NB 1	SB 1			
Volume Total	120	193	270			
Volume Left	7	26	0			
Volume Right	113	0	1			
cSH	741	1222	1700			
Volume to Capacity	0.16	0.02	0.16			
Queue Length 95th (m)	4.4	0.5	0.0			
Control Delay (s)	10.8	1.2	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.8	1.2	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			2.6			
Intersection Capacity Utilization			37.3%	ICU Level of Service		A
Analysis Period (min)			15			

Corseed & Moco Residential  
2: CR 25 & Corseed Access/Industrial Dr

HCM Unsignalized Intersection Capacity Analysis  
Total (2025) AM Peak Hour













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	9	0	37	0	0	0	12	162	0	0	348	3
Future Volume (Veh/h)	9	0	37	0	0	0	12	162	0	0	348	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.86	0.92	0.92	0.86	0.92
Hourly flow rate (vph)	10	0	40	0	0	0	13	188	0	0	405	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	620	620	406	660	622	188	408			188		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	620	620	406	660	622	188	408			188		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	94	100	100	100	99			100		
cM capacity (veh/h)	398	400	647	351	400	857	1156			1392		
Direction, Lane #												
	EB 1	WB 1	NB 1	SB 1								
Volume Total	50	0	201	408								
Volume Left	10	0	13	0								
Volume Right	40	0	0	3								
cSH	575	1700	1156	1392								
Volume to Capacity	0.09	0.00	0.01	0.00								
Queue Length 95th (m)	2.2	0.0	0.3	0.0								
Control Delay (s)	11.9	0.0	0.6	0.0								
Lane LOS	B	A	A									
Approach Delay (s)	11.9	0.0	0.6	0.0								
Approach LOS	B	A										
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization			28.5%		ICU Level of Service					A		
Analysis Period (min)			15									

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	10	164	4	3	382
Future Volume (Veh/h)	11	10	164	4	3	382
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.86	0.92	0.92	0.86
Hourly flow rate (vph)	12	11	191	4	3	444
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	643	193			195	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	643	193			195	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	99			100	
cM capacity (veh/h)	438	851			1384	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	23	195	447			
Volume Left	12	0	3			
Volume Right	11	4	0			
cSH	571	1700	1384			
Volume to Capacity	0.04	0.11	0.00			
Queue Length 95th (m)	1.0	0.0	0.0			
Control Delay (s)	11.6	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	11.6	0.0	0.1			
Approach LOS	B					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			32.5%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	42	3	165	14	1	392
Future Volume (Veh/h)	42	3	165	14	1	392
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.86	0.92	0.92	0.86
Hourly flow rate (vph)	46	3	192	15	1	456
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	658	200			207	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	658	200			207	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	100			100	
cM capacity (veh/h)	431	844			1370	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	49	207	457			
Volume Left	46	0	1			
Volume Right	3	15	0			
cSH	444	1700	1370			
Volume to Capacity	0.11	0.12	0.00			
Queue Length 95th (m)	2.8	0.0	0.0			
Control Delay (s)	14.1	0.0	0.0			
Lane LOS	B		A			
Approach Delay (s)	14.1	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			31.4%		ICU Level of Service	A
Analysis Period (min)			15			










Corseed & Moco Residential  
5: CR 109 & CR 25

HCM Signalized Intersection Capacity Analysis  
Total (2025) AM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	64	313	184	110	331	84
Future Volume (vph)	64	313	184	110	331	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Fr <sub>t</sub>	1.00	1.00	1.00	0.85	0.97	
Fl <sub>t</sub> Protected	0.95	1.00	1.00	1.00	0.96	
Satd. Flow (prot)	1526	1634	1479	1389	1680	
Fl <sub>t</sub> Permitted	0.64	1.00	1.00	1.00	0.96	
Satd. Flow (perm)	1021	1634	1479	1389	1680	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	67	329	194	116	348	88
RTOR Reduction (vph)	0	0	0	65	10	0
Lane Group Flow (vph)	67	329	194	51	426	0
Heavy Vehicles (%)	17%	15%	27%	15%	1%	19%
Turn Type	Perm	NA	NA	Perm	Prot	
Protected Phases		4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	37.6	37.6	37.6	37.6	32.6	
Effective Green, g (s)	37.6	37.6	37.6	37.6	32.6	
Actuated g/C Ratio	0.44	0.44	0.44	0.44	0.38	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	4.0	
Lane Grp Cap (vph)	451	722	654	614	644	
v/s Ratio Prot		c0.20	0.13		c0.25	
v/s Ratio Perm	0.07			0.04		
v/c Ratio	0.15	0.46	0.30	0.08	0.66	
Uniform Delay, d <sub>1</sub>	14.1	16.6	15.2	13.7	21.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d <sub>2</sub>	0.3	1.0	0.5	0.1	5.3	
Delay (s)	14.5	17.5	15.7	13.8	26.9	
Level of Service	B	B	B	B	C	
Approach Delay (s)		17.0	15.0		26.9	
Approach LOS		B	B		C	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			20.2		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.55			
Actuated Cycle Length (s)			85.0		Sum of lost time (s)	14.8
Intersection Capacity Utilization			89.0%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

















Corseed & Moco Residential  
1: CR 25 & Melody Ln

HCM Unsignalized Intersection Capacity Analysis  
Total (2025) PM Peak Hour










						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	38	71	344	173	6
Future Volume (Veh/h)	1	38	71	344	173	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	1	40	74	358	180	6
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	689	183	186			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	689	183	186			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	95	95			
cM capacity (veh/h)	392	865	1382			
Direction, Lane #						
	EB 1	NB 1	SB 1			
Volume Total	41	432	186			
Volume Left	1	74	0			
Volume Right	40	0	6			
cSH	840	1382	1700			
Volume to Capacity	0.05	0.05	0.11			
Queue Length 95th (m)	1.2	1.3	0.0			
Control Delay (s)	9.5	1.8	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.5	1.8	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization		44.8%		ICU Level of Service		A
Analysis Period (min)			15			










Corseed & Moco Residential  
2: CR 25 & Corseed Access/Industrial Dr













HCM Unsignalized Intersection Capacity Analysis  
Total (2025) PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	0	23	0	0	0	40	427	0	0	210	10
Future Volume (Veh/h)	6	0	23	0	0	0	40	427	0	0	210	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.92	0.94	0.92
Hourly flow rate (vph)	7	0	25	0	0	0	43	454	0	0	223	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	768	768	228	794	774	454	234			454		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	768	768	228	794	774	454	234			454		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	97	100	100	100	97			100		
cM capacity (veh/h)	312	322	813	291	320	608	1339			1112		
Direction, Lane #												
	EB 1	WB 1	NB 1	SB 1								
Volume Total	32	0	497	234								
Volume Left	7	0	43	0								
Volume Right	25	0	0	11								
cSH	602	1700	1339	1112								
Volume to Capacity	0.05	0.00	0.03	0.00								
Queue Length 95th (m)	1.3	0.0	0.8	0.0								
Control Delay (s)	11.3	0.0	1.0	0.0								
Lane LOS	B	A	A									
Approach Delay (s)	11.3	0.0	1.0	0.0								
Approach LOS	B	A										
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization			49.7%	ICU Level of Service						A		
Analysis Period (min)			15									

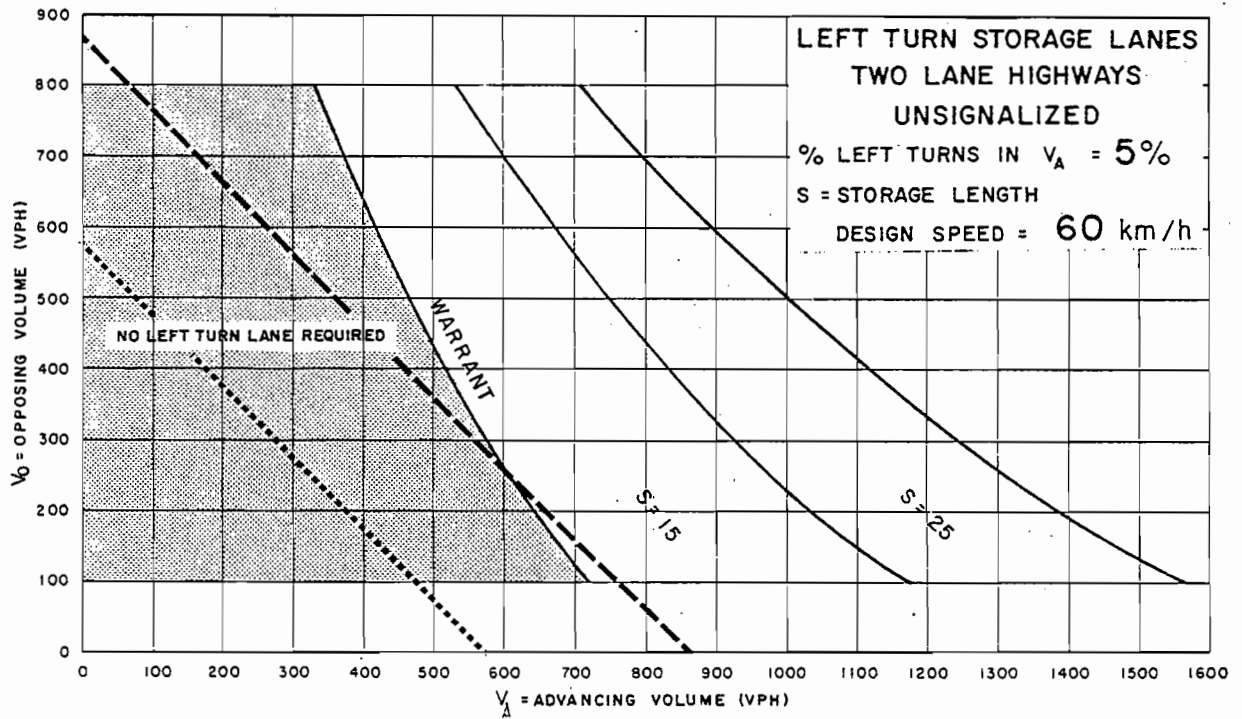


						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	7	460	12	11	222
Future Volume (Veh/h)	7	7	460	12	11	222
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.94	0.92	0.92	0.94
Hourly flow rate (vph)	8	8	489	13	12	236
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	756	496			502	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	756	496			502	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	99			99	
cM capacity (veh/h)	373	576			1068	
<b>Direction, Lane #</b>						
	WB 1	NB 1	SB 1			
Volume Total	16	502	248			
Volume Left	8	0	12			
Volume Right	8	13	0			
cSH	453	1700	1068			
Volume to Capacity	0.04	0.30	0.01			
Queue Length 95th (m)	0.8	0.0	0.3			
Control Delay (s)	13.2	0.0	0.5			
Lane LOS	B		A			
Approach Delay (s)	13.2	0.0	0.5			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.4			
Intersection Capacity Utilization			34.9%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	27	2	470	46	3	226
Future Volume (Veh/h)	27	2	470	46	3	226
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.94	0.92	0.92	0.94
Hourly flow rate (vph)	29	2	500	50	3	240
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	771	525			550	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	771	525			550	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	100			100	
cM capacity (veh/h)	369	554			1025	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	31	550	243			
Volume Left	29	0	3			
Volume Right	2	50	0			
cSH	377	1700	1025			
Volume to Capacity	0.08	0.32	0.00			
Queue Length 95th (m)	2.0	0.0	0.1			
Control Delay (s)	15.4	0.0	0.1			
Lane LOS	C		A			
Approach Delay (s)	15.4	0.0	0.1			
Approach LOS	C					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			37.5%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	133	295	342	376	195	82
Future Volume (vph)	133	295	342	376	195	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.96	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1580	1620	1663	1536	1632	
Flt Permitted	0.53	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	885	1620	1663	1536	1632	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	141	314	364	400	207	87
RTOR Reduction (vph)	0	0	0	185	22	0
Lane Group Flow (vph)	141	314	364	215	272	0
Heavy Vehicles (%)	13%	16%	13%	4%	5%	11%
Turn Type	Perm	NA	NA	Perm	Prot	
Protected Phases		4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	37.6	37.6	37.6	37.6	17.6	
Effective Green, g (s)	37.6	37.6	37.6	37.6	17.6	
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.25	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	4.0	
Lane Grp Cap (vph)	475	870	893	825	410	
v/s Ratio Prot		0.19	c0.22		c0.17	
v/s Ratio Perm	0.16			0.14		
v/c Ratio	0.30	0.36	0.41	0.26	0.66	
Uniform Delay, d1	8.9	9.3	9.6	8.7	23.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.5	0.6	0.4	8.2	
Delay (s)	9.7	9.8	10.2	9.1	31.8	
Level of Service	A	A	B	A	C	
Approach Delay (s)		9.8	9.6		31.8	
Approach LOS		A	A		C	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			14.0		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.49			
Actuated Cycle Length (s)			70.0		Sum of lost time (s)	14.8
Intersection Capacity Utilization			97.0%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

## Appendix G – MTO GDSOH Left Turn Lane Warrant Graphs



--- TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

..... TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

**Melody Lane / County Road 25**  
2015 Existing - Northbound  
Critical Case - PM Peak Hour

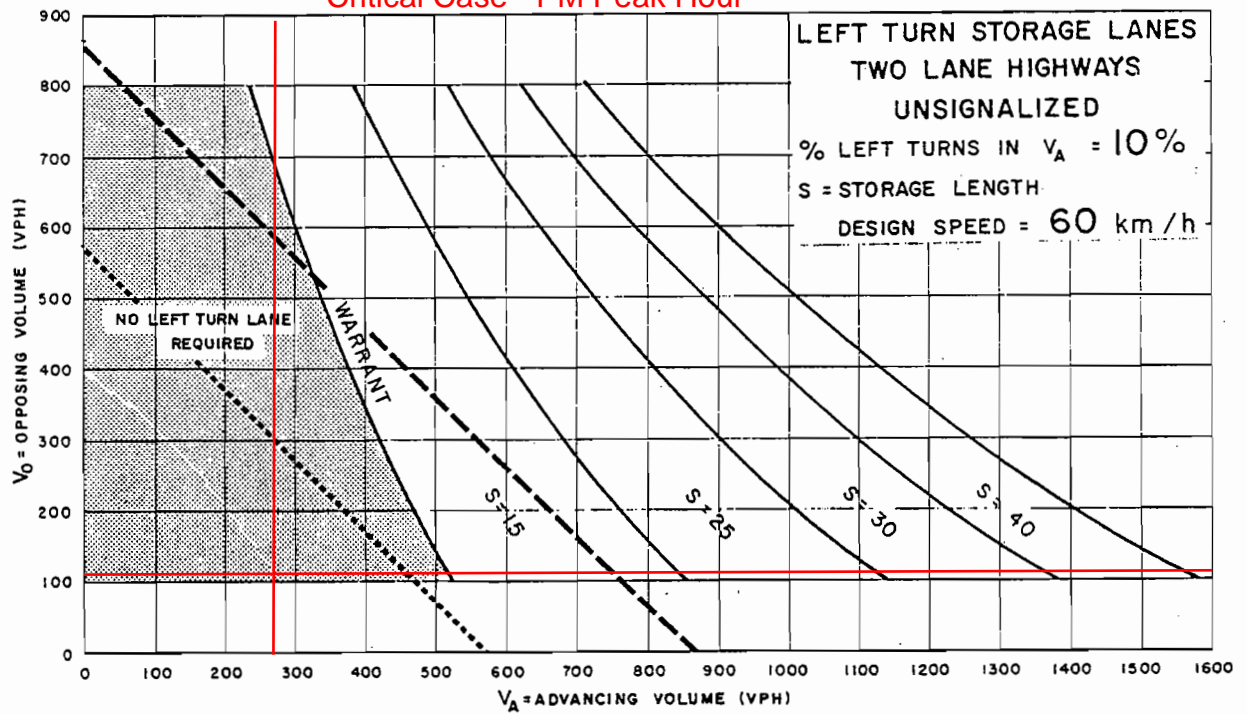
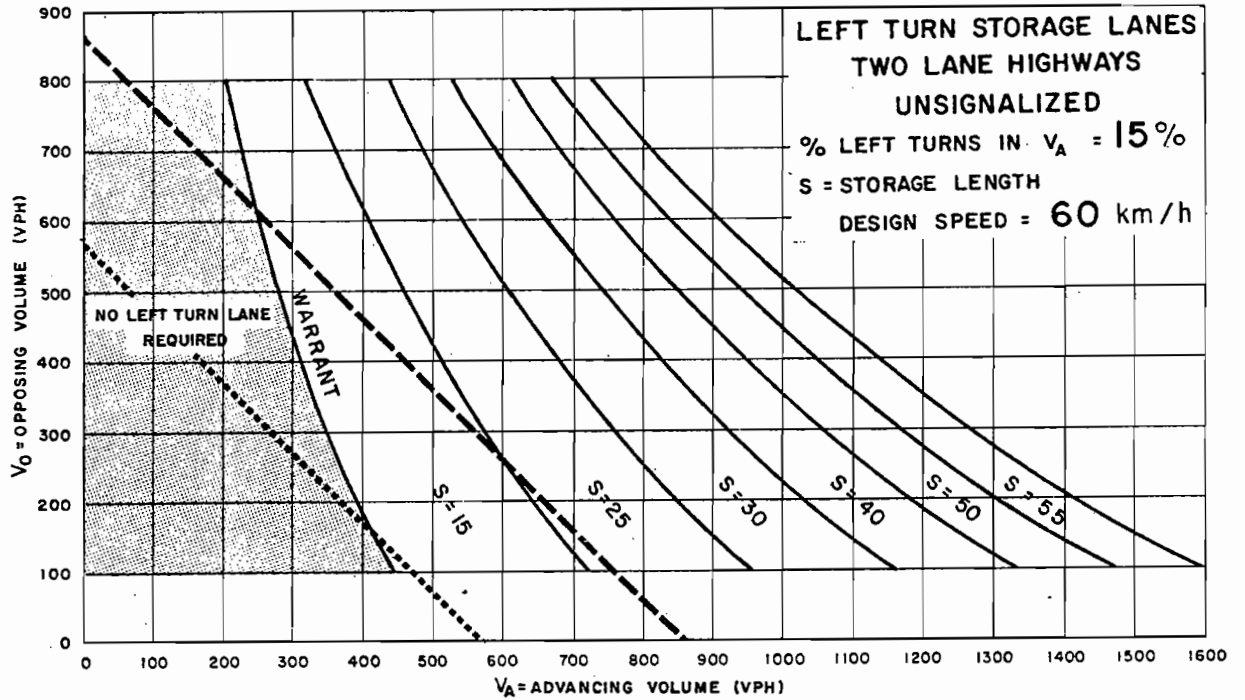


Figure EA-6



--- TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

..... TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

**Melody Lane / County Road 25**  
 2020 Background - Northbound  
 Critical Case - PM Peak Hour

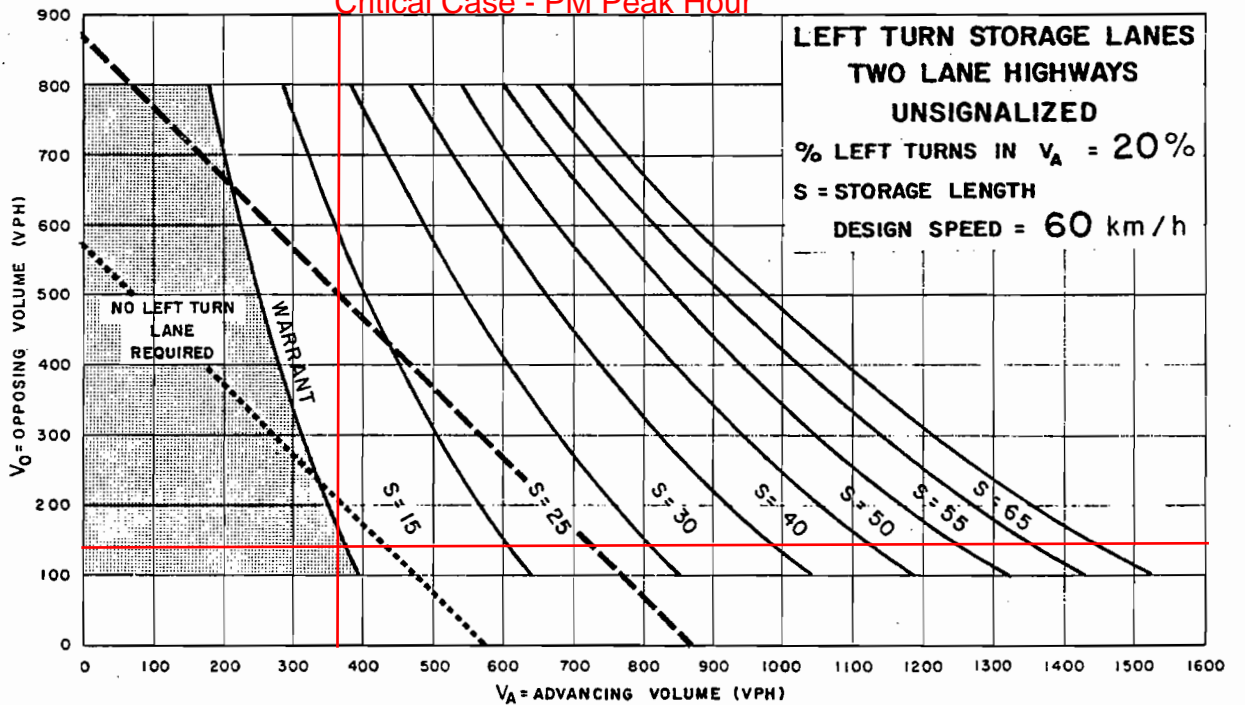
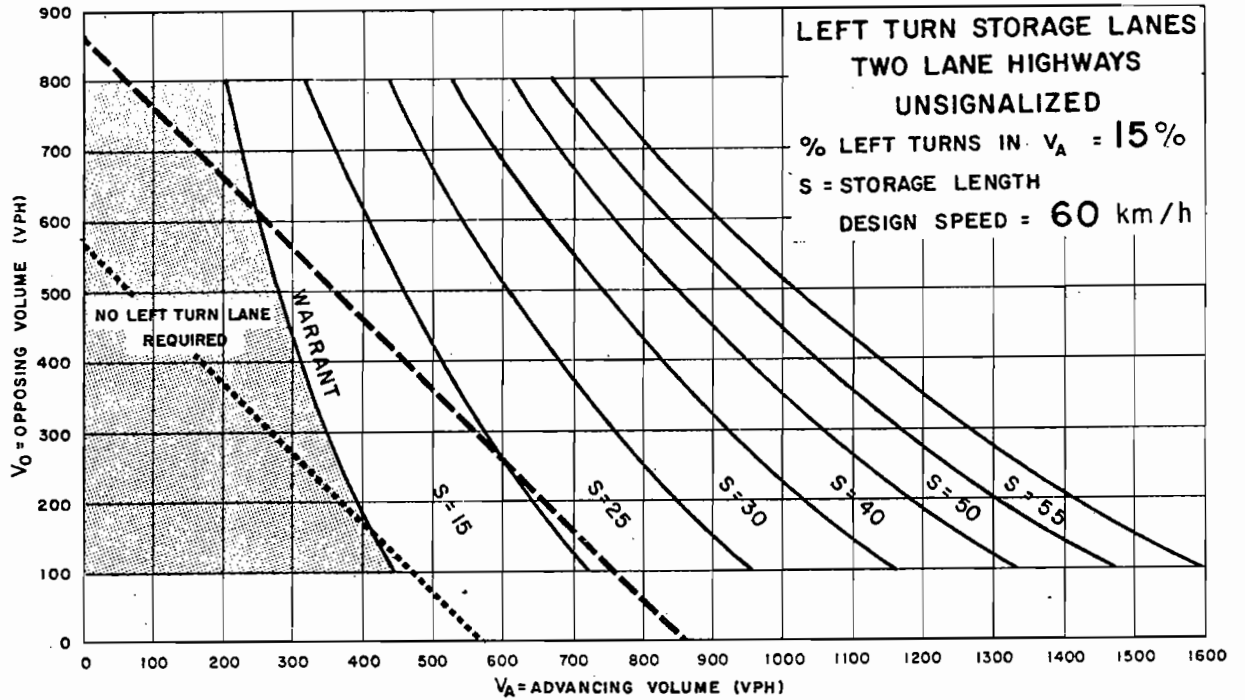


Figure EA-7



--- TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

..... TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

**Melody Lane / County Road 25**  
2025 Background - Northbound  
Critical Case - PM Peak Hour

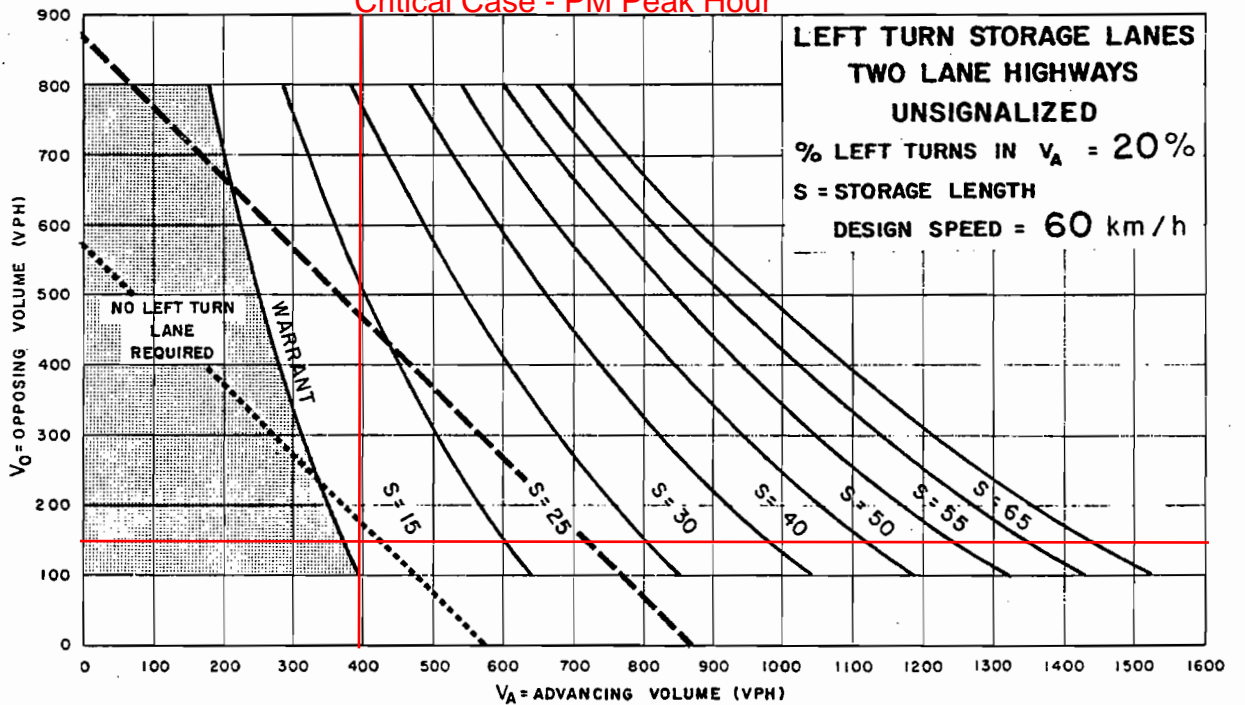
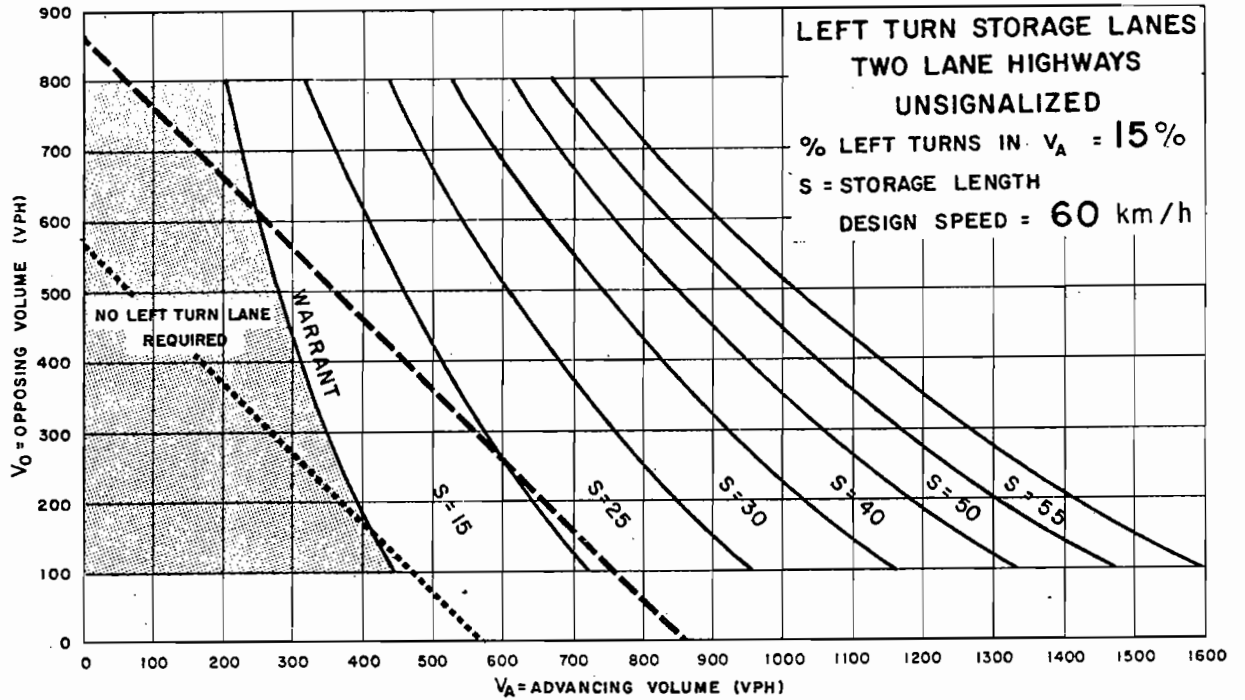


Figure EA-7



--- TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

..... TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

**Melody Lane / County Road 25**  
2020 Total Traffic - Northbound  
Critical Case - PM Peak Hour

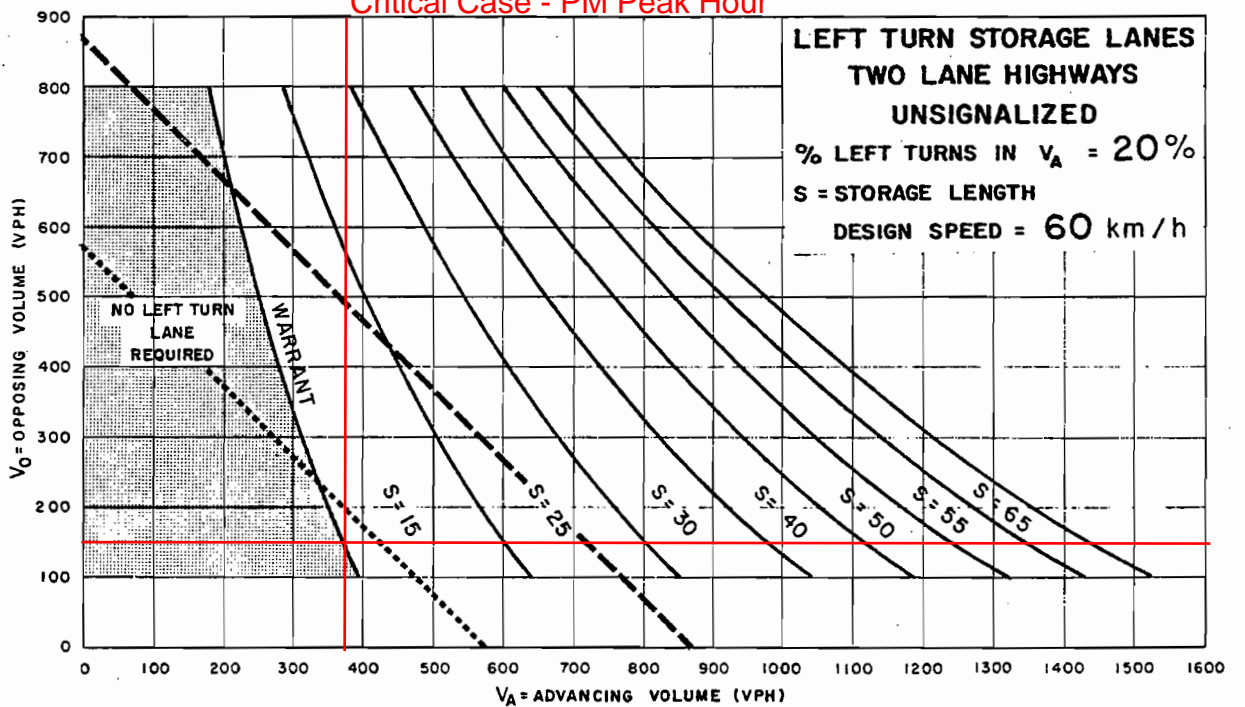
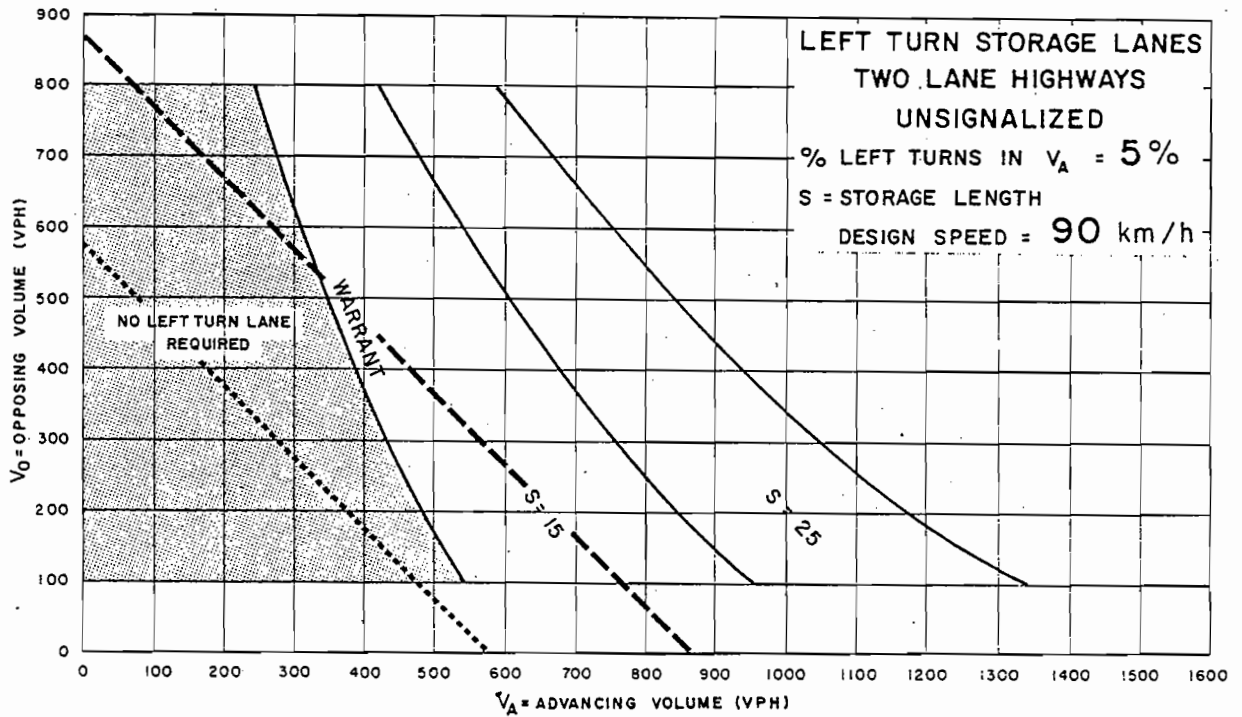


Figure EA-7





----- TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

..... TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

**Corseed Access & Industrial Dr / CR 25**  
 2020 Total Traffic - Southbound  
 Critical Case - PM Peak Hour

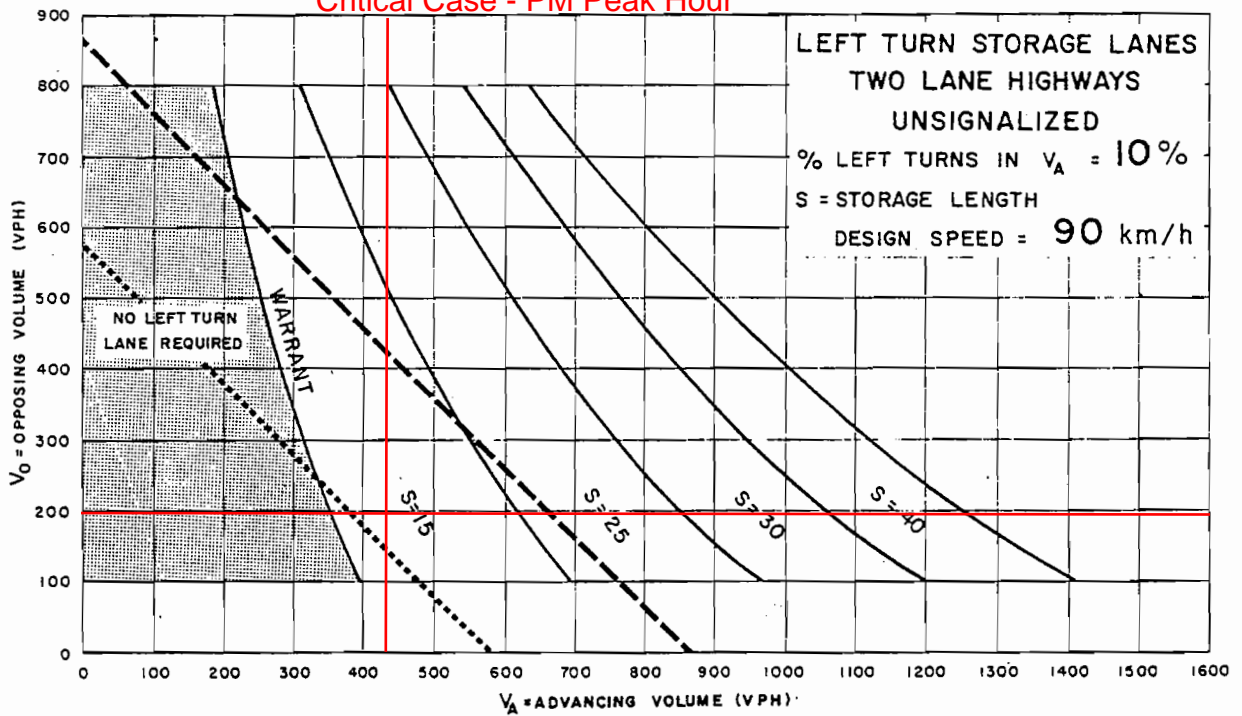
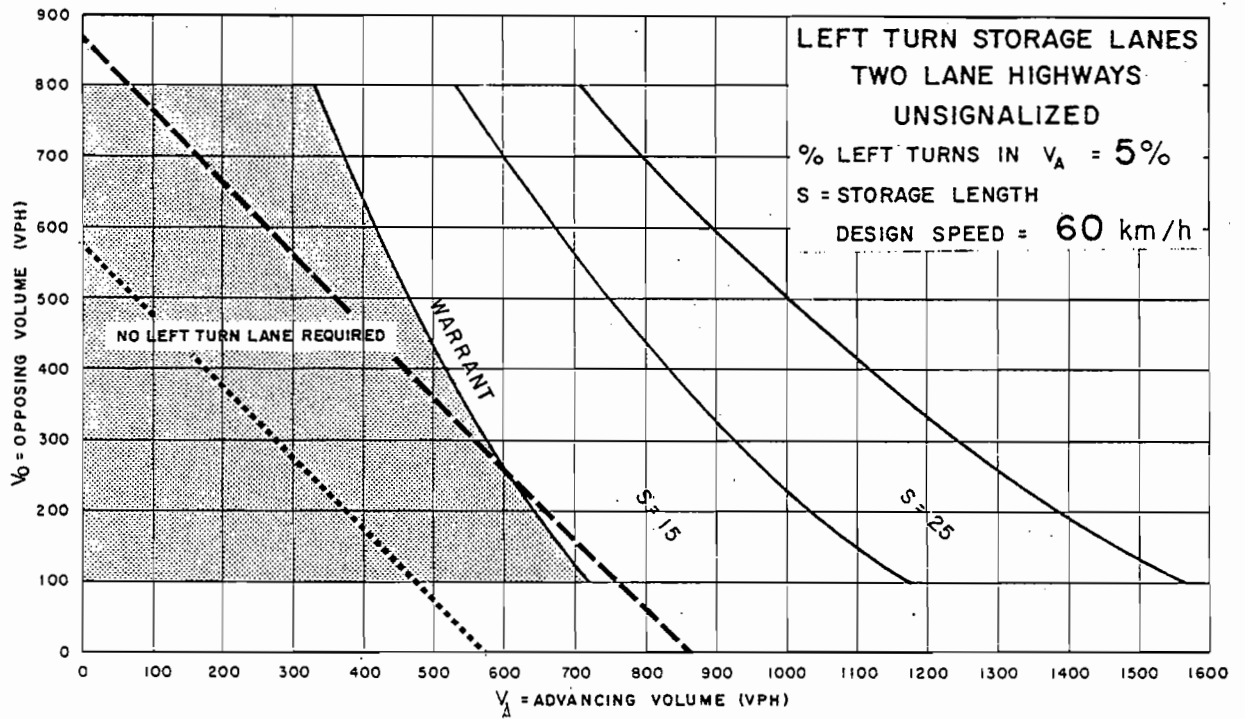


Figure EA-18



- - - - - TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL  
 AREAS OR URBAN AREAS WITH RESTRICTED FLOW  
 . . . . . TRAFFIC SIGNALS MAY BE WARRANTED IN  
 "FREE FLOW" URBAN AREAS

**Corseed Access & Industrial Dr / CR 25**  
 2020 Total Traffic - Southbound  
 Critical Case - PM Peak Hour

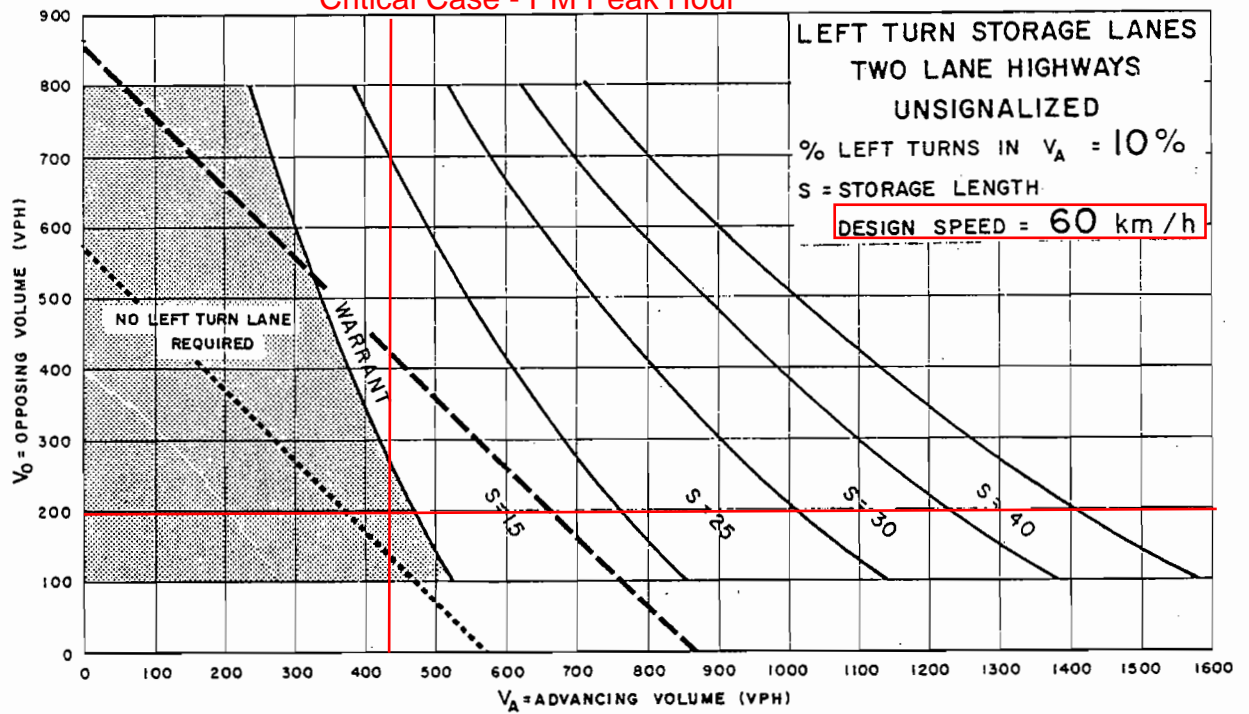
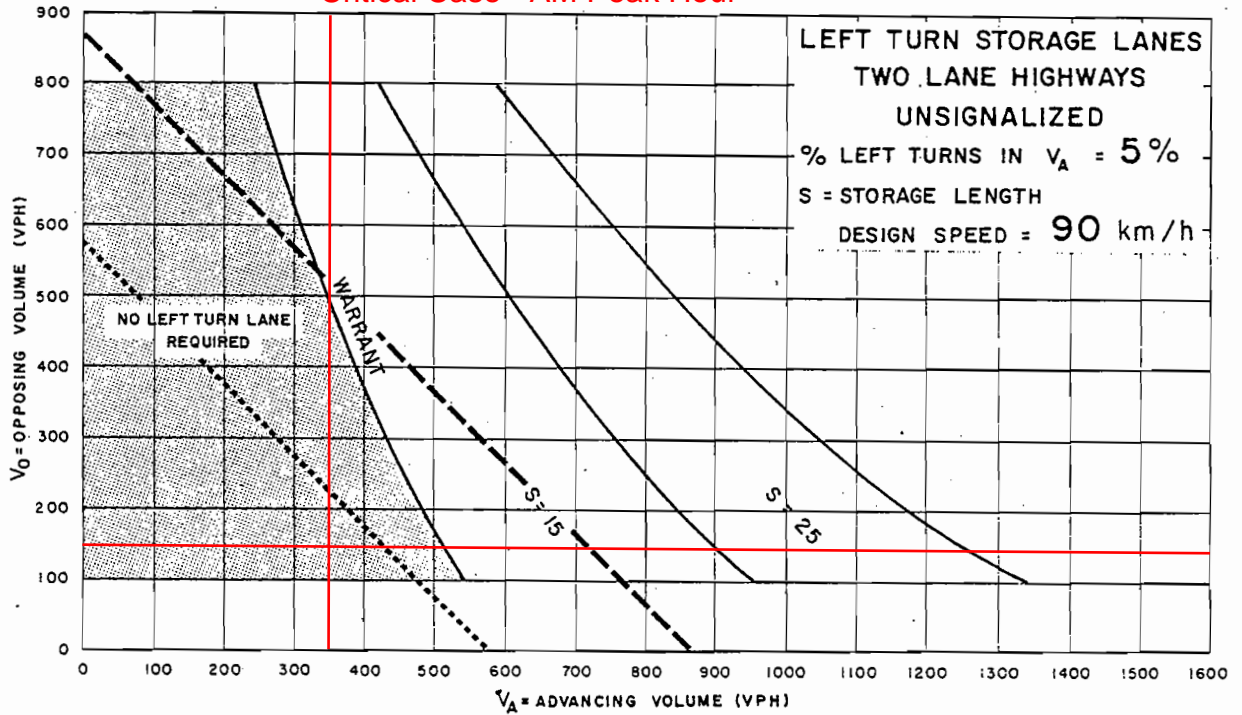


Figure EA-6

**Moco North Access / CR 25**  
**2020 Total Traffic - Southbound**  
**Critical Case - AM Peak Hour**

AT-GRADE INTERSECTIONS

APPENDIX A



--- TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW  
 ..... TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

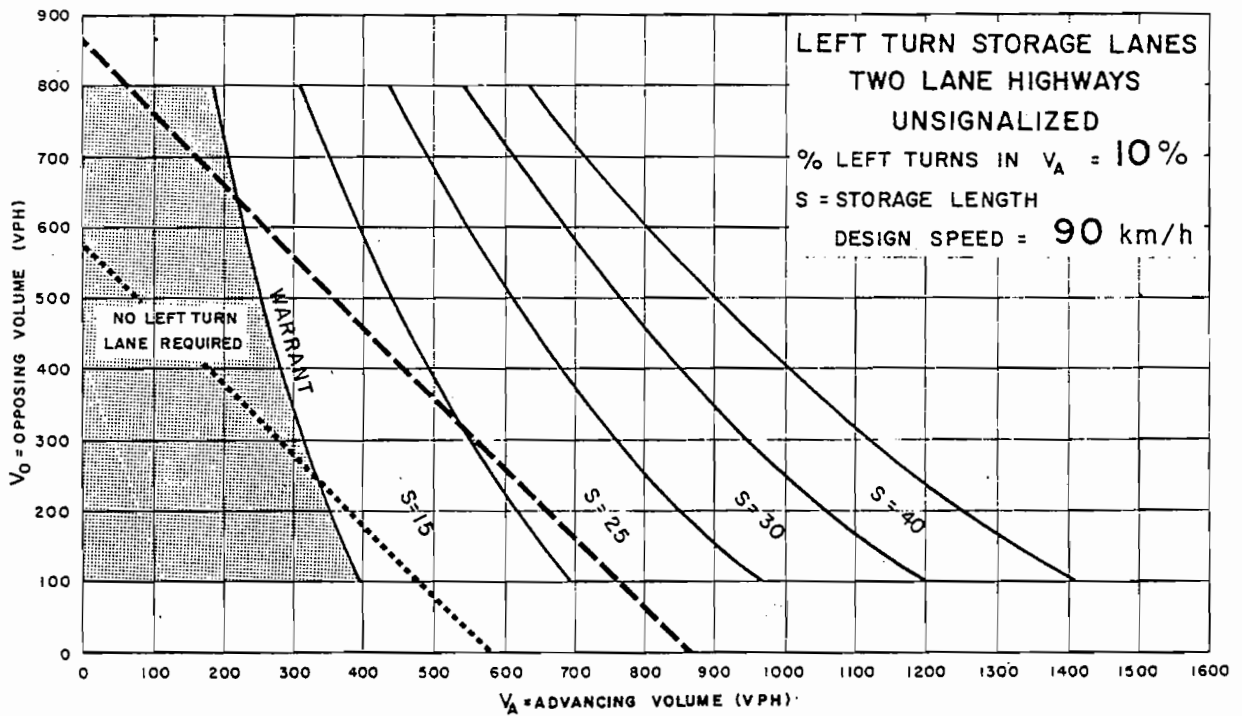
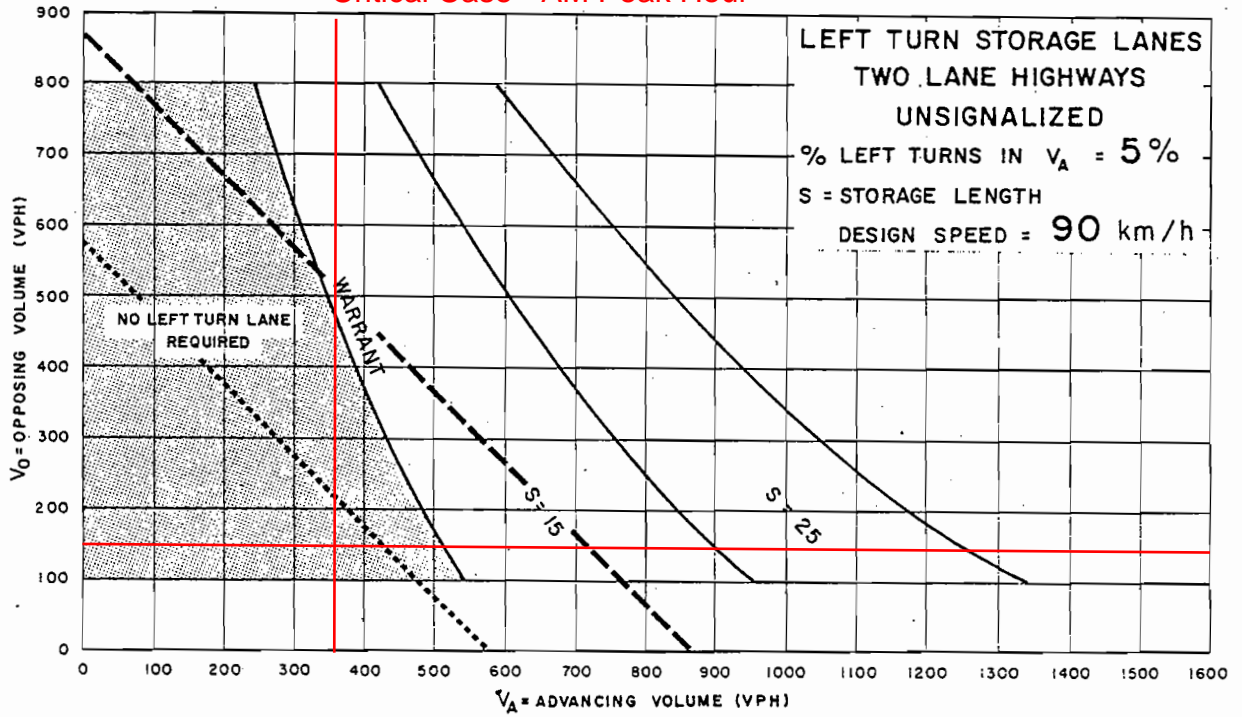


Figure EA-18

**Moco South Access / CR 25**  
**2020 Total Traffic - Southbound**  
**Critical Case - AM Peak Hour**



--- TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

..... TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

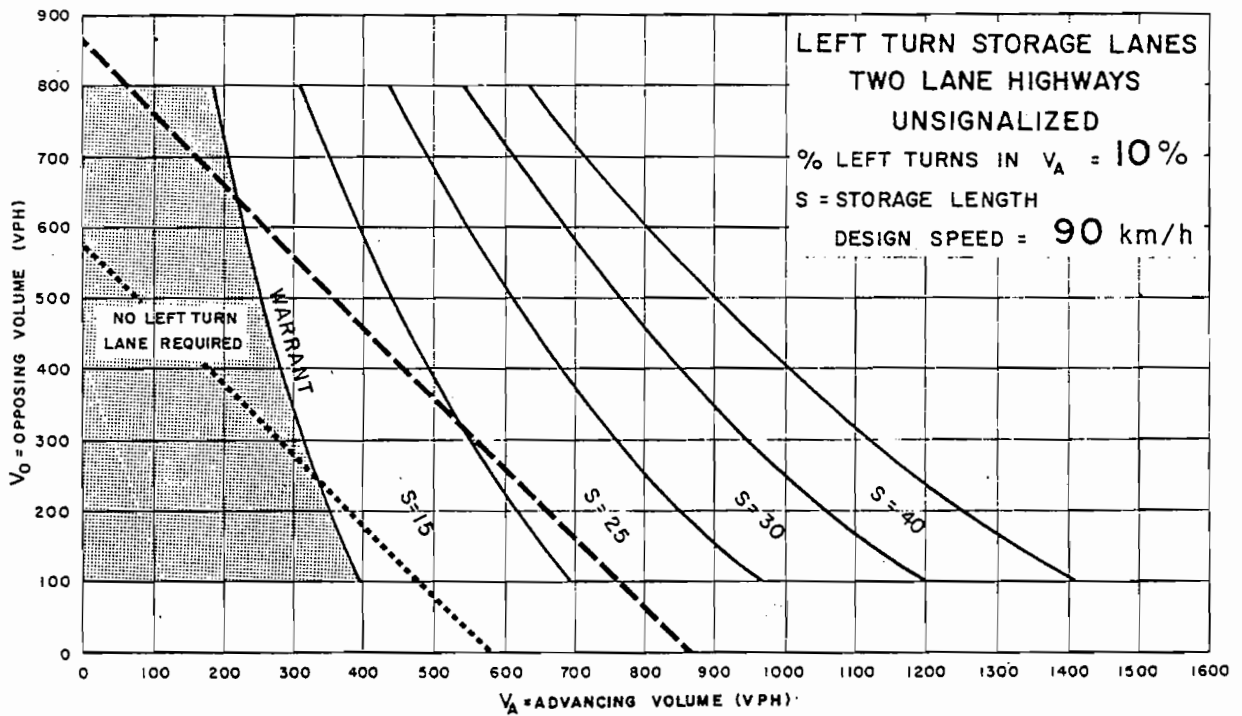


Figure EA-18

# Melody Lane / County Road 25

AT-GRADE INTERSECTIONS 2025 Total Traffic - Northbound  
Critical Case - PM Peak Hour

APPENDIX A

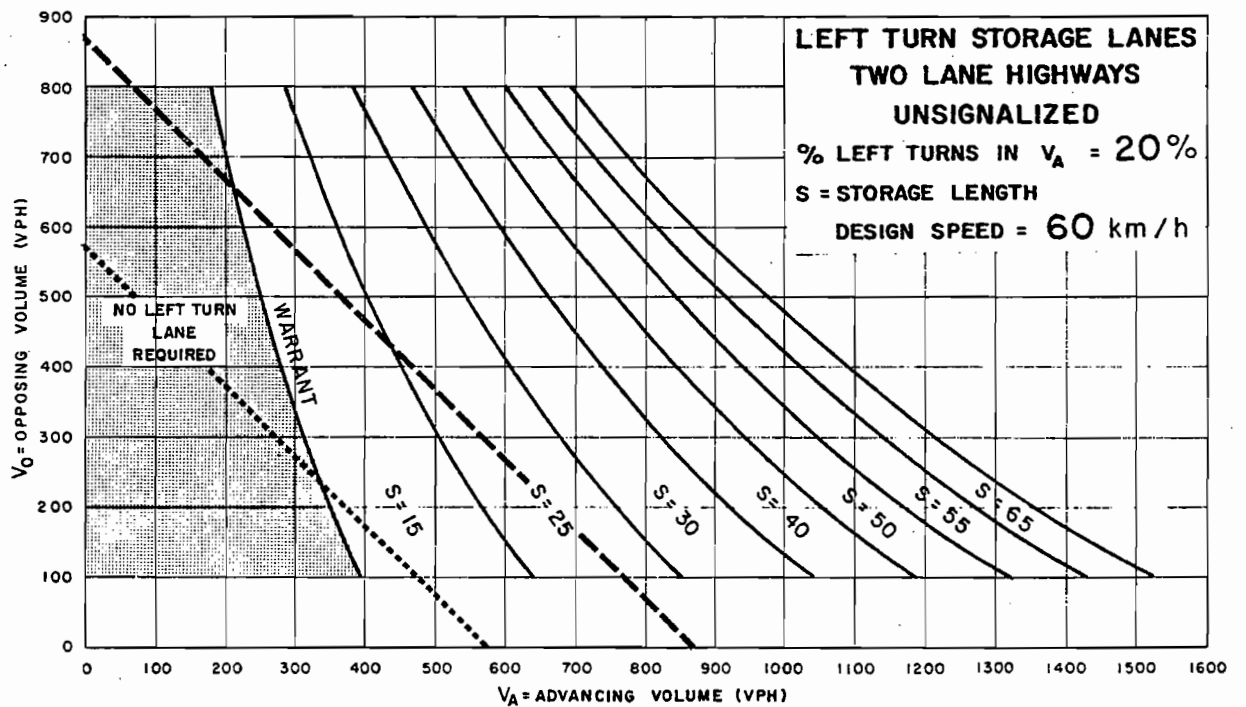
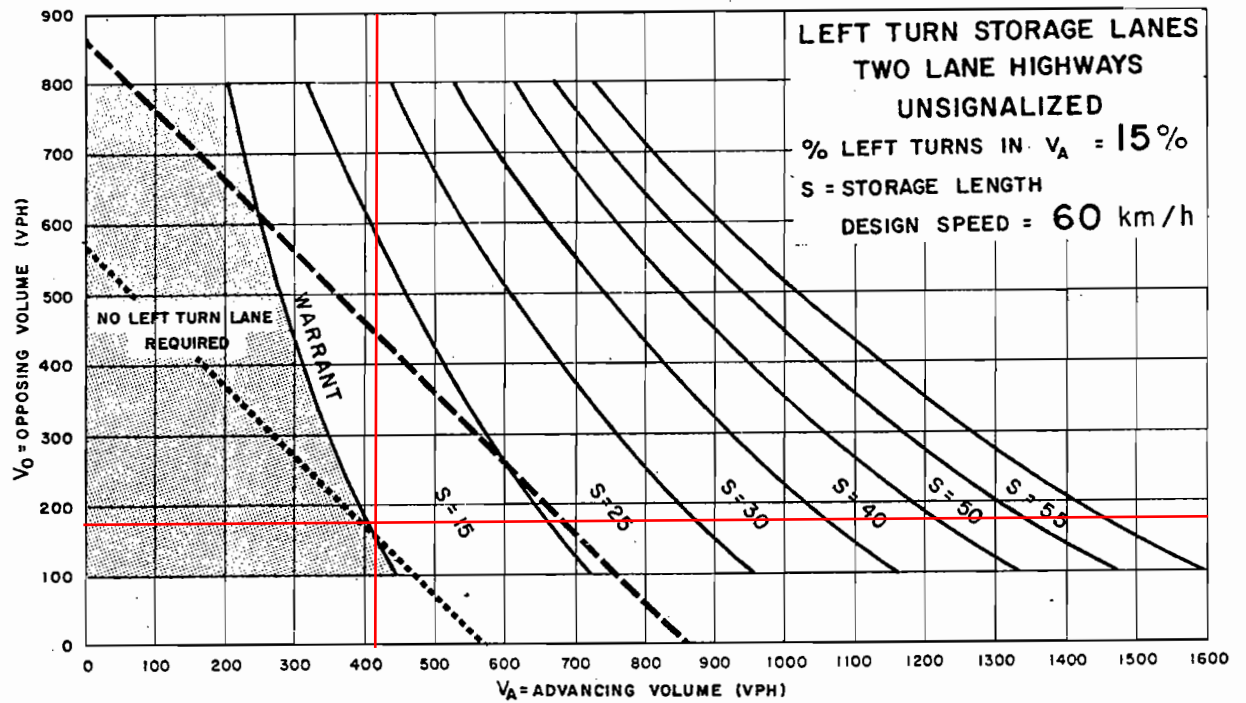
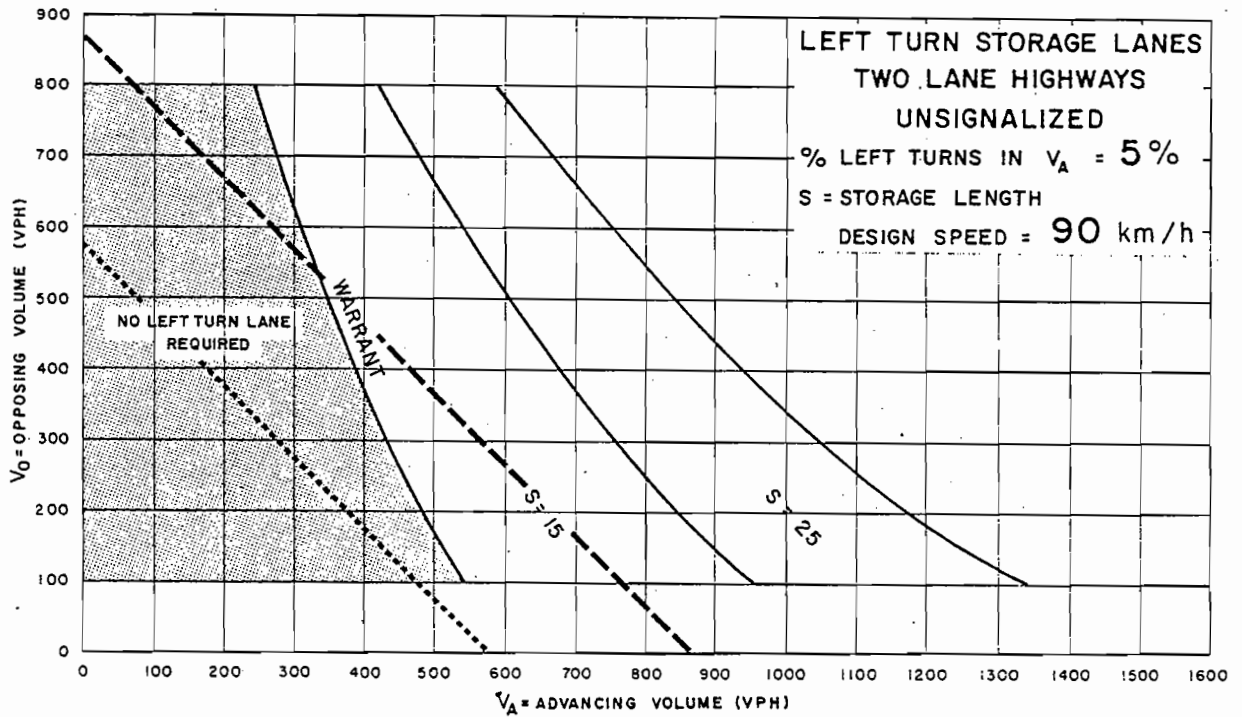


Figure EA-7



--- TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

..... TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

**Corseed Access & Industrial Dr / CR 25**  
 2025 Total Traffic - Northbound  
 Critical Case - PM Peak Hour

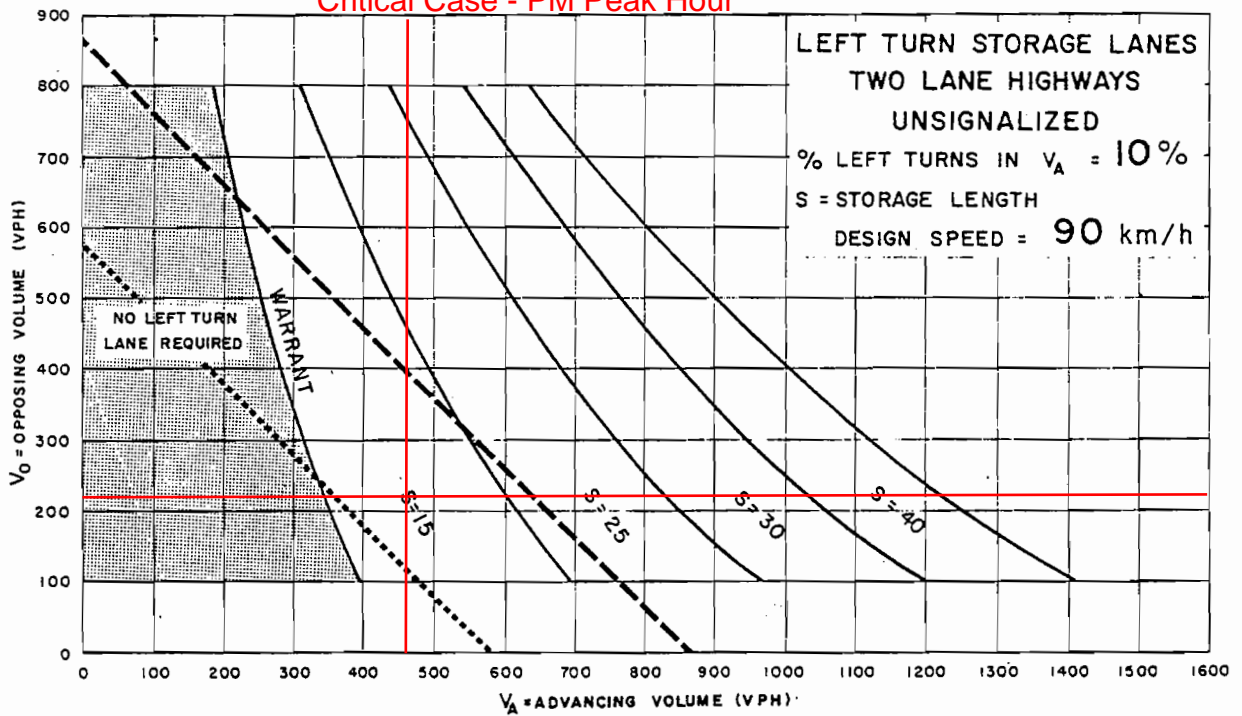
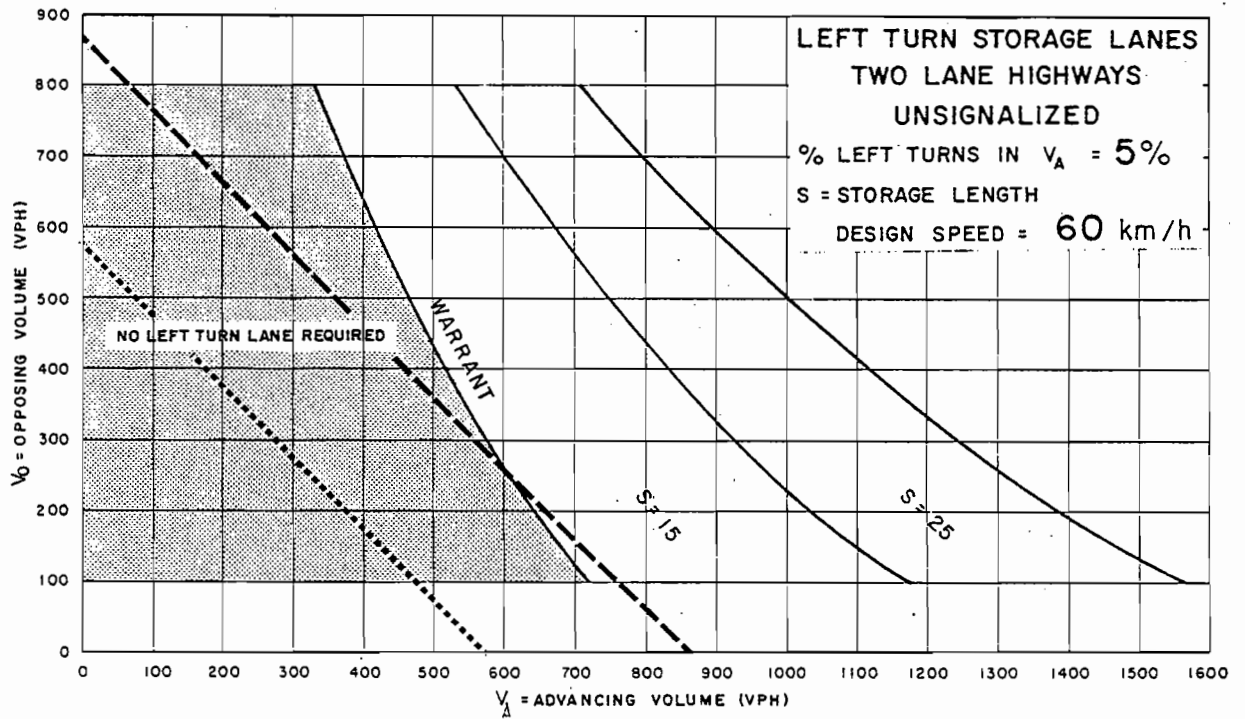


Figure EA-18



--- TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

..... TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

**Corseed Access & Industrial Dr / CR 25**  
 2025 Total Traffic - Northbound  
 Critical Case - PM Peak Hour

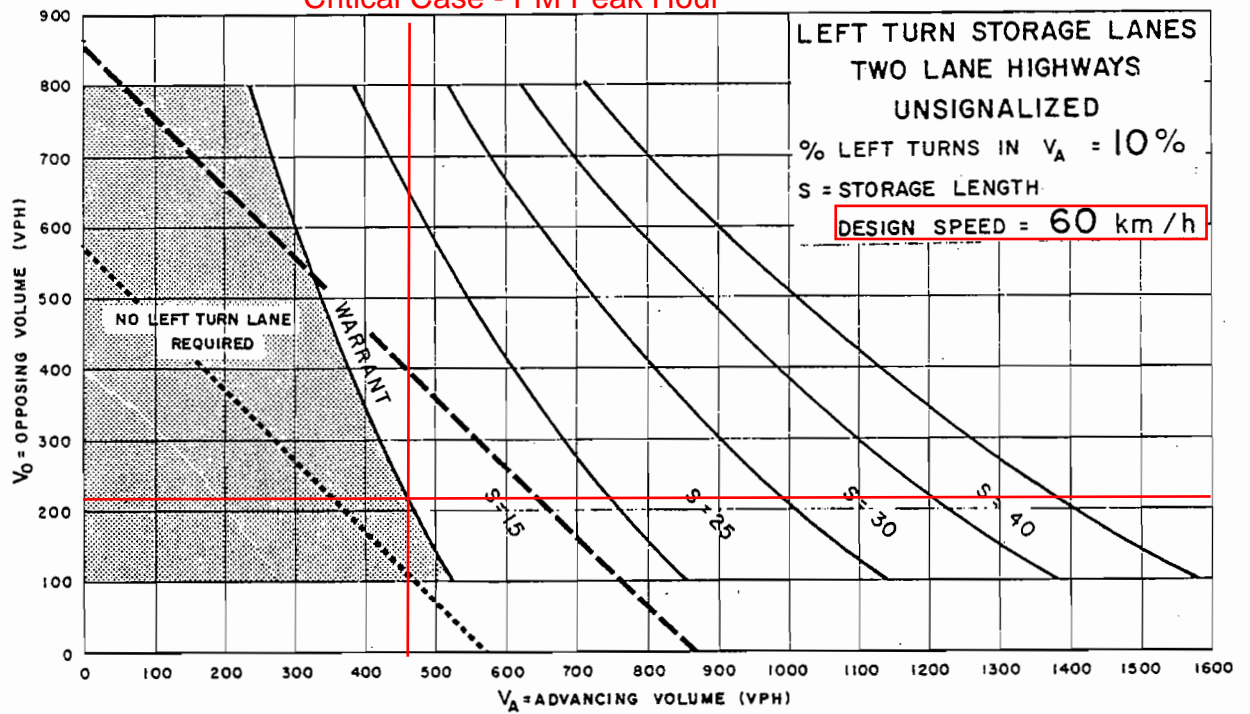


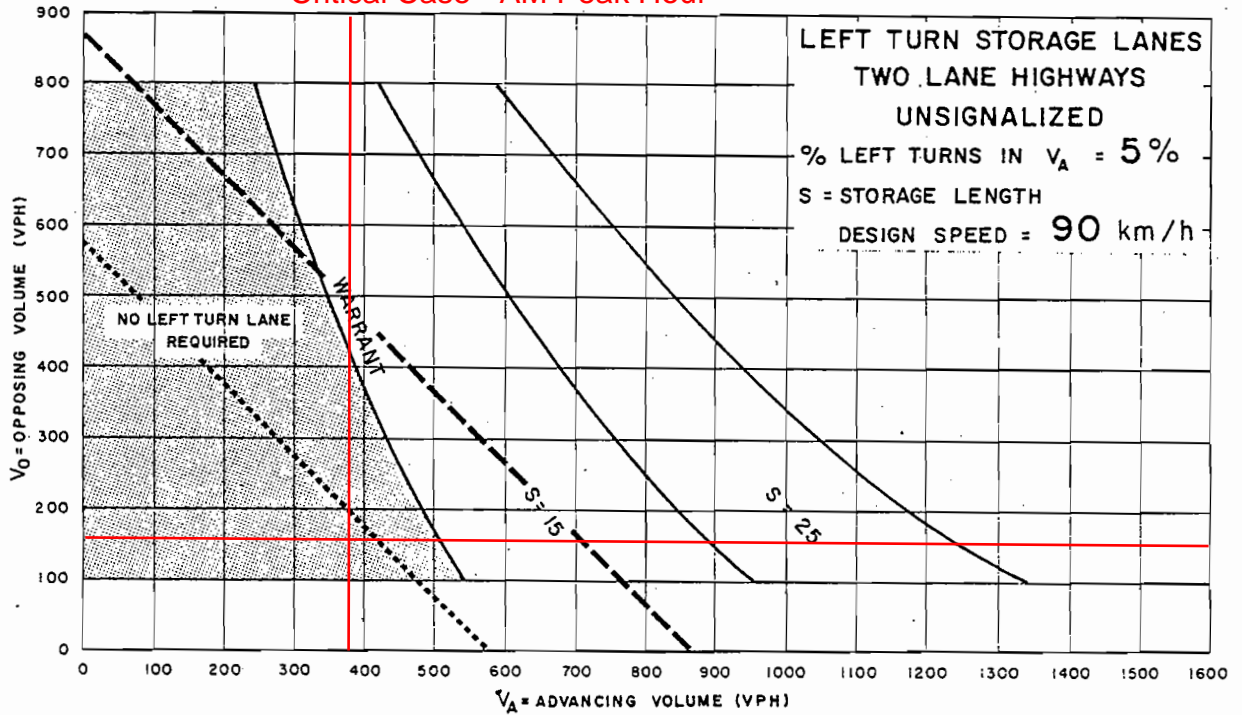
Figure EA-6

# Moco North Access / County Road 25

AT-GRADE INTERSECTIONS

2025 Total Traffic - Southbound  
Critical Case - AM Peak Hour

APPENDIX A



- TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW
- ..... TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

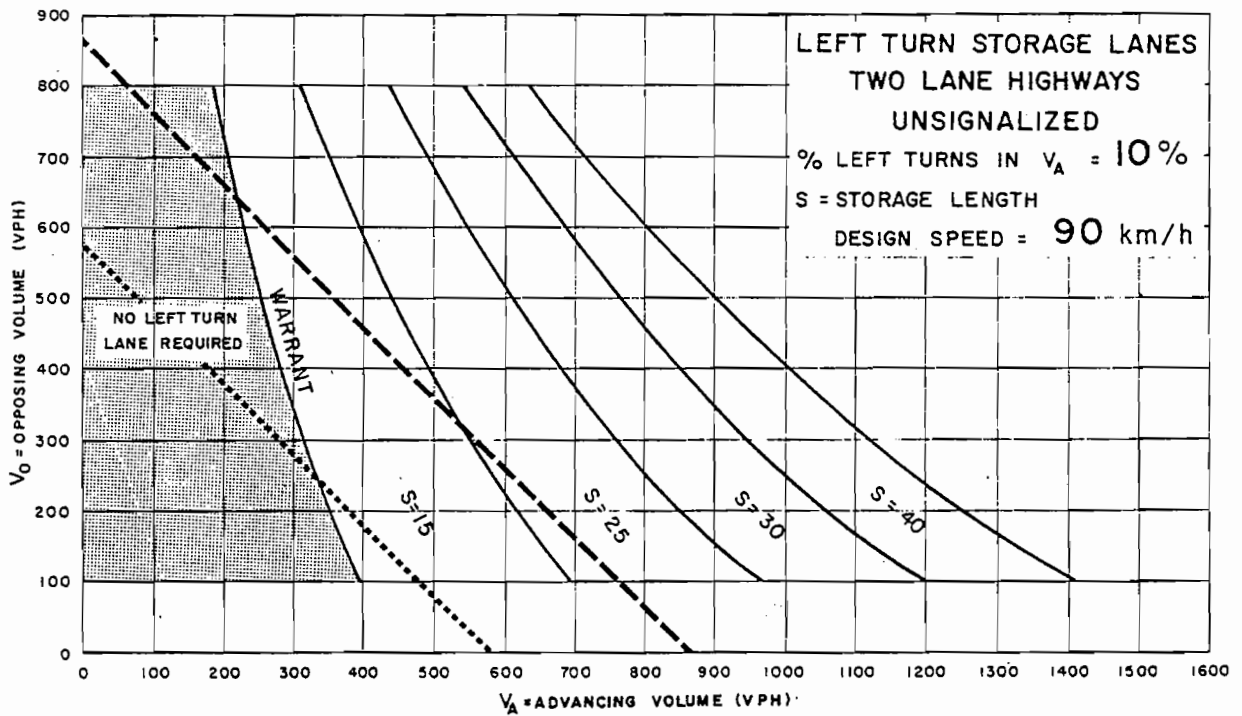


Figure EA-18



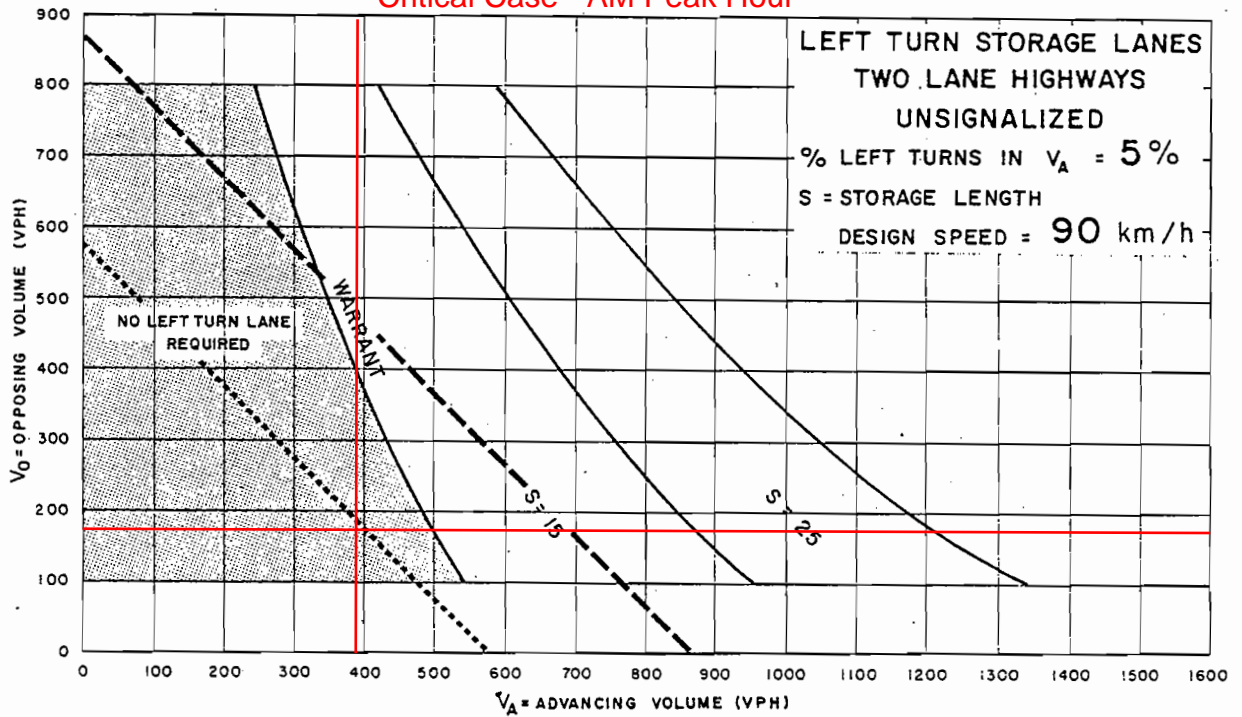
**Moco South Access / County Road 25**

2025 Total Traffic - Southbound

Critical Case - AM Peak Hour

AT-GRADE INTERSECTIONS

APPENDIX A



--- TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

..... TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

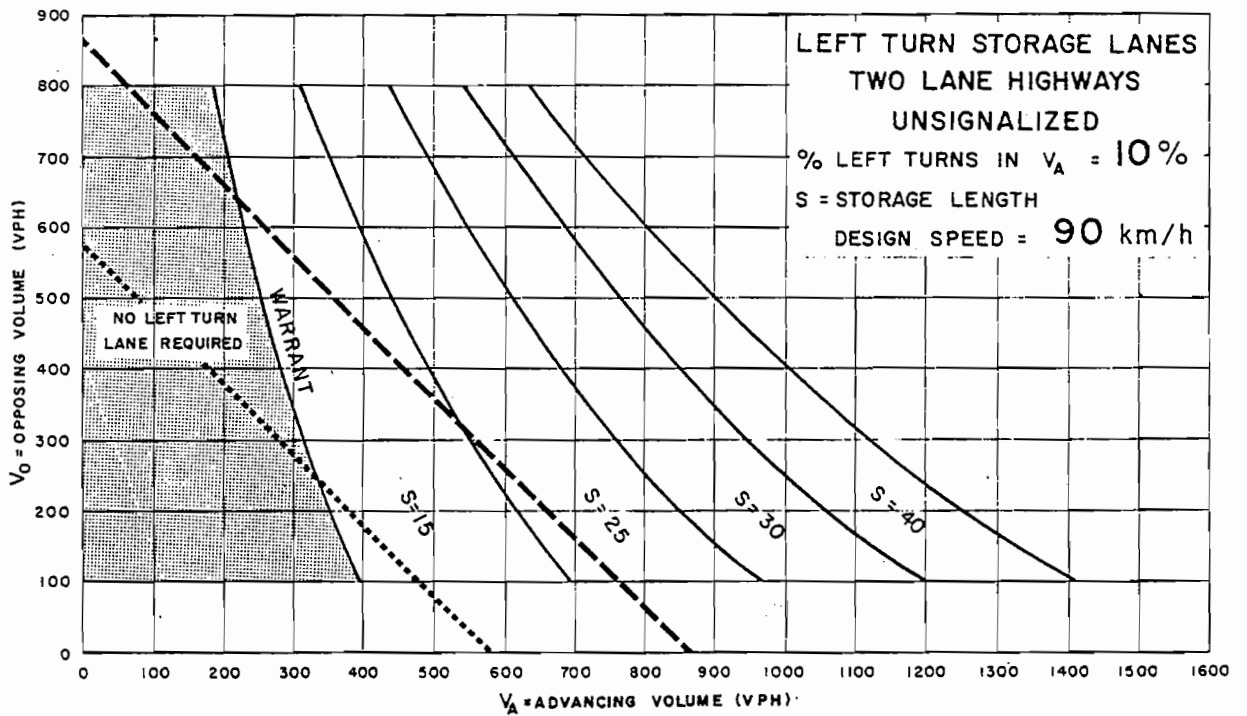


Figure EA-18

## **Appendix H – OTM Book 12 – Traffic Signal Justification Sheets**

**Justification No. 7 - 2025 Total Traffic**

Melody Lane / CR 25

Justification	Description	Rest. Flow	Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
			Numerical	%			
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	284	59%	16%	NO	NO
	B. Vehicle volume, along minor streets (average hour)	180	36	20%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	480	246	51%	3%	NO	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	2	4%		NO	NO

**Justification No. 7 - 2025 Total Traffic**

Corseed Access & Industrial Drive / CR 25

Justification	Description	Rest. Flow	Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
			Numerical	%			
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	322	67%	13%	NO	NO
	B. Vehicle volume, along minor streets (average hour)	120	19	16%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	480	300	62%	25%	NO	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	15	30%		NO	NO

**Justification No. 7 - 2025 Total Traffic**

Moco North / CR25

Justification	Description	Rest. Flow	Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
			Numerical	%			
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	323	67%	3%	NO	NO
	B. Vehicle volume, along minor streets (average hour)	180	9	5%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	480	311	65%	6%	NO	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	5	9%		NO	NO

**Justification No. 7 - 2025 Total Traffic**

Moco South / CR 25

Justification	Description	Rest. Flow	Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
			Numerical	%			
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	348	72%	7%	NO	NO
	B. Vehicle volume, along minor streets (average hour)	180	19	10%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	480	314	66%	23%	NO	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	17	35%		NO	NO