

Millbrook Development Phase 2

Township of Cavan Monaghan,
County of Peterborough

Traffic Impact Study for the Towerhill Developments Ltd.

Type of Document:
Final Report

Project Number:
JDE – 1331

Date Submitted:
October 24th, 2018
Revised: May 25th, 2020



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Executive Summary

The Millbrook Development encompasses approximately 97.3 hectares of land, located on the west side of County Road 10 between Brookside Street to Larmer Line. The proposed development will include: residential, institutional and urban employment area lands.

This report summarizes the traffic impact study prepared for Phase 2 of the proposed Millbrook Development [Subject Site] located north of the community of Millbrook, in the Township of Cavan Monaghan [Township], County of Peterborough [County]. The Subject Site includes a 52.1 hectare parcel, north of Fallis Line and west of County Road 10. The report assesses the impact of traffic related to the development on the adjacent roadway and provides recommendations to accommodate the traffic in a safe and efficient manner.

The Subject Site (Phase 2) includes the following:

- | | |
|----------------------------|------------------|
| • Single Detached | 328 units |
| • Townhouse | 245 units |
| • High Density Residential | <u>192 units</u> |
| Total | 765 units |
| • Institutional Block | 5.5 Acres |

It is anticipated that the proposed development will be fully occupied by 2023.

The proposed development includes one full-movement access onto County Road 10, north of the existing Township of Cavan Monaghan Municipal Office [Street 'B' North]. The development also includes two full-movement access roads located directly across the Millbrook Development Phase 1 Street 'A' and Street 'D' [Street 'B' South & Street 'I'] and one full-movement access onto Fallis Line at the west end of the development [Street 'L'].

The scope of this analysis includes a review of the following intersections:

- County Road 10 / Fallis Line;
- County Road 10 / Larmer Line;
- County Road 10 / Municipal Office Driveway;
- County Road 10 / Street 'B';
- Fallis Line / Street 'B' South & Street 'A';
- Fallis Line / Street 'I' & Street 'D'; and
- Fallis Line / Street 'L'.

Conclusions

1. The proposed development of the Subject Site is expected to generate a total of 638 AM, 602 PM and 677 SAT peak hour trips.
2. Background traffic and pedestrian counts were completed for the existing intersections of County Road 10 / Municipal Office Driveway on Tuesday April 25th, 2017 and Saturday August 12th, 2017.
3. An intersection operational analysis was completed at the intersections of County Road 10 / Larmer Line, County Road 10 / Municipal Office Driveway and County Road 10 / Fallis Line,

using the existing (2018) and background (2023, 2026 and 2031) traffic volumes. The following improvements are recommended:

Background (2023) Traffic Volumes

As part of the Millbrook Community Centre Development

- **County Road 10 / Municipal Office Driveway (Millbrook Community Centre)**
 - Construct a northbound left-turn lane with a 160 metre taper length, 70 metre parallel length and 15 metre storage length.

As part of the Millbrook Phase 1 Development

- **County Road 10 / Larmer Line**
 - Construct a northbound left-turn lane with a 160 metre taper length, 60 metre parallel length and 25 metre storage length.
- **County Road 10 / Fallis Line**
 - Reduce the posted speed limit from 80 km/h to 60km/h on Fallis Line from County Road 10 to west of Street 'A';
 - Construct a northbound left-turn lane with a 145 metre taper length, 60 metre parallel length and 25 metre storage length; and
 - Construct a southbound right-turn lane with an 80 metre taper length and 85 metre parallel length.

Background (2026) Traffic Volumes

- **County Road 10 / Fallis Line**
 - Install traffic signals.

Background (2031) Traffic Volumes

- **County Road 10 / Larmer Line**
 - Install traffic signals.

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. An intersection operation analysis was completed under total (2023, 2026 and 2031) traffic volumes with the proposed development operational at the study area intersections. In addition to the improvements recommended as a result of the background traffic noted above, the following additional improvements are recommended:

Total (2023) Traffic Volumes

- **County Road 10 / Fallis Line**
 - Install traffic signals.
- **Street 'I' & Street 'D' / Fallis Line**
 - Construct a westbound left-turn lane with a 115 metre taper length, 30 metre parallel and 25 metre storage.
- **County Road 10 / Street 'B' North**
 - Construct a northbound left-turn lane with a 160 metre taper length, 60 metre parallel length and 25 metre storage length; and
 - Construct a southbound right-turn lane with an 80 metre taper length and 85 metre parallel length.
- **Fallis Line**
 - Extend the 60 km/h speed limit zone on Fallis Line to include the area from County Road 10 to a location 200 metres west of Street 'L'.

Conditional Works - Total (2031) Traffic Volumes

- **County Road 10 / Street 'B' North**
 - Install traffic signals.
6. The sight lines available on Fallis Line for Street 'L', Street 'B' South and Street 'I' and on County Road 10 for Street 'B' North meet the minimum stopping sight distance requirements as identified in the Transportation Association of Canada Guidelines.
 7. Some form of pedestrian crossing treatment is recommended on Fallis Line near the west edge of the Millbrook Community Centre property. The specific pedestrian crossing treatment, location and construction timing is beyond the scope of this report.
 8. In summary, with the improvements outlined above, the proposed development will not cause any operational issues will not add significant delay or congestion to the local roadway network.

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1 Introduction

1.1 Background

Towerhill Developments Ltd. [the Developer] is proposing to develop a 52.1 hectare parcel of land [Subject Site], located north of Fallis Line and west of County Road 10 in the Township of Cavan Monaghan [Township], County of Peterborough [County]. The Subject Site is Phase 2 of the Millbrook Development, which encompasses 97.3 hectares on the west side of County Road 10, between Brookside Street to Larmer Line.

The proposed development of the Subject Site (Phase 2) will include the following:

• Single Detached	328 units
• Townhouse	245 units
• High Density Residential	192 units
Total	765 units
• Institutional Block	5.5 Acres

A traffic impact study was completed by JD Engineering for the proposed Millbrook Development Phase 1 (dated July 2014) [Millbrook TIS], which is located just south of the proposed development, west of County Road 10 [Millbrook Development Phase 1]. Based on correspondence with the Developer, 141 units were built-out and occupied for Millbrook Development Phase 1 by the end of 2018 (existing year for this analysis).

The proposed development includes one full-movement access onto County Road 10, north of the existing Township of Cavan Monaghan Municipal Office [Street 'B' North]. The development also includes two full-movement road access located directly across the Millbrook Development Phase 1 Street 'A' and Street 'D' [Street 'B' South & Street 'I'] and one full-movement access onto Fallis Line at the west end of the development [Street 'L'].

The Developer has retained **JD Northcote Engineering Inc.** [JD Engineering] to prepare this traffic impact study in support of the Draft Plan of Subdivision Application for the Subject Site.

1.2 Study Area

Figure 1 illustrates the location of the Subject Site and study area intersections in relation to the surrounding area. The Site Plan by Innovative Planning Solutions is included in **Appendix A**.

The Subject Site is bound by County Road 10, the existing Township municipal office and the future Millbrook Community Centre to the east, Fallis Line to the south, and Future Millbrook Development lands to the north and west.

Through the consultation with the Township and County, the following intersections are included in the Traffic Impact Analysis:

- County Road 10 / Fallis Line;
- County Road 10 / Larmer Line; and
- County Road 10 / Municipal Office Driveway.
- County Road 10 / Street 'B';
- Fallis Line / Street 'B' South & Street 'A';
- Fallis Line / Street 'I' & Street 'D'; and
- Fallis Line / Street 'L'.

Figure 1 – Proposed Site Location and Study Area



1.3 Study Scope and Objectives

The purpose of this study is to identify the potential impacts to traffic flow at the site access on the surrounding roadway network. The study analysis takes into account the County's Traffic Impact Assessment Guidelines and includes the following tasks:

- 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;
- Estimate the amount of traffic that would be generated by the proposed development and assign to the roadway network;
- Prepare diagrams summarizing the weekday morning [AM], afternoon [PM] and Saturday midday [SAT] peak hour traffic volumes at the study area intersections for the existing and horizon years;
- Complete LOS analysis of horizon year (with the proposed development) traffic conditions and identify additional operational deficiencies;
- Recommend improvements to address operational deficiencies;
- Review the configuration of the site access roads;
- Complete a review and analysis of the existing collision data for County Road 10; and
- Document findings and recommendations in a final report.

1.4 Horizon Year and Analysis Periods

Based on discussions with the Developer, it is anticipated that the proposed residential development within the Subject Site will be completed and fully occupied by 2023. Traffic scenarios for the existing (2018), ultimate build-out year horizon year (2023) and planning horizon years (2026 and 2031) were selected for analysis of traffic operations in the study area.

The weekday morning [AM], afternoon [PM] and midday Saturday [SAT] peak hours have been selected as the analysis periods for this study.

2 Information Gathering

2.1 Street and Intersection Characteristics

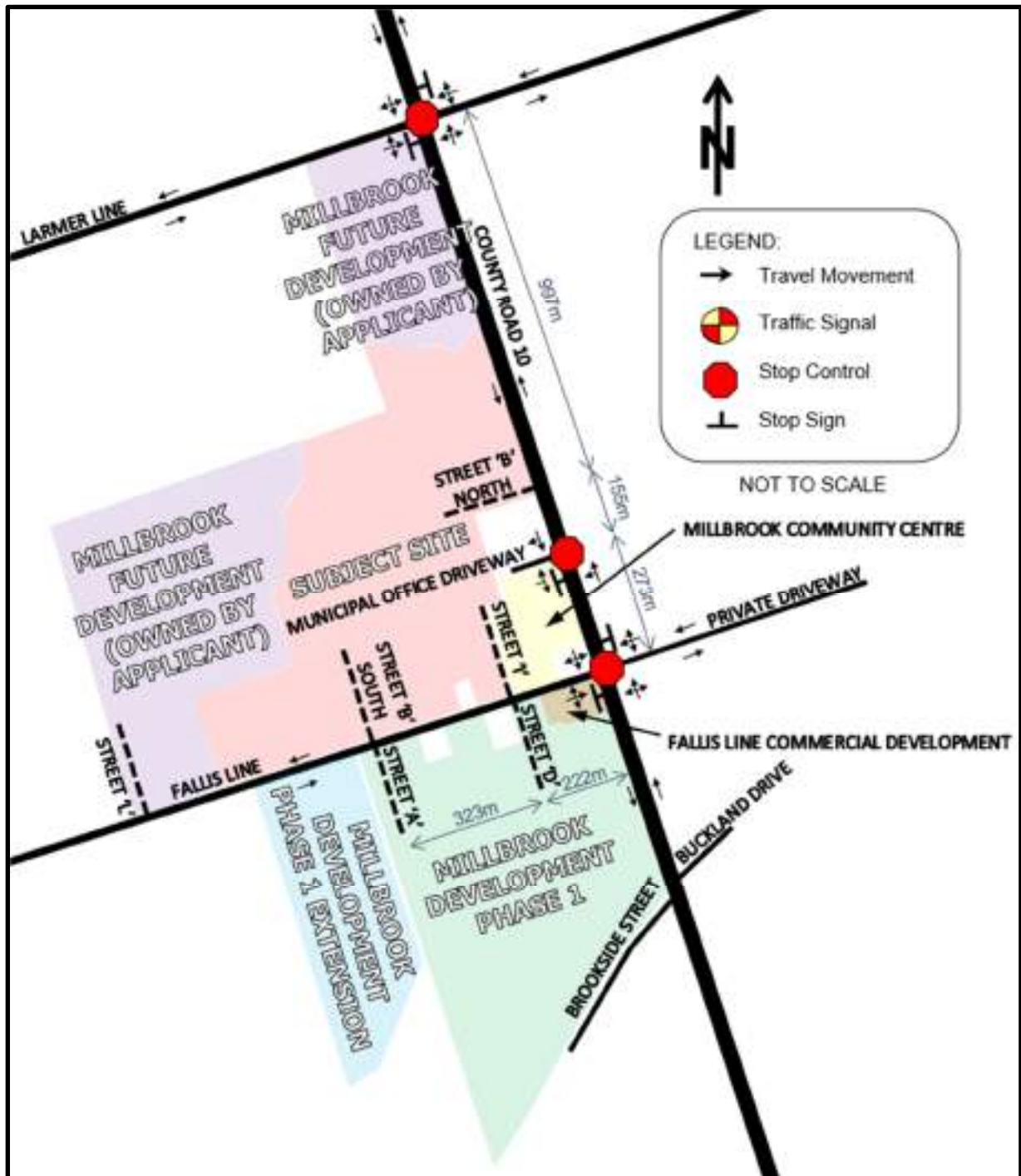
County Road 10 is a two-lane 'Class A' Major County Arterial road with a rural cross-section. Between Fallis Line and Larmer Line, County Road 10 has a 20 metre wide right-of-way, 6.25 metre paved road width and gravel shoulders. There are no sidewalks on County Road 10, in the study area. The posted speed limit on County Road 10 is 80km/h from immediately south of Fallis Line to the north end of the study area. County Road 10 is under the jurisdiction of the County.

Fallis Line is a two-lane local road with a rural cross-section, 6.0 metre paved road width, 0.25 metre wide gravel shoulders and a 20 metre ROW within the study area. There are no sidewalks on Fallis Line. The assumed (unposted) speed limit on Fallis Line is 80km/h. Fallis Line is under the jurisdiction of the Township.

Larmer Line is a two-lane local road with a rural cross-section, 6.0 metre paved road width, 0.25 metre wide gravel shoulders and a 20 metre ROW within the study area. There are no sidewalks on Larmer Line. The assumed (unposted) speed limit on Larmer Line is 80km/h. Larmer Line is under the jurisdiction of the Township.

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

Figure 2 – Existing (2018) Lane Configuration within Study Area



2.2 Transit Access

There is currently no municipal transit system available within the study area. The 2015 Township Official Plan has recommended steps toward implementing a preliminary transit system. Since this process is still in the early phases, we have conservatively assumed that the proposed development will not have access to transit.

2.3 Other Developments within the Study Area

2.3.1 Adjacent Development Description

Based on discussions with the Township, only planned developments within Millbrook will have a notable impact on the traffic volumes in the study area. All other development outside the study area will be accounted for in the background traffic growth rate, as outlined in Section 2.6.

Millbrook Development Phase 1 (by the Developer)

As noted in Section 1.1, 240 units are currently built-out and occupancy will occur shortly for Millbrook Development Phase 1. We have assumed that Millbrook Development Phase 1 will be fully built-out and occupied by 2021. The unit breakdown of the Millbrook Development Phase 1 for the 2021 horizon year is summarized below:

Anticipated (2021) Occupancy of the Millbrook Development Phase 1

• Single Detached	269 units
• Townhouse	<u>65 units</u>
Total	334 units

Millbrook Future Development (by the Developer)

An additional review of the anticipated ultimate development of the future development lands (owned by the Developer) has also been reviewed for long-range planning purposes [Millbrook Future Development]. The following ultimate development statistics have been assumed for the Millbrook Future Development:

Assumed Ultimate Development of the Millbrook Future Development for Horizon Year 2031

• Institutional	9.9 ha.
• Urban Employment	12.13 ha.

Fallis Line Commercial Development (by the Developer)

Towerhill Development Ltd. is also moving ahead with a proposed commercial development on the property municipally known as 919 Fallis Line, located at the southwest corner of the intersection of Fallis Line / County Road 10 [Fallis Line Commercial Development]. The proposed commercial development includes a general office building (13,412sq.ft. GFA) and a fast-food restaurant (5,000sq.ft. GFA). It is anticipated that build-out and occupancy of this development will occur by 2019. JD Engineering prepared a traffic brief (dated September 2017) for the Fallis Line Commercial Development [919 Fallis Line Traffic Brief].

Millbrook Community Centre (by the Township)

The Township is moving ahead with the proposed Millbrook Community Centre on a parcel of land located directly south of the existing Township Municipal Office. The Millbrook Community Centre will have a total gross floor area of 50,130 square feet, that will include an ice rink, community hall, multi-use rooms within the building and a play area with future splash pad directly north of the proposed building. It is anticipated that build-out will occur by 2019. JD Engineering prepared a traffic impact study (dated October 2017) for the Millbrook Community Centre [Community Centre TIS].

Millbrook Development Phase 1 Extension (by Others)

Based on correspondence with the Township there is a proposed residential extension to the Millbrook Development Phase 1 parcel located just west of the Millbrook Development south of Fallis Line [Millbrook Development Phase 1 Extension]. This property is not owned by Towerhill Development Ltd. The proposed residential development includes the construction of 65 single detached units. It is anticipated that build-out and occupancy of this development will occur by 2021. Azsura Engineers prepared a traffic letter (dated September 2017) for the Millbrook Development Phase 1 Extension [Azsura Traffic Letter].

Section 2.3.2 and 2.3.3 outline the methodology applied to account for the additional traffic in the study area, as a result of the Millbrook Development Phase 1, Millbrook Future Development, Fallis Line Commercial Development Millbrook Community Centre, and Millbrook Development Phase 1 Extension. Sections 2.3.4 provides the calculation of the traffic generation for each of the adjacent developments.

2.3.2 Adjacent Development Traffic Generation Methodology

Although traffic impact studies are available for the Fallis Line Commercial Development, Millbrook Development Phase 1 and Millbrook Development Phase 1 Extension, adjustments to the traffic generation for the developments are required to reflect updated information; furthermore, a traffic impact study is not available for the Future Development; consequently the traffic generated for this development has been estimated as part of this analysis. The traffic generation for these proposed developments have been calculated based on the data provided in the Institute of Transportation Engineers [ITE] *Trip Generation Manual* (10th Edition) [ITE Trip Generation Manual]. The following ITE land uses have been applied to estimate the traffic from mentioned adjacent developments:

- ITE land use 210 (Single-Family Detached Housing);
- ITE land use 220 (Multifamily Housing (Low-Rise));
- ITE land use 770 (Business Park); and
- ITE land use 933 (Fast-Food Restaurant without Drive-Through Window).

The AM and PM peak hour traffic generation for the Fallis Line Commercial Development, Millbrook Development Phase 1 and Millbrook Development Phase 1 Extension do not exactly align with the AM, PM and SAT peak hour in the traffic counts; consequently, we have applied the peak hour of adjacent street traffic values provided in the ITE Trip Generation Manual.

For the Millbrook Future Development although the peak hours of traffic generation for the Millbrook Future Development is not anticipated to exactly align with the peak hour of traffic on the adjacent streets, for the purposes of this analysis we have conservatively applied the peak hour of traffic generator rates.

No transportation modal split reduction has been applied to the traffic generation calculations.

2.3.3 Adjacent Development Traffic Assignment Methodology

The traffic assignment for the fast-food and office component of the Fallis Line Commercial Development has been estimated based on the 919 Fallis Line Traffic Brief.

We have assumed the Millbrook Future Development will follow the same traffic assignment as the office component of the Fallis Line Commercial Development as identified in the 919 Fallis Line Traffic Brief. The 919 Fallis Line Traffic Brief assumed 20% of all traffic generated by the office component of the development would be generated within the Millbrook community, with half of this traffic (10%) being generated within the existing Millbrook community and the other half (10%) generated within the proposed Millbrook Development. Excerpts from this study have been included in **Appendix B**.

The Community Centre TIS estimated the traffic assignment for the Millbrook Community Centre, based on the planned residential development in the area for the 2019 build-out year. The Community Centre TIS assumed 25% of the Millbrook Development Phase 1 was built-out and occupied. Since the residential distribution in the Community Centre TIS did not include all residential units in Phase 1 and Phase 2 of the Millbrook Development (assumed for 2023 build-out), the traffic assignment has been adjusted to reflect the ultimate build-out of the Subject Site. Furthermore, it is anticipated an additional driveway from the Millbrook Community Centre onto Street 'I' would be constructed upon the build-out of the Subject Site, which will also impact the traffic distribution in the area.

The revised distribution was selected based on the probable route of travel between the residential areas and the Millbrook Community Centre, assuming that people will select their route primarily based on travel time. **Table 1** illustrates the estimated residential capture for the Millbrook Community Centre with the surrounding residential development.

Table 1 – Millbrook Community Centre Residential Capture Distribution

Travel Direction (to/from)	Percentage of Total Residential Capture
Tapley	13%
Millbrook	25%
Carmel / South Monaghan / Bailieboro	4%
Cavan	4%
Fraserville / Cedar Valley	6%
Millbrook Development Phase 1	19%
Millbrook Development Phase 2	29%
Total	100%

Table 2 illustrates the estimated distribution of ingress and egress traffic for the Millbrook Community Centre.

Table 2 – Millbrook Community Centre Trip Distribution

Travel Direction (to/from)	Percentage of Total Traffic Generation
North via CR10	4%
South via CR10	29%
West via Fallis Line	4%
West via Larmer Line	8%
East via Larmer Line	6%
Via Millbrook Development Phase 1 Roadways	19%
Via Millbrook Development Phase 2 Roadways	29%
Total	100%

The traffic assignment used for Millbrook Development Phase 1 in the Millbrook TIS will be applied to both the Millbrook Development Phase 1 and the Millbrook Development Phase 1 Extension (excerpts attached in **Appendix B**). The Millbrook TIS applied 2006 Transportation Tomorrow Survey [TTS] data using the TTS Internet Data Retrieval System [IDRS]. The estimated distribution of trips generated by the Millbrook Development Phase 1 and the Millbrook Development Phase 1 Extension is illustrated in **Table 3**.

Table 3 - Millbrook Development Phase 1 Traffic Distribution

Travel Direction (to/from)	Percentage of Total Traffic Generation
North via County Road 10	59%
Southeast via County Road 10	28%
Southwest via Fallis Line	10%
East via Larmer Line	3%
Total	100%

2.3.4 Adjacent Development Traffic Calculation

2.3.4.1 Fallis Line Commercial Development

The traffic generation for the office component of the Fallis Line Commercial Development was obtained from the 919 Fallis Line Traffic Brief (excerpts provided in **Appendix B**).

The statistics and land use for the fast-food restaurant component of the proposed development have been updated since the 919 Fallis Line Traffic Brief. The traffic generation for the fast-food component of the Fallis Line Commercial Development has been calculated based on the data provided in the ITE Trip Generation Manual.

The estimated trip generation of the fast-food component of the Fallis Line Commercial Development is illustrated below in **Table 4**.

Table 4 – Estimated Traffic Generation of the Fallis Line Commercial Development

Development	Size	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
General Office Building ITE Land Use: 710*	13,412 sq.ft.	34	5	39	16	78	94	3	3	6
Fast-Food Restaurant without Drive-Through Window ITE Land Use: 933	5,000 sq.ft.	64	62	126	74	68	142	139	134	273
TOTAL TRIP GENERATION		98	67	165	90	146	236	142	137	279
INTERNAL CAPTURE**		-3	-3	-6	-3	-3	-6	-2	-2	-4
NET GENERATION		95	64	159	87	143	230	140	135	275
PASS-BY TRIPS (ITE Land Use: 932)***		0	0	0	-30	-30	-60	0	0	0
TOTAL SITE		95	64	159	57	113	170	140	135	275

* The traffic generated was estimated in the 919 Fallis Line Traffic Brief (excerpts provided in **Appendix B**).

** The internal capture rate has been calculated using the methodology outlined in Section 7 of the ITE Trip Generation Handbook (2nd Edition). Calculations are provided in **Appendix I**.

*** Since ITE pass-by data were not available for ITE land use 933, the ITE pass-by data for ITE land use 932 (High-Turnover (Sit-Down) Restaurant) were applied. Pass-by trips for the AM, PM and SAT are 0%, 43% and 0% respectively.

Using the traffic distribution pattern noted in Section 2.3.3, the traffic assignment for the Fallis Line Commercial Development for the AM, PM and SAT peak hour and has been illustrated in **Figure 3**.

2.3.4.2 Millbrook Community Centre

For the purposes of this report, the traffic generated for the Millbrook Community Centre was estimated based on the Community Centre TIS (excerpts are provided in **Appendix B**). It is noted the primary

access to the proposed Millbrook Community Centre will be via a proposed connection to the existing driveway for the Township Municipal Office, onto County Road 10 [Municipal Office Driveway].

Using the traffic distribution pattern noted in Section 2.3.3, the traffic assignment for the Millbrook Community Centre for the AM, PM and SAT peak hour was calculated and has been illustrated in **Figure 4**.

2.3.4.3 Millbrook Development Phase 1

The traffic generation for the Millbrook Development Phase 1 has been calculated using the unit count outlined above. The estimated trip generation of the Millbrook Development Phase 1 is illustrated below in **Table 5**.

Table 5 – Estimated Traffic Generation of Millbrook Development Phase 1

Development	Size	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Single-Family Detached Housing ITE Land Use: 210	269 units	50	150	200	168	99	267	136	115	251
Multifamily Housing (Low-Rise) ITE Land Use: 220	65 units	7	25	32	26	15	41	23	23	46
TOTAL TRIP GENERATION	334 units	57	175	232	194	114	306	159	138	297

Using the traffic distribution pattern noted in Section 2.3.3, the traffic assignment for the Millbrook Development Phase 1 was calculated for the AM, PM and SAT peak hour and has been illustrated in **Figure 5**.

2.3.4.4 Millbrook Development Phase 1 Extension

The traffic generation for the Millbrook Development Phase 1 Extension is based on the Azsura Traffic Letter for the AM and PM peak hour (excerpts are attached in **Appendix B**). For the purposes of this report, the estimated traffic generation in the SAT peak hour for the Millbrook Development Phase 1 Extension has been calculated based on the data provided in the ITE Trip Generation Manual.

The trip generation for the Millbrook Development Phase 1 Extension from the Azsura Traffic Letter and the estimated traffic generated for the SAT peak hour is illustrated below in **Table 6**.

Table 6 – Estimated Traffic Generation of Millbrook Development Phase 1 Extension

Development	Size	AM Peak Hour*			PM Peak Hour*			SAT Peak Hour**		
		IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Single-Family Detached Housing ITE Land Use: 210	65 units	14	41	55	45	26	71	39	34	73

* The traffic generated was estimated in the Azsura Traffic Brief (excerpts provided in **Appendix B**).

** The traffic generated was estimated based on the ITE Trip Generation Manual.

Using the traffic distribution pattern noted in Section 2.3.3, the traffic assignment for the Millbrook Development Phase 1 Extension was calculated for the AM, PM and SAT peak hour and has been illustrated in **Figure 6**.

2.3.4.5 Millbrook Future Development

The traffic generation for the Millbrook Future Development has been calculated using the statistics outlined above. For the purposes of this report, we have assumed the gross floor area will be 25% of the total area. The estimated trip generation of the Future Millbrook Development is illustrated below in **Table 7**.

Table 7 – Estimated Traffic Generation of Millbrook Future Development

Development	Size	AM Peak Hour			PM Peak Hour			SAT Peak Hour*		
		IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Business Park ITE Land Use: 770	592,822 sq.ft.	679	120	799	191	542	733	24	23	47

*The ITE Trip Generation Manual did not provide a traffic generation rate for the SAT peak hour for this land use; we have assumed that the ratio of SAT to PM peak hour trips for the Business Park will be the same as the ratio of SAT to PM peak hour trips calculated for the General Office Building in Section 2.3.4.1 (6%).

Using the traffic distribution pattern noted in Section 2.3.2, the traffic assignment for the Millbrook Future Development was calculated for the AM, PM and SAT peak hour and has been illustrated in **Figure 7**.

The total adjacent traffic volumes for the 2023, 2026 and 2031 horizon year in the AM and PM peak hour in **Figures 8 and 9**.

Figure 3 – Fallis Line Commercial Development Traffic Volumes (2019)

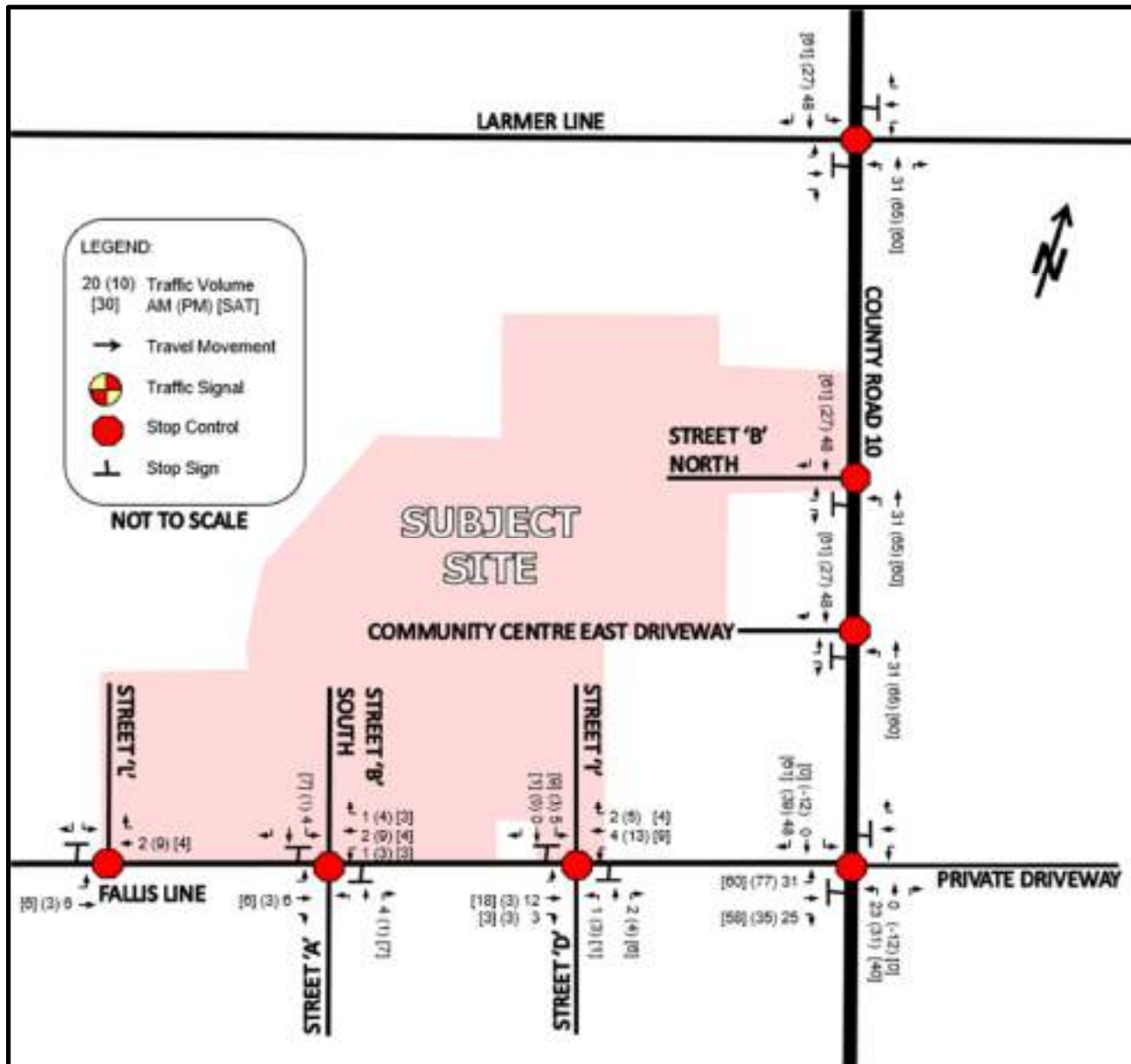


Figure 4 – Millbrook Community Centre (2021)

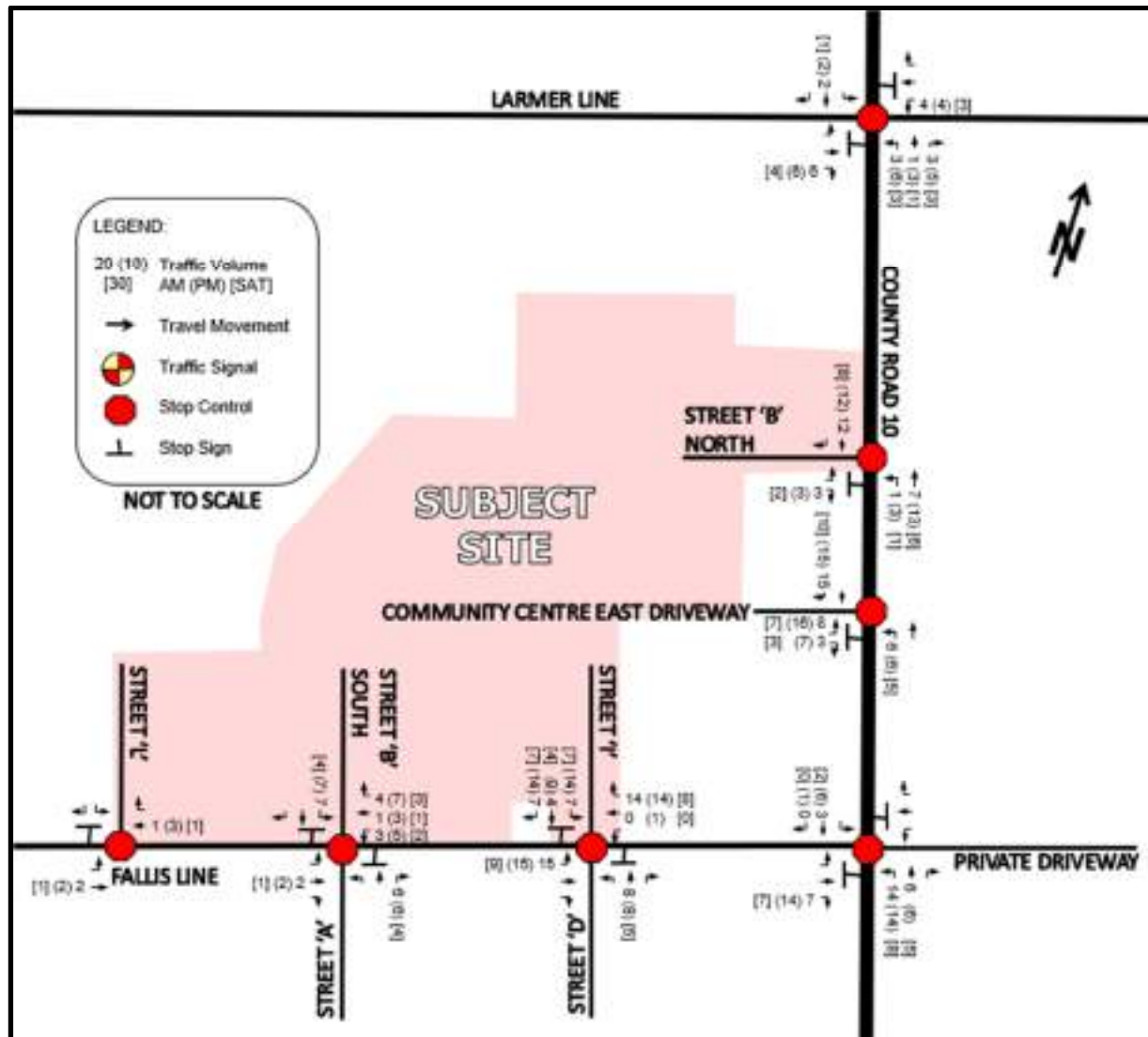


Figure 5 – Millbrook Development Phase 1 Traffic Volumes (2021)

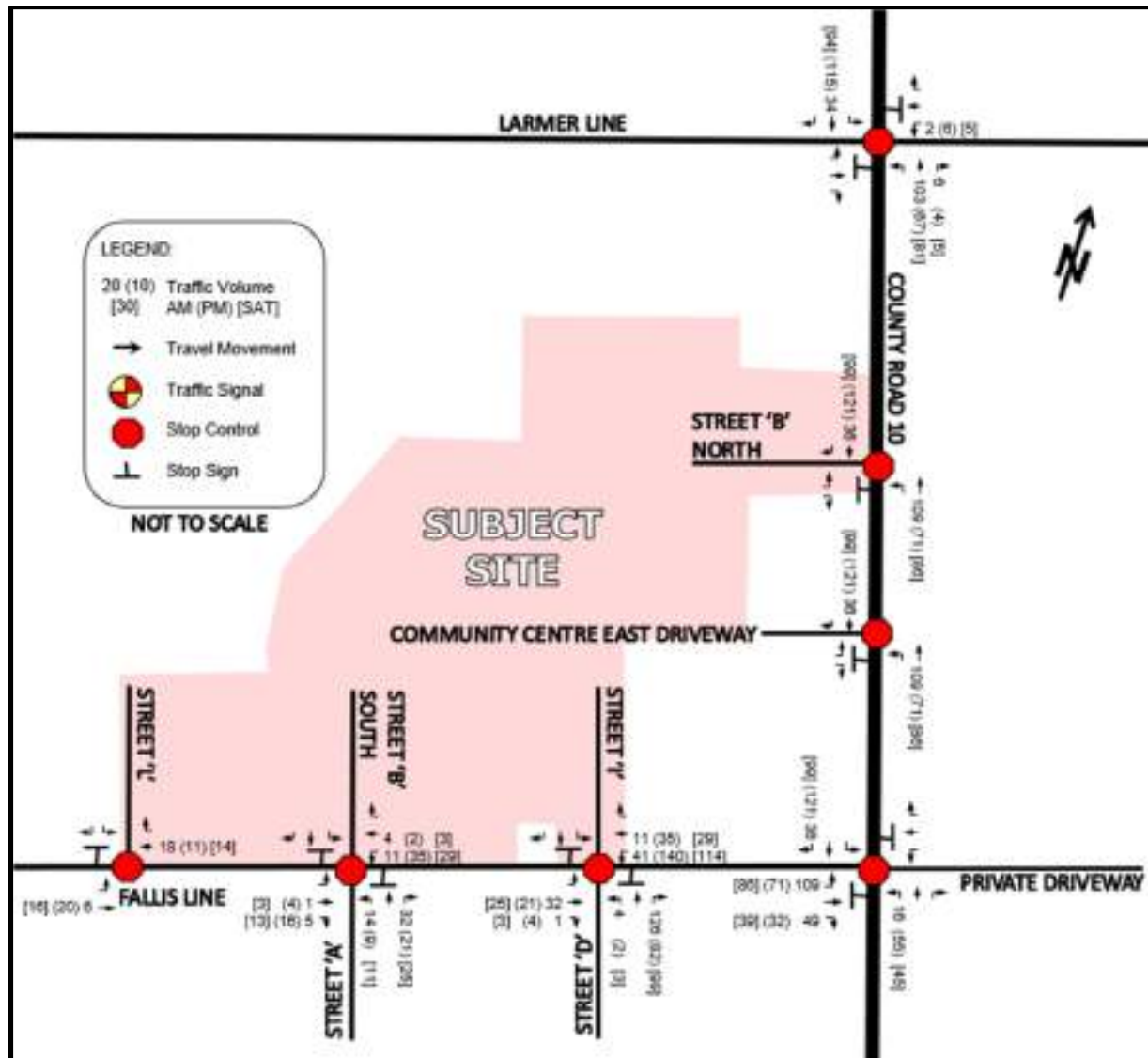


Figure 6 – Millbrook Development Phase 1 Extension Traffic Volumes (2021)

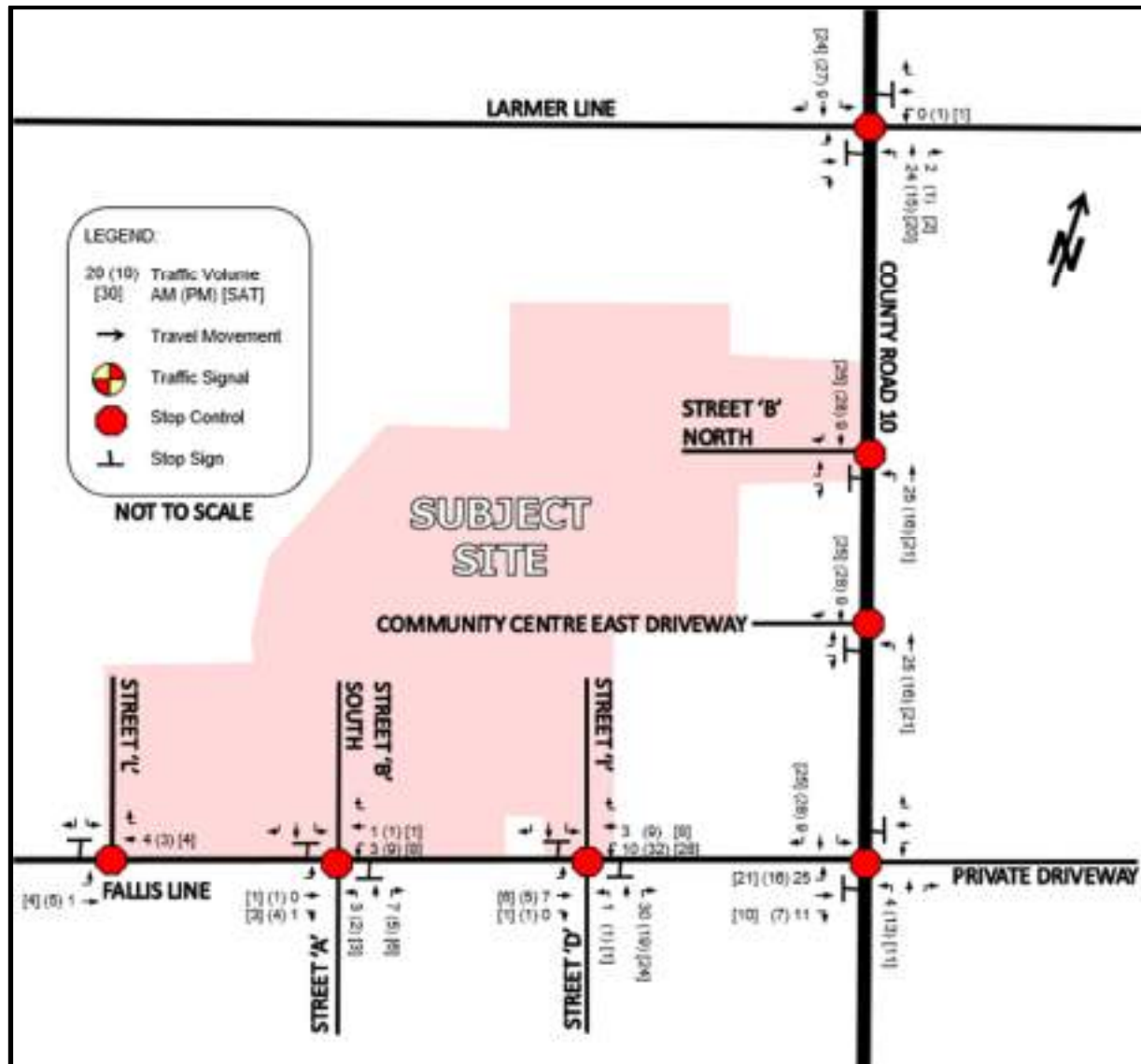


Figure 7 – Millbrook Future Development Traffic Volumes (2031)

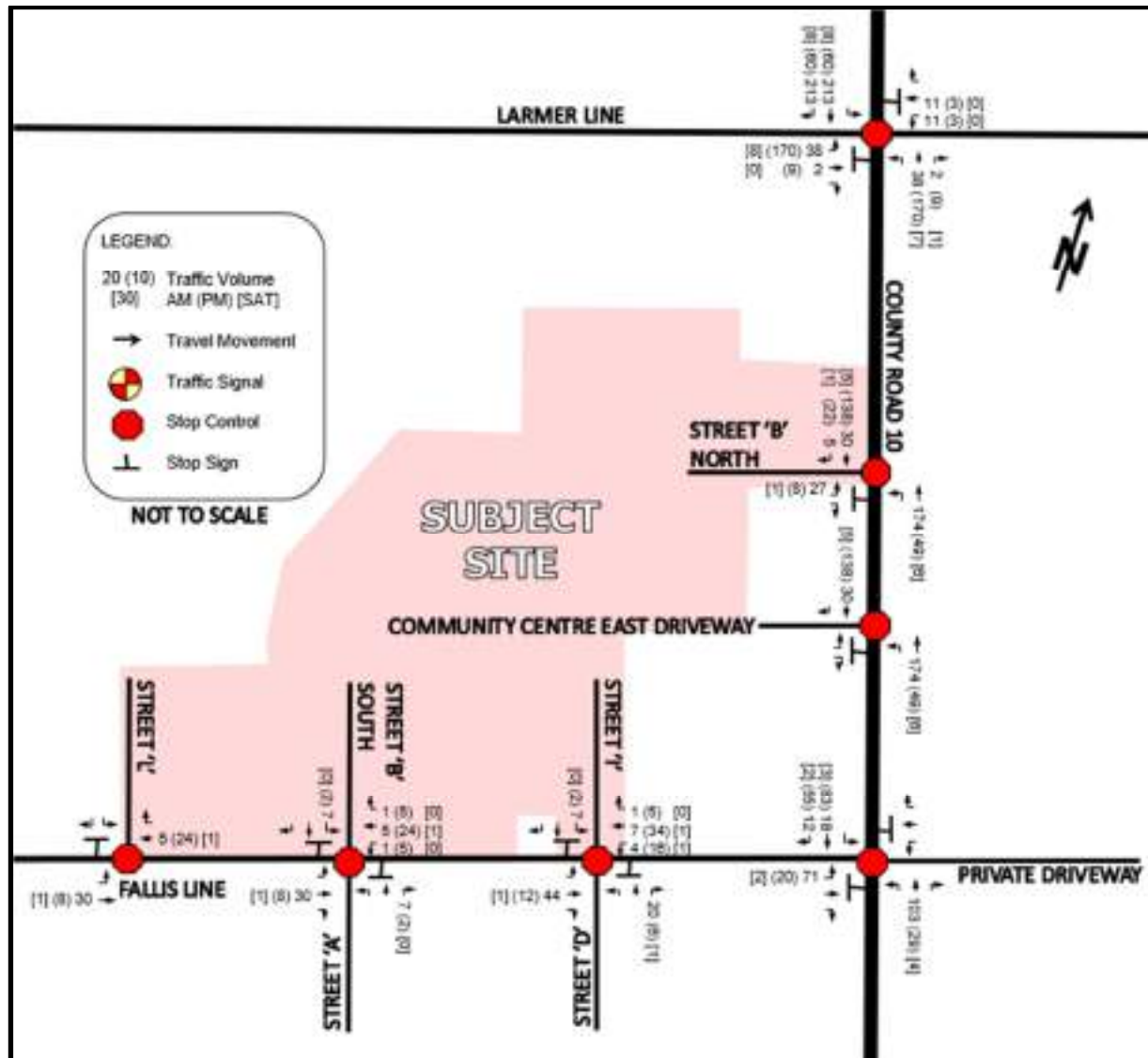


Figure 8 – Total Adjacent Volumes (2023 & 2026)

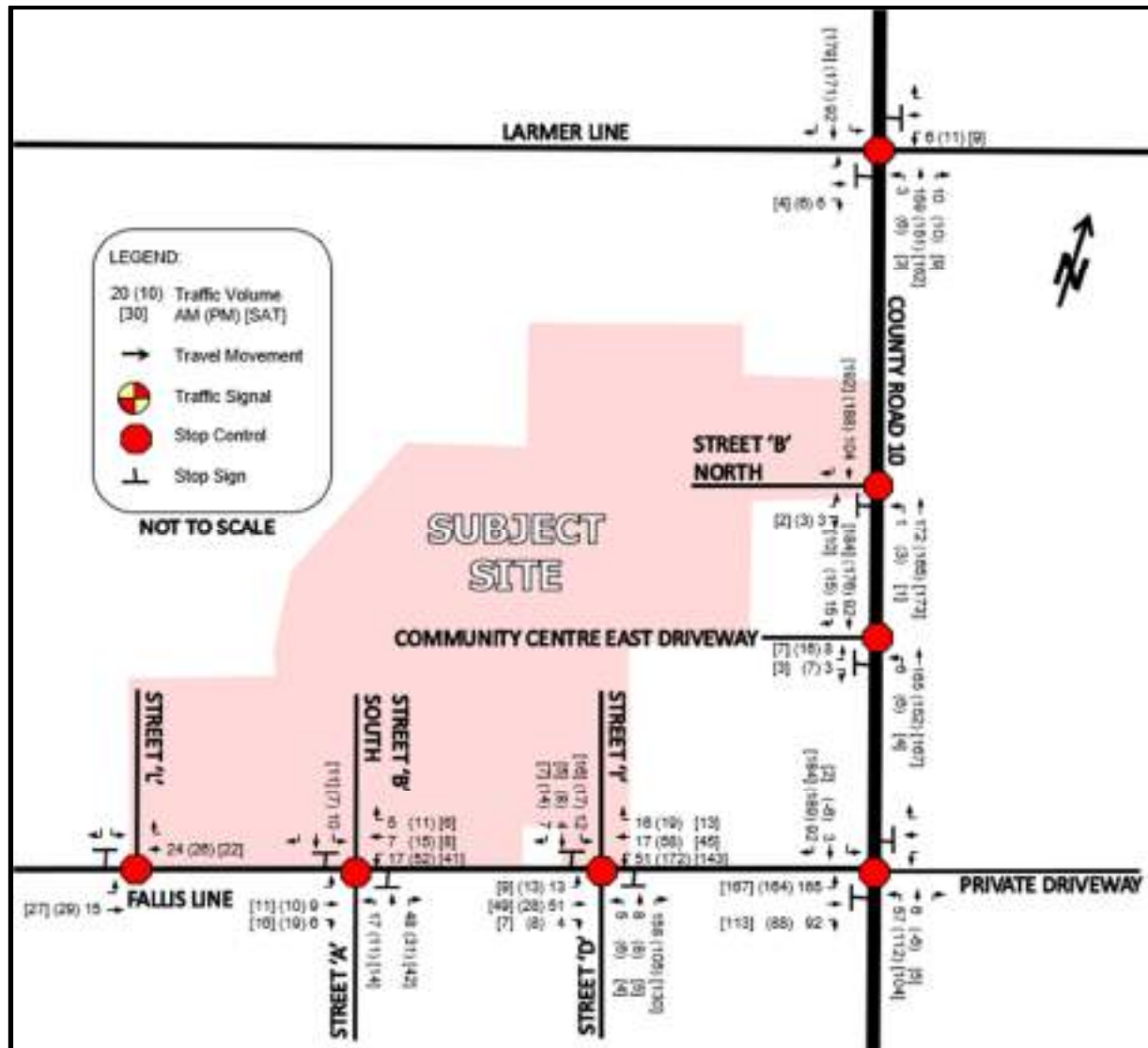
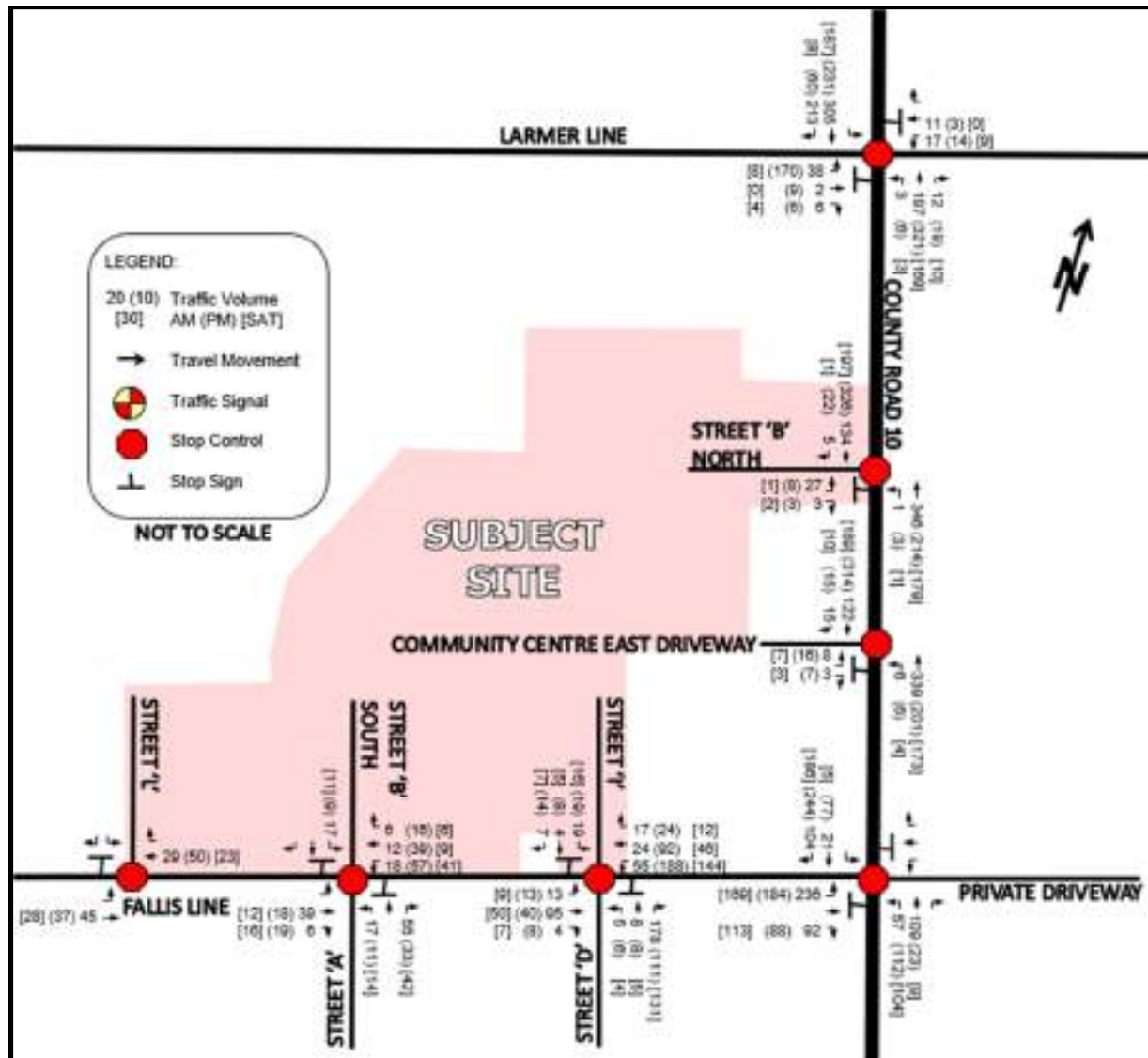


Figure 9 – Total Adjacent Volumes (2031)



2.4 Local Road Improvements

Through our discussions with the Township and County staff, there are no significant local road improvements scheduled in the study area that will impact traffic volumes or traffic patterns within the horizon years included in this analysis.

2.5 Traffic Counts

Detailed turning movement traffic and pedestrian counts were commissioned by JD Engineering at the existing study area intersections.

Table 8 summarizes the traffic count data collection information.

Table 8 - Traffic Count Data

Location	Count Date	AM Peak Hour	PM Peak Hour	SAT Peak Hour
County Road 10 / Larmer Line	Tuesday, April 25 th , 2017	07:30 - 08:30	16:30 - 17:30	-
	Saturday, August 12 th , 2017	-	-	12:00 – 13:00
County Road 10 / Municipal Office Driveway	Tuesday, April 25 th , 2017	07:30 - 08:30	16:30 - 17:30	-
	Saturday, August 12 th , 2017	-	-	12:00 – 13:00
County Road 10 / Fallis Line	Tuesday, April 25 th , 2017	07:30 - 08:30	16:30 - 17:30	-
	Saturday, August 12 th , 2017	-	-	12:00 – 13:00

Detailed traffic count data can be found in **Appendix C**.

The County provided Automatic Traffic Recorder [ATR] data for County Road 10. A review of this data was completed to estimate seasonal variations in traffic volume and the background traffic volume growth in the study area. No seasonal variation was observed in the ATR data.

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

The traffic counts have been factored by the background traffic growth rates noted in Section 2.6 to estimate the existing (2018) traffic volumes.

Figure 10 illustrates the existing (2018) AM, PM and SAT peak hour traffic volumes in the study area.

As noted in Section 1.1, 141 units of the Millbrook Development Phase 1 were build-out and occupied by the end of 2018 (existing year for this analysis). Consequently, we have included the trip generation for these units in the existing (2018) scenario. For the purpose of our analysis we have assumed 114 units are single-detached residential and 27 units are townhouses.

Figure 11 illustrates the adjusted existing (2018) AM, PM and SAT peak hour traffic volumes in the study area with the occupied Millbrook Phase 1 traffic.

2.6 Horizon Year Traffic Volumes

The County's ATR counts were reviewed in order to estimate the anticipated background traffic growth rate for the study area. The County's ATR data included counts at two locations within the study area. One counter was located north of Larmer Line on County Road 10 [Larmer Count] and the other was located north of Brookside Street on County Road 10 [Brookside Count]. **Table 9** summarizes the data at the two locations.

Table 9 - County ATR Counts

Location	Year	Season	Day of Week	24-hour Traffic Volume
Brookside Count	2005	Spring	Monday	4,581
		Summer	Tuesday	4,375
	2006	Spring	Monday	3,998
		Summer	Wednesday	4,651
		Fall	Wednesday	4,398
	2009	Spring	Wednesday	3,737
Larmer Count	2005	Spring	Monday	No Data
		Summer	Tuesday	892
	2006	Spring	Monday	1,842
		Summer	Wednesday	4,524
		Fall	Wednesday	3,637
	2009	Spring	Wednesday	No Data
	2016	Spring	Tuesday	4791
		Summer	Wednesday	4397
		Fall	Wednesday	5074

The most recent data set was available only at the Larmer Count location. Comparing the spring, summer and fall traffic counts from 2006 to 2016, the background traffic growth rate was calculated as 10%/year, 0%/year and 3%/year respectively.

The Brookside Count location is closer to the Millbrook community. Based on our review of the study area, this location is expected to have a more significant traffic growth. Comparing the spring traffic counts from 2005 to 2009, the background traffic growth rate was -5.2%/year between 2005-2009 and -2.2%/year between 2006-2009.

Through discussions with the County, future travel demands were based on a historical growth rate of 2.0% for rural areas of the County.

The above analysis is related to County Road 10; however, we have assumed all background traffic volumes for existing roads within the area will have the same background traffic growth rate.

Figure 12, 13 and 14 illustrates the background (2023, 2026 and 2031) AM, PM and SAT peak hour traffic volumes for the study area.

Figure 13 – Background (2026) Traffic Volume

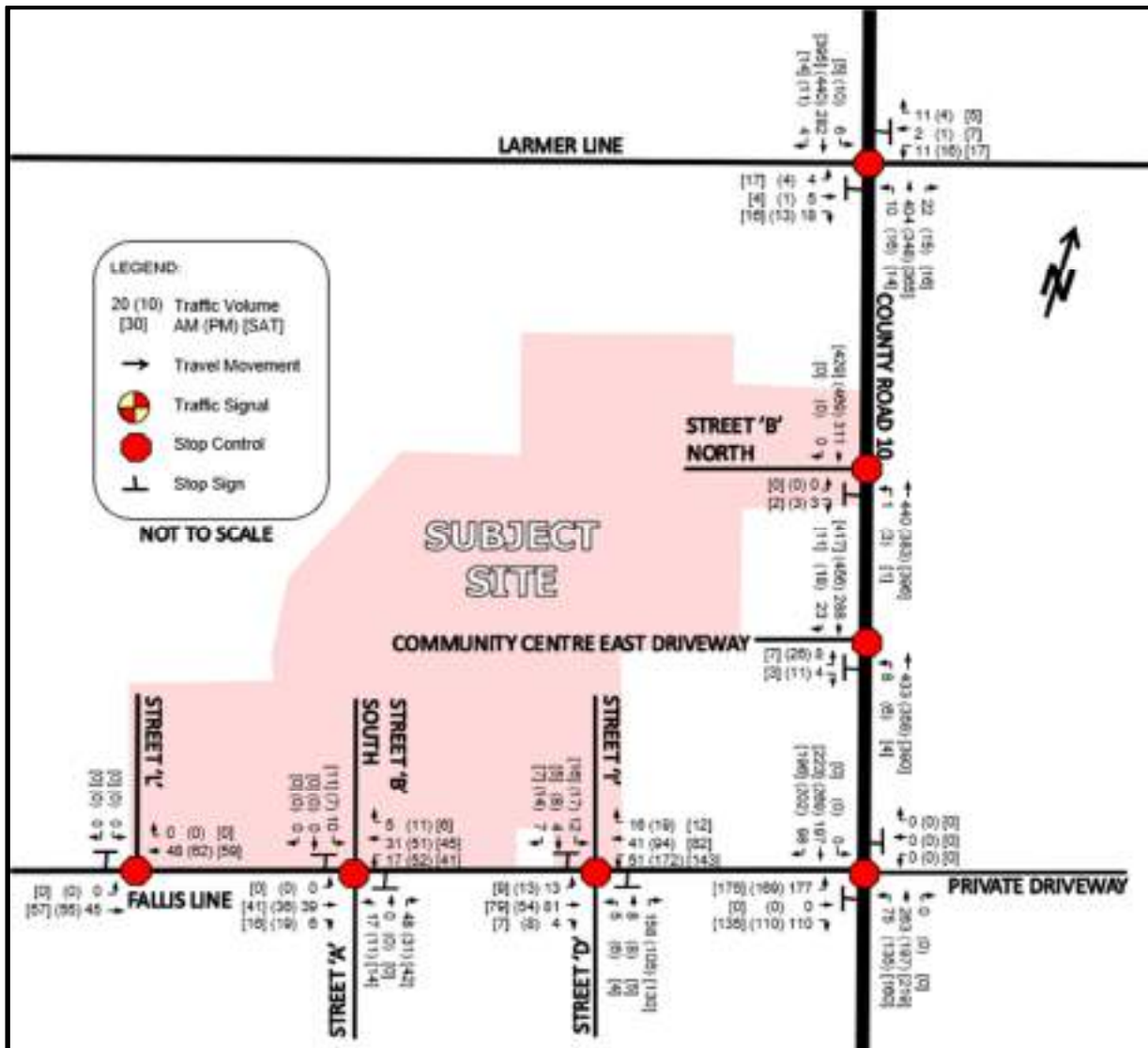
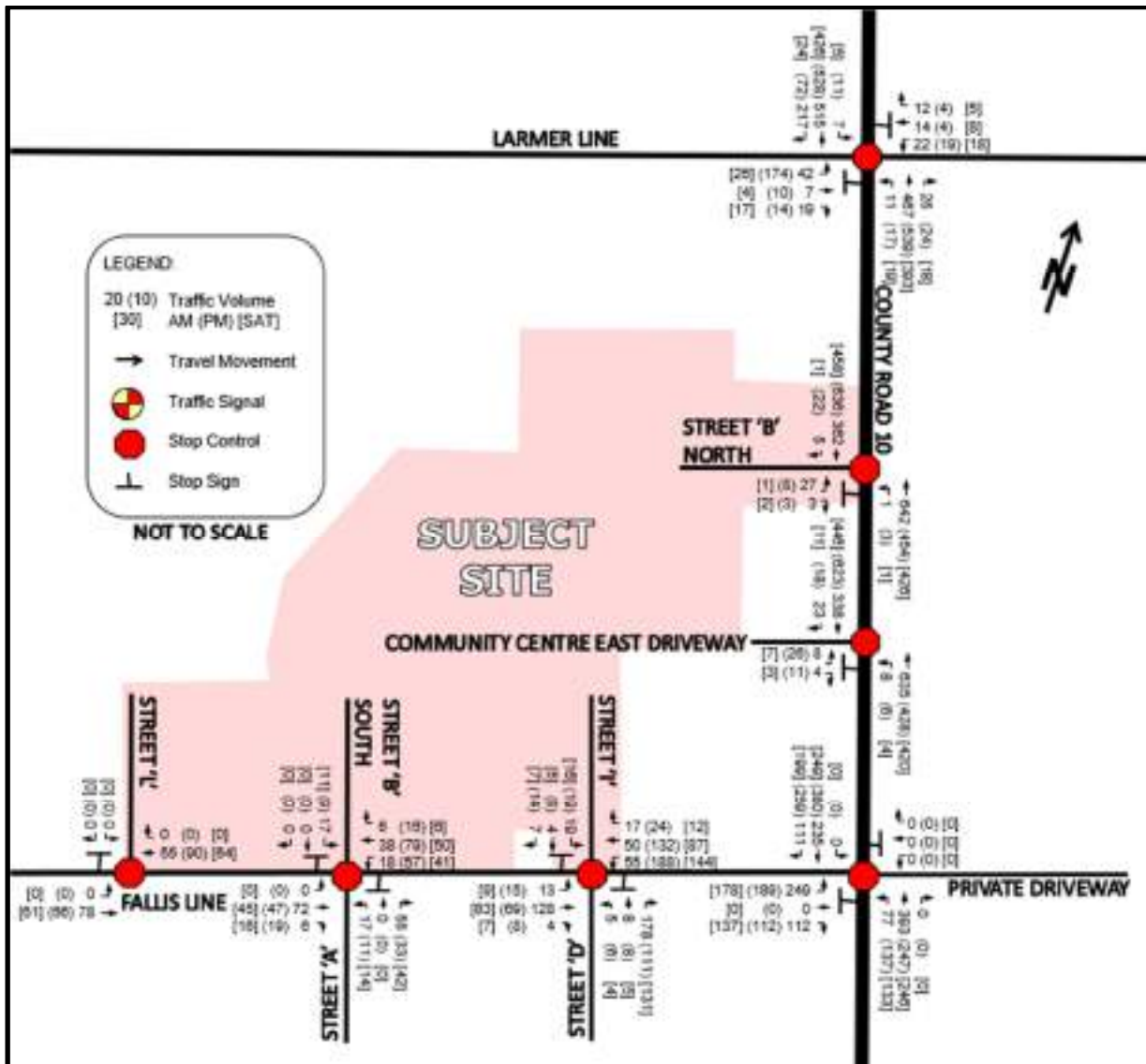


Figure 14 – Background (2031) Traffic Volume



3 Intersection Operation without Proposed Development

3.1 Intersection Capacity Analysis Criteria

Intersection performance was measured using the traffic analysis software, Synchro 10, a deterministic model that employs Highway Capacity Manual and Intersection Capacity Utilization methodologies for analysing intersection operations. These procedures are accepted by provincial and municipal agencies throughout North America.

Synchro 10 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.

For the purpose of our analysis, turning movements with a volume-to-capacity [V/C] ratio of 0.85 or greater are considered to be critical movements. Values approaching this threshold 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 10**. A description of traffic performance characteristics is included for each LOS.

Table 10 - 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 (Excellent)	less than 10.0	less than 10.0
B	Higher delay; more vehicles stop (Very Good)	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 (Good)	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 (Satisfactory)	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 acceptable 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 (Unacceptable)	greater than 80.0	greater than 50.0

3.2 Existing (2018) Intersection Operation

The results of the LOS analysis under existing (2018) traffic volumes during the AM, PM and SAT peak hour can be found below in **Table 11**. 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 11 – Existing (2018) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour			Weekday PM Peak Hour			Weekend SAT Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
County Road 10 / Larmer Line (unsignalized)	-	1.0	A	-	0.7	A	-	1.3	A
EB	0.03	11.3	B	0.02	11.6	B	0.05	11.8	B
WB	0.03	11.6	B	0.03	13.2	B	0.04	12.2	B
County Road 10 / Fallis Line (unsignalized)	-	2.5	A	-	2.1	A	-	2.3	A
EB	0.18	12.4	B	0.15	12.8	B	0.14	11.9	B
NB	0.02	7.7	A	0.04	8.1	A	0.03	7.8	A
SB	0.00	0.0	A	0.00	0.0	A	0.00	0.0	A
County Road 10 / Municipal Office Driveway (unsignalized)	-	0.1	A	-	0.3	A	-	0.0	A
EB	0.01	9.4	A	0.03	12.0	B	0.00	0.0	A

The results of the LOS analysis indicate that all intersections in the study area are operating within the typical design limits noted in Section 3.1.

An analysis was completed for left turn movements at all unsignalized intersections in the study area, based on the criteria outlined in Appendix 9A of the Ontario Ministry of Transportation [MTO] Design Supplement for TAC Geometric Design Guide for Canadian Roads (dated June 2017) [MTO DS]. Based on the above noted criteria, a left turn lane is warranted in the northbound direction at the County Road

10 / Fallis Line intersection (results provided in **Appendix G**); however, a left turn lane is not recommended as this intersection is operating with an excellent LOS. Based on the above noted criteria, a left turn lane is not warranted at any of the other unsignalized intersections in the study area.

For right turn movements at the unsignalized intersections in the study area, the criteria outlined in Appendix G of the Virginia Department of Transportation Road Design Manual [VDOT RDM] were applied. Based on the above noted criteria, a right turn taper is warranted in the southbound direction at the County Road 10 / Fallis Line intersection (results provided in **Appendix J**); however, a right turn taper is not recommended as this intersection is operating with an excellent LOS. Based on the above noted criteria, a right turn lane is not warranted at any of the other unsignalized intersections in the study area.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at any of the unsignalized intersections in the study area (results are provided in **Appendix H**).

No infrastructure improvements are recommended within the study area for the existing (2018) scenario.

3.3 Background (2023) Intersection Operation

The results of the LOS analysis under background (2023) traffic volumes during the AM, PM and SAT peak hour can be found below in **Table 12**.

The Community Centre TIS recommended the construction of a northbound left turn at the County Road Municipal Office Driveway upon the build-out of the Millbrook Community Centre in 2019, with a 160 metre taper length, a 70 metre parallel length and a 15 metre storage length.

The Millbrook TIS recommended the following upon build-out and occupancy of the Millbrook Phase 1 Development:

- County Road 10 / Larmer Line
 - Construction of a northbound left-turn lane with a 160 metre taper length, 60 metre parallel length and 25 metre storage length.
- County Road 10 / Fallis Line
 - Reduction in the posted speed limit from 80 km/h to 60km/h on Fallis Line from County Road 10 to west of Street 'A';
 - Construction of a northbound left-turn lane with a 145 metre taper length, 60 metre parallel length and 25 metre storage length; and
 - Construction of a southbound right-turn lane with an 80 metre taper length and 85 metre parallel length.

As outlined in Section 2.3, the Millbrook Community Centre and Millbrook Phase 1 Development are anticipated to be completed by 2023; consequently, the above-noted improvements have been assumed to be complete by the 2023 horizon year.

With the above-noted exceptions, the existing intersection geometry and traffic control have been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 12 – Background (2023) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour			Weekday PM Peak Hour			Weekend SAT Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
County Road 10 / Larmer Line (unsignalized)	-	1.1	A	-	1.0	A	-	1.4	A
EB	0.06	13.2	B	0.04	13.6	B	0.09	15.5	C
WB	0.08	16.1	C	0.10	22.0	C	0.10	17.6	C
County Road 10 / Fallis Line (unsignalized)	-	9.6	A	-	15.4	C	-	9.6	A
EB	0.69	27.9	D	0.88	53.8	F	0.70	29.0	D
County Road 10 / Municipal Office Driveway (unsignalized)	-	0.3	A	-	0.8	A	-	0.2	A
EB	0.04	14.3	B	0.13	17.1	C	0.03	14.3	B

The results of the LOS analysis indicate that the eastbound movements at the County Road 10 / Fallis Line intersection are operating outside the typical design limits noted in Section 3.1 in the PM peak hour; however, no additional improvements are recommended as the eastbound movements are only marginally outside the typical design limits.

The results of the LOS analysis indicate that all other intersections in the study area are operating within the typical design limits noted in Section 3.1.

An analysis was completed for left turn movements at all unsignalized intersections in the study area based on the criteria outlined in Appendix 9A of the MTO DS. Based on the above noted criteria a left turn lane is warranted in the southbound direction of the County Road 10 / Larmer Line intersection (results provided in **Appendix G**); however, based on low left turning volumes a southbound left turn lane is not recommended.

For right turn movements at the unsignalized intersections in the study area, the criteria outlined in Appendix G of the Virginia Department of Transportation Road Design Manual [VDOT RDM] were applied. Based on the above noted criteria, a right turn lane is not warranted at any of the other unsignalized intersections in the study area.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at any of the unsignalized intersections in the study area (results are provided in **Appendix H**).

The anticipated 95th percentile queue can be accommodated for all proposed storage lanes in the study area.

No additional improvements are recommended within the study area for the background (2023) scenario.

3.4 Background (2026) Intersection Operation

The results of the LOS analysis under background (2026) traffic volumes during the AM, PM and SAT peak hour can be found below in **Table 13**. The recommendations noted in Section 3.3 have been applied in this scenario. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 13 – Background (2026) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour			Weekday PM Peak Hour			Weekend SAT Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
County Road 10 / Larmer Line (unsignalized)	-	1.2	A	-	1.1	A	-	1.5	A
EB	0.07	13.7	B	0.05	14.4	B	0.11	16.0	C
WB	0.08	16.4	C	0.10	22.5	C	0.10	18.2	C
County Road 10 / Fallis Line (unsignalized)	-	10.3	B	-	17.7	C	-	10.1	A
EB	0.73	31.0	D	0.92	64.3	F	0.73	31.6	D
County Road 10 / Municipal Office Driveway (unsignalized)	-	0.3	A	-	0.8	A	-	0.2	A
EB	0.04	14.6	B	0.13	17.6	C	0.03	14.6	B

The results of the LOS analysis indicate that the eastbound movements at the County Road 10 / Fallis Line intersection are operating outside the typical design limits in the PM peak hour, as noted in Section 3.1. Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at this intersection (results are provided in **Appendix H**); however, based on the control delay for the eastbound movement, it is recommended that traffic signals are installed at the County Road 10 / Fallis Line intersection. All-way-stop-control is not feasible for this location as it would only provide a temporary solution and a roundabout is not feasible as the existing road allowance cannot accommodate a roundabout.

A summary of the results of the Synchro analysis with above-noted improvements can be found below in **Table 14**. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 14 – Background (2026) LOS with Improvements

Location (N-S Street / E-W Street)	Weekday AM Peak Hour			Weekday PM Peak Hour			Weekend SAT Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
County Road 10 / Fallis Line (signalized)	-	13.9	B	-	11.9	B	-	11.9	B
EB	0.72	25.6	C	0.70	24.5	C	0.70	2.9	C
NBL	0.14	9.2	A	0.28	10.1	B	0.22	9.2	A
NBT	0.32	10.1	B	0.23	8.7	A	0.23	8.5	A
SBT	0.24	9.3	A	0.32	9.5	A	0.23	7.6	A
SBR	0.15	2.8	A	0.25	2.2	A	0.22	2.2	A

The results of the LOS analysis indicate that all intersections in the study area are operating within the typical design limits noted in Section 3.1.

An analysis was completed for left turn movements at all unsignalized intersections in the study area based on the criteria outlined in Appendix 9A of the MTO DS. Based on the above noted criteria a left turn lane is warranted in the southbound direction of the County Road 10 / Larmer Line intersection (results provided in **Appendix G**); however, based on low left turning volumes a southbound left turn lane is not recommended.

For right turn movements at the unsignalized intersections in the study area, the criteria outlined in Appendix G of the VDOT RDM were applied. Based on the above noted criteria, a right turn lane is not warranted at any of the unsignalized intersections in the study area.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at any of the unsignalized intersections in the study area (results are provided in **Appendix H**).

The anticipated 95th percentile queue can be accommodated for all proposed storage lanes in the study area.

No additional improvements are recommended within the study area for the background (2026) scenario.

3.5 Background (2031) Intersection Operation

The results of the LOS analysis under background (2031) traffic volumes during the AM, PM and SAT peak hour can be found below in **Table 15**. The recommendations noted in Section 3.4 have been applied in this scenario. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 15 – Background (2031) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour			Weekday PM Peak Hour			Weekend SAT Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
County Road 10 / Larmer Line (unsignalized)	-	4.9	A	-	58.6	F	-	1.8	A
EB	0.59	62.7	F	1.72	411.4	F	0.16	18.8	C
WB	0.40	46.5	E	0.26	45.0	E	0.12	20.2	C
County Road 10 / Fallis Line (signalized)	-	17.3	B	-	12.7	B	-	12.0	B
EB	0.78	28.2	C	0.72	25.4	C	0.70	24.1	C
NBL	0.16	11.9	B	0.37	12.6	B	0.23	9.4	A
NBT	0.52	15.1	B	0.30	9.7	A	0.26	8.8	A
SBT	0.31	12.2	B	0.46	11.7	B	0.26	8.9	A
SBR	0.18	3.3	A	0.31	2.3	A	0.22	2.2	A
County Road 10 / Municipal Office Driveway (unsignalized)	-	0.3	A	-	0.9	A	-	0.2	A
EB	0.05	19.0	C	0.19	24.4	C	0.030	15.4	C

The results of the LOS analysis indicate that the eastbound movements at the County Road 10 / Larmer Line intersection are operating outside the typical design limits in the PM peak hour, as noted in Section 3.1. Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at this intersection (results are provided in **Appendix H**); however, based on the control delay for the eastbound movement, it is recommended that traffic signals are installed at the County Road 10 / Larmer Line intersection. All-way-stop-control is not feasible for this location as it would only provide a temporary solution and a roundabout is not feasible as the existing road allowance cannot accommodate a roundabout.

A summary of the results of the Synchro analysis with above-noted improvements can be found below in **Table 16**. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 16 – Background (2031) LOS with Improvements

Location (N-S Street / E-W Street)	Weekday AM Peak Hour			Weekday PM Peak Hour			Weekend SAT Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
County Road 10 / Larmer Line (signalized)	-	11.1	B	-	17.0	B	-	5.4	A
EB	0.48	34.4	C	0.77	49.2	D	0.33	29.9	C
NBL	0.30	29.1	C	0.12	23.9	C	0.23	33.4	C
NBT	0.03	3.8	A	0.04	7.2	A	0.03	2.8	A
SBT	0.42	5.4	A	0.53	11.0	B	0.27	3.0	A
SBR	0.64	8.3	A	0.59	12.0	B	0.30	3.2	A

The results of the LOS analysis indicate that all intersections in the study area are operating within the typical design limits noted in Section 3.1.

For right turn movements at the unsignalized intersections in the study area, the criteria outlined in Appendix G of the VDOT RDM were applied. Based on the above noted criteria, a right turn lane is not warranted at any of the unsignalized intersections in the study area.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at any of the unsignalized intersections in the study area (results are provided in **Appendix H**).

The anticipated 95th percentile queue can be accommodated for all proposed storage lanes in the study area.

No additional improvements are recommended within the study area for the background (2031) scenario.

4 Proposed Development Traffic Generation and Assignment

4.1 Traffic Generation for Subject Site

The traffic generation for the Subject Site has been calculated based on the data provided in the ITE Trip Generation Manual. The following ITE land uses have been applied to estimate the traffic from the proposed development:

- ITE land use 210 (Single-Family Detached Housing);
- ITE land use 220 (Multifamily Housing (Low-Rise));
- ITE land use 221 (Multifamily Housing (Mid-Rise)); and
- ITE land use 520 (Elementary School)¹.

The estimated trip generation of the proposed development is illustrated below in **Table 17**. The AM, PM and SAT peak hour traffic generation for the proposed development does not exactly align with the AM, PM and SAT peak hour in the traffic counts; consequently, we have applied the peak hour of adjacent street traffic values provided in the ITE Trip Generation Manual.

¹ Based on correspondence with the Kawartha Pine Ridge District School board, it has not yet been confirmed whether the institutional block will be an elementary school or middle school; however, based on future school projections, an elementary school would likely have more students (350 students). Consequently, for the purpose of this analysis, we have conservatively assumed the institutional block will be an elementary school.

Table 17 - Estimated Traffic Generation of Proposed Development

Development	Size	AM Peak Hour			PM Peak Hour			SAT Peak Hour*		
		IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Single-Family Detached Housing ITE Land Use: 210	328 units	61	182	243	205	120	325	165	141	306
Multifamily Housing (Low-Rise) ITE Land Use: 220	245 units	26	87	113	87	51	138	116	116	232
Multifamily Housing (Mid-Rise) ITE Land Use: 221	192 units	18	52	70	52	33	85	42	43	85
Total Residential	765 units	105	321	426	344	204	548	323	300	623
Elementary School** ITE Land Use: 520	350 students	114	98	212	26	28	54	26	28	54
TOTAL TRIP GENERATION		219	419	638	370	232	602	349	328	677

*There are no SAT peak hour ITE trip generation rates for the ITE Elementary School land use (ITE#520). Consequently, we have assumed the trip generation in the SAT peak hour to be equivalent to the PM peak hour.

** We have applied a 10% reduction in the ITE trip generation rates for the ITE Elementary School land use (ITE#520) to account for internal trips within the proposed development.

No transportation modal split reduction has been applied to the above-noted traffic generation calculation.

4.2 Traffic Assignment for Subject Site

The traffic assignment used for the proposed development in the Millbrook TIS will be applied to the residential component of the proposed development (excerpts attached in **Appendix B**). The Millbrook TIS applied 2006 TTS data using the TTS IDRS. The estimated distribution of trips generated by the residential component of the proposed development is illustrated in **Table 18**.

Table 18 - Millbrook Development Phase 2 Residential Traffic Distribution

Travel Direction (to/from)	Percentage of Total Traffic Generation
North via County Road 10	59%
Southeast via County Road 10	28%
Southwest via Fallis Line	5%
Southwest via Larmer Line	5%
East via Larmer Line	3%
Total	100%

There are 35 single-detached residential units with frontage on Fallis Line (20 units just west of Street 'B' South and 15 units just east of Street 'B' South). The distribution of traffic has been adjusted to reflect the trips generated from these residential units directly onto Fallis Line.

Using the above noted traffic distribution, the traffic assignment for the residential component of the proposed development was calculated for the AM, PM and SAT peak hour and has been illustrated in **Figure 15**.

The distribution of elementary school traffic from the proposed development is based on the estimated origin / destination of trips generated by the proposed elementary school. Given that the proposed elementary school is anticipated to have a catchment area similar to the existing Millbrook/South Cavan

Public School, the main origins and destinations would be from residential areas within this area. The resulting traffic distribution pattern, based on the above noted assumptions, for the AM, PM and SAT peak hours is illustrated in **Table 19**.

Table 19 - Millbrook Development Phase 2 School Traffic Distribution

Travel Direction (to/from)	Percentage of Total Traffic Generation
North via County Road 10	5%
Southeast via County Road 10	65%
Southwest via Fallis Line	10%
Southwest via Larmer Line	10%
East via Larmer Line	10%
Total	100%

Using the above noted traffic distribution, the traffic assignment for the school component of the proposed development was calculated for the AM, PM and SAT peak hour and has been illustrated in **Figure 16**.

Figure 15 – Proposed Development Residential Traffic Assignment

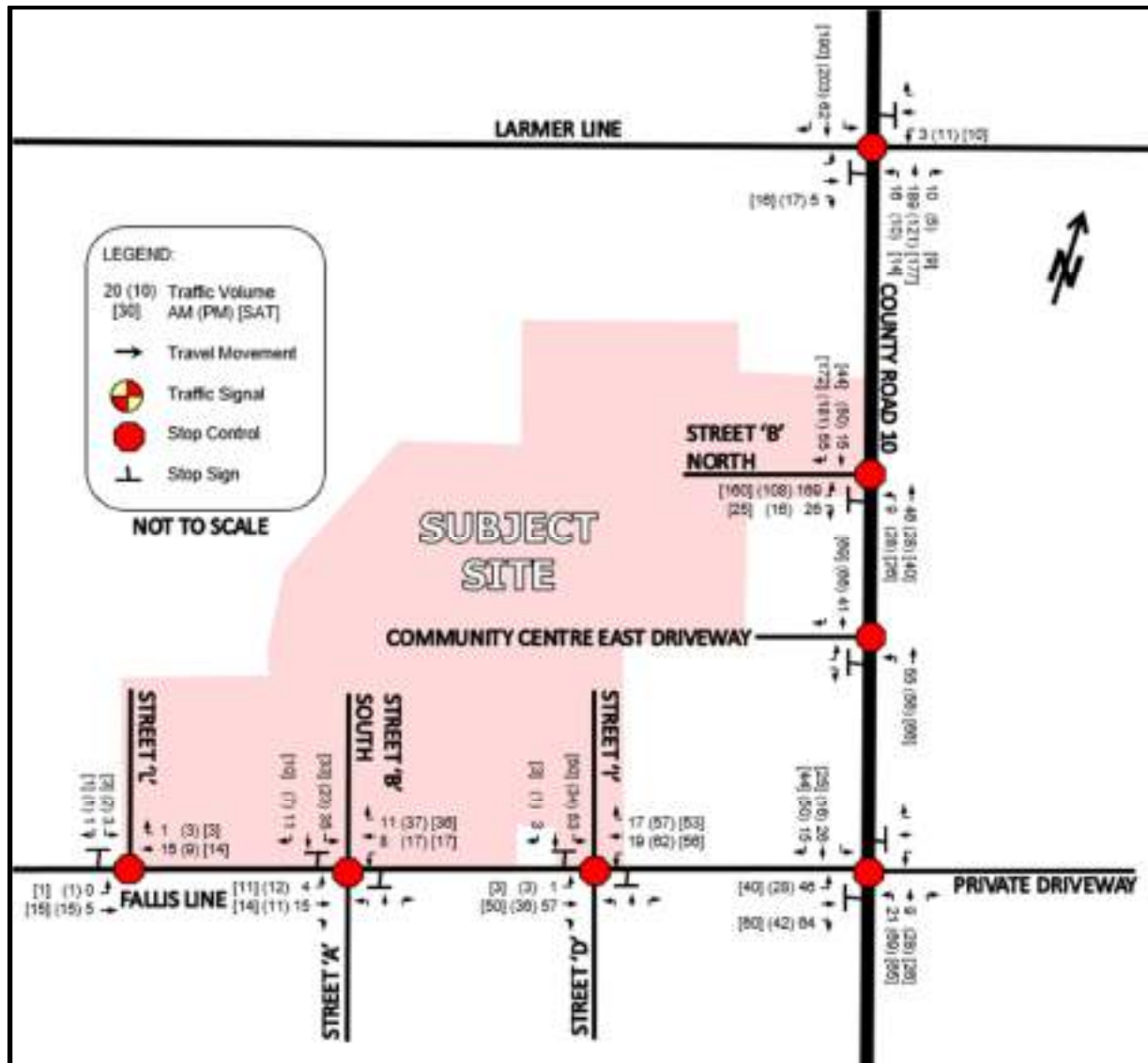
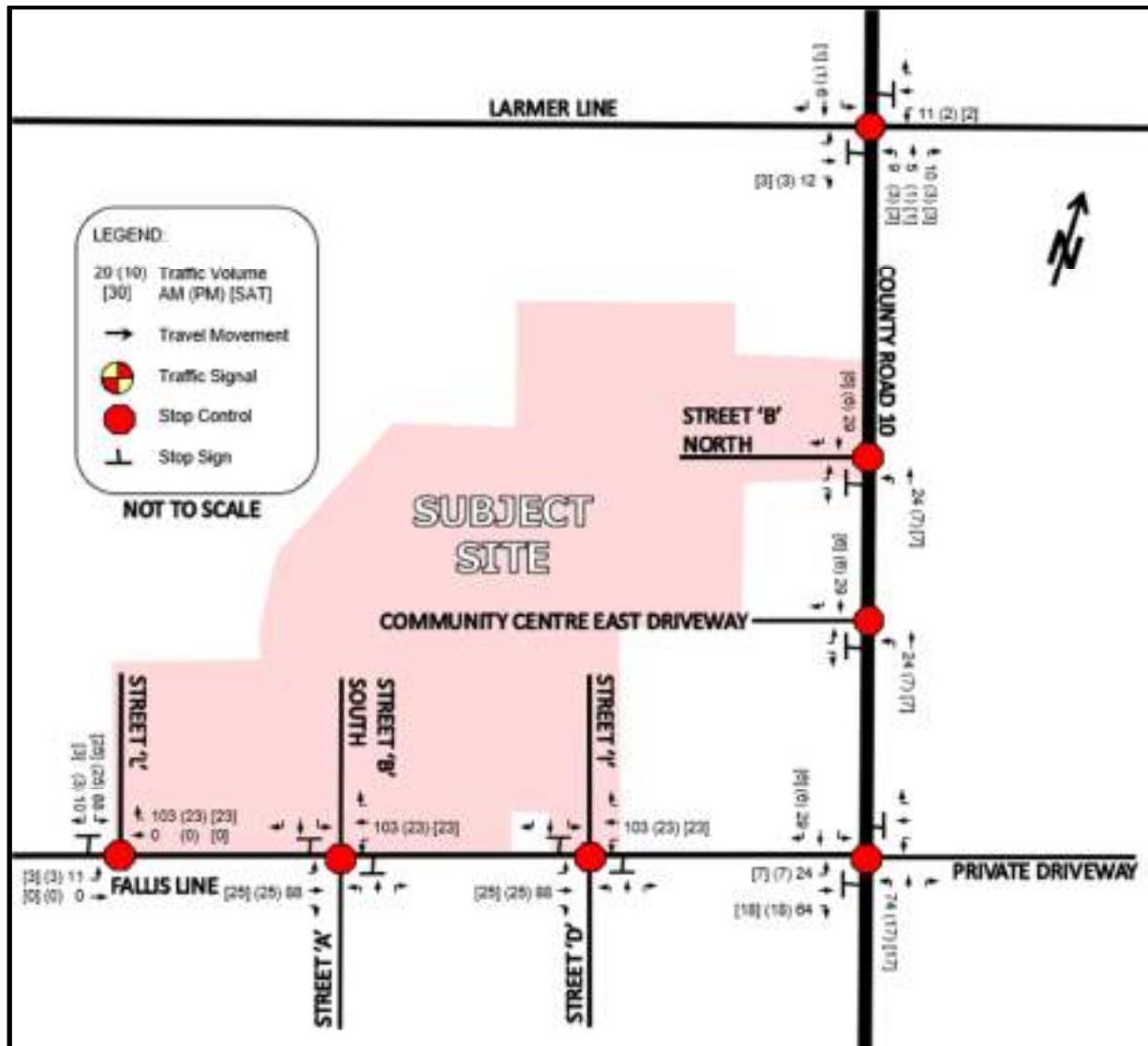


Figure 16 – Proposed Development School Traffic Assignment



4.3 Total Horizon Year Traffic Volumes with the Proposed Development

For the total (2023, 2026 and 2031) horizon years with development traffic volume, the proposed development traffic was added to the background (2023, 2026 and 2031) traffic volume. The resulting total (2023, 2026 and 2031) horizon years with proposed traffic volume for the AM, PM and SAT peak hour are illustrated in **Figure 17, 18 and 19**.

Figure 17 – Total (2023) Traffic Volumes

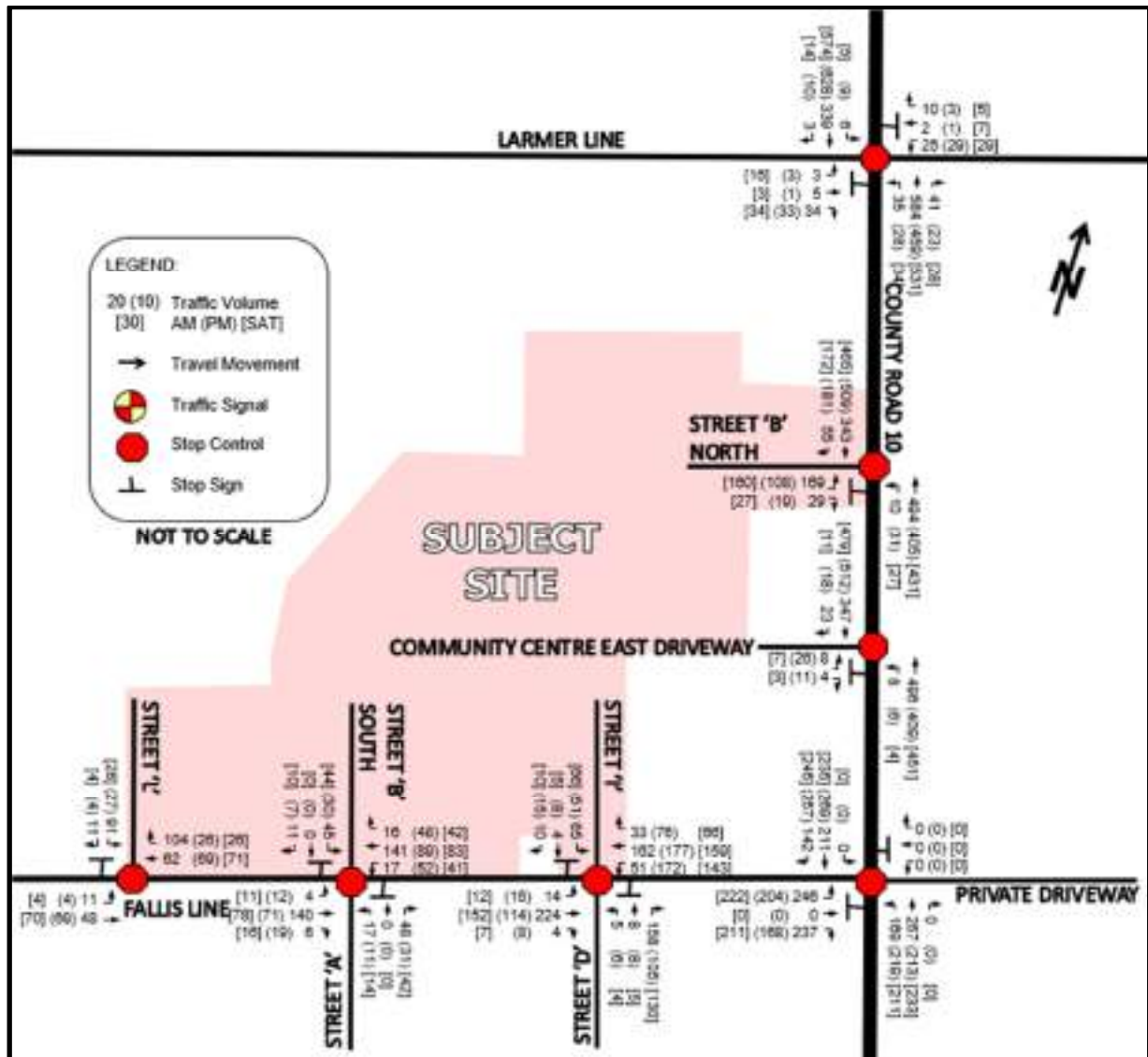


Figure 18 – Total (2026) Traffic Volumes

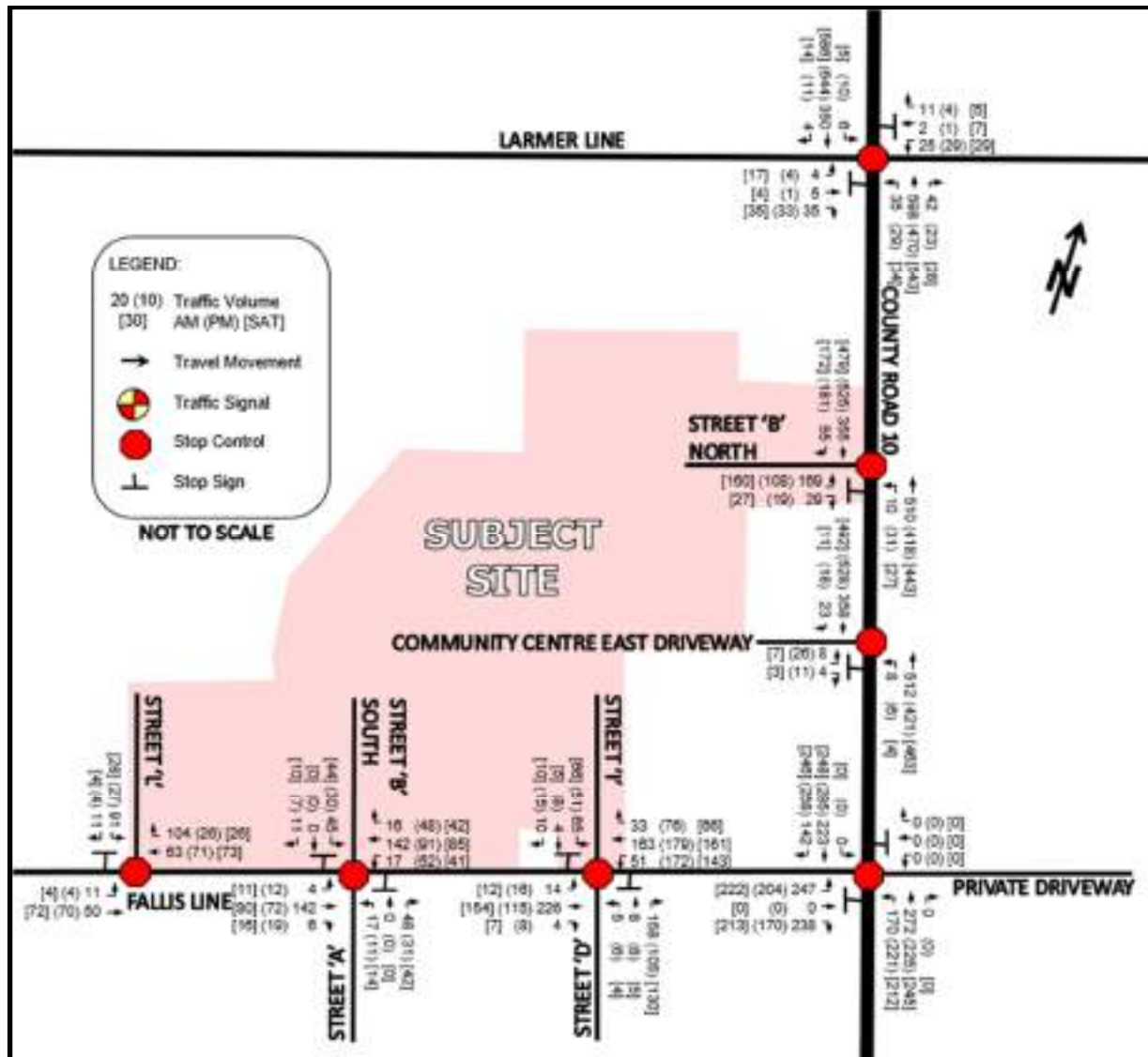
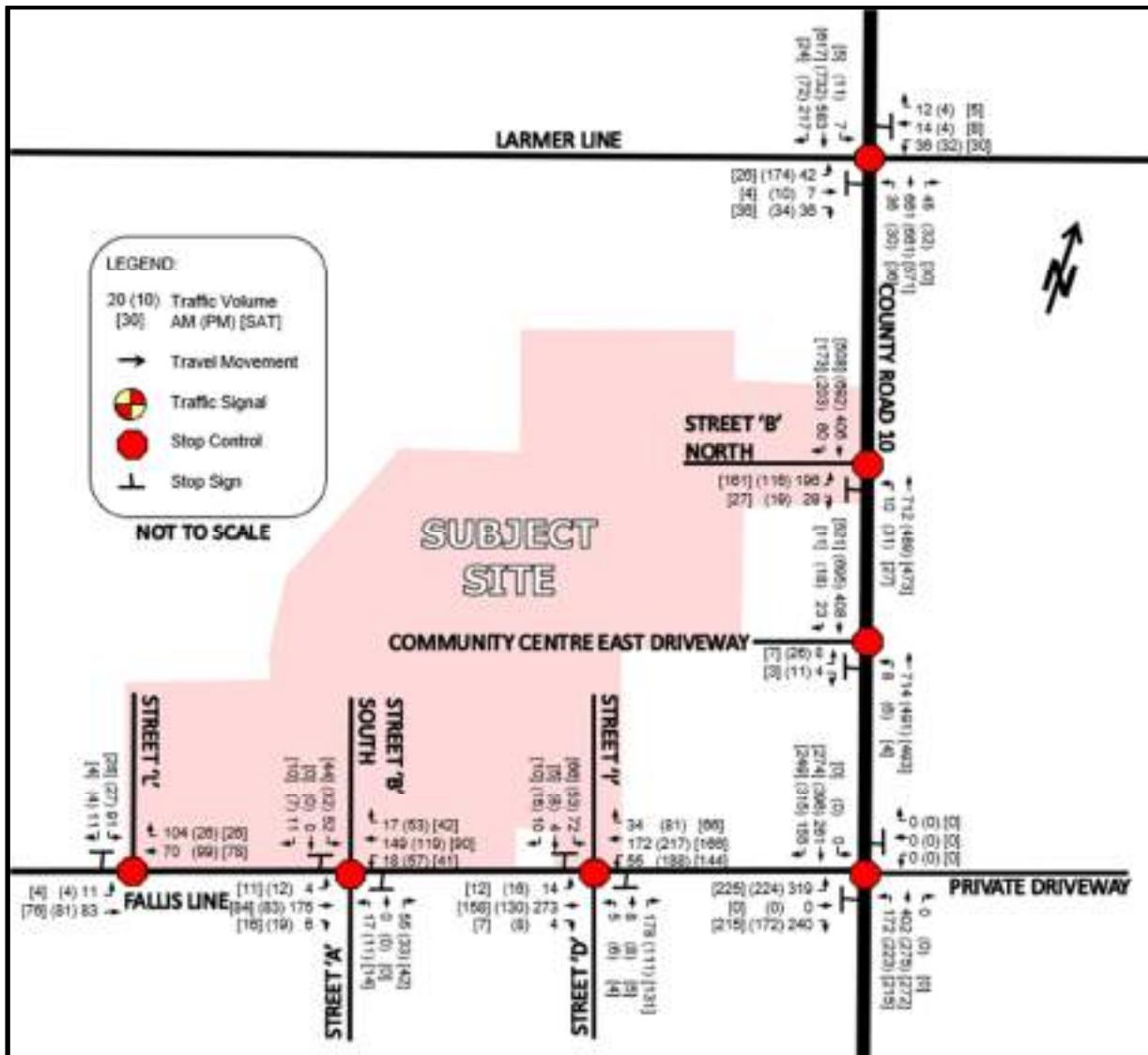


Figure 19 – Total (2031) Traffic Volumes



5 Intersection Operation with Proposed Development

5.1 Total (2023) Intersection Operation

The results of the LOS analysis under total (2023) traffic volumes during the AM, PM and SAT peak hour can be found below in **Table 20**. The recommendations noted in Section 3.3 have been applied in this scenario. It is recommended that the a posted speed limit of 60km/h is provided on Fallis Line from County Road 10 to a location 200 west of Street 'L'. Detailed output of the Synchro analysis can be found in **Appendix F**.

Table 20 – Total (2023) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour			Weekday PM Peak Hour			Weekend SAT Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
County Road 10 / Larmer Line (unsignalized)	-	2.1	A	-	2.3	A	-	2.4	A
EB	0.13	15.5	C	0.12	17.0	C	0.21	22.1	C
WB	0.27	34.3	D	0.35	55.8	F	0.28	38.5	E
County Road 10 / Fallis Line (unsignalized)	-	112.3	F	-	99.9	F	-	61.2	F
EB	1.56	290.4	F	1.67	351.3	F	1.31	187.2	F
County Road 10 / Community Centre East Driveway (unsignalized)	-	0.3	A	-	0.8	A	-	0.2	A
EB	0.04	16.6	C	0.15	20.2	C	0.03	16.3	C
Street 'B' South & Street 'A' / Fallis Line (unsignalized)	-	3.3	A	-	3.6	A	-	4.0	A
NB	0.09	10.1	B	0.06	9.6	A	0.07	9.6	A
SB	0.11	11.9	B	0.07	11.5	B	0.10	11.5	B
Street 'I' & Street 'D' / Fallis Line (unsignalized)	-	5.6	A	-	6.1	A	-	6.3	A
NB	0.25	11.5	B	0.18	11.2	B	0.19	10.7	B
SB	0.28	21.3	C	0.31	24.6	C	0.34	26.0	D
County Road 10 / Street 'B' North (unsignalized)	-	7.3	A	-	4.6	B	-	10.3	B
EB	0.70	39.8	E	0.61	43.1	E	0.85	69.5	F
Street 'L' / Fallis Line (unsignalized)	-	3.5	A	-	1.6	A	-	1.7	A
WB	0.00	0.0	A	0.00	0.0	A	0.00	0.0	A
SB	0.15	10.4	B	0.04	9.6	A	0.05	9.6	A

The results of the LOS analysis indicate that the westbound movements at the County Road 10 / Larmer Line intersection are operating outside the typical design limits in the PM peak hour, as noted in Section 3.1; however, as the delay is only marginally outside of the design standards, improvements are not recommended. It is recommended the Township observe traffic at this intersection closer to the build-out of the proposed development.

The results of the LOS analysis indicate that eastbound movements at the County Road 10 / Fallis Line intersection are operating outside the typical design limits, as noted in Section 3.1. Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at this intersection (results are provided in **Appendix H**); however, based on the control delay for the eastbound movement, it is recommended that traffic signals are installed at the County Road 10 / Fallis Line intersection. All-way-stop-control is not feasible for this location as it would only provide a temporary solution and a roundabout is not feasible as the existing road allowance cannot accommodate a roundabout.

The results of the LOS analysis indicate that eastbound movements at the County Road 10 / Street 'B' North intersection are operating outside the typical design limits in the SAT peak hour, as noted in Section 3.1. Based on the criteria outlined for left turn movements in Appendix 9A of the MTO DS a northbound left turn lane is recommended at this intersection with a 160 metre taper length, 60 metre parallel length and 25 metre storage length. Based on the criteria outlined for right turn movements

outlined in Appendix G of the VDOT RDM, a southbound right turn lane is recommended at this intersection with an 80 metre taper length and 85 metre parallel length.

Based on the left turn lane criteria outlined for left turn movements Appendix 9A of the MTO DS, a left turn lane is warranted in the westbound direction at the Street 'I' & Street 'D' / Fallis Line intersection (results provided in **Appendix G**). It is recommended a westbound left turn lane be installed with a 115 metre taper, 30 metre parallel and 25 metre storage at this intersection.

A summary of the results of the Synchro analysis with above-noted improvements, during the PM peak hour, can be found below in **Table 21**. Detailed output of the Synchro analysis can be found in **Appendix F**.

Table 21 – Total (2023) LOS with Improvements

Location (N-S Street / E-W Street)	Weekday AM Peak Hour			Weekday PM Peak Hour			Weekend SAT Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
County Road 10 / Fallis Line (signalized)	-	20.2	C	-	14.8	B	-	15.1	B
EB	0.84	29.0	C	0.78	26.4	C	0.79	26.3	C
NBL	0.39	18.5	B	0.50	16.3	B	0.40	14.3	B
NBT	0.38	16.9	B	0.27	11.3	B	0.27	11.6	B
SBT	0.30	16.0	B	0.35	12.0	B	0.27	11.6	B
SBR	0.24	4.1	A	0.32	2.7	A	0.28	2.7	A
Street 'I' & Street 'D' / Fallis Line (unsignalized)	-	5.6	A	-	6.1	A	-	6.3	A
WB	0.00	0.0	A	0.00	0.0	A	0.00	0.0	A
NB	0.25	11.5	B	0.18	11.1	B	0.19	10.7	B
SB	0.28	21.2	C	0.30	24.1	C	0.34	25.5	D
County Road 10 / Street 'B' North (unsignalized)	-	6.6	A	-	3.6	A	-	7.1	A
EB	0.67	36.1	E	0.53	33.1	D	0.74	47.7	E

The results of the LOS analysis indicate that all intersections in the study area are operating within the typical design limits noted in Section 3.1.

Based on the left turn lane criteria outlined in Appendix 9A of the MTO DS, a left turn lane is warranted in the southbound direction of the County Road 10 / Larmer Line intersection (results provided in **Appendix G**); however, based on low left turning volumes a southbound left turn lane is not recommended. Additional left turn lanes are not warranted at the other unsignalized study area intersections.

Based on the right turn lane criteria outlined Appendix G of the VDOT RDM, a right turn lane is warranted in the westbound direction at the Street 'L' / Fallis Line and Street 'I' & Street 'D' / Fallis Line intersections; however, based on low thru volumes and low intersection delay, no additional westbound right turn lanes are recommended. Based on the right turn lane criteria outlined Appendix G of the VDOT RDM, a right turn taper is also warranted in the northbound direction at the County Road 10 / Larmer Line intersection; however, a northbound right turn taper is not recommended as it will not notably improve capacity at this intersection and due to the upcoming recommendation for signalization in the 2031 horizon year. Additional right turn lanes are not warranted at the other unsignalized study area intersections for this horizon year.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at any of the unsignalized intersections in the study area (results are provided in **Appendix H**).

The anticipated 95th percentile queue can be accommodated for all proposed storage lanes in the study area.

No additional improvements are recommended within the study area for the total (2023) scenario.

5.2 Total (2026) Intersection Operation

The results of the LOS analysis under total (2026) traffic volumes during the AM, PM and SAT peak hour can be found below in **Table 22**. The recommendations noted in Section 3.4 and 5.1 have been applied in this scenario. Detailed output of the Synchro analysis can be found in **Appendix F**.

Table 22 – Total (2026) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour			Weekday PM Peak Hour			Weekend SAT Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
County Road 10 / Larmer Line (unsignalized)	-	2.2	A	-	2.4	B	-	2.6	A
EB	0.14	16.4	C	0.14	18.2	C	0.23	23.5	C
WB	0.28	36.1	E	0.38	59.6	F	0.30	40.4	E
County Road 10 / Fallis Line (signalized)	-	20.3	C	-	15.0	B	-	15.1	B
EB	0.85	29.1	C	0.78	26.3	C	0.79	26.3	C
NBL	0.40	19.0	B	0.52	17.0	B	0.41	14.6	B
NBT	0.40	17.3	B	0.28	11.5	B	0.28	11.7	B
SBT	0.32	16.2	B	0.37	12.3	B	0.29	11.8	B
SBR	0.24	4.1	A	0.32	2.7	A	0.28	2.7	A
County Road 10 / Community Centre East Driveway (unsignalized)	-	0.3	A	-	0.8	A	-	0.2	A
EB	0.05	17.0	C	0.16	20.9	C	0.03	16.7	C
Street 'B' South & Street 'A' / Fallis Line (unsignalized)	-	3.3	A	-	3.5	A	-	4.0	A
NB	0.09	10.1	B	0.06	9.6	A	0.07	9.6	A
SB	0.11	12.0	B	0.07	11.5	B	0.10	11.6	B
Street 'I' & Street 'D' / Fallis Line (unsignalized)	-	5.6	A	-	6.1	A	-	6.3	A
WBTR	0.00	0.0	A	0.00	0.0	A	0.00	0.0	A
NB	0.25	11.5	B	0.18	11.1	B	0.19	10.7	B
SB	0.28	21.4	C	0.30	24.2	C	0.34	25.8	D
County Road 10 / Street 'B' North (unsignalized)	-	7.0	A	-	3.8	A	-	7.7	A
EB	0.70	39.5	E	0.55	35.8	E	0.77	52.9	F
Street 'L' / Fallis Line (unsignalized)	-	3.5	A	-	1.6	A	-	1.6	A
WB	0.00	0.0	A	0.00	0.0	A	0.00	0.0	A
SB	0.15	10.4	B	0.04	9.6	A	0.05	9.6	A

The results of the LOS analysis indicate that the westbound movements at the County Road 10 / Larmer Line intersection are operating outside the typical design limits in the PM peak hour and eastbound movements at the County Road 10 / Street 'B' North intersection are operating outside the typical design limits in the SAT peak hour, as noted in Section 3.1; however, as the delay is only marginally outside

the design standards, additional geometric and traffic signal improvements are not recommended. It is recommended the County monitor traffic at these intersections to confirm the exact timing for installation of traffic signals. The results of the LOS analysis indicate that all other intersections in the study area are operating within the typical design limits.

An analysis was completed for left turn movements at all unsignalized intersections in the study area based on the criteria outlined in Appendix 9A of the MTO DS.

Based on the left turn lane criteria outlined in Appendix 9A of the MTO DS, a left turn lane is warranted in the southbound direction of the County Road 10 / Larmer Line intersection (results provided in **Appendix G**); however, based on low left turning volumes a southbound left turn lane is not recommended. Left turn lanes are not warranted at the other unsignalized study area intersections.

Based on the right turn lane criteria outlined Appendix G of the VDOT RDM, a right turn lane is warranted in the westbound direction at the Street 'L' / Fallis Line and Street 'I' & Street 'D' / Fallis Line intersections; however, based on low thru volumes and low intersection delay, no additional westbound right turn lanes are recommended. Based on the right turn lane criteria outlined Appendix G of the VDOT RDM, a right turn taper is also warranted in the northbound direction at the County Road 10 / Larmer Line intersection; however, a northbound right turn taper is not recommended as it will not improve capacity at this intersection and due to the upcoming recommendation for signalization in the 2031 horizon year. Additional right turn lanes are not warranted at any other unsignalized study area intersections for this horizon year.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at any of the unsignalized intersections in the study area (results are provided in **Appendix H**).

The anticipated 95th percentile queue can be accommodated for all proposed storage lanes in the study area.

No additional improvements are recommended within the study area for the total (2026) scenario.

5.3 Total (2031) Intersection Operation

The results of the LOS analysis under total (2031) traffic volumes during the AM, PM and SAT peak hour can be found below in **Table 23**. The recommendations noted in Section 3.5 and 5.2 have been applied in this scenario. Detailed output of the Synchro analysis can be found in **Appendix F**.

Table 23 – Total (2031) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour			Weekday PM Peak Hour			Weekend SAT Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
County Road 10 / Larmer Line (signalized)	-	11.2	B	-	21.0	C	-	6.6	A
EB	0.51	29.8	C	0.80	49.9	D	0.39	24.9	C
WB	0.40	32.6	C	0.18	25.6	C	0.30	34.7	C
NBL	0.09	4.4	A	0.10	8.2	A	0.06	3.2	A
NBTR	0.62	8.2	A	0.67	14.3	B	0.42	4.6	A
SB	0.71	10.4	B	0.80	19.3	B	0.45	4.9	A
County Road 10 / Fallis Line (signalized)	-	23.5	C	-	17.3	B	-	15.3	B
EB	0.85	24.7	C	0.79	27.2	C	0.79	26.4	C
NBL	0.56	27.7	C	0.71	29.0	C	0.43	15.2	B
NBT	0.73	29.0	C	0.36	12.9	B	0.31	12.2	B
SBT	0.46	20.8	C	0.52	15.3	B	0.32	12.2	B
SBR	0.30	52	A	0.39	2.9	A	0.29	2.8	A
County Road 10 / Community Centre East Driveway (unsignalized)	-	0.3	A	-	0.9	A	-	0.2	A
EB	0.07	22.7	C	0.23	29.9	D	0.04	17.7	C
Street 'B' South & Street 'A' / Fallis Line (unsignalized)	-	3.4	A	-	3.4	A	-	4.0	A
WBTR	0.00	0.0	A	0.00	0.0	A	0.00	0.0	A
NB	0.11	10.4	B	0.06	9.8	A	0.07	9.7	A
SB	0.13	12.9	B	0.08	12.2	B	0.10	11.7	B
Street 'I' & Street 'D' / Fallis Line (unsignalized)	-	6.4	A	-	6.4	A	-	6.3	A
NB	0.30	12.4	B	0.20	11.6	B	0.20	10.8	B
SB	0.37	27.3	D	0.37	30.3	D	0.35	26.5	D
County Road 10 / Street 'B' North (unsignalized)	-	24.7	B	-	7.7	A	-	9.6	A
EB	1.15	154.5	F	0.84	85.8	F	0.85	68.6	F
Street 'L' / Fallis Line (unsignalized)	-	3.2	A	-	1.4	A	-	1.6	A
WB	0.00	0.0	A	0.00	0.0	A	0.00	0.0	A
SB	0.16	10.8	B	0.05	9.9	A	0.046	9.7	A

The results of the LOS analysis indicate that the eastbound movements at the County Road 10 / Street 'B' North intersection are operating outside the typical design limits in the all scenarios, as noted in Section 3.1. Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted this intersection (results are provided in **Appendix H**); however, traffic signals should be considered at this intersection for long-range infrastructure planning purposes. It is recommended the County observe traffic at this intersection closer to the 2031 horizon year to determine the exact timing for traffic signal installation. All-way-stop-control is not feasible for this location as the intersection will still operate outside design limits and a roundabout is not feasible as the existing road allowance cannot accommodate a roundabout.

A summary of the results of the Synchro analysis with traffic signals installed at the Street 'B' North / County Road 10 intersection, can be found below in **Table 24**. Detailed output of the Synchro analysis can be found in **Appendix F**.

Table 24 – Total (2031) LOS with Improvements

Location (N-S Street / E-W Street)	Weekday AM Peak Hour			Weekday PM Peak Hour			Weekend SAT Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
County Road 10 / Street 'B' North (signalized)	-	15.8	B	-	9.6	A	-	11.3	B
EB	0.73	44.9	D	0.60	43.8	D	0.65	39.3	D
NBL	0.02	6.0	A	0.08	4.9	A	0.06	5.8	A
NBT	0.65	12.2	B	0.39	6.0	A	0.40	7.6	A
SBT	0.41	8.4	A	0.56	8.1	A	0.44	8.0	A
SBR	0.06	1.9	A	0.18	1.1	A	0.1	1.4	A

The results of the LOS analysis indicate that all intersections in the study area are operating within the typical design limits noted in Section 3.1.

An analysis was completed for left turn movements at all unsignalized intersections in the study area based on the criteria outlined in Appendix 9A of the MTO DS. Based on the left turn lane criteria outlined in Appendix 9A of the MTO DS, no left turn lanes are warranted at the unsignalized study area intersections (results provided in **Appendix G**).

Based on the right turn lane criteria outlined Appendix G of the VDOT RDM, a right turn lane is warranted in the westbound direction at the Street 'L' / Fallis Line and Street 'I' & Street 'D' / Fallis Line intersections; however, based on low thru volumes and low intersection delay, no additional westbound right turn lanes are recommended. Based on the right turn lane criteria outlined Appendix G of the VDOT RDM, a right turn taper is also warranted in the westbound direction at the Street 'B' & Street 'A' / Fallis Line intersection however, based on low thru volumes and low intersection delay, a westbound right turn taper is not recommended. Additional right turn lanes are not warranted at any other unsignalized study area intersections for this horizon year.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at any of the unsignalized intersections in the study area (results are provided in **Appendix H**).

The anticipated 95th percentile queue can be accommodated for all proposed storage lanes in the study area.

No additional improvements are recommended within the study area for the total (2031) scenario.

5.4 Sight Distance Review

A review of the available sight distance for the proposed site access was completed as part of this analysis.

Street 'B' South

The sight distance east and west of the Street 'B' South is significantly greater than the minimum stopping sight distance requirements as identified in the Transportation Association of Canada *Design Guide for Canadian Roads* (2017) [TAC Guidelines] for a design speed of 80km/h (130 metres).

There are no issues with the sight distance available for the proposed Street 'B' South.

Street 'I'

The sight distance east and west of the Street 'I' is significantly greater than the minimum stopping sight distance requirements as identified in the TAC Guidelines for a design speed of 80km/h (130 metres).

There are no issues with the sight distance available for the proposed Street 'I'.

Street 'B' North

The sight distance north and south of the Street 'B' North is significantly greater than the minimum stopping sight distance requirements as identified in the TAC Guidelines for a design speed of 100km/h (185 metres).

There are no issues with the sight distance available for the proposed Street 'B' North.

Street 'L'

The sight distance east and west of the Street 'L' is greater than the minimum stopping sight distance requirements as identified in the TAC Guidelines for a design speed of 80km/h (130 metres).

There are no issues with the sight distance available for the proposed Street 'L'.

5.5 Site Access

Street 'B' South will operate efficiently as a full-movement access, with two-way stop control for southbound and northbound movement. No lane improvements are recommended on Fallis Line at Street 'B' South. A single southbound and northbound lane on Street 'B' South at Fallis Line will provide the necessary capacity to service the proposed development.

Street 'I' will operate efficiently as a full-movement access, with two-way stop control for southbound and northbound movement. A westbound left turn lane is recommended on Fallis Line at Street 'I' with a 115 metre taper, 45 metre parallel and 15 metre storage. A single southbound and northbound lane on Street 'I' at Fallis Line will provide the necessary capacity to service the proposed development.

Street 'B' North will operate efficiently as a full-movement access, with two-way stop control for southbound and northbound movement. A southbound right turn lane with an 80 metre taper length and 85 metre parallel length and a northbound left turn lane with a 160 metre taper, 70 metre parallel and 15 metre storage is recommended. Signalization may be required at this intersection around 2031, subject to monitoring and confirmation by the County. A single eastbound and westbound lane on Street 'B' North at County Road 10 will provide the necessary capacity to service the proposed development.

Street 'L' will operate efficiently as a full-movement access, with one-way stop control for southbound movements. No lane improvements are recommended on Fallis Line at Street 'L'. A single southbound and northbound lane on Street 'L' at Fallis Line will provide the necessary capacity to service the proposed development.

The proposed spacing between Street 'L' and Street 'B' South on Fallis Line is in excess of 300 metres (measured edge of road to edge of road), which is well in excess of the suggested minimum intersection spacing as identified in the TAC Guidelines for local roads (60 metres).

The proposed spacing between Street 'B' South and Street 'I' on Fallis Line is in excess of 300 metres (measured edge of road to edge of road), which is well in excess of the suggested minimum intersection spacing as identified in the TAC Guidelines for local roads (60 metres).

The proposed spacing between Street 'I' and the Fallis Line Commercial North driveway is in excess of 100 metres (measured edge of road to edge of driveway), which is well in excess of the suggested minimum corner clearance requirements as identified in the TAC Guidelines – Figure 8.8.2 - 15 metre for the unsignalized condition.

The proposed spacing between Street 'B' North and the Community Centre East Access is in excess of 115 metres (measured edge of road to edge of driveway), which is well in excess of the suggested minimum corner clearance requirements as identified in the TAC Guidelines – Figure 8.8.2 - 35 metre for the unsignalized and 70 metre for signalized condition.

The proposed spacing between Street 'B' North and Larmer Line is in excess of 980 metres (measured edge of road to edge of road), which is well in excess of the suggested intersection spacing along an arterial road as identified in the TAC Guidelines (400 metres preferred).

5.6 Active Transportation Review

There is currently no formal active transportation infrastructure in the study area.

The 2010 Township Trail Master Plan identifies a proposed trail on the unopened portion of Fallis Line East from County Road 10 to Cedar Valley Road. The Trail Master Plan also identifies an option for a trail connection between the Victoria Rail Trail and Millbrook along Fallis Line and an off-street portion east of the Subject Site.

The County's Active Transportation Master Plan (June 2017) proposes fully paved shoulders along County Road 10 in the study area as one of the initial projects with a multi-use pathway as the ultimate design. The County's current capital budget does not identify any funds specifically for the above-noted improvements.

A gravel multi-use path is proposed along the west edge of the Millbrook Community Centre property, connecting into Fallis Line. A sidewalk is also proposed along the west side of County Road 10 and the north side of Fallis Line adjacent to the Millbrook Community Centre property, which will connect into the proposed sidewalk within the Subject Site. A sidewalk extension from the Millbrook Community Centre, through the Township Municipal Office property, to Street 'B' North should also be considered to provide additional access between the residential and institutional lands. The Subject Site includes an internal sidewalk network along all proposed roads with connections to the Millbrook Community Centre via Street 'I'.

Pedestrian crossing treatment is recommended on Fallis Line near the west edge of the Millbrook Community Centre property to accommodate trips to / from the existing Millbrook Community. The specific pedestrian crossing treatment, location and construction timing is beyond the scope of this report.

5.7 Traffic Calming

The Township requested traffic calming be provided midway along Street B. Based on our review of the proposed road layout, it is recommended that a raised intersection is provided at the Street B / Street E intersection to control vehicle speeds within the study area. The proposed raised intersection is located approximately midway through the subject site providing traffic calming within this critical area. Furthermore, the proposed development includes a 90-degree corner midway through the subject site on Street B which will further act as a traffic calming measure due to the lower speeds required to navigate this corner.

6 Collision Data Review

The County has provided collision reports for County Road 10 within the study area. A review of the collision reports was completed as part of our analysis. The following summarizes our collision data analysis.

Collision reports on County Road 10 were provided by the County in the Millbrook TIS. A total of four collisions occurred in 2009. Updated collision reports have been provided by the Peterborough Police Service [PPS]. The collision reports cover the study area from 2015 to 2018. Three of the collisions occurred as a result of drivers losing control of their vehicle during the winter. **Table 25** summarizes our review of the accidents.

Table 25 – Collision Data Analysis

Accident Description	Result of Analysis
2009 - Vehicle lost control while travelling northbound on County Road 10 attempting to make a right turn onto Larmer Line.	The sightlines for northbound traffic on County Road 10 approaching Larmer Line are excellent and the necessary intersection signage is provided. This accident occurred during the winter and it is our expectation that weather and road conditions played a significant role. No additional measures are recommended as a result of this accident.
2009 - Vehicle lost control while travelling northbound on County Road 10, north of Brookside Street.	There are no significant vertical or horizontal curves in County Road 10 and Larmer Line near the scene of both accidents. Both accidents occurred during the winter and it is our expectation that weather and road conditions played a significant role. No additional measures are recommended as a result of these accidents.
2017 - Vehicle lost control near the CR 10 / Larmer Line intersection and slid in to a ditch.	
2009 - Vehicle struck a deer on County Road 10 near Fallis Line.	Collisions with wildlife should continue to be monitored to determine if signage or additional measures need to be taken to make drivers aware of the increased risk for the area. Since there was only two collisions reported, no additional measures are recommended at this time.
2017 - Vehicle struck a deer on County Road 10 just south of Larmer Line.	
2009 - Vehicle travelling on CR 10 southbound signaled to turn right then changed and turned left into vehicle passing from behind.	This type of collision has a low probability of reoccurrence and it is unlikely that signage, pavement marking or infrastructure improvements would prevent future collisions of this nature.
2016 - Motorcycle vehicle travelling southbound at the CR 10 / Larmer Line intersection tries to avoid eastbound vehicle that failed to stop at the stop sign.	The sightlines for eastbound traffic on Larmer Line approaching County Road 10 are excellent. This type of collision has a low probability of reoccurrence and it is unlikely that signage, pavement marking or infrastructure improvements would prevent future collisions of this nature.

7 Summary

The **Township of Cavan Monaghan** retained **JD Engineering** to prepare this traffic impact study in support of the proposed Phase 2 of the Millbrook Development that includes the development of the 97.3 hectare parcel north and south of Fallis Line and west of County Road 10 in the Township of Cavan Monaghan, County of Peterborough. The proposed site plan is included in **Appendix A**. This chapter summarizes the conclusions and recommendations from the study.

The proposed development will include 328 single-detached, 245 townhouse and 192 high-density residential units. The proposed development will also include a 5.5 acre institutional block.

1. The proposed development of the Subject Site is expected to generate a total of 638 AM, 602 PM and 677 SAT peak hour trips.
2. Background traffic and pedestrian counts were completed for the existing intersections of County Road 10 / Municipal Office Driveway on Tuesday April 25th, 2017 and Saturday August 12th, 2017.
3. An intersection operational analysis was completed at the intersections of County Road 10 / Larmer Line, County Road 10 / Municipal Office Driveway and County Road 10 / Fallis Line, using the existing (2018) and background (2023, 2026 and 2031) traffic volumes. The following improvements are recommended:

Background (2023) Traffic Volumes

As part of the Millbrook Community Centre Development

- **County Road 10 / Municipal Office Driveway (Millbrook Community Centre)**
 - Construct a northbound left-turn lane with a 160 metre taper length, 70 metre parallel length and 15 metre storage length.

As part of the Millbrook Phase 1 Development

- **County Road 10 / Larmer Line**
 - Construct a northbound left-turn lane with a 160 metre taper length, 60 metre parallel length and 25 metre storage length.
- **County Road 10 / Fallis Line**
 - Reduce the posted speed limit from 80 km/h to 60km/h on Fallis Line from County Road 10 to west of Street 'A';
 - Construct a northbound left-turn lane with a 145 metre taper length, 60 metre parallel length and 25 metre storage length; and
 - Construct a southbound right-turn lane with an 80 metre taper length and 85 metre parallel length.

Background (2026) Traffic Volumes

- **County Road 10 / Fallis Line**
 - Install traffic signals.

Background (2031) Traffic Volumes

- **County Road 10 / Larmer Line**
 - Install traffic signals.

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. An intersection operation analysis was completed under total (2023, 2026 and 2031) traffic volumes with the proposed development operational at the study area intersections. In addition to the improvements recommended as a result of the background traffic noted above, the following additional improvements are recommended:

Total (2023) Traffic Volumes

- **County Road 10 / Fallis Line**
 - Install traffic signals.
- **Street 'I' & Street 'D' / Fallis Line**
 - Construct a westbound left-turn lane with a 115 metre taper length, 30 metre parallel and 25 metre storage.
- **County Road 10 / Street 'B' North**
 - Construct a northbound left-turn lane with a 160 metre taper length, 60 metre parallel length and 25 metre storage length; and
 - Construct a southbound right-turn lane with an 80 metre taper length and 85 metre parallel length.
- **Fallis Line**
 - Extend the 60 km/h speed limit zone on Fallis Line to include the area from County Road 10 to a location 200 metres west of Street 'L'.

Conditional Works - Total (2031) Traffic Volumes

- **County Road 10 / Street 'B' North**
 - Install traffic signals.
6. The sight lines available on Fallis Line for Street 'L', Street 'B' South and Street 'I' and on County Road 10 for Street 'B' North meet the minimum stopping sight distance requirements as identified in the Transportation Association of Canada Guidelines.
 7. Some form of pedestrian crossing treatment is recommended on Fallis Line near the west edge of the Millbrook Community Centre property. The specific pedestrian crossing treatment, location and construction timing is beyond the scope of this report.
 8. In summary, with the improvements outlined above, the proposed development will not cause any operational issues will not add significant delay or congestion to the local roadway network.

Appendix A – Site Plan

Appendix B – Adjacent Development TIS Excerpts

Millbrook TIS Excerpts



Millbrook Development

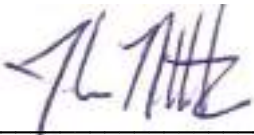
Township of Cavan Monaghan,
County of Peterborough

Traffic Impact Study for Towerhill Developments Ltd.

Type of Document:
Final Report

Project Number:
JDE – 1331

Date Submitted:
July 3rd, 2014



John Northcote, P.Eng.
Professional License #: 100124071



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condition traffic. During the interim condition, vehicles will access the site via Fallis Line through the extension of Street A. **Table 10** illustrates the distribution of egress trips generated by the Future Site for the interim condition.

Table 17 – Future Site Interim Development Trip Distribution

Direction	East via Larmer Line	South / East via Millbrook	South / West via Hwy 115	North Via CR 10
Egress	3%	28%	10%	59%

The distribution for the traffic generated during the ultimate condition for the Future Site was based on 2006 Transportation Tomorrow Survey [TTS] data as outlined in Section 4.2. In order to simplify the calculation, all traffic generated during the interim condition is assumed to access the Future Site via Fallis Line and the additional traffic generated during the ultimate condition will access the Future Site via County Road 10, between Fallis Line and Larmer Line. The distribution of the additional traffic for the ultimate condition is slightly different than the distribution of traffic for the interim condition, because southbound and westbound traffic will travel along County Road 10 to either Fallis Line or Larmer Line. **Table 11** illustrates the distribution of the additional egress trips generated by the Future Site during the ultimate condition.

Table 18 –Future Site Ultimate Development Trip Distribution

Direction	East via Larmer Line	South / East via Millbrook	South / West via Larmer Line	South / West via Fallis Line	North Via CR 10
Egress	3%	28%	5%	5%	59%

Using the above-noted traffic generation and distribution methodology, the Future Site traffic assignment for the interim and ultimate condition during the AM and PM peak hour was calculated and has been illustrated in **Figure 7 & 8**.

919 Fallis Line Traffic Brief Excerpts



919 Fallis Line

Township of Cavan Monaghan,
County of Peterborough

Traffic Brief for Cortel Group

Type of Document:
Final Report

Project Number:
JDE – 1331

Date Submitted:
October 2nd, 2017

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2.3 Other Developments within the Study Area

Based on discussions with the Township, the Millbrook development and the Millbrook Recreation Centre outlined in Section 1.1 are the only proposed developments within the study area that will have a significant impact on local traffic volumes in the study area.

2.4 Local Road Improvements

Through our discussion with the Township and County staff, there are no significant local road improvements scheduled in the study area that will impact traffic volumes or traffic patterns within the short-term.

3 Proposed Development Traffic Generation and Assignment

3.1 Traffic Generation

The traffic generation for the subject site has been calculated based on the data provided in the Institute of Transportation Engineers [ITE] *Trip Generation Manual* (9th Edition) [ITE Trip Generation Manual]. The following ITE land uses have been applied to estimate the traffic from the proposed development:

- ITE land use 710 (General Office Building).
- ITE land use 934 (Fast-Food Restaurant with Drive-Through Window);

The estimated trip generation of the proposed development is illustrated below in **Table 1**. The AM, PM and SAT peak hour traffic generation for the subject site generally align with the anticipated AM, PM and SAT peak hour of the adjacent road network.

Table 1 - Estimated Traffic Generation of Proposed Development

Development	Size	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Fast-Food Restaurant with Drive-Thru Window ITE Land Use: 934	2,476 sq. ft.	58	55	113	42	39	81	74	72	146
General Office Building ITE Land Use: 710	13,412 sq. ft.	34	5	39	16	78	94	3	3	6
TOTAL TRIP GENERATION		92	60	152	58	117	175	77	75	152
INTERNAL CAPTURE*		-3	-3	-6	-2	-2	-4	-2	-2	-4
NET GENERATION		89	57	146	56	115	171	75	73	148
PASS-BY TRIPS (ITE Land Use: 934)**		-28	-28	-56	-20	-20	-40	-36	-36	-72
TOTAL SITE		61	29	90	36	95	131	39	37	76

* The internal capture rate has been calculated using the methodology outlined in Section 7 of the ITE Trip Generation Handbook (2nd Edition). Calculations are provided in **Appendix B**.

** The ITE data provides a pass-by rate for weekday AM and PM peak hour (49% and 50% respectively). For the purpose of this report we have decided to use a pass-by rate of 50% for the Fast-Food Restaurant component of the development for all scenarios.

No transportation modal split reduction has been applied to the above-noted traffic generation calculation.

3.2 Traffic Assignment

The ITE data provides the anticipated percentage of new traffic entering and exiting during the peak hour. The distribution of office traffic beyond the local area has been calculated based on the 2011 Transportation Tomorrow Survey [TTS] data for planning district 104, retrieved using the TTS Internet Data Retrieval System [IDRS] (output attached in **Appendix C**). TTS data provides historical origin and destination trip data for specific areas within the County and the Greater Toronto and Hamilton Area [GTHA].

Traffic distribution for the trips generated by the subject site during the AM, PM and SAT peak hour is expected to generally follow commuter travel patterns. Our analysis is based on all work-based ingress traffic during the AM peak hour. Generally, the distribution of egress traffic is expected to follow the inverse of the ingress 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.

In order to account for the interaction between the office component of the proposed development and the community of Millbrook, we have assumed that 20% of all traffic generated by the subject site will be generated within the Millbrook community. Half of this traffic has been attributed to the existing Millbrook community and the other half is attributed to the future build-out of the Millbrook Development. This value has been based on our review of the number, type and location of businesses and facilities within the community of Millbrook. An adjustment has also been made to account for the impact of future development in Fraserville. Traffic distribution along Larmer Line is expected to increase as this development proceeds.

The estimated distribution of trips generated by the subject site for the office component of the proposed development is illustrated in **Table 2**, which was calculated using the methodology outlined above.

Table 2 – Proposed Office Traffic Distribution

Travel Direction (to/from)	Percentage of Total Traffic Generation
South / East via Millbrook	15%
South / West via Hwy 115	19%
North via CR10	66%
Total	100%

The distribution of traffic for the fast food restaurant component of the development is assumed to follow the distribution of the future traffic volumes within the study area¹. **Table 3** illustrates the calculation of the distribution of ingress and egress traffic for the fast food restaurant component of the proposed development.

¹ The future traffic volumes in the area are based on the Total 2031 traffic volumes at the intersection of Fallis Line / County Road 10 from the Millbrook TIS.

Table 3 - Proposed Fast-Food Restaurant Traffic Distribution

Scenario	Direction	Ingress / Egress Traffic Direction		
		Northbound via County Road 10	Southbound via County Road 10	Eastbound via Fallis Line
AM	In	44%	28%	28%
	Out	43%	43%	13%
PM	In	43%	39%	19%
	Out	41%	30%	28%
SAT	In	44%	24%	28%
	Out	43%	43%	13%

The distribution of traffic entering at each site access location is based on our review of the internal parking and building layout, in conjunction with the external traffic distribution.

Using the traffic distribution patterns noted above, the traffic assignment for the proposed development was calculated. The assignment of the fast food restaurant primary traffic, fast food restaurant pass-by traffic, office traffic and total site traffic is illustrated in **Figures 3, 4, 5 and 6** respectively for the AM, PM and SAT peak hours.

Figure 3 - Fast-Food Restaurant Traffic Assignment – Primary Trips

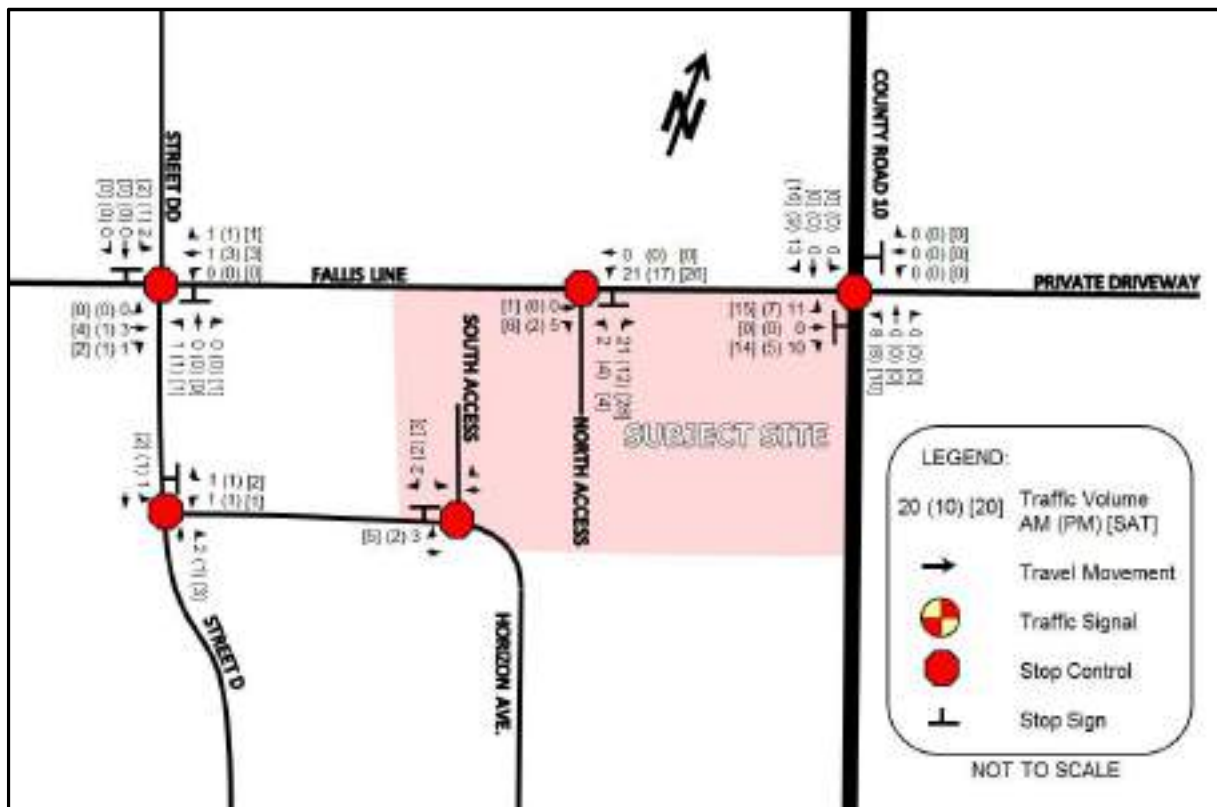


Figure 4 - Fast-Food Restaurant Traffic Assignment – Pass-by Trips

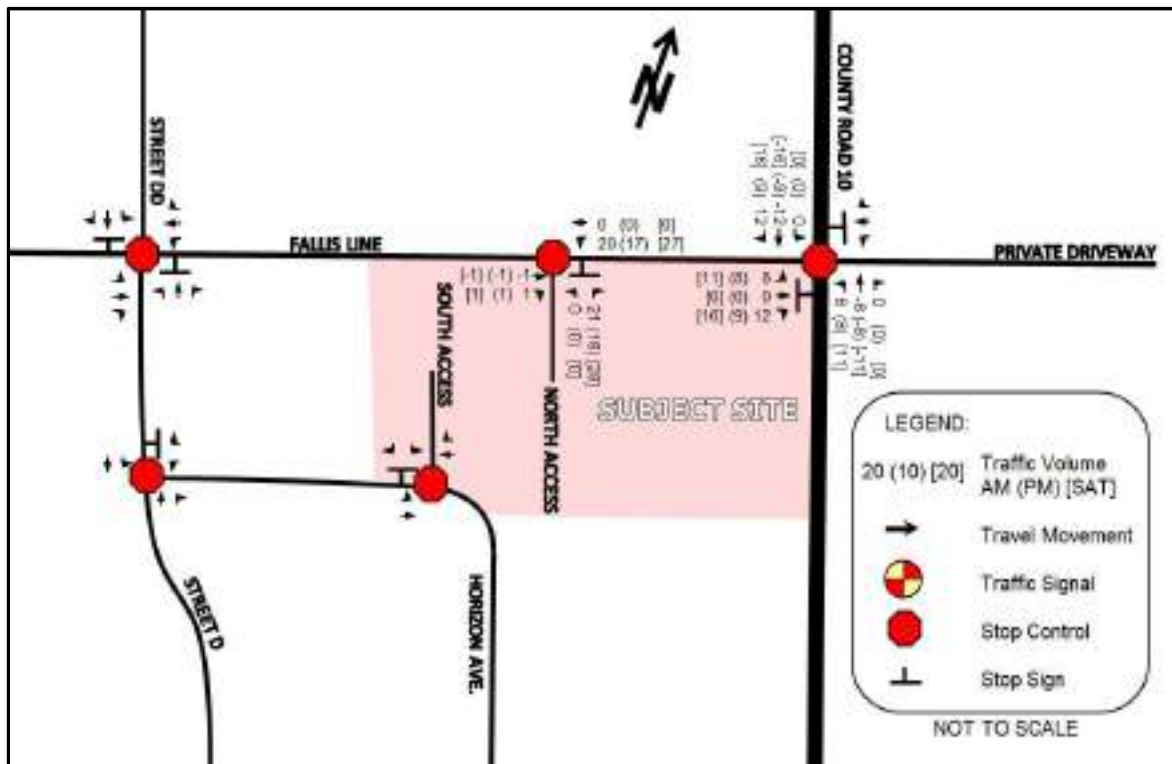


Figure 5 - Office Traffic Assignment

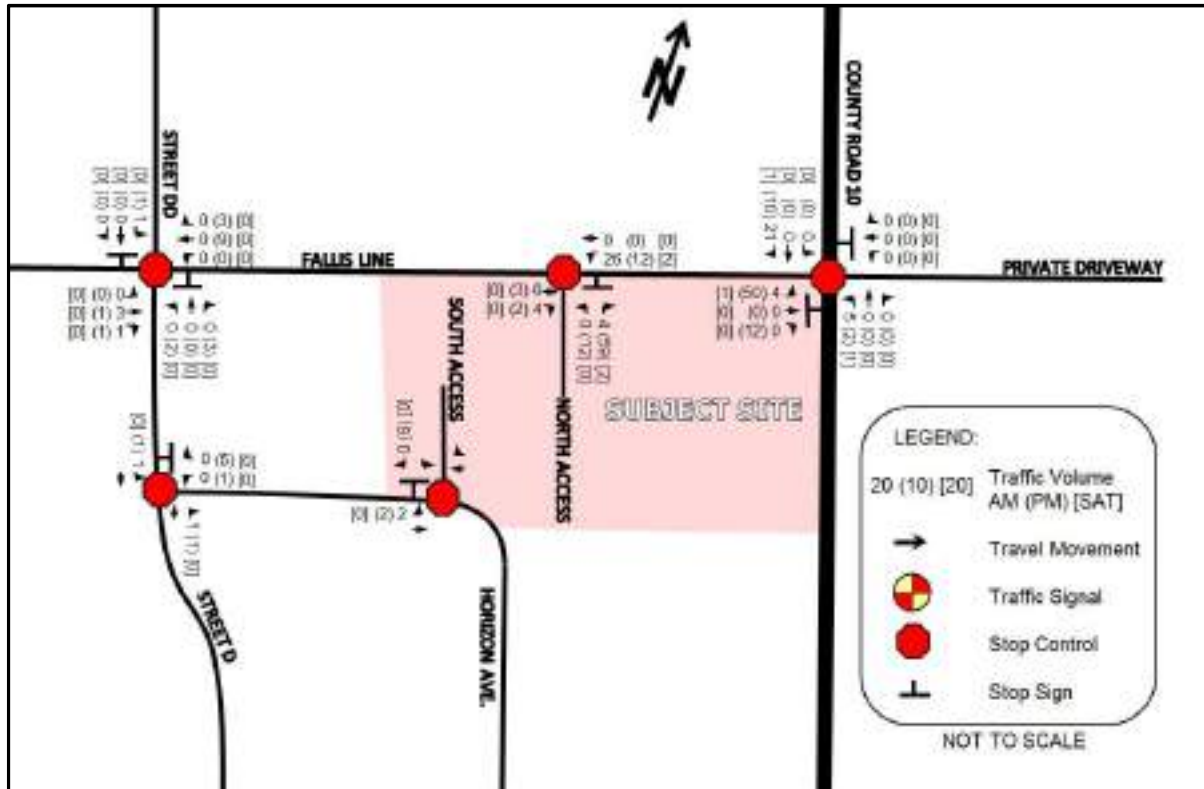
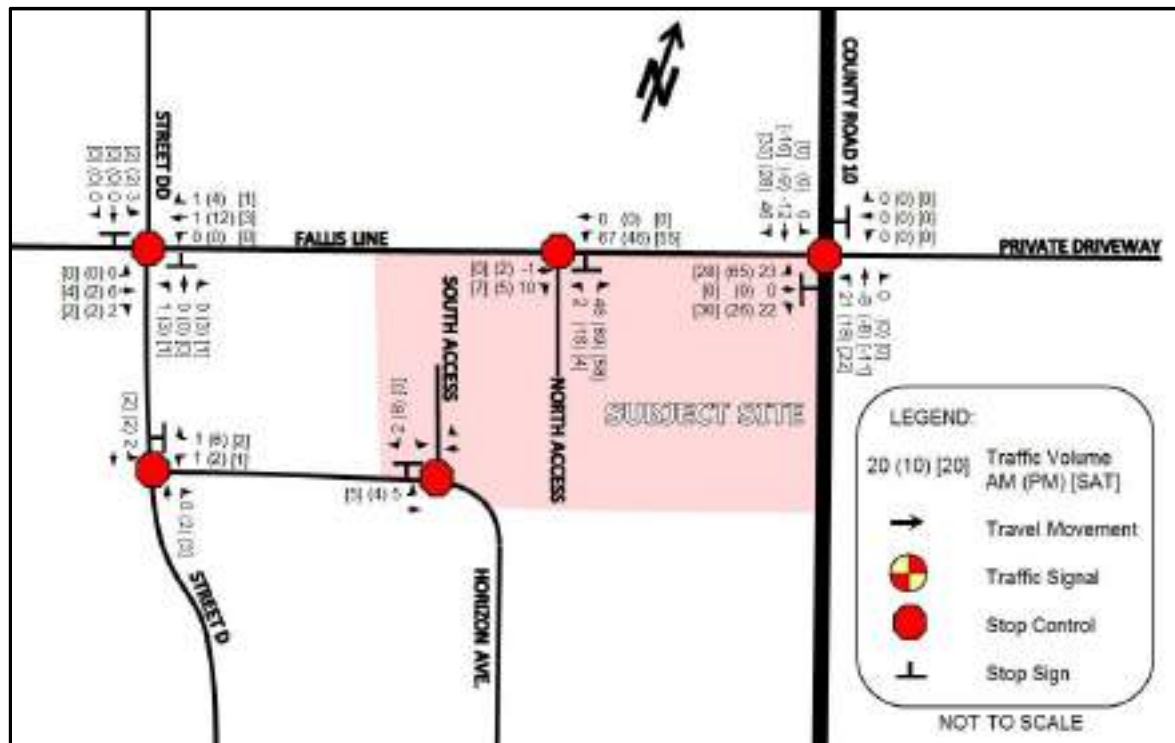


Figure 6 - Total Site Traffic Assignment



4 Site Access

4.1 Sight Distance Review

A review of the available sight distance for the proposed North Access and South Access was completed as part of this analysis.

North Access

The sight distance west of the North Access is significantly greater than the minimum stopping sight distance requirements as identified in the Transportation Association of Canada *Design Guide for Canadian Roads* (2011) [TAC Guidelines] for a design speed of 100km/h (185 meters).

The sight distance east of the North Access ends at the County Road 10 / Fallis Line intersection (102 metres) and is less than the minimum stopping sight distance requirements as identified in the TAC Guidelines for a design speed of 100km/h (185 meters); however, there are no concerns with the sight distance as vehicles turning onto Fallis Line will be turning at much slower speeds.

There are no issues with the sight distance available for the proposed North Access.

South Access

The sight distance west of the South Access ends at the Street D / Horizon Avenue intersection (77 metres) and is less than the minimum stopping sight distance requirements as identified in the TAC Guidelines for a design speed of 60km/h (85 meters); however, there are no concerns with the sight distance as vehicles turning onto Horizon Avenue will be turning at much slower speeds.

Community Centre TIS Excerpts

Millbrook Community Centre

Township of Cavan Monaghan,
County of Peterborough

Traffic Impact Study for the Township of Cavan Monaghan

Type of Document:
Final Report

Project Number:
JDE – 1784

Date Submitted:
October 10th, 2017



John Northcote, P.Eng.
Professional License #: 100124071



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very low volume of left turn movements from County Road 10 into the Municipal Office Driveway, a northbound left turn lane is not recommended on County Road 10 at the Municipal Office Driveway.

For right turn movements at the Municipal Office Driveway, the criteria outlined in Section E.7 of the MTO GDSOH were applied (60 vph minimum right turn volume warrant). Based on the above-noted criteria, a right turn lane is not warranted on County Road 10 at the Municipal Office Driveway.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted on County Road 10 at the Municipal Office Driveway (results are provided in **Appendix G**).

No infrastructure improvements are recommended within the study area for the existing (2017) scenario.

4 Proposed Development Traffic Generation and Assignment

4.1 Traffic Generation for Subject Site

The traffic generation for the subject site has been calculated based on the data provided in the Institute of Transportation Engineers [ITE] *Trip Generation Manual* (9th Edition) [ITE Trip Generation Manual]. The following ITE land uses have been applied to estimate the traffic from the proposed development:

- ITE land use 495 (Recreational Community Centre).

The estimated trip generation of the proposed development is illustrated below in **Table 7**. Although the peak hours of traffic generation for the proposed development are not anticipated to exactly align with the peak hour of traffic on the adjacent streets, for the purpose of this analysis we have conservatively assumed that the peak periods are concurrent. For the purpose of our analysis we have applied the ITE traffic generation rate for the Sunday peak hour for the community centre, since the rate is marginally higher than the Saturday peak hour rate. Since the traffic counts are based on the Saturday peak hour, which is the critical weekend period for the adjacent road network, we have still listed the peak period as the SAT peak hour below.

Table 7 - Estimated Traffic Generation of Proposed Development

Development	Size	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Recreational Community Centre ITE Land Use: 495	50,130 sq. ft.	68	35	103	68	70	138	42	33	75

No transportation modal split reduction has been applied to the above-noted traffic generation calculation.

4.2 Traffic Assignment for Subject Site

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.

Traffic distribution for the trips generated by the subject site during the AM, PM and SAT peak hour is expected to be related to the location of existing and planned residential development in the area surrounding the Millbrook Community Centre. The distribution was selected based on the probable route of travel between the residential areas and the Millbrook Community Centre, assuming that people will select their route primarily based on travel time. **Table 8** illustrates the estimated distribution of traffic generated by the Millbrook Community Centre, as it relates to the surrounding residential development.

Table 8 – Subject Site Residential Capture Distribution

Travel Direction (to/from)	Percentage of Total Residential Capture
Tapley	22%
Millbrook	46%
Carmel / South Monaghan / Bailieboro	7%
Cavan	8%
Fraserville / Cedar Valley	11%
Millbrook Development Phase 1	6%
Total	100%

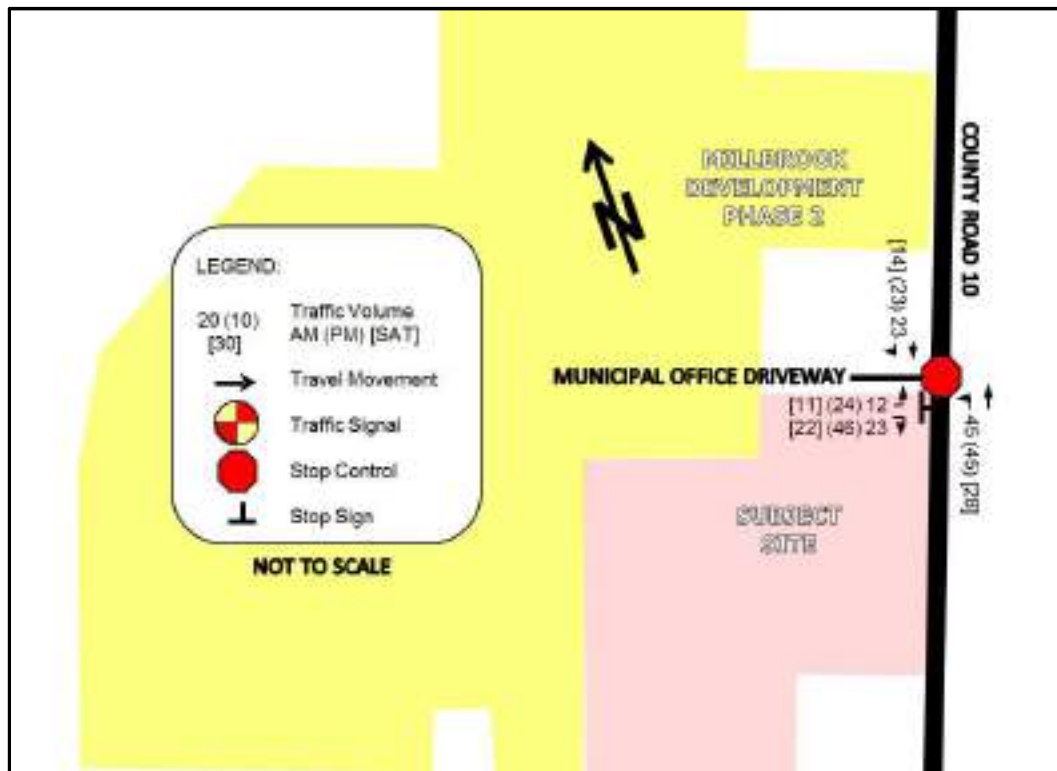
Table 9 illustrates the estimated distribution of ingress and egress traffic for the proposed development, based on the above-noted assumptions.

Table 9 – Subject Site Trip Distribution

Travel Direction (to/from)	Percentage of Total Traffic Generation
South via CR10	81%
North via CR10	19%
Total	100%

Using the above-noted traffic distribution pattern, the development traffic assignment for the AM, PM and SAT peak hour was calculated and has been illustrated in **Figure 8**.

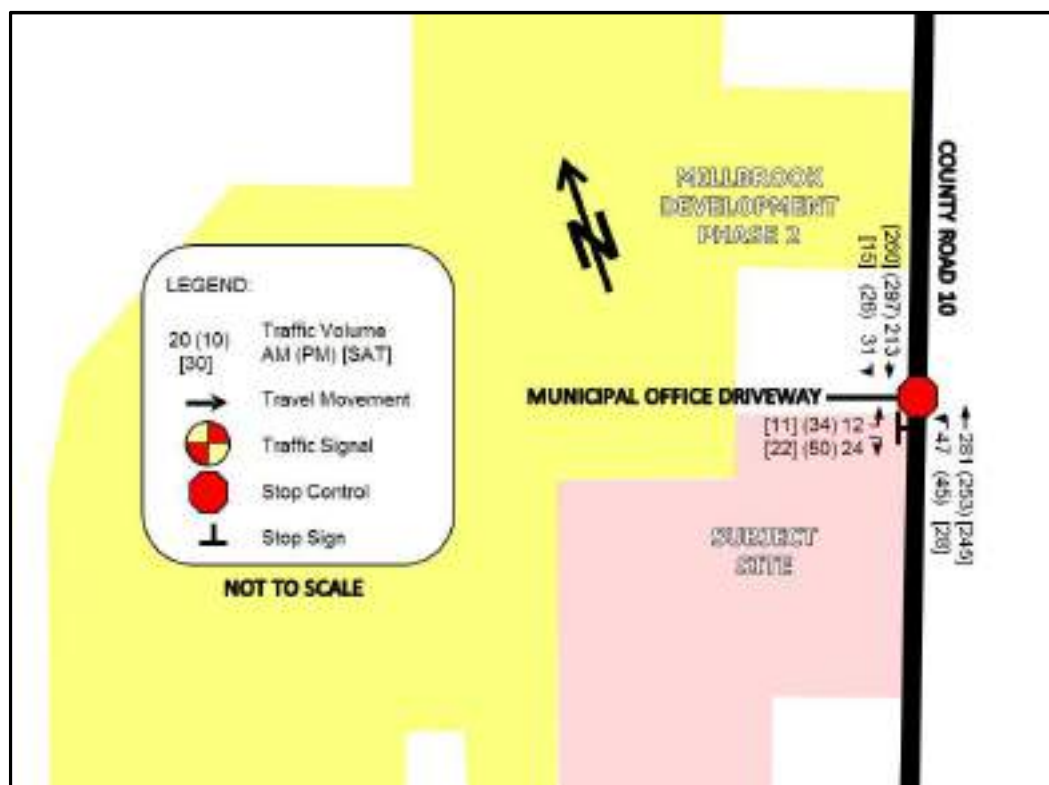
Figure 8 – Traffic Assignment for Proposed Development



4.3 Total Horizon Year Traffic Volumes with the Proposed Development

For the total (2019) horizon year with development traffic volumes, the proposed development traffic was added to the total background (2019) traffic volumes. The resulting total (2019) horizon year with proposed traffic volume for the AM, PM and SAT peak hour can be found in **Figure 9**.

Figure 9 – Total (2019) Traffic Volumes



5 Intersection Operation with Proposed Development

5.1 Total (2019) Intersection Operation

The results of the LOS analysis under total (2019) traffic volumes during the AM, PM and SAT peak hour can be found below in **Table 10**. Existing intersection geometry and traffic control have been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 10 – Total (2019) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour			Weekday PM Peak Hour			Weekend SAT Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
County Road 10 / Municipal Office Driveway (unsignalized)	-	1.5	A	-	2.3	A	-	1.1	A
EB	0.07	11.7	B	0.19	13.9	B	0.05	11.0	B

The results of the LOS analysis indicate that all intersections are operating within the typical design limits noted in Section 3.1.

An analysis was completed for left turn movements at the Municipal Office Driveway / County Road 10 intersection, based on the criteria outlined in Section E.9.1 of the MTO GDSOH. Our analysis

Azsura Traffic Letter Excerpts

September 14, 2017

Mr. Saverio Montemarano
Bromont Group
457 Jevian Drive, Suite 8
Woodbridge, ON
L4L 7Z9

Dear Mr. Montemarano,

Reference: Residential Development
Township of Cavan Monaghan
Traffic Impact Technical Letter – 65 units addition
Project N° 2022-16

Asurza Engineers Ltd. was retained by Saverio Montemarano (the Applicant or Developer) to undertake a traffic impact analysis for the proposed addition of 65 single family detached housing units in the Village of Millbrook.

1. Background

The developer has an application for a residential development south of Fallis Line and west of County Road 10 in Millbrook. One of the documents for this application is the traffic impact study completed by JD Northcote Engineering Inc. (JD Engineering) in July 2014. The document addresses the future traffic conditions on the adjacent roads including the new traffic volumes generated by the proposed development.

The developer has recently acquired a 4.4 hectare parcel of land, part of this land is intended to include an additional 65 single detached home units which were not considered as part of the traffic impact study done by JD Engineering. In this regard, a traffic analysis to supplement the original traffic study is

4. Traffic Generation

Estimation of trips generated by the proposed 65 residential units was derived from the Trip Generation Manual, 9th Edition, published by the Institute of Transportation Engineers (ITE). The land use which most closely describes the proposed new 65 residential units is Land Use 210 Single-Family Detached Housing; the trip rates and estimated number of additional trips related to the proposed Single-Family Detached House units are shown in *Table 1*.

TRIP GENERATION RATES BY LAND USE								
ITE Code	ITE Land Use	Unit of Measure	AM Peak Hour of Adj. Street			PM Peak Hour of Adj. Street		
			Rate	In	Out	Rate	In	Out
210	Single-Family Detached House	Units	Eq.	25%	75%	Eq.	63%	37%

ESTIMATED NUMBER OF TRIPS BY LAND USE								
ITE Code	ITE Land Use	Total Units	AM Peak Hour of Adj. Street			PM Peak Hour of Adj. Street		
			Trips	In	Out	Trips	In	Out
210	Single-Family Detached House	65	55	14	41	71	45	26

Table 1: Estimated Number of New Trips.

As shown in the above table, the estimated number of new trips generated by the 65 additional residential units is 55 trips for the morning peak hour and 71 trips for the afternoon peak hour.

5. Trip Distribution and Assignment

The additional trips generated by the proposed 65 residential units is distributed in the same proportion as noted in the original traffic impact study report completed by JD Engineering 2014. The distribution of trips was estimated based on the 2006 Transportation Tomorrow Survey (TTS) data. TTS data provides historical origin and destination work trip percentages for specific areas within the County and the Greater Toronto and Hamilton Area (GTHA). After the trips were distributed according the work trip destination percentages, the resulting trips are assigned to the road network thus the trips generated by

the proposed 65 residential units for the morning and afternoon peak hour are as shown in *Exhibit 2*.

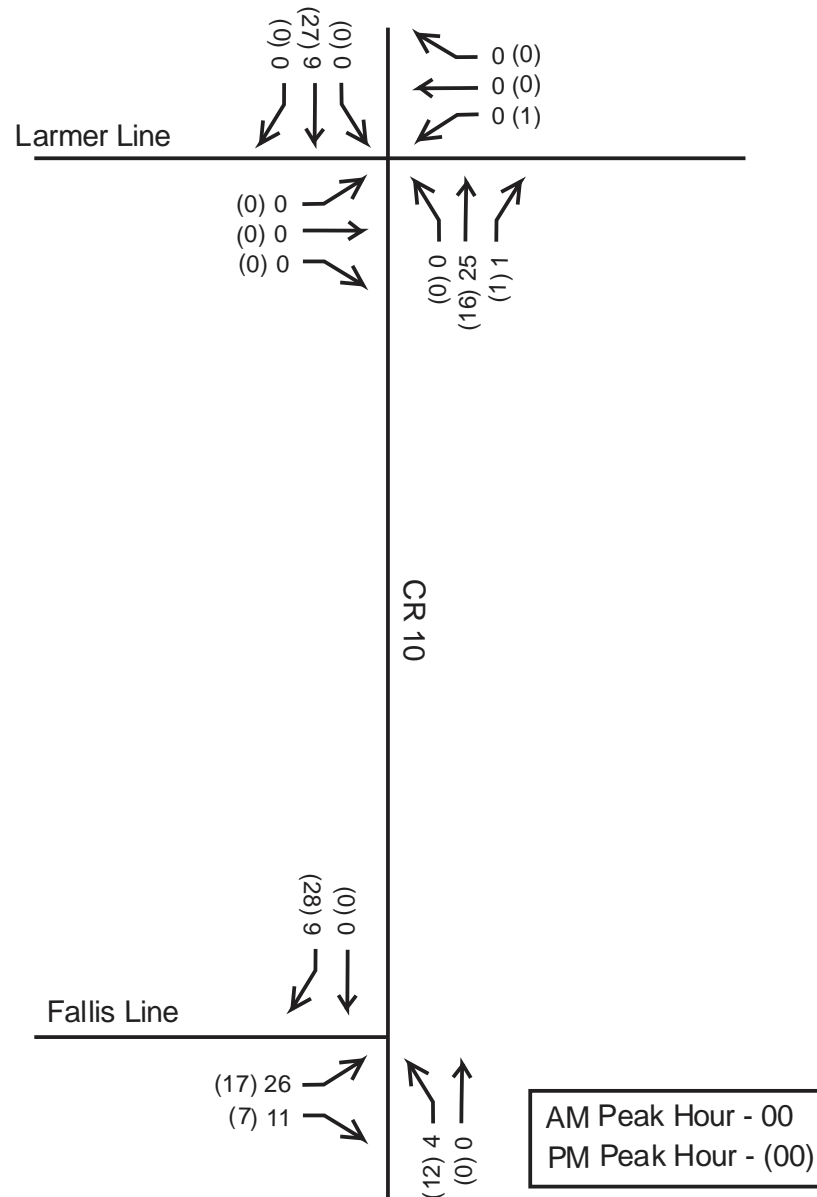


Exhibit 2: Trips Generated by the 65 Residential Units.

Appendix C – Traffic Count Data

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: Millbrook
Site #: 1710800001
Intersection: County Rd 10 & Fallis Line
TFR File #: 1
Count date: 25-Apr-17

Weather conditions:

Person(s) who counted:

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

Major Road: County Rd 10 runs N/S

North Leg Total: 392

North Entering: 167

North Peds: 0

Peds Cross: \nlessgtr

Heavys	0	0	0	0
Trucks	1	7	0	8
Cars	4	155	0	159
Totals	5	162	0	



Heavys	0
Trucks	13
Cars	212
Totals	225

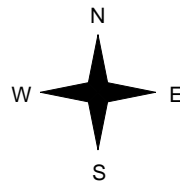
East Leg Total: 0
 East Entering: 0
 East Peds: 0
 Peds Cross: \nlessgtr

Heavys	Trucks	Cars	Totals
0	1	19	20



Fallis Line

Heavys	Trucks	Cars	Totals
0	1	9	10
0	0	0	0
0	0	15	15
0	1	24	



County Rd 10



Cars	Trucks	Heavys	Totals
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	

Private Driveway



Cars	Trucks	Heavys	Totals
0	0	0	0

Peds Cross: \nlessgtr
 West Peds: 0
 West Entering: 25
 West Leg Total: 45

Cars	170
Trucks	7
Heavys	0
Totals	177



Cars	15	203	0	218
Trucks	0	12	0	12
Heavys	0	0	0	0
Totals	15	215	0	

Peds Cross: \nlessgtr
 South Peds: 0
 South Entering: 230
 South Leg Total: 407

Comments

Ontario Traffic Inc

Afternoon Peak Diagram

Specified Period

From: 16:00:00

To: 19:00:00

One Hour Peak

From: 16:30:00

To: 17:30:00

Municipality: Millbrook
Site #: 1710800001
Intersection: County Rd 10 & Fallis Line
TFR File #: 1
Count date: 25-Apr-17

Weather conditions:

Person(s) who counted:

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

Major Road: County Rd 10 runs N/S

North Leg Total: 415

North Entering: 241

North Peds: 0

Peds Cross: \nlessgtr

Heavys	0	0	0	0
Trucks	0	4	0	4
Cars	11	226	0	237
Totals	11	230	0	



Heavys	0
Trucks	0
Cars	174
Totals	174

East Leg Total: 1
 East Entering: 0
 East Peds: 0
 Peds Cross: \nlessgtr

Heavys	0
Trucks	0
Cars	30
Totals	30

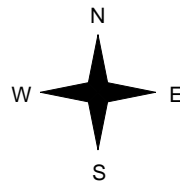


County Rd 10



Fallis Line

Heavys	0
Trucks	0
Cars	4
Totals	4
Heavys	0
Trucks	0
Cars	0
Totals	0
Heavys	0
Trucks	0
Cars	18
Totals	18
Heavys	0
Trucks	0
Cars	22
Totals	22



Cars	0
Trucks	0
Heavys	0
Totals	0
Cars	0
Trucks	0
Heavys	0
Totals	0
Cars	0
Trucks	0
Heavys	0
Totals	0

Private Driveway



Cars	1
Trucks	0
Heavys	0
Totals	1

Peds Cross: \nlessgtr
 West Peds: 0
 West Entering: 22
 West Leg Total: 52

Cars	244
Trucks	4
Heavys	0
Totals	248
Cars	19
Trucks	0
Heavys	0
Totals	19
Cars	170
Trucks	0
Heavys	0
Totals	170
Cars	1
Trucks	0
Heavys	0
Totals	1



County Rd 10



Peds Cross: \nlessgtr
 South Peds: 0
 South Entering: 190
 South Leg Total: 438

Comments

Ontario Traffic Inc

Total Count Diagram

Municipality: Millbrook
Site #: 1710800001
Intersection: County Rd 10 & Fallis Line
TFR File #: 1
Count date: 25-Apr-17

Weather conditions:
Person(s) who counted:

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

Major Road: County Rd 10 runs N/S

North Leg Total: 1864
 North Entering: 933
 North Peds: 0
 Peds Cross: \nlessgtr

Heavys	Trucks	Cars	Totals
0	3	32	35
0	32	866	898
0	35	898	931



Heavys	Trucks	Cars	Totals
0	32	899	931

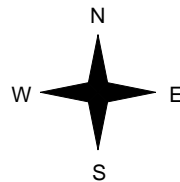
East Leg Total: 3
 East Entering: 1
 East Peds: 0
 Peds Cross: \nlessgtr

Heavys	Trucks	Cars	Totals
0	5	97	102



Fallis Line

Heavys	Trucks	Cars	Totals
0	2	37	39
0	0	0	0
0	1	87	88
0	3	124	127



County Rd 10

County Rd 10



Cars	Trucks	Heavys	Totals
1	0	0	1
0	0	0	0
0	0	0	0
1	0	0	1

Private Driveway



Cars	Trucks	Heavys	Totals
2	0	0	2

Peds Cross: \nlessgtr
 West Peds: 1
 West Entering: 127
 West Leg Total: 229

Cars	Trucks	Heavys	Totals
953	33	0	986



Cars	Trucks	Heavys	Totals
65	2	0	67
861	30	0	891
2	0	0	2
928	32	0	960

Peds Cross: \nlessgtr
 South Peds: 0
 South Entering: 960
 South Leg Total: 1946

Comments

Ontario Traffic Inc

Traffic Count Summary

Intersection: County Rd 10 & Fallis Line

Count Date: 25-Apr-17

Municipality: Millbrook

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	0	138	3	141	0	318	8:00:00	13	164	0	177	0
9:00:00	0	128	5	133	0	329	9:00:00	12	184	0	196	0
10:00:00	0	106	5	111	0	259	10:00:00	8	139	1	148	0
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	0	191	7	198	0	374	17:00:00	16	159	1	176	0
18:00:00	0	215	10	225	0	390	18:00:00	13	152	0	165	0
19:00:00	0	120	5	125	0	223	19:00:00	5	93	0	98	0

East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	0	0	0	0	0	20	8:00:00	7	0	13	20	0
9:00:00	0	0	0	0	0	23	9:00:00	12	0	11	23	0
10:00:00	0	0	1	1	0	20	10:00:00	7	0	12	19	0
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	0	0	0	0	0	17	17:00:00	2	0	15	17	0
18:00:00	0	0	0	0	0	28	18:00:00	5	0	23	28	0
19:00:00	0	0	0	0	0	20	19:00:00	6	0	14	20	1

Calculated Values for Traffic Crossing Major Street

Hours Ending:	7:00	8:00	9:00	10:00	16:00	17:00	18:00	19:00
Crossing Values:	0	7	12	7	0	2	5	6

Ontario Traffic Inc.

Mid-day Peak Diagram

Specified Period

From: 11:00:00

To: 17:00:00

One Hour Peak

From: 12:00:00

To: 13:00:00

Municipality: Millbrook

Site #: 1722900001

Intersection: CR 10 & Fallis Line

TFR File #: 18

Count date: 12-Aug-17

Weather conditions:

Person(s) who counted:

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

Major Road: CR 10 runs N/S

North Leg Total: 382

North Entering: 195

North Peds: 0

Peds Cross: 

Heavys	0	0	0
Trucks	0	1	1
Cars	10	184	194
Totals	10	185	



Heavys	0
Trucks	0
Cars	187
Totals	187

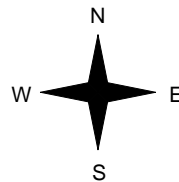
Heavys	Trucks	Cars	Totals
0	0	31	31



CR 10



Fallis Line



Heavys	Trucks	Cars	Totals
0	0	7	7
0	0	18	18
0	0	25	



CR 10

Peds Cross: 

West Peds: 0


West Entering: 25

West Leg Total: 56

Cars	202
Trucks	1
Heavys	0
Totals	203



Cars	21	180	201
Trucks	0	0	0
Heavys	0	0	0
Totals	21	180	

Peds Cross: 

South Peds: 0

South Entering: 201

South Leg Total: 404

Comments

Ontario Traffic Inc.

Total Count Diagram

Municipality: Millbrook
Site #: 1722900001
Intersection: CR 10 & Fallis Line
TFR File #: 18
Count date: 12-Aug-17

Weather conditions:
Person(s) who counted:

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

Major Road: CR 10 runs N/S

North Leg Total: 2021
 North Entering: 1039
 North Peds: 0
 Peds Cross: 

Heavys	Trucks	Cars	Totals
0	0	0	0
0	9	9	9
59	971	1030	1030
59	980		980



Heavys	Trucks	Cars	Totals
0	9	973	982

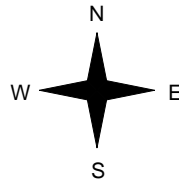
Heavys	Trucks	Cars	Totals
0	1	163	164



CR 10




Fallis Line



Heavys	Trucks	Cars	Totals
0	0	48	48
0	2	128	130
0	2	176	




CR 10

Peds Cross: 
 West Peds: 1
 West Entering: 178
 West Leg Total: 342

Cars	Trucks	Heavys	Totals
1100	11	0	1111



Cars	Trucks	Heavys	Totals
104	1	0	105
925	9	0	934
1031	10	0	

Peds Cross: 
 South Peds: 0
 South Entering: 1041
 South Leg Total: 2152

Comments

Ontario Traffic Inc.

Traffic Count Summary

Intersection: CR 10 & Fallis Line

Count Date: 12-Aug-17

Municipality: Millbrook

North Approach Totals						North/South Total Approaches	South Approach Totals						
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total		
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0	
12:00:00	0	158	7	165	0	378	12:00:00	24	188	1	213	0	
13:00:00	0	185	10	195	0	396	13:00:00	21	180	0	201	0	
14:00:00	0	175	12	187	0	340	14:00:00	13	140	0	153	0	
15:00:00	0	146	12	158	0	332	15:00:00	16	157	1	174	0	
16:00:00	0	166	7	173	0	329	16:00:00	13	143	0	156	0	
17:00:00	0	150	11	161	0	305	17:00:00	18	126	0	144	0	
Totals:	0	980	59	1039	0	2080		105	934	2	1041	0	
East Approach Totals						East/West Total Approaches	West Approach Totals						
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total		
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0	
12:00:00	0	0	0	0	0	33	12:00:00	9	0	24	33	1	
13:00:00	0	0	0	0	5	25	13:00:00	7	0	18	25	0	
14:00:00	0	0	0	0	0	20	14:00:00	10	0	10	20	0	
15:00:00	1	0	0	1	0	43	15:00:00	10	0	32	42	0	
16:00:00	0	0	0	0	0	26	16:00:00	6	0	20	26	0	
17:00:00	0	0	0	0	0	31	17:00:00	6	0	25	31	0	
Totals:	1	0	0	1	5	178		48	0	129	177	1	
Calculated Values for Traffic Crossing Major Street													
Hours Ending:	11:00	12:00	13:00	14:00		15:00	16:00	17:00	17:00				
Crossing Values:	0	9	7	10		11	6	6	6				

Count Date: 12-Aug-17 **Site #:** 1722900001

[illegible]

Count Date: 12-Aug-17 Site #: 1722900001

[illegible]

Count Date: 12-Aug-17 Site #: 1722900001

[illegible]

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: Millbrook

Site #: 1710800002

Intersection: County Rd 10 & Larmer Line

TFR File #: 1

Count date: 25-Apr-17

Weather conditions:

Person(s) who counted:

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

Major Road: County Rd 10 runs N/S

North Leg Total: 404

North Entering: 167

North Peds: 0

Peds Cross: \nlessgtr

Heavys	0	0	0	0
Trucks	2	6	0	8
Cars	1	153	5	159
Totals	3	159	5	



Heavys	0
Trucks	13
Cars	224
Totals	237

East Leg Total: 34

East Entering: 15

East Peds: 0

Peds Cross: \nlessgtr

Heavys	0
Trucks	2
Cars	9
Totals	11

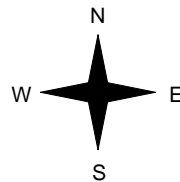
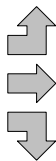


County Rd 10



Larmer Line

Heavys	0
Trucks	0
Cars	23
Totals	23
Heavys	0
Trucks	0
Cars	4
Totals	4
Heavys	0
Trucks	2
Cars	8
Totals	10
Heavys	0
Trucks	2
Cars	35
Totals	



Cars	9
Trucks	0
Heavys	0
Totals	9
Cars	2
Trucks	0
Heavys	0
Totals	2
Cars	4
Trucks	0
Heavys	0
Totals	4
Cars	15
Trucks	0
Heavys	0
Totals	

Larmer Line



Cars	19
Trucks	0
Heavys	0
Totals	19

Peds Cross: \nlessgtr

West Peds: 0

West Entering: 37

West Leg Total: 48

Cars	165
Trucks	8
Heavys	0
Totals	173
Cars	6
Trucks	0
Heavys	0
Totals	6
Cars	192
Trucks	13
Heavys	0
Totals	205
Cars	10
Trucks	0
Heavys	0
Totals	10
Cars	208
Trucks	13
Heavys	0
Totals	



County Rd 10



Peds Cross: \nlessgtr

South Peds: 0

South Entering: 221

South Leg Total: 394

Comments

Ontario Traffic Inc

Afternoon Peak Diagram

Specified Period

From: 16:00:00

To: 19:00:00

One Hour Peak

From: 16:30:00

To: 17:30:00

Municipality: Millbrook

Site #: 1710800002

Intersection: County Rd 10 & Larmer Line

TFR File #: 1

Count date: 25-Apr-17

Weather conditions:

Person(s) who counted:

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

Major Road: County Rd 10 runs N/S

North Leg Total: 413

North Entering: 242

North Peds: 0

Peds Cross: \nlessgtr

Heavys	0	0	0	0
Trucks	0	3	0	3
Cars	9	222	8	239
Totals	9	225	8	



Heavys 0

Trucks 2

Cars 169

Totals 171

East Leg Total: 21

East Entering: 8

East Peds: 0

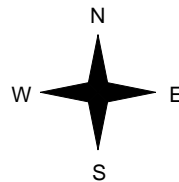
Peds Cross: \nlessgtr

Heavys	Trucks	Cars	Totals
0	0	18	18



Larmer Line

Heavys	Trucks	Cars	Totals
0	0	3	3
0	0	1	1
0	0	6	6
0	0	10	



County Rd 10

County Rd 10

Cars	Trucks	Heavys	Totals
2	1	0	3
1	0	0	1
3	1	0	4
6	2	0	

Larmer Line



Cars	Trucks	Heavys	Totals
13	0	0	13

Peds Cross: \nlessgtr

West Peds: 0

West Entering: 10

West Leg Total: 28

Cars	231
Trucks	4
Heavys	0
Totals	235



Cars	8	164	4	176
Trucks	0	1	0	1
Heavys	0	0	0	0
Totals	8	165	4	

Peds Cross: \nlessgtr

South Peds: 0

South Entering: 177

South Leg Total: 412

Comments

Ontario Traffic Inc

Total Count Diagram

Municipality: Millbrook
Site #: 1710800002
Intersection: County Rd 10 & Larmer Line
TFR File #: 1
Count date: 25-Apr-17

Weather conditions:
Person(s) who counted:

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

Major Road: County Rd 10 runs N/S

North Leg Total: 1872
 North Entering: 947
 North Peds: 0
 Peds Cross: \nless

Heavys	0	0	0	0
Trucks	4	30	0	34
Cars	39	842	32	913
Totals	43	872	32	

Heavys 1
 Trucks 31
 Cars 893
 Totals 925

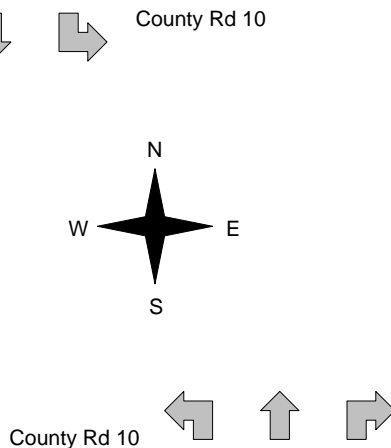
East Leg Total: 134
 East Entering: 62
 East Peds: 0
 Peds Cross: \nless

Heavys	0	Trucks	4	Cars	85	Totals
						89



Larmer Line

Heavys	0	Trucks	1	Cars	54	Totals
						55
						12
						44
						108



Cars	31	Trucks	2	Heavys	0	Totals
						33
						7
						22
						57

Larmer Line



Cars	68	Trucks	4	Heavys	0	Totals
						72

Peds Cross: \nless
 West Peds: 0
 West Entering: 111
 West Leg Total: 200

Cars	903	Trucks	35	Heavys	0	Totals
						938

Cars	39	808	24	871
Trucks	0	28	4	32
Heavys	0	1	0	1
Totals	39	837	28	

Peds Cross: \nless
 South Peds: 0
 South Entering: 904
 South Leg Total: 1842

Comments

Ontario Traffic Inc

Traffic Count Summary

Intersection: County Rd 10 & Larmer Line						Count Date: 25-Apr-17		Municipality: Millbrook					
North Approach Totals						North/South Total Approaches	South Approach Totals						
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total		
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0	
8:00:00	1	125	5	131	0	300	8:00:00	3	162	4	169	0	
9:00:00	6	129	3	138	0	325	9:00:00	6	171	10	187	0	
10:00:00	2	113	3	118	0	254	10:00:00	8	124	4	136	0	
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0	
17:00:00	7	180	6	193	0	358	17:00:00	7	152	6	165	0	
18:00:00	8	209	11	228	0	377	18:00:00	7	140	2	149	0	
19:00:00	8	116	15	139	0	237	19:00:00	8	88	2	98	0	
Totals:						1851	39 837 28 904						0
East Approach Totals						East/West Total Approaches	West Approach Totals						
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total		
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0	
8:00:00	4	1	16	21	0	53	8:00:00	22	2	8	32	0	
9:00:00	2	1	3	6	0	36	9:00:00	16	4	10	30	0	
10:00:00	1	1	6	8	0	20	10:00:00	4	1	7	12	0	
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0	
17:00:00	7	0	5	12	0	26	17:00:00	2	2	10	14	0	
18:00:00	2	1	1	4	0	13	18:00:00	2	3	4	9	0	
19:00:00	6	3	2	11	0	25	19:00:00	9	0	5	14	0	
Totals:						173	55 12 44 111						0
Calculated Values for Traffic Crossing Major Street													
Hours Ending:		7:00	8:00	9:00	10:00			16:00	17:00	18:00	19:00		
Crossing Values:		0	28	22	6			0	11	7	18		

Ontario Traffic Inc.

Mid-day Peak Diagram

Specified Period

From: 11:00:00

To: 17:00:00

One Hour Peak

From: 12:00:00

To: 13:00:00

Municipality: Millbrook

Site #: 1722900002

Intersection: CR 10 & Larmer Line

TFR File #: 1

Count date: 12-Aug-17

Weather conditions:

Person(s) who counted:

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

Major Road: CR 10 runs N/S

North Leg Total: 385

North Entering: 197

North Peds: 0

Peds Cross: \nlessgtr

Heavys	0	0	0	0
Trucks	0	2	0	2
Cars	12	179	4	195
Totals	12	181	4	



Heavys 0

Trucks 1

Cars 187

Totals 188

East Leg Total: 30

East Entering: 17

East Peds: 5

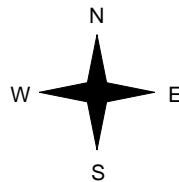
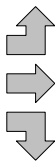
Peds Cross: \nlessgtr

Heavys	Trucks	Cars	Totals
0	0	30	30



Larmer Line

Heavys	Trucks	Cars	Totals
0	0	14	14
0	0	3	3
0	0	10	10
0	0	27	



CR 10



Cars	Trucks	Heavys	Totals
4	0	0	4
6	0	0	6
7	0	0	7
17	0	0	



Larmer Line



Cars	Trucks	Heavys	Totals
13	0	0	13

Peds Cross: \nlessgtr

West Peds: 0

West Entering: 27

West Leg Total: 57

Cars	196
Trucks	2
Heavys	0
Totals	198



Cars	12	169	6	187
Trucks	0	1	0	1
Heavys	0	0	0	0
Totals	12	170	6	

Peds Cross: \nlessgtr

South Peds: 0

South Entering: 188

South Leg Total: 386

Comments

Ontario Traffic Inc.

Total Count Diagram

Municipality: Millbrook
Site #: 1722900002
Intersection: CR 10 & Larmer Line
TFR File #: 1
Count date: 12-Aug-17

Weather conditions:
Person(s) who counted:

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

Major Road: CR 10 runs N/S

North Leg Total: 2027
 North Entering: 1044
 North Peds: 0
 Peds Cross: \nlessgtr

Heavys	Trucks	Cars	Totals
0	0	0	0
0	10	0	10
59	943	32	1034
59	953	32	



Heavys	Trucks	Cars	Totals
0	14	969	983

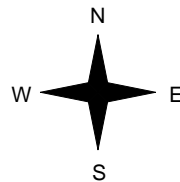
East Leg Total: 169
 East Entering: 85
 East Peds: 5
 Peds Cross: \nlessgtr

Heavys	Trucks	Cars	Totals
0	0	160	160



Larmer Line

Heavys	Trucks	Cars	Totals
0	0	75	75
0	0	22	22
0	0	54	54
0	0	151	



CR 10



Cars	Trucks	Heavys	Totals
33	2	0	35
27	0	0	27
22	1	0	23
82	3	0	

Larmer Line



Cars	Trucks	Heavys	Totals
84	0	0	84

Peds Cross: \nlessgtr
 West Peds: 0
 West Entering: 151
 West Leg Total: 311

Cars	Trucks	Heavys	Totals
1019	11	0	1030



Cars	Trucks	Heavys	Totals
74	0	0	74
861	12	0	873
30	0	0	30
965	12	0	

Peds Cross: \nlessgtr
 South Peds: 0
 South Entering: 977
 South Leg Total: 2007

Comments

Ontario Traffic Inc.

Traffic Count Summary

Intersection: CR 10 & Larmer Line

Count Date: 12-Aug-17

Municipality: Millbrook

North Approach Totals						North/South Total Approaches	South Approach Totals						
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total		
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0	
12:00:00	2	152	7	161	0	357	12:00:00	7	185	4	196	0	
13:00:00	4	181	12	197	0	385	13:00:00	12	170	6	188	0	
14:00:00	5	177	9	191	0	336	14:00:00	14	124	7	145	0	
15:00:00	8	149	7	164	0	330	15:00:00	15	146	5	166	0	
16:00:00	10	154	11	175	0	322	16:00:00	11	128	8	147	0	
17:00:00	3	140	13	156	0	289	17:00:00	15	118	0	133	0	
Totals:	32	953	59	1044	0	2019		74	871	30	975	0	
East Approach Totals						East/West Total Approaches	West Approach Totals						
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total		
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0	
12:00:00	0	3	6	9	0	39	12:00:00	17	4	9	30	0	
13:00:00	7	6	4	17	5	44	13:00:00	14	3	10	27	0	
14:00:00	2	5	7	14	0	41	14:00:00	14	4	9	27	0	
15:00:00	4	6	9	19	0	30	15:00:00	5	2	4	11	0	
16:00:00	8	4	3	15	0	34	16:00:00	9	1	9	19	0	
17:00:00	2	3	6	11	0	46	17:00:00	14	8	13	35	0	
Totals:	23	27	35	85	5	234		73	22	54	149	0	

Calculated Values for Traffic Crossing Major Street

Hours Ending:	11:00	12:00	13:00	14:00	15:00	16:00	17:00	17:00
Crossing Values:	0	21	27	21	15	21	24	24

Count Date: 12-Aug-17 **Site #:** 1722900002

[illegible]

Count Date: 12-Aug-17 **Site #:** 1722900002

[illegible]

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: Millbrook

Site #: 1710800003

Intersection: County Rd 10 & Municipal Office Dr

TFR File #: 16

Count date: 25-Apr-17

Weather conditions:

Person(s) who counted:


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

Major Road: County Rd 10 runs N/S

North Leg Total: 396

North Entering: 172

North Peds: 0

Peds Cross: 

Heavys	0	0	0
Trucks	1	8	9
Cars	7	156	163
Totals	8	164	



Heavys	0
Trucks	13
Cars	211
Totals	224

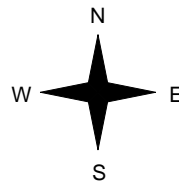
Heavys	0
Trucks	1
Cars	9
Totals	10



County Rd 10



Municipal Office Driveway




Heavys	0
Trucks	0
Cars	0
Totals	0

0	0	1	1
0	0	1	



County Rd 10

Peds Cross: 

West Peds: 0


West Entering: 1

West Leg Total: 11

Cars	157
Trucks	8
Heavys	0
Totals	165



Cars	2	211	213
Trucks	0	13	13
Heavys	0	0	0
Totals	2	224	

Peds Cross: 

South Peds: 0

South Entering: 226

South Leg Total: 391

Comments

Ontario Traffic Inc

Afternoon Peak Diagram

Specified Period

From: 16:00:00

To: 19:00:00

One Hour Peak

From: 16:30:00

To: 17:30:00

Municipality: Millbrook

Site #: 1710800003

Intersection: County Rd 10 & Municipal Office Dr

TFR File #: 16

Count date: 25-Apr-17

Weather conditions:

Person(s) who counted:

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

Major Road: County Rd 10 runs N/S

North Leg Total: 423

North Entering: 241

North Peds: 0

Peds Cross: 

Heavys	0	0	0
Trucks	0	4	4
Cars	3	234	237
Totals	3	238	



Heavys	0
Trucks	0
Cars	182
Totals	182

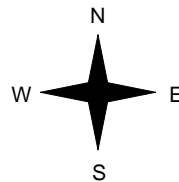
Heavys	Trucks	Cars	Totals
0	0	3	3



County Rd 10




Municipal Office Driveway



Heavys	Trucks	Cars	Totals
0	0	10	10
0	0	4	4
0	0	14	



County Rd 10

Peds Cross: 

West Peds: 0


West Entering: 14

West Leg Total: 17

Cars	238
Trucks	4
Heavys	0
Totals	242



Cars	0	172	172
Trucks	0	0	0
Heavys	0	0	0
Totals	0	172	

Peds Cross: 

South Peds: 0

South Entering: 172

South Leg Total: 414

Comments

Ontario Traffic Inc

Total Count Diagram

Municipality: Millbrook
Site #: 1710800003
Intersection: County Rd 10 & Municipal Office Dr
TFR File #: 16
Count date: 25-Apr-17

Weather conditions:
Person(s) who counted:

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

Major Road: County Rd 10 runs N/S

North Leg Total: 1885
 North Entering: 962
 North Peds: 0
 Peds Cross: 

	Heavys	Trucks	Cars	Totals
North	0	0	0	0
East	2	35	37	37
South	38	887	925	925
Totals	40	922		



	Heavys	Trucks	Cars	Totals
North	0	0	0	0
East	33	890	923	923
South				
Totals				

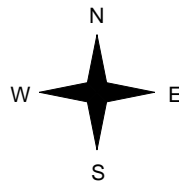
Heavys	Trucks	Cars	Totals
0	3	63	66



County Rd 10



Municipal Office Driveway




Heavys	Trucks	Cars	Totals
0	2	16	18
0	2	11	13
0	4	27	



County Rd 10




Peds Cross: 
 West Peds: 0
 West Entering: 31
 West Leg Total: 97

	Cars	Trucks	Heavys	Totals
West	898	37	0	935
South	25	1	0	26
Totals	874	31	0	905



	Cars	Trucks	Heavys	Totals
West	898	37	0	935
South	25	1	0	26
Totals	874	31	0	905

Peds Cross: 
 South Peds: 0
 South Entering: 931
 South Leg Total: 1866

Comments

Ontario Traffic Inc

Traffic Count Summary

Intersection: County Rd 10 & Municipal Office ☐ Count Date: 25-Apr-17 Municipality: Millbrook

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	1	7:00:00	0	1	0	1	0
8:00:00	0	137	0	137	0	309	8:00:00	2	170	0	172	0
9:00:00	0	131	11	142	0	338	9:00:00	7	189	0	196	0
10:00:00	0	109	17	126	0	272	10:00:00	13	133	0	146	0
16:00:00	0	3	0	3	0	6	16:00:00	0	3	0	3	0
17:00:00	0	195	6	201	0	361	17:00:00	0	160	0	160	0
18:00:00	0	220	3	223	0	377	18:00:00	1	153	0	154	0
19:00:00	0	125	3	128	0	226	19:00:00	3	95	0	98	0

Ontario Traffic Inc

Count Date: 25-Apr-17 Site #: 1710800003

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	2	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0
9:15:00	1	1	0	0	3	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0
9:30:00	1	0	0	0	4	1	2	1	0	0	2	1	0	0	0	0	0	0	0	0
9:45:00	2	1	0	0	5	1	2	0	0	0	2	0	0	0	0	0	0	0	0	0
10:00:00	4	2	0	0	5	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
10:01:43	4	0	0	0	5	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
16:00:00	4	0	0	0	5	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
16:15:00	4	0	0	0	5	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
16:30:00	4	0	0	0	6	1	2	0	0	0	2	0	0	0	0	0	0	0	0	0
16:45:00	8	4	0	0	7	1	2	0	0	0	2	0	0	0	0	0	0	0	0	0
17:00:00	14	6	0	0	8	1	2	0	0	0	2	0	0	0	0	0	0	0	0	0
17:15:00	14	0	0	0	9	1	2	0	0	0	2	0	0	0	0	0	0	0	0	0
17:30:00	14	0	0	0	10	1	2	0	0	0	2	0	0	0	0	0	0	0	0	0
17:45:00	14	0	0	0	10	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
18:00:00	14	0	0	0	10	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
18:15:00	16	2	0	0	10	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
18:30:00	16	0	0	0	11	1	2	0	0	0	2	0	0	0	0	0	0	0	0	0

Count Date: 25-Apr-17 **Site #:** 1710800003

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	2	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0
9:15:00	1	1	0	0	3	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0
9:30:00	1	0	0	0	4	1	2	1	0	0	0	2	1	0	0	0	0	0	0	0
9:45:00	2	1	0	0	5	1	2	0	0	0	0	2	0	0	0	0	0	0	0	0
10:00:00	4	2	0	0	5	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
10:01:43	4	0	0	0	5	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
16:00:00	4	0	0	0	5	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
16:15:00	4	0	0	0	5	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
16:30:00	4	0	0	0	6	1	2	0	0	0	0	2	0	0	0	0	0	0	0	0
16:45:00	8	4	0	0	7	1	2	0	0	0	0	2	0	0	0	0	0	0	0	0
17:00:00	14	6	0	0	8	1	2	0	0	0	0	2	0	0	0	0	0	0	0	0
17:15:00	14	0	0	0	9	1	2	0	0	0	0	2	0	0	0	0	0	0	0	0
17:30:00	14	0	0	0	10	1	2	0	0	0	0	2	0	0	0	0	0	0	0	0
17:45:00	14	0	0	0	10	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
18:00:00	14	0	0	0	10	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
18:15:00	16	2	0	0	10	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
18:30:00	16	0	0	0	11	1	2	0	0	0	0	2	0	0	0	0	0	0	0	0
18:45:00	16	0	0	0	11	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
19:00:00	16	0	0	0	11	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
19:00:53	16	0	0	0	11	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
						</														

Ontario Traffic Inc.

Mid-day Peak Diagram

Specified Period

From: 11:00:00

To: 17:00:00

One Hour Peak

From: 12:00:00

To: 13:00:00

Municipality: Millbrook

Site #: 1722900003

Intersection: CR 10 & Municipal Office Driveway

TFR File #: 1

Count date: 12-Aug-17

Weather conditions:

Person(s) who counted:


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

Major Road: CR 10 runs N/S

North Leg Total: 383

North Entering: 196

North Peds: 0

Peds Cross: 

Heavys	0	0	0
Trucks	0	1	1
Cars	1	194	195
Totals	1	195	



Heavys	0
Trucks	0
Cars	187
Totals	187

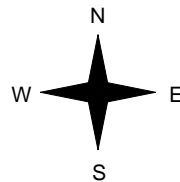
Heavys	Trucks	Cars	Totals
0	0	1	1



CR 10




Municipal Office Driveway



Heavys	Trucks	Cars	Totals
0	0	0	0
0	0	0	0
0	0	0	0



CR 10

Peds Cross: 

West Peds: 0


West Entering: 0

West Leg Total: 1

Cars	194
Trucks	1
Heavys	0
Totals	195



Cars	0	187	187
Trucks	0	0	0
Heavys	0	0	0
Totals	0	187	

Peds Cross: 

South Peds: 0

South Entering: 187

South Leg Total: 382

Comments

Ontario Traffic Inc.

Total Count Diagram

Municipality: Millbrook
Site #: 1722900003
Intersection: CR 10 & Municipal Office Driveway
TFR File #: 1
Count date: 12-Aug-17

Weather conditions:
Person(s) who counted:

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

Major Road: CR 10 runs N/S

North Leg Total: 2014
 North Entering: 1036
 North Peds: 0
 Peds Cross: 

Heavys	Trucks	Cars	Totals
0	1	10	11
0	2	2	4
0	0	9	9
0	2	11	


Heavys	Trucks	Cars	Totals
0	13	965	978

Heavys	Trucks	Cars	Totals
0	1	10	11

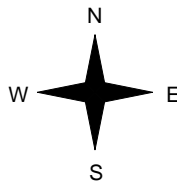
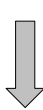


Municipal Office Driveway

Heavys	Trucks	Cars	Totals
0	2	2	4
0	0	9	9
0	2	11	


Peds Cross: 
 West Peds: 1
 West Entering: 13
 West Leg Total: 24

Cars	Trucks	Heavys	Totals
1032	9	0	1041



CR 10

Cars	Trucks	Heavys	Totals
7	0	0	7
963	11	0	974

Peds Cross: 
 South Peds: 0
 South Entering: 981
 South Leg Total: 2022

Comments

Ontario Traffic Inc.

Traffic Count Summary

Intersection: CR 10 & Municipal Office Driveway						Count Date: 12-Aug-17		Municipality: Millbrook					
North Approach Totals						North/South Total Approaches	South Approach Totals						
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total		
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0	
12:00:00	0	161	1	162	0	358	12:00:00	2	194	0	196	0	
13:00:00	0	195	1	196	0	383	13:00:00	0	187	0	187	0	
14:00:00	0	187	0	187	0	335	14:00:00	2	146	0	148	0	
15:00:00	0	157	0	157	0	326	15:00:00	1	168	0	169	0	
16:00:00	0	173	0	173	0	321	16:00:00	1	147	0	148	0	
17:00:00	0	159	2	161	0	294	17:00:00	1	132	0	133	0	
Totals:						2017	7 974 0 981 0						
East Approach Totals						East/West Total Approaches	West Approach Totals						
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total		
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0	
12:00:00	0	0	0	0	0	3	12:00:00	0	0	3	3	1	
13:00:00	0	0	0	0	5	0	13:00:00	0	0	0	0	0	
14:00:00	0	0	0	0	0	1	14:00:00	0	0	1	1	0	
15:00:00	0	0	0	0	0	3	15:00:00	1	0	2	3	0	
16:00:00	0	0	0	0	0	3	16:00:00	2	0	1	3	0	
17:00:00	0	0	0	0	0	3	17:00:00	1	0	2	3	0	
Totals:						13	4 0 9 13 1						
Calculated Values for Traffic Crossing Major Street													
Hours Ending:		11:00	12:00	13:00	14:00			15:00	16:00	17:00	17:00		
Crossing Values:		0	0	0	0			1	2	1	1		

[illegible]

Count Date: 12-Aug-17 Site #: 1722900003

[illegible]

[illegible]

Count Date: 12-Aug-17 Site #: 1722900003

[illegible]

[illegible]

Count Date: 12-Aug-17 **Site #:** 1722900003

[illegible]

[illegible]





Count Date: 12-Aug-17 Site #: 1722900003

[illegible]

Appendix D – Synchro Analysis Output – Existing Conditions




Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Existing (2018) AM Peak Hour

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	4	10	5	2	9	6	253	13	5	177	3
Future Vol, veh/h	3	4	10	5	2	9	6	253	13	5	177	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	20	0	0	0	0	6	0	0	4	67
Mvmt Flow	4	5	12	6	2	11	7	301	15	6	211	4
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	554	555	213	557	550	309	215	0	0	316	0	0
Stage 1	225	225	-	323	323	-	-	-	-	-	-	-
Stage 2	329	330	-	234	227	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.4	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.48	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	446	443	784	444	446	736	1367	-	-	1256	-	-
Stage 1	782	721	-	693	654	-	-	-	-	-	-	-
Stage 2	688	649	-	774	720	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	434	438	784	430	441	736	1367	-	-	1256	-	-
Mov Cap-2 Maneuver	434	438	-	430	441	-	-	-	-	-	-	-
Stage 1	777	717	-	689	650	-	-	-	-	-	-	-
Stage 2	671	645	-	753	716	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	11.3		11.6			0.2			0.2			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL		NBT	NBR		EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	1367		-	-	590	564	1256	-	-			
HCM Lane V/C Ratio	0.005		-	-	0.034	0.034	0.005	-	-			
HCM Control Delay (s)	7.6		0	-	11.3	11.6	7.9	0	-			
HCM Lane LOS	A		A	-	B	B	A	A	-			
HCM 95th %tile Q(veh)	0		-	-	0.1	0.1	0	-	-			




Millbrook Development Phase 2
2: County Road 10 & Fallis Line

HCM 2010 TWSC
Existing (2018) AM Peak Hour

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	57	36	22	219	165	21
Future Vol, veh/h	57	36	22	219	165	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	10	0	0	6	4	20
Mvmt Flow	66	42	26	255	192	24
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	511	204	216	0	-	0
Stage 1	204	-	-	-	-	-
Stage 2	307	-	-	-	-	-
Critical Hdwy	6.5	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	509	842	1366	-	-	-
Stage 1	811	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	498	842	1366	-	-	-
Mov Cap-2 Maneuver	498	-	-	-	-	-
Stage 1	793	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.4	0.7		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1366	-	592	-	-	
HCM Lane V/C Ratio	0.019	-	0.183	-	-	
HCM Control Delay (s)	7.7	0	12.4	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-	

Millbrook Development Phase 2
3: County Road 10 & Municipal Office Access

HCM 2010 TWSC
Existing (2018) AM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	2	275	183	8
Future Vol, veh/h	0	1	2	275	183	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	6	5	13
Mvmt Flow	0	1	2	324	215	9
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	548	220	224	0	-	0
Stage 1	220	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	501	825	1357	-	-	-
Stage 1	821	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	500	825	1357	-	-	-
Mov Cap-2 Maneuver	500	-	-	-	-	-
Stage 1	819	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.4	0.1		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1357	-	825	-	-	
HCM Lane V/C Ratio	0.002	-	0.001	-	-	
HCM Control Delay (s)	7.7	0	9.4	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Existing (2018) PM Peak Hour

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	3	1	6	6	1	3	8	197	6	8	279	9
Future Vol, veh/h	3	1	6	6	1	3	8	197	6	8	279	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	25	0	33	0	1	0	0	1	0
Mvmt Flow	3	1	7	7	1	3	9	224	7	9	317	10




Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	588	589	322	590	591	228	327	0	0	231	0	0
Stage 1	340	340	-	246	246	-	-	-	-	-	-	-
Stage 2	248	249	-	344	345	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.35	6.5	6.53	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.725	4	3.597	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	423	423	724	387	422	740	1244	-	-	1349	-	-
Stage 1	679	643	-	709	706	-	-	-	-	-	-	-
Stage 2	760	704	-	626	640	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	415	416	724	378	415	740	1244	-	-	1349	-	-
Mov Cap-2 Maneuver	415	416	-	378	415	-	-	-	-	-	-	-
Stage 1	674	638	-	703	700	-	-	-	-	-	-	-
Stage 2	749	698	-	614	635	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.6		13.2		0.3		0.2	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1244	-	-	558 448	1349	-	-
HCM Lane V/C Ratio	0.007	-	-	0.02 0.025	0.007	-	-
HCM Control Delay (s)	7.9	0	-	11.6 13.2	7.7	0	-
HCM Lane LOS	A	A	-	B B	A A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1 0.1	0	-	-




Millbrook Development Phase 2
2: County Road 10 & Fallis Line

HCM 2010 TWSC
Existing (2018) PM Peak Hour

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	32	43	173	235	62
Future Vol, veh/h	34	32	43	173	235	62
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	40	38	51	206	280	74
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	625	317	354	0	-	0
Stage 1	317	-	-	-	-	-
Stage 2	308	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	452	728	1216	-	-	-
Stage 1	743	-	-	-	-	-
Stage 2	750	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	431	728	1216	-	-	-
Mov Cap-2 Maneuver	431	-	-	-	-	-
Stage 1	708	-	-	-	-	-
Stage 2	750	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.8	1.6		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1216	-	537	-	-	
HCM Lane V/C Ratio	0.042	-	0.146	-	-	
HCM Control Delay (s)	8.1	0	12.8	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-	

Millbrook Development Phase 2
3: County Road 10 & Municipal Office Access

HCM 2010 TWSC
Existing (2018) PM Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	4	0	205	290	3
Future Vol, veh/h	10	4	0	205	290	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	12	5	0	238	337	3

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	577	339	340	0	-	0
Stage 1	339	-	-	-	-	-
Stage 2	238	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	482	708	1230	-	-	-
Stage 1	726	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	482	708	1230	-	-	-
Mov Cap-2 Maneuver	482	-	-	-	-	-
Stage 1	726	-	-	-	-	-
Stage 2	806	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1230	-	530	-	-
HCM Lane V/C Ratio	-	-	0.031	-	-
HCM Control Delay (s)	0	-	12	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Existing (2018) SAT Peak Hour

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	14	3	10	9	6	4	12	208	8	4	226	12
Future Vol, veh/h	14	3	10	9	6	4	12	208	8	4	226	12
Conflicting Peds, #/hr	0	0	5	5	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	14	3	10	9	6	4	12	214	8	4	233	12




Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	494	493	244	501	495	218	245	0	0	222	0	0
Stage 1	247	247	-	242	242	-	-	-	-	-	-	-
Stage 2	247	246	-	259	253	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	489	480	800	484	479	827	1333	-	-	1359	-	-
Stage 1	761	706	-	766	709	-	-	-	-	-	-	-
Stage 2	761	706	-	750	701	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	477	474	797	469	473	827	1333	-	-	1359	-	-
Mov Cap-2 Maneuver	477	474	-	469	473	-	-	-	-	-	-	-
Stage 1	753	704	-	758	702	-	-	-	-	-	-	-
Stage 2	743	699	-	732	699	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.8		12.2		0.4		0.1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1333	-	-	560 518	1359	-	-
HCM Lane V/C Ratio	0.009	-	-	0.05 0.038	0.003	-	-
HCM Control Delay (s)	7.7	0	-	11.8 12.2	7.7	0	-
HCM Lane LOS	A	A	-	B B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2 0.1	0	-	-




Millbrook Development Phase 2
2: County Road 10 & Fallis Line

HCM 2010 TWSC
Existing (2018) SAT Peak Hour

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	44	35	41	184	189	53
Future Vol, veh/h	44	35	41	184	189	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	47	37	44	196	201	56
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	513	229	257	0	-	0
Stage 1	229	-	-	-	-	-
Stage 2	284	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	525	815	1320	-	-	-
Stage 1	814	-	-	-	-	-
Stage 2	769	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	506	815	1320	-	-	-
Mov Cap-2 Maneuver	506	-	-	-	-	-
Stage 1	784	-	-	-	-	-
Stage 2	769	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.9	1.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1320	-	608	-	-	
HCM Lane V/C Ratio	0.033	-	0.138	-	-	
HCM Control Delay (s)	7.8	0	11.9	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-	

Millbrook Development Phase 2
3: County Road 10 & Municipal Office Access

HCM 2010 TWSC
Existing (2018) SAT Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	228	242	1
Future Vol, veh/h	0	0	0	228	242	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	0	0	0	238	252	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	491	253	253	0	-	0
Stage 1	253	-	-	-	-	-
Stage 2	238	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	540	791	1324	-	-	-
Stage 1	794	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	540	791	1324	-	-	-
Mov Cap-2 Maneuver	540	-	-	-	-	-
Stage 1	794	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1324	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	0	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	

Appendix E – Synchro Analysis Output – Background Conditions

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Background (2023) AM Peak Hour

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	3	5	17	11	2	10	10	390	21	6	271	3
Future Vol, veh/h	3	5	17	11	2	10	10	390	21	6	271	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	850	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	20	0	0	0	0	6	0	0	4	67
Mvmt Flow	4	6	20	13	2	12	12	464	25	7	323	4






Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	847	852	325	853	842	477	327	0	0	489	0	0
Stage 1	339	339	-	501	501	-	-	-	-	-	-	-
Stage 2	508	513	-	352	341	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.4	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.48	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	284	299	676	281	303	592	1244	-	-	1085	-	-
Stage 1	680	643	-	556	546	-	-	-	-	-	-	-
Stage 2	551	539	-	669	642	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	273	294	676	265	298	592	1244	-	-	1085	-	-
Mov Cap-2 Maneuver	273	294	-	265	298	-	-	-	-	-	-	-
Stage 1	673	638	-	550	541	-	-	-	-	-	-	-
Stage 2	532	534	-	638	637	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.2		16.1		0.2		0.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1244	-	-	470 353	1085	-	-
HCM Lane V/C Ratio	0.01	-	-	0.063 0.078	0.007	-	-
HCM Control Delay (s)	7.9	-	-	13.2 16.1	8.3	0	-
HCM Lane LOS	A	-	-	B C	A A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2 0.3	0	-	-






Millbrook Development Phase 2
2: County Road 10 & Fallis Line

HCM 2010 TWSC
Background (2023) AM Peak Hour

Intersection						
Int Delay, s/veh	9.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	176	109	74	248	185	98
Future Vol, veh/h	176	109	74	248	185	98
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	950	-	-	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	10	0	0	6	4	20
Mvmt Flow	205	127	86	288	215	114
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	675	215	329	0	-	0
Stage 1	215	-	-	-	-	-
Stage 2	460	-	-	-	-	-
Critical Hdwy	6.5	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	407	830	1242	-	-	-
Stage 1	802	-	-	-	-	-
Stage 2	619	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	379	830	1242	-	-	-
Mov Cap-2 Maneuver	379	-	-	-	-	-
Stage 1	747	-	-	-	-	-
Stage 2	619	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	27.9	1.9		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1242	-	478	-	-	
HCM Lane V/C Ratio	0.069	-	0.693	-	-	
HCM Control Delay (s)	8.1	-	27.9	-	-	
HCM Lane LOS	A	-	D	-	-	
HCM 95th %tile Q(veh)	0.2	-	5.3	-	-	

Millbrook Development Phase 2
3: County Road 10 & Municipal Office Access

HCM 2010 TWSC
Background (2023) AM Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	4	8	417	277	23
Future Vol, veh/h	8	4	8	417	277	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	6	5	13
Mvmt Flow	9	5	9	491	326	27

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	849	340	353	0	-	0
Stage 1	340	-	-	-	-	-
Stage 2	509	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	334	707	1217	-	-	-
Stage 1	725	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	332	707	1217	-	-	-
Mov Cap-2 Maneuver	332	-	-	-	-	-
Stage 1	720	-	-	-	-	-
Stage 2	608	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.3	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1217	-	403	-	-
HCM Lane V/C Ratio	0.008	-	0.035	-	-
HCM Control Delay (s)	8	-	14.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Background (2023) PM Peak Hour

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	3	1	13	16	1	3	15	337	15	9	424	10
Future Vol, veh/h	3	1	13	16	1	3	15	337	15	9	424	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	850	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	25	0	33	0	1	0	0	1	0
Mvmt Flow	3	1	15	18	1	3	17	383	17	10	482	11






Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	936	942	488	942	939	392	493	0	0	400	0	0
Stage 1	508	508	-	426	426	-	-	-	-	-	-	-
Stage 2	428	434	-	516	513	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.35	6.5	6.53	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.725	4	3.597	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	247	265	584	221	266	594	1081	-	-	1170	-	-
Stage 1	551	542	-	564	589	-	-	-	-	-	-	-
Stage 2	609	585	-	502	539	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	240	258	584	210	259	594	1081	-	-	1170	-	-
Mov Cap-2 Maneuver	240	258	-	210	259	-	-	-	-	-	-	-
Stage 1	542	535	-	555	580	-	-	-	-	-	-	-
Stage 2	595	576	-	482	533	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.6		22		0.3		0.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1081	-	-	440 235	1170	-	-
HCM Lane V/C Ratio	0.016	-	-	0.044 0.097	0.009	-	-
HCM Control Delay (s)	8.4	-	-	13.6 22	8.1	0	-
HCM Lane LOS	A	-	-	B C	A A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1 0.3	0	-	-






Millbrook Development Phase 2
2: County Road 10 & Fallis Line

HCM 2010 TWSC
Background (2023) PM Peak Hour

Intersection						
Int Delay, s/veh	15.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	169	108	133	185	253	201
Future Vol, veh/h	169	108	133	185	253	201
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	950	-	-	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	201	129	158	220	301	239
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	837	301	540	0	-	0
Stage 1	301	-	-	-	-	-
Stage 2	536	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	339	743	1039	-	-	-
Stage 1	755	-	-	-	-	-
Stage 2	591	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	287	743	1039	-	-	-
Mov Cap-2 Maneuver	287	-	-	-	-	-
Stage 1	640	-	-	-	-	-
Stage 2	591	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	53.8	3.8		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1039	-	377	-	-	
HCM Lane V/C Ratio	0.152	-	0.875	-	-	
HCM Control Delay (s)	9.1	-	53.8	-	-	
HCM Lane LOS	A	-	F	-	-	
HCM 95th %tile Q(veh)	0.5	-	8.6	-	-	

Millbrook Development Phase 2
3: County Road 10 & Municipal Office Access

HCM 2010 TWSC
Background (2023) PM Peak Hour

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	26	11	6	346	440	18
Future Vol, veh/h	26	11	6	346	440	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	30	13	7	402	512	21

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	939	523	533	0	-	0
Stage 1	523	-	-	-	-	-
Stage 2	416	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	295	558	1045	-	-	-
Stage 1	599	-	-	-	-	-
Stage 2	670	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	293	558	1045	-	-	-
Mov Cap-2 Maneuver	293	-	-	-	-	-
Stage 1	595	-	-	-	-	-
Stage 2	670	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.1	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1045	-	341	-	-
HCM Lane V/C Ratio	0.007	-	0.126	-	-
HCM Control Delay (s)	8.5	-	17.1	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-






Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Background (2023) SAT Peak Hour

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	16	3	15	17	7	5	17	353	16	5	383	14
Future Vol, veh/h	16	3	15	17	7	5	17	353	16	5	383	14
Conflicting Peds, #/hr	0	0	5	5	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	850	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	16	3	15	18	7	5	18	364	16	5	395	14
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	826	828	407	834	827	372	409	0	0	380	0	0
Stage 1	412	412	-	408	408	-	-	-	-	-	-	-
Stage 2	414	416	-	426	419	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	293	309	648	290	309	678	1161	-	-	1190	-	-
Stage 1	621	598	-	624	600	-	-	-	-	-	-	-
Stage 2	620	595	-	610	593	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	281	303	645	276	303	678	1161	-	-	1190	-	-
Mov Cap-2 Maneuver	281	303	-	276	303	-	-	-	-	-	-	-
Stage 1	611	595	-	614	590	-	-	-	-	-	-	-
Stage 2	598	585	-	587	590	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	15.5		17.6		0.4		0.1					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1161	-	-	377 315	1190	-	-					
HCM Lane V/C Ratio	0.015	-	-	0.093 0.095	0.004	-	-					
HCM Control Delay (s)	8.1	-	-	15.5 17.6	8	0	-					
HCM Lane LOS	A	-	-	C C	A A	-	-					
HCM 95th %tile Q(veh)	0	-	-	0.3 0.3	0	-	-					






Millbrook Development Phase 2
2: County Road 10 & Fallis Line

HCM 2010 TWSC
Background (2023) SAT Peak Hour

Intersection						
Int Delay, s/veh	9.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	175	133	129	207	210	195
Future Vol, veh/h	175	133	129	207	210	195
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	950	-	-	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	186	141	137	220	223	207
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	717	223	430	0	-	0
Stage 1	223	-	-	-	-	-
Stage 2	494	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	399	822	1140	-	-	-
Stage 1	819	-	-	-	-	-
Stage 2	617	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	351	822	1140	-	-	-
Mov Cap-2 Maneuver	351	-	-	-	-	-
Stage 1	721	-	-	-	-	-
Stage 2	617	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	29	3.3		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1140	-	466	-	-	
HCM Lane V/C Ratio	0.12	-	0.703	-	-	
HCM Control Delay (s)	8.6	-	29	-	-	
HCM Lane LOS	A	-	D	-	-	
HCM 95th %tile Q(veh)	0.4	-	5.4	-	-	

Millbrook Development Phase 2
3: County Road 10 & Municipal Office Access

HCM 2010 TWSC
Background (2023) SAT Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	3	4	378	404	11
Future Vol, veh/h	7	3	4	378	404	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	7	3	4	394	421	11

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	829	427	432	0	-	0
Stage 1	427	-	-	-	-	-
Stage 2	402	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	343	632	1138	-	-	-
Stage 1	662	-	-	-	-	-
Stage 2	680	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	342	632	1138	-	-	-
Mov Cap-2 Maneuver	342	-	-	-	-	-
Stage 1	659	-	-	-	-	-
Stage 2	680	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.3	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1138	-	397	-	-
HCM Lane V/C Ratio	0.004	-	0.026	-	-
HCM Control Delay (s)	8.2	-	14.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Background (2026) AM Peak Hour

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔			↔	
Traffic Vol, veh/h	4	5	18	11	2	11	10	404	22	6	282	4
Future Vol, veh/h	4	5	18	11	2	11	10	404	22	6	282	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	850	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	20	0	0	0	0	6	0	0	4	67
Mvmt Flow	5	6	21	13	2	13	12	481	26	7	336	5






Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	879	884	339	884	873	494	341	0	0	507	0	0
Stage 1	353	353	-	518	518	-	-	-	-	-	-	-
Stage 2	526	531	-	366	355	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.4	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.48	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	270	286	664	268	291	579	1229	-	-	1068	-	-
Stage 1	668	634	-	544	536	-	-	-	-	-	-	-
Stage 2	539	529	-	657	633	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	259	281	664	252	286	579	1229	-	-	1068	-	-
Mov Cap-2 Maneuver	259	281	-	252	286	-	-	-	-	-	-	-
Stage 1	661	629	-	539	531	-	-	-	-	-	-	-
Stage 2	519	524	-	625	628	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.7		16.4		0.2		0.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1229	-	-	447 345	1068	-	-
HCM Lane V/C Ratio	0.01	-	-	0.072 0.083	0.007	-	-
HCM Control Delay (s)	8	-	-	13.7 16.4	8.4	0	-
HCM Lane LOS	A	-	-	B C	A A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2 0.3	0	-	-






Millbrook Development Phase 2
2: County Road 10 & Fallis Line

HCM 2010 TWSC
Background (2026) AM Peak Hour

Intersection						
Int Delay, s/veh	10.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	177	110	75	263	197	98
Future Vol, veh/h	177	110	75	263	197	98
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	950	-	-	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	10	0	0	6	4	20
Mvmt Flow	206	128	87	306	229	114
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	709	229	343	0	-	0
Stage 1	229	-	-	-	-	-
Stage 2	480	-	-	-	-	-
Critical Hdwy	6.5	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	389	815	1227	-	-	-
Stage 1	791	-	-	-	-	-
Stage 2	606	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	361	815	1227	-	-	-
Mov Cap-2 Maneuver	361	-	-	-	-	-
Stage 1	735	-	-	-	-	-
Stage 2	606	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	31	1.8		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1227	-	459	-	-	
HCM Lane V/C Ratio	0.071	-	0.727	-	-	
HCM Control Delay (s)	8.2	-	31	-	-	
HCM Lane LOS	A	-	D	-	-	
HCM 95th %tile Q(veh)	0.2	-	5.8	-	-	

Millbrook Development Phase 2
3: County Road 10 & Municipal Office Access

HCM 2010 TWSC
Background (2026) AM Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	4	8	433	288	23
Future Vol, veh/h	8	4	8	433	288	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	6	5	13
Mvmt Flow	9	5	9	509	339	27






Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	880	353	366	0	-	0
Stage 1	353	-	-	-	-	-
Stage 2	527	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	320	695	1204	-	-	-
Stage 1	716	-	-	-	-	-
Stage 2	596	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	318	695	1204	-	-	-
Mov Cap-2 Maneuver	318	-	-	-	-	-
Stage 1	711	-	-	-	-	-
Stage 2	596	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.6	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1204	-	388	-	-
HCM Lane V/C Ratio	0.008	-	0.036	-	-
HCM Control Delay (s)	8	-	14.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-






Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Background (2026) PM Peak Hour

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	1	13	16	1	4	16	348	15	10	440	11
Future Vol, veh/h	4	1	13	16	1	4	16	348	15	10	440	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	850	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	25	0	33	0	1	0	0	1	0
Mvmt Flow	5	1	15	18	1	5	18	395	17	11	500	13
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	972	977	507	977	975	404	513	0	0	412	0	0
Stage 1	529	529	-	440	440	-	-	-	-	-	-	-
Stage 2	443	448	-	537	535	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.35	6.5	6.53	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.725	4	3.597	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	234	253	570	209	253	585	1063	-	-	1158	-	-
Stage 1	537	530	-	554	581	-	-	-	-	-	-	-
Stage 2	598	576	-	489	527	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	226	245	570	198	245	585	1063	-	-	1158	-	-
Mov Cap-2 Maneuver	226	245	-	198	245	-	-	-	-	-	-	-
Stage 1	528	523	-	545	571	-	-	-	-	-	-	-
Stage 2	582	566	-	469	520	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	14.4		22.5		0.4		0.2					
HCM LOS	B		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1063	-	-	404	229	1158	-	-				
HCM Lane V/C Ratio	0.017	-	-	0.051	0.104	0.01	-	-				
HCM Control Delay (s)	8.4	-	-	14.4	22.5	8.1	0	-				
HCM Lane LOS	A	-	-	B	C	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.3	0	-	-				






Millbrook Development Phase 2
2: County Road 10 & Fallis Line

HCM 2010 TWSC
Background (2026) PM Peak Hour

Intersection						
Int Delay, s/veh	17.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	169	110	135	197	269	202
Future Vol, veh/h	169	110	135	197	269	202
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	950	-	-	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	201	131	161	235	320	240
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	877	320	560	0	-	0
Stage 1	320	-	-	-	-	-
Stage 2	557	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	322	725	1021	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	578	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	271	725	1021	-	-	-
Mov Cap-2 Maneuver	271	-	-	-	-	-
Stage 1	624	-	-	-	-	-
Stage 2	578	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	64.3	3.7		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1021	-	360	-	-	
HCM Lane V/C Ratio	0.157	-	0.923	-	-	
HCM Control Delay (s)	9.2	-	64.3	-	-	
HCM Lane LOS	A	-	F	-	-	
HCM 95th %tile Q(veh)	0.6	-	9.6	-	-	

Millbrook Development Phase 2
3: County Road 10 & Municipal Office Access

HCM 2010 TWSC
Background (2026) PM Peak Hour

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	26	11	6	358	456	18
Future Vol, veh/h	26	11	6	358	456	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	30	13	7	416	530	21

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	971	541	551	0	-	0
Stage 1	541	-	-	-	-	-
Stage 2	430	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	283	545	1029	-	-	-
Stage 1	588	-	-	-	-	-
Stage 2	660	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	281	545	1029	-	-	-
Mov Cap-2 Maneuver	281	-	-	-	-	-
Stage 1	584	-	-	-	-	-
Stage 2	660	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.6	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1029	-	328	-	-
HCM Lane V/C Ratio	0.007	-	0.131	-	-
HCM Control Delay (s)	8.5	-	17.6	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-






Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Background (2026) SAT Peak Hour

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↱	↰			↕	
Traffic Vol, veh/h	17	4	16	17	7	5	17	365	16	5	395	14
Future Vol, veh/h	17	4	16	17	7	5	17	365	16	5	395	14
Conflicting Peds, #/hr	0	0	5	5	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	850	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	18	4	16	18	7	5	18	376	16	5	407	14
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	850	852	419	859	851	384	421	0	0	392	0	0
Stage 1	424	424	-	420	420	-	-	-	-	-	-	-
Stage 2	426	428	-	439	431	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	283	299	638	279	299	668	1149	-	-	1178	-	-
Stage 1	612	590	-	615	593	-	-	-	-	-	-	-
Stage 2	610	588	-	601	586	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	271	292	636	263	292	668	1149	-	-	1178	-	-
Mov Cap-2 Maneuver	271	292	-	263	292	-	-	-	-	-	-	-
Stage 1	602	586	-	605	584	-	-	-	-	-	-	-
Stage 2	588	579	-	576	582	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	16		18.2			0.3			0.1			
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL		NBT	NBR		EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	1149		-	-	364	302	1178	-	-			
HCM Lane V/C Ratio	0.015		-	-	0.105	0.099	0.004	-	-			
HCM Control Delay (s)	8.2		-	-	16	18.2	8.1	0	-			
HCM Lane LOS	A		-	-	C	C	A	A	-			
HCM 95th %tile Q(veh)	0		-	-	0.3	0.3	0	-	-			






Millbrook Development Phase 2
2: County Road 10 & Fallis Line

HCM 2010 TWSC
Background (2026) SAT Peak Hour

Intersection						
Int Delay, s/veh	10.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	175	135	130	219	223	196
Future Vol, veh/h	175	135	130	219	223	196
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	950	-	-	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	186	144	138	233	237	209
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	746	237	446	0	-	0
Stage 1	237	-	-	-	-	-
Stage 2	509	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	384	807	1125	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	337	807	1125	-	-	-
Mov Cap-2 Maneuver	337	-	-	-	-	-
Stage 1	708	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	31.6	3.2		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1125	-	452	-	-	
HCM Lane V/C Ratio	0.123	-	0.73	-	-	
HCM Control Delay (s)	8.6	-	31.6	-	-	
HCM Lane LOS	A	-	D	-	-	
HCM 95th %tile Q(veh)	0.4	-	5.9	-	-	

Millbrook Development Phase 2
3: County Road 10 & Municipal Office Access

HCM 2010 TWSC
Background (2026) SAT Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	3	4	390	417	11
Future Vol, veh/h	7	3	4	390	417	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	7	3	4	406	434	11












Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	854	440	445	0	-	0
Stage 1	440	-	-	-	-	-
Stage 2	414	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	332	621	1126	-	-	-
Stage 1	653	-	-	-	-	-
Stage 2	671	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	331	621	1126	-	-	-
Mov Cap-2 Maneuver	331	-	-	-	-	-
Stage 1	650	-	-	-	-	-
Stage 2	671	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.6	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1126	-	385	-	-
HCM Lane V/C Ratio	0.004	-	0.027	-	-
HCM Control Delay (s)	8.2	-	14.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Background (2026) AM Peak Hour with Improvements

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	177	110	75	263	197	98
Future Volume (vph)	177	110	75	263	197	98
Satd. Flow (prot)	1627	0	1785	1773	1807	1331
Flt Permitted	0.970		0.616			
Satd. Flow (perm)	1627	0	1157	1773	1807	1331
Satd. Flow (RTOR)	52					114
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	10%	0%	0%	6%	4%	20%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	334	0	87	306	229	114
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	53.0		37.0	37.0	37.0	37.0
Total Split (%)	58.9%		41.1%	41.1%	41.1%	41.1%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effct Green (s)	15.6		31.6	31.6	31.6	31.6
Actuated g/C Ratio	0.26		0.53	0.53	0.53	0.53
v/c Ratio	0.72		0.14	0.32	0.24	0.15
Control Delay	25.6		9.2	10.1	9.3	2.8
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	25.6		9.2	10.1	9.3	2.8
LOS	C		A	B	A	A
Approach Delay	25.6			9.9	7.1	
Approach LOS	C			A	A	
Queue Length 50th (m)	26.9		4.3	16.8	11.9	0.0
Queue Length 95th (m)	46.4		12.3	35.8	26.6	6.3
Internal Link Dist (m)	1075.5			460.0	547.0	
Turn Bay Length (m)			95.0			80.0
Base Capacity (vph)	1308		617	945	964	763
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.26		0.14	0.32	0.24	0.15
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 59.2						

Millbrook Development Phase 2 2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Background (2026) AM Peak Hour with Improvements

Natural Cycle: 45

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 13.9

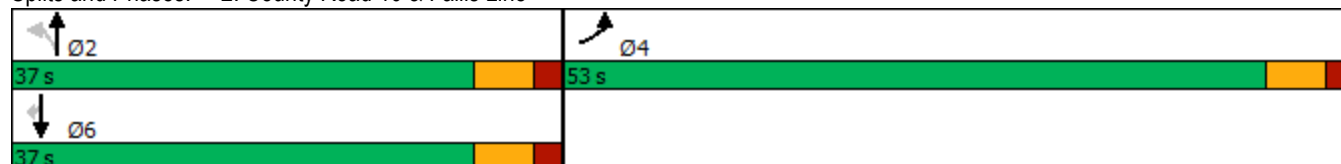
Intersection LOS: B

Intersection Capacity Utilization 46.1%

ICU Level of Service A












Analysis Period (min) 15

Splits and Phases: 2: County Road 10 & Fallis Line



Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Background (2026) PM Peak Hour with Improvements

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	169	110	135	197	269	202
Future Volume (vph)	169	110	135	197	269	202
Satd. Flow (prot)	1728	0	1785	1879	1842	1597
Flt Permitted	0.971		0.567			
Satd. Flow (perm)	1728	0	1065	1879	1842	1597
Satd. Flow (RTOR)	55					240
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	332	0	161	235	320	240
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	53.0		37.0	37.0	37.0	37.0
Total Split (%)	58.9%		41.1%	41.1%	41.1%	41.1%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effct Green (s)	14.6		31.6	31.6	31.6	31.6
Actuated g/C Ratio	0.25		0.54	0.54	0.54	0.54
v/c Ratio	0.70		0.28	0.23	0.32	0.25
Control Delay	24.5		10.1	8.7	9.5	2.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	24.5		10.1	8.7	9.5	2.2
LOS	C		B	A	A	A
Approach Delay	24.5			9.3	6.3	
Approach LOS	C			A	A	
Queue Length 50th (m)	26.0		8.3	11.6	16.8	0.0
Queue Length 95th (m)	43.3		20.3	24.9	34.3	7.5
Internal Link Dist (m)	1075.5			460.0	547.0	
Turn Bay Length (m)			95.0			80.0
Base Capacity (vph)	1409		577	1018	998	975
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.24		0.28	0.23	0.32	0.25
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 58.2						

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Background (2026) PM Peak Hour with Improvements

Natural Cycle: 45

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 11.9

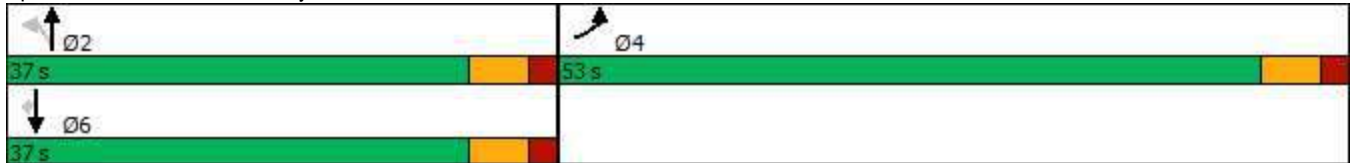
Intersection LOS: B

Intersection Capacity Utilization 52.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: County Road 10 & Fallis Line



Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Background (2026) SAT Peak Hour with Improvements



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	175	135	130	219	223	196
Future Volume (vph)	175	135	130	219	223	196
Satd. Flow (prot)	1720	0	1785	1879	1860	1597
Flt Permitted	0.973		0.611			
Satd. Flow (perm)	1720	0	1148	1879	1860	1597
Satd. Flow (RTOR)	65					209
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	330	0	138	233	237	209
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	53.0		37.0	37.0	37.0	37.0
Total Split (%)	58.9%		41.1%	41.1%	41.1%	41.1%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effct Green (s)	14.3		31.6	31.6	31.6	31.6
Actuated g/C Ratio	0.25		0.55	0.55	0.55	0.55
v/c Ratio	0.70		0.22	0.23	0.23	0.22
Control Delay	23.9		9.2	8.5	8.6	2.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	23.9		9.2	8.5	8.6	2.2
LOS	C		A	A	A	A
Approach Delay	23.9			8.8	5.6	
Approach LOS	C			A	A	
Queue Length 50th (m)	24.6		6.7	11.3	11.5	0.0
Queue Length 95th (m)	46.8		18.5	26.7	27.2	8.6
Internal Link Dist (m)	1075.5			460.0	547.0	
Turn Bay Length (m)			95.0			80.0
Base Capacity (vph)	1413		626	1025	1014	965
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.23		0.22	0.23	0.23	0.22
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 57.9						

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Background (2026) SAT Peak Hour with Improvements

Natural Cycle: 45

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 11.9

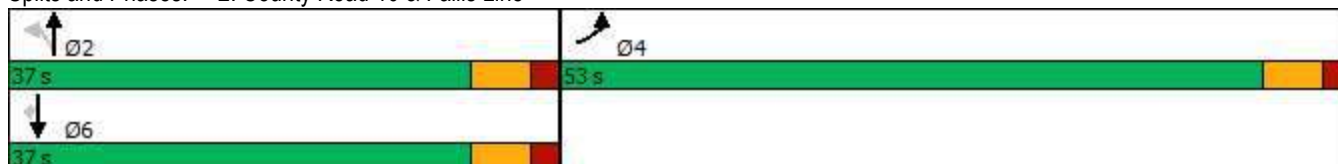
Intersection LOS: B

Intersection Capacity Utilization 51.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: County Road 10 & Fallis Line



Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Background (2031) AM Peak Hour

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	42	7	19	22	14	12	11	467	25	7	515	217
Future Vol, veh/h	42	7	19	22	14	12	11	467	25	7	515	217
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	850	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	20	0	0	0	0	6	0	0	4	2
Mvmt Flow	50	8	23	26	17	14	13	556	30	8	613	258












Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1371	1370	742	1371	1484	571	871	0	0	586	0	0
Stage 1	758	758	-	597	597	-	-	-	-	-	-	-
Stage 2	613	612	-	774	887	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.4	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.48	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	125	148	388	125	126	524	783	-	-	999	-	-
Stage 1	402	418	-	493	495	-	-	-	-	-	-	-
Stage 2	483	487	-	394	365	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	106	143	388	110	122	524	783	-	-	999	-	-
Mov Cap-2 Maneuver	106	143	-	110	122	-	-	-	-	-	-	-
Stage 1	395	411	-	485	487	-	-	-	-	-	-	-
Stage 2	446	479	-	358	359	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	62.7		46.5		0.2		0.1	
HCM LOS	F		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	783	-	-	138	142	999	-
HCM Lane V/C Ratio	0.017	-	-	0.587	0.402	0.008	-
HCM Control Delay (s)	9.7	-	-	62.7	46.5	8.6	0
HCM Lane LOS	A	-	-	F	E	A	A
HCM 95th %tile Q(veh)	0.1	-	-	3	1.7	0	-

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Background (2031) AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	249	112	77	393	235	111
Future Volume (vph)	249	112	77	393	235	111
Satd. Flow (prot)	1628	0	1785	1773	1807	1331
Flt Permitted	0.967		0.591			
Satd. Flow (perm)	1628	0	1110	1773	1807	1331
Satd. Flow (RTOR)	38					129
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	10%	0%	0%	6%	4%	20%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	420	0	90	457	273	129
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	53.0		37.0	37.0	37.0	37.0
Total Split (%)	58.9%		41.1%	41.1%	41.1%	41.1%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effct Green (s)	20.0		31.3	31.3	31.3	31.3
Actuated g/C Ratio	0.32		0.49	0.49	0.49	0.49
v/c Ratio	0.78		0.16	0.52	0.31	0.18
Control Delay	28.2		11.9	15.1	12.2	3.3
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	28.2		11.9	15.1	12.2	3.3
LOS	C		B	B	B	A
Approach Delay	28.2			14.6	9.4	
Approach LOS	C			B	A	
Queue Length 50th (m)	39.6		5.3	33.5	17.6	0.0
Queue Length 95th (m)	62.5		15.2	68.8	38.4	7.7
Internal Link Dist (m)	333.1			460.0	687.0	
Turn Bay Length (m)			95.0			80.0
Base Capacity (vph)	1227		547	874	891	722
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.34		0.16	0.52	0.31	0.18
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 63.4						

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Background (2031) AM Peak Hour

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 17.3

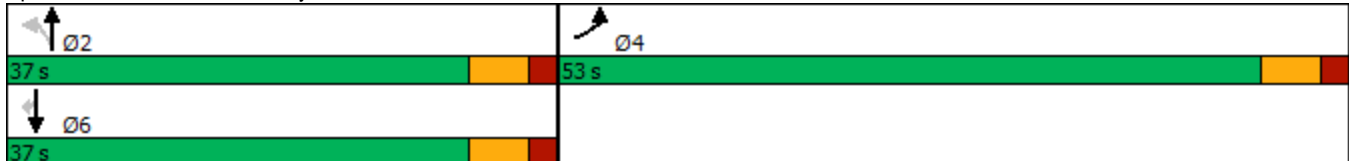
Intersection LOS: B

Intersection Capacity Utilization 52.3%

ICU Level of Service A






Analysis Period (min) 15

Splits and Phases: 2: County Road 10 & Fallis Line



Millbrook Development Phase 2
3: County Road 10 & Community Centre East Driveway

HCM 2010 TWSC
Background (2031) AM Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	4	8	635	338	23
Future Vol, veh/h	8	4	8	635	338	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	6	5	13
Mvmt Flow	9	5	9	747	398	27

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1177	412	425	0	-	0
Stage 1	412	-	-	-	-	-
Stage 2	765	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	213	644	1145	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	463	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	211	644	1145	-	-	-
Mov Cap-2 Maneuver	211	-	-	-	-	-
Stage 1	668	-	-	-	-	-
Stage 2	463	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1145	-	272	-	-
HCM Lane V/C Ratio	0.008	-	0.052	-	-
HCM Control Delay (s)	8.2	-	19	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Background (2031) PM Peak Hour

Intersection												
Int Delay, s/veh	58.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	174	10	14	19	4	4	17	539	24	11	528	72
Future Vol, veh/h	174	10	14	19	4	4	17	539	24	11	528	72
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	850	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	25	0	33	0	1	0	0	1	0
Mvmt Flow	198	11	16	22	5	5	19	613	27	13	600	82

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1337	1345	641	1346	1373	627	682	0	0	640	0	0
Stage 1	667	667	-	665	665	-	-	-	-	-	-	-
Stage 2	670	678	-	681	708	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.35	6.5	6.53	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.725	4	3.597	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 132	153	478	115	147	432	920	-	-	954	-	-
Stage 1	451	460	-	414	461	-	-	-	-	-	-	-
Stage 2	450	455	-	405	441	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 123	146	478	101	141	432	920	-	-	954	-	-
Mov Cap-2 Maneuver	~ 123	146	-	101	141	-	-	-	-	-	-	-
Stage 1	442	450	-	405	451	-	-	-	-	-	-	-
Stage 2	432	445	-	373	431	-	-	-	-	-	-	-












Approach	EB	WB	NB	SB
HCM Control Delay, s\$	411.4	45	0.3	0.2
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	920	-	-	131	120	954	-
HCM Lane V/C Ratio	0.021	-	-	1.718	0.256	0.013	-
HCM Control Delay (s)	9	-	-	\$ 411.4	45	8.8	0
HCM Lane LOS	A	-	-	F	E	A	A
HCM 95th %tile Q(veh)	0.1	-	-	16.8	1	0	-

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Background (2031) PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	189	112	137	247	380	259
Future Volume (vph)	189	112	137	247	380	259
Satd. Flow (prot)	1731	0	1785	1879	1842	1597
Flt Permitted	0.970		0.449			
Satd. Flow (perm)	1731	0	844	1879	1842	1597
Satd. Flow (RTOR)	49					308
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	358	0	163	294	452	308
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	53.0		37.0	37.0	37.0	37.0
Total Split (%)	58.9%		41.1%	41.1%	41.1%	41.1%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effct Green (s)	15.8		31.3	31.3	31.3	31.3
Actuated g/C Ratio	0.27		0.53	0.53	0.53	0.53
v/c Ratio	0.72		0.37	0.30	0.46	0.31
Control Delay	25.4		12.6	9.8	11.7	2.3
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	25.4		12.6	9.8	11.7	2.3
LOS	C		B	A	B	A
Approach Delay	25.4			10.8	7.9	
Approach LOS	C			B	A	
Queue Length 50th (m)	29.7		9.3	16.0	27.5	0.0
Queue Length 95th (m)	47.8		23.7	33.1	53.6	8.6
Internal Link Dist (m)	333.1			460.0	699.0	
Turn Bay Length (m)			95.0			80.0
Base Capacity (vph)	1390		446	994	974	990
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.26		0.37	0.30	0.46	0.31
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 59.2						

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Background (2031) PM Peak Hour

Natural Cycle: 45

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 12.7

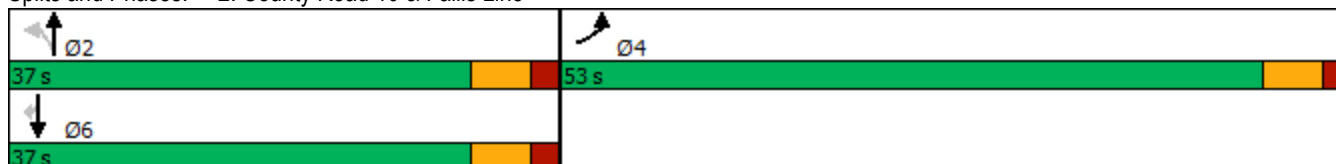
Intersection LOS: B

Intersection Capacity Utilization 59.9%

ICU Level of Service B





Analysis Period (min) 15

Splits and Phases: 2: County Road 10 & Fallis Line



Millbrook Development Phase 2
3: County Road 10 & Community Centre East Driveway

HCM 2010 TWSC
Background (2031) PM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	26	11	6	428	623	18
Future Vol, veh/h	26	11	6	428	623	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	30	13	7	498	724	21
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1247	735	745	0	-	0
Stage 1	735	-	-	-	-	-
Stage 2	512	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	193	423	872	-	-	-
Stage 1	478	-	-	-	-	-
Stage 2	606	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	191	423	872	-	-	-
Mov Cap-2 Maneuver	191	-	-	-	-	-
Stage 1	474	-	-	-	-	-
Stage 2	606	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	24.4	0.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	872	-	228	-	-	
HCM Lane V/C Ratio	0.008	-	0.189	-	-	
HCM Control Delay (s)	9.2	-	24.4	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0	-	0.7	-	-	

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Background (2031) SAT Peak Hour

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	26	4	17	18	8	5	19	393	18	5	426	24
Future Vol, veh/h	26	4	17	18	8	5	19	393	18	5	426	24
Conflicting Peds, #/hr	0	0	5	5	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	850	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	1	0
Mvmt Flow	27	4	18	19	8	5	20	405	19	5	439	25












Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	923	926	457	933	929	415	464	0	0	424	0	0
Stage 1	462	462	-	455	455	-	-	-	-	-	-	-
Stage 2	461	464	-	478	474	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	252	271	608	248	270	642	1108	-	-	1146	-	-
Stage 1	584	568	-	589	572	-	-	-	-	-	-	-
Stage 2	584	567	-	572	561	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	240	264	606	233	264	642	1108	-	-	1146	-	-
Mov Cap-2 Maneuver	240	264	-	233	264	-	-	-	-	-	-	-
Stage 1	573	565	-	578	562	-	-	-	-	-	-	-
Stage 2	561	557	-	546	558	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	18.8		20.2		0.4		0.1	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1108	-	-	310	269	1146	-
HCM Lane V/C Ratio	0.018	-	-	0.156	0.119	0.004	-
HCM Control Delay (s)	8.3	-	-	18.8	20.2	8.2	0
HCM Lane LOS	A	-	-	C	C	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.4	0	-

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Background (2031) SAT Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	178	137	133	246	249	199
Future Volume (vph)	178	137	133	246	249	199
Satd. Flow (prot)	1720	0	1785	1879	1860	1597
Flt Permitted	0.973		0.596			
Satd. Flow (perm)	1720	0	1120	1879	1860	1597
Satd. Flow (RTOR)	65					212
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	335	0	141	262	265	212
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	53.0		37.0	37.0	37.0	37.0
Total Split (%)	58.9%		41.1%	41.1%	41.1%	41.1%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effct Green (s)	14.4		31.5	31.5	31.5	31.5
Actuated g/C Ratio	0.25		0.54	0.54	0.54	0.54
v/c Ratio	0.70		0.23	0.26	0.26	0.22
Control Delay	24.1		9.4	8.8	8.9	2.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	24.1		9.4	8.8	8.9	2.2
LOS	C		A	A	A	A
Approach Delay	24.1			9.0	5.9	
Approach LOS	C			A	A	
Queue Length 50th (m)	25.2		6.9	13.1	13.2	0.0
Queue Length 95th (m)	47.5		19.1	30.3	30.7	8.8
Internal Link Dist (m)	333.1			460.0	656.0	
Turn Bay Length (m)			95.0			80.0
Base Capacity (vph)	1410		608	1021	1010	964
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.24		0.23	0.26	0.26	0.22
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 58						

Millbrook Development Phase 2 2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Background (2031) SAT Peak Hour

Natural Cycle: 45

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 12.0

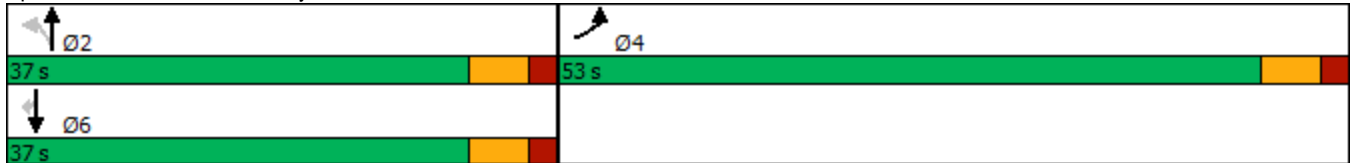
Intersection LOS: B

Intersection Capacity Utilization 53.7%

ICU Level of Service A






Analysis Period (min) 15

Splits and Phases: 2: County Road 10 & Fallis Line




















Millbrook Development Phase 2
3: County Road 10 & Community Centre East Driveway

HCM 2010 TWSC
Background (2031) SAT Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	3	4	420	446	11
Future Vol, veh/h	7	3	4	420	446	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	7	3	4	438	465	11
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	917	471	476	0	-	0
Stage 1	471	-	-	-	-	-
Stage 2	446	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	304	597	1097	-	-	-
Stage 1	632	-	-	-	-	-
Stage 2	649	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	303	597	1097	-	-	-
Mov Cap-2 Maneuver	303	-	-	-	-	-
Stage 1	629	-	-	-	-	-
Stage 2	649	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	15.4	0.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1097	-	356	-	-	
HCM Lane V/C Ratio	0.004	-	0.029	-	-	
HCM Control Delay (s)	8.3	-	15.4	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

Lanes, Volumes, Timings
Background (2031) AM Peak Hour with Improvements

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	7	19	22	14	12	11	467	25	7	515	217
Future Volume (vph)	42	7	19	22	14	12	11	467	25	7	515	217
Satd. Flow (prot)	0	1659	0	0	1777	0	1785	1763	0	0	1745	0
Flt Permitted		0.778			0.866		0.344				0.995	
Satd. Flow (perm)	0	1331	0	0	1573	0	646	1763	0	0	1736	0
Satd. Flow (RTOR)		22			14			5			42	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	20%	0%	0%	0%	0%	6%	0%	0%	4%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	81	0	0	57	0	13	586	0	0	879	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	30.0	30.0		30.0	30.0		60.0	60.0		60.0	60.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.0			6.0		6.0	6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		9.0			9.0		62.5	62.5			62.5	
Actuated g/C Ratio		0.11			0.11		0.78	0.78			0.78	
v/c Ratio		0.48			0.30		0.03	0.42			0.64	
Control Delay		34.4			29.1		3.8	5.4			8.3	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		34.4			29.1		3.8	5.4			8.3	
LOS		C			C		A	A			A	
Approach Delay		34.4			29.1			5.3			8.3	
Approach LOS		C			C			A			A	
Queue Length 50th (m)		8.6			6.1		0.4	27.2			52.1	
Queue Length 95th (m)		18.3			14.1		1.9	47.7			92.3	
Internal Link Dist (m)		884.7			354.8			385.0			381.6	
Turn Bay Length (m)							85.0					
Base Capacity (vph)		416			483		506	1382			1369	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.19			0.12		0.03	0.42			0.64	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 79.8												

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

Lanes, Volumes, Timings
Background (2031) AM Peak Hour with Improvements

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 9.2

Intersection LOS: A

Intersection Capacity Utilization 61.7%

ICU Level of Service B


















Analysis Period (min) 15

Splits and Phases: 1: County Road 10 & Larmer Line



Millbrook Development Phase 2
1: County Road 10 & Larmer Line

Lanes, Volumes, Timings
Background (2031) PM Peak Hour with Improvements

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	174	10	14	19	4	4	17	539	24	11	528	72
Future Volume (vph)	174	10	14	19	4	4	17	539	24	11	528	72
Satd. Flow (prot)	0	1782	0	0	1454	0	1785	1850	0	0	1831	0
Flt Permitted		0.729			0.793		0.381				0.987	
Satd. Flow (perm)	0	1356	0	0	1192	0	716	1850	0	0	1809	0
Satd. Flow (RTOR)		4			5			4			13	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	0%	0%	25%	0%	33%	0%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	225	0	0	32	0	19	640	0	0	695	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	30.0	30.0		30.0	30.0		60.0	60.0		60.0	60.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.0			6.0		6.0	6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		18.5			18.5		56.5	56.5			56.5	
Actuated g/C Ratio		0.21			0.21		0.65	0.65			0.65	
v/c Ratio		0.77			0.12		0.04	0.53			0.59	
Control Delay		49.2			23.9		7.2	11.0			12.0	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		49.2			23.9		7.2	11.0			12.0	
LOS		D			C		A	B			B	
Approach Delay		49.2			23.9			10.9			12.0	
Approach LOS		D			C			B			B	
Queue Length 50th (m)		33.5			3.5		1.0	50.9			57.8	
Queue Length 95th (m)		55.7			10.2		3.9	87.7			100.5	
Internal Link Dist (m)		884.7			354.8			385.0			381.6	
Turn Bay Length (m)							85.0					
Base Capacity (vph)		377			332		464	1202			1178	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.60			0.10		0.04	0.53			0.59	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 87												

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

Lanes, Volumes, Timings
Background (2031) PM Peak Hour with Improvements

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 17.0

Intersection LOS: B

Intersection Capacity Utilization 64.7%

ICU Level of Service C


















Analysis Period (min) 15

Splits and Phases: 1: County Road 10 & Larmer Line



Millbrook Development Phase 2
1: County Road 10 & Larmer Line

Lanes, Volumes, Timings
Background (2031) SAT Peak Hour with Improvements

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	4	17	18	8	5	19	393	18	5	426	24
Future Volume (vph)	26	4	17	18	8	5	19	393	18	5	426	24
Satd. Flow (prot)	0	1715	0	0	1786	0	1785	1866	0	0	1847	0
Flt Permitted		0.811			0.789		0.494				0.997	
Satd. Flow (perm)	0	1430	0	0	1440	0	928	1866	0	0	1843	0
Satd. Flow (RTOR)		18			5			5			6	
Confl. Peds. (#/hr)			5	5								
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	49	0	0	32	0	20	424	0	0	469	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	30.0	30.0		30.0	30.0		60.0	60.0		60.0	60.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.0			6.0		6.0	6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		7.3			7.3		67.5	67.5			67.5	
Actuated g/C Ratio		0.09			0.09		0.85	0.85			0.85	
v/c Ratio		0.33			0.23		0.03	0.27			0.30	
Control Delay		29.9			33.4		2.8	3.0			3.2	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		29.9			33.4		2.8	3.0			3.2	
LOS		C			C		A	A			A	
Approach Delay		29.9			33.4			3.0			3.2	
Approach LOS		C			C			A			A	
Queue Length 50th (m)		5.0			4.4		0.6	15.1			17.3	
Queue Length 95th (m)		13.4			11.1		2.3	28.5			32.5	
Internal Link Dist (m)		884.7			354.8			385.0			381.6	
Turn Bay Length (m)							85.0					
Base Capacity (vph)		446			440		789	1587			1568	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.11			0.07		0.03	0.27			0.30	
Intersection Summary												
Cycle Length: 90												

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

Lanes, Volumes, Timings
Background (2031) SAT Peak Hour with Improvements

Actuated Cycle Length: 79.4

Natural Cycle: 45

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.33

Intersection Signal Delay: 5.4

Intersection LOS: A

Intersection Capacity Utilization 42.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: County Road 10 & Larmer Line



Appendix F – Synchro Analysis Output – Total Conditions

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Total (2023) AM Peak Hour

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	3	5	34	25	2	10	35	584	41	6	339	3
Future Vol, veh/h	3	5	34	25	2	10	35	584	41	6	339	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	850	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	20	0	0	0	0	6	0	0	4	67
Mvmt Flow	4	6	40	30	2	12	42	695	49	7	404	4






Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1231	1248	406	1247	1226	720	408	0	0	744	0	0
Stage 1	420	420	-	804	804	-	-	-	-	-	-	-
Stage 2	811	828	-	443	422	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.4	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.48	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	156	175	608	152	180	431	1162	-	-	873	-	-
Stage 1	615	593	-	380	398	-	-	-	-	-	-	-
Stage 2	376	389	-	598	592	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	145	167	608	133	172	431	1162	-	-	873	-	-
Mov Cap-2 Maneuver	145	167	-	133	172	-	-	-	-	-	-	-
Stage 1	593	587	-	366	384	-	-	-	-	-	-	-
Stage 2	350	375	-	547	586	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	15.5		34.3		0.4		0.2	
HCM LOS	C		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1162	-	-	394	166	873	-
HCM Lane V/C Ratio	0.036	-	-	0.127	0.265	0.008	-
HCM Control Delay (s)	8.2	-	-	15.5	34.3	9.2	0
HCM Lane LOS	A	-	-	C	D	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.4	1	0	-






Millbrook Development Phase 2
2: County Road 10 & Fallis Line

HCM 2010 TWSC
Total (2023) AM Peak Hour

Intersection						
Int Delay, s/veh	112.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	246	237	169	257	211	142
Future Vol, veh/h	246	237	169	257	211	142
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	950	-	-	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	10	0	0	6	4	20
Mvmt Flow	286	276	197	299	245	165
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	938	245	410	0	-	0
Stage 1	245	-	-	-	-	-
Stage 2	693	-	-	-	-	-
Critical Hdwy	6.5	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	~ 284	799	1160	-	-	-
Stage 1	777	-	-	-	-	-
Stage 2	482	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 236	799	1160	-	-	-
Mov Cap-2 Maneuver	~ 236	-	-	-	-	-
Stage 1	645	-	-	-	-	-
Stage 2	482	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	290.4	3.5		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1160	-	361	-	-	
HCM Lane V/C Ratio	0.169	-	1.556	-	-	
HCM Control Delay (s)	8.7	-	290.4	-	-	
HCM Lane LOS	A	-	F	-	-	
HCM 95th %tile Q(veh)	0.6	-	31.7	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Millbrook Development Phase 2
3: County Road 10 & Community Centre East Driveway

HCM 2010 TWSC
Total (2023) AM Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	4	8	496	347	23
Future Vol, veh/h	8	4	8	496	347	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	6	5	13
Mvmt Flow	9	5	9	584	408	27





Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1024	422	435	0	-	0
Stage 1	422	-	-	-	-	-
Stage 2	602	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	263	636	1135	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	551	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	261	636	1135	-	-	-
Mov Cap-2 Maneuver	261	-	-	-	-	-
Stage 1	661	-	-	-	-	-
Stage 2	551	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.6	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1135	-	325	-	-
HCM Lane V/C Ratio	0.008	-	0.043	-	-
HCM Control Delay (s)	8.2	-	16.6	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-





Millbrook Development Phase 2
4: Street 'A'/Street 'B' South & Fallis Line

HCM 2010 TWSC
Total (2023) AM Peak Hour

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	140	6	17	141	16	17	0	48	45	0	11
Future Vol, veh/h	4	140	6	17	141	16	17	0	48	45	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	10	0	0	20	0	0	0	0	0	0	0
Mvmt Flow	4	152	7	18	153	17	18	0	52	49	0	12
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	170	0	0	159	0	0	368	370	156	388	365	162
Stage 1	-	-	-	-	-	-	164	164	-	198	198	-
Stage 2	-	-	-	-	-	-	204	206	-	190	167	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1420	-	-	1433	-	-	592	563	895	574	566	888
Stage 1	-	-	-	-	-	-	843	766	-	808	741	-
Stage 2	-	-	-	-	-	-	803	735	-	816	764	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1420	-	-	1433	-	-	577	553	895	534	556	888
Mov Cap-2 Maneuver	-	-	-	-	-	-	577	553	-	534	556	-
Stage 1	-	-	-	-	-	-	840	764	-	806	731	-
Stage 2	-	-	-	-	-	-	781	725	-	766	762	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.7			10.1			11.9		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	782	1420	-	-	1433	-	-	579				
HCM Lane V/C Ratio	0.09	0.003	-	-	0.013	-	-	0.105				
HCM Control Delay (s)	10.1	7.5	0	-	7.5	0	-	11.9				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.4				




Millbrook Development Phase 2
5: Street 'D'/Street 'I' & Fallis Line

HCM 2010 TWSC
Total (2023) AM Peak Hour

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	224	4	51	162	33	5	8	158	65	4	10
Future Vol, veh/h	14	224	4	51	162	33	5	8	158	65	4	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	10	0	0	20	0	0	0	0	0	0	0
Mvmt Flow	15	243	4	55	176	36	5	9	172	71	4	11
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	212	0	0	247	0	0	587	597	245	670	581	194
Stage 1	-	-	-	-	-	-	275	275	-	304	304	-
Stage 2	-	-	-	-	-	-	312	322	-	366	277	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1370	-	-	1331	-	-	424	419	799	373	428	853
Stage 1	-	-	-	-	-	-	736	686	-	710	667	-
Stage 2	-	-	-	-	-	-	703	655	-	657	685	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1370	-	-	1331	-	-	396	394	799	275	403	853
Mov Cap-2 Maneuver	-	-	-	-	-	-	396	394	-	275	403	-
Stage 1	-	-	-	-	-	-	726	677	-	701	636	-
Stage 2	-	-	-	-	-	-	657	624	-	503	676	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			1.6			11.5			21.3		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	741	1370	-	-	1331	-	-	306				
HCM Lane V/C Ratio	0.251	0.011	-	-	0.042	-	-	0.281				
HCM Control Delay (s)	11.5	7.7	0	-	7.8	0	-	21.3				
HCM Lane LOS	B	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	1	0	-	-	0.1	-	-	1.1				




Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

HCM 2010 TWSC
Total (2023) AM Peak Hour

Intersection						
Int Delay, s/veh	7.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	169	29	10	494	343	55
Future Vol, veh/h	169	29	10	494	343	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	6	18	0
Mvmt Flow	184	32	11	537	373	60
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	962	403	433	0	-	0
Stage 1	403	-	-	-	-	-
Stage 2	559	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	286	652	1137	-	-	-
Stage 1	679	-	-	-	-	-
Stage 2	576	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	282	652	1137	-	-	-
Mov Cap-2 Maneuver	282	-	-	-	-	-
Stage 1	669	-	-	-	-	-
Stage 2	576	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	39.8	0.2		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1137	-	308	-	-	
HCM Lane V/C Ratio	0.01	-	0.699	-	-	
HCM Control Delay (s)	8.2	0	39.8	-	-	
HCM Lane LOS	A	A	E	-	-	
HCM 95th %tile Q(veh)	0	-	4.9	-	-	

Millbrook Development Phase 2
7: Fallis Line & Street L

HCM 2010 TWSC
Total (2023) AM Peak Hour

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	48	62	104	91	11
Future Vol, veh/h	11	48	62	104	91	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	13	55	71	120	105	13
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	191	0	-	0	212	131
Stage 1	-	-	-	-	131	-
Stage 2	-	-	-	-	81	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1389	-	-	-	779	921
Stage 1	-	-	-	-	898	-
Stage 2	-	-	-	-	945	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1389	-	-	-	771	921
Mov Cap-2 Maneuver	-	-	-	-	771	-
Stage 1	-	-	-	-	889	-
Stage 2	-	-	-	-	945	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.4	0		10.4		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1389	-	-	-	785	
HCM Lane V/C Ratio	0.009	-	-	-	0.149	
HCM Control Delay (s)	7.6	0	-	-	10.4	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.5	

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Total (2023) PM Peak Hour

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	3	1	33	29	1	3	28	459	23	9	628	10
Future Vol, veh/h	3	1	33	29	1	3	28	459	23	9	628	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	850	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	25	0	33	0	1	0	0	1	0
Mvmt Flow	3	1	38	33	1	3	32	522	26	10	714	11






Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1341	1352	720	1358	1344	535	725	0	0	548	0	0
Stage 1	740	740	-	599	599	-	-	-	-	-	-	-
Stage 2	601	612	-	759	745	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.35	6.5	6.53	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.725	4	3.597	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	131	151	431	112	153	490	887	-	-	1032	-	-
Stage 1	412	426	-	451	494	-	-	-	-	-	-	-
Stage 2	491	487	-	366	424	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	124	143	431	98	145	490	887	-	-	1032	-	-
Mov Cap-2 Maneuver	124	143	-	98	145	-	-	-	-	-	-	-
Stage 1	397	419	-	435	476	-	-	-	-	-	-	-
Stage 2	469	469	-	328	417	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17	55.8	0.5	0.1
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	887	-	-	343	107	1032	-
HCM Lane V/C Ratio	0.036	-	-	0.123	0.35	0.01	-
HCM Control Delay (s)	9.2	-	-	17	55.8	8.5	0
HCM Lane LOS	A	-	-	C	F	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.4	1.4	0	-

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

HCM 2010 TWSC
Total (2023) PM Peak Hour

Intersection						
Int Delay, s/veh	99.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	204	168	219	213	269	257
Future Vol, veh/h	204	168	219	213	269	257
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	950	-	-	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	243	200	261	254	320	306

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1096	320	626	0	-	0
Stage 1	320	-	-	-	-	-
Stage 2	776	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	~ 238	725	965	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	457	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 174	725	965	-	-	-
Mov Cap-2 Maneuver	~ 174	-	-	-	-	-
Stage 1	541	-	-	-	-	-
Stage 2	457	-	-	-	-	-






Approach	EB	NB	SB
HCM Control Delay, s	351.3	5.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	965	-	265	-	-
HCM Lane V/C Ratio	0.27	-	1.671	-	-
HCM Control Delay (s)	10.1	-	351.3	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	1.1	-	28.1	-	-

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Millbrook Development Phase 2
3: County Road 10 & Community Centre East Driveway

HCM 2010 TWSC
Total (2023) PM Peak Hour

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	26	11	6	409	512	18
Future Vol, veh/h	26	11	6	409	512	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	30	13	7	476	595	21





Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1096	606	616	0	-	0
Stage 1	606	-	-	-	-	-
Stage 2	490	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	238	501	974	-	-	-
Stage 1	548	-	-	-	-	-
Stage 2	620	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	236	501	974	-	-	-
Mov Cap-2 Maneuver	236	-	-	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	620	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.2	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	974	-	280	-	-
HCM Lane V/C Ratio	0.007	-	0.154	-	-
HCM Control Delay (s)	8.7	-	20.2	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-





Millbrook Development Phase 2
4: Street 'A'/Street 'B' South & Fallis Line

HCM 2010 TWSC
Total (2023) PM Peak Hour

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	71	19	52	89	48	11	0	31	30	0	7
Future Vol, veh/h	12	71	19	52	89	48	11	0	31	30	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	13	77	21	57	97	52	12	0	34	33	0	8
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	149	0	0	98	0	0	355	377	88	368	361	123
Stage 1	-	-	-	-	-	-	114	114	-	237	237	-
Stage 2	-	-	-	-	-	-	241	263	-	131	124	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1445	-	-	1508	-	-	604	558	976	592	569	933
Stage 1	-	-	-	-	-	-	896	805	-	771	713	-
Stage 2	-	-	-	-	-	-	767	694	-	877	797	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1445	-	-	1508	-	-	576	530	976	549	540	933
Mov Cap-2 Maneuver	-	-	-	-	-	-	576	530	-	549	540	-
Stage 1	-	-	-	-	-	-	887	797	-	763	684	-
Stage 2	-	-	-	-	-	-	730	666	-	838	789	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			2.1			9.6			11.5		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	826	1445	-	-	1508	-	-	595				
HCM Lane V/C Ratio	0.055	0.009	-	-	0.037	-	-	0.068				
HCM Control Delay (s)	9.6	7.5	0	-	7.5	0	-	11.5				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.2				

Millbrook Development Phase 2
5: Street 'D'/Street 'I' & Fallis Line

HCM 2010 TWSC
Total (2023) PM Peak Hour

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	114	8	172	177	76	6	8	105	51	8	15
Future Vol, veh/h	16	114	8	172	177	76	6	8	105	51	8	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	17	124	9	187	192	83	7	9	114	55	9	16




Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	275	0	0	133	0	0	783	812	129	832	775	234
Stage 1	-	-	-	-	-	-	163	163	-	608	608	-
Stage 2	-	-	-	-	-	-	620	649	-	224	167	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1300	-	-	1464	-	-	314	315	926	291	331	810
Stage 1	-	-	-	-	-	-	844	767	-	486	489	-
Stage 2	-	-	-	-	-	-	479	469	-	783	764	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1300	-	-	1464	-	-	263	263	926	218	277	810
Mov Cap-2 Maneuver	-	-	-	-	-	-	263	263	-	218	277	-
Stage 1	-	-	-	-	-	-	832	756	-	479	415	-
Stage 2	-	-	-	-	-	-	390	398	-	669	753	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			3.2			11.2			24.6		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	714	1300	-	-	1464	-	-	263
HCM Lane V/C Ratio	0.181	0.013	-	-	0.128	-	-	0.306
HCM Control Delay (s)	11.2	7.8	0	-	7.8	0	-	24.6
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0	-	-	0.4	-	-	1.3



Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

HCM 2010 TWSC
Total (2023) PM Peak Hour

Intersection						
Int Delay, s/veh	4.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	108	19	31	405	509	181
Future Vol, veh/h	108	19	31	405	509	181
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	117	21	34	440	553	197
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1160	652	750	0	-	0
Stage 1	652	-	-	-	-	-
Stage 2	508	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	218	471	868	-	-	-
Stage 1	522	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	207	471	868	-	-	-
Mov Cap-2 Maneuver	207	-	-	-	-	-
Stage 1	495	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	43.1	0.7		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	868	-	226	-	-	
HCM Lane V/C Ratio	0.039	-	0.611	-	-	
HCM Control Delay (s)	9.3	0	43.1	-	-	
HCM Lane LOS	A	A	E	-	-	
HCM 95th %tile Q(veh)	0.1	-	3.6	-	-	

Millbrook Development Phase 2
7: Fallis Line & Street L

HCM 2010 TWSC
Total (2023) PM Peak Hour

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	69	69	26	27	4
Future Vol, veh/h	4	69	69	26	27	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	5	79	79	30	31	5
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	109	0	-	0	183	94
Stage 1	-	-	-	-	94	-
Stage 2	-	-	-	-	89	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1488	-	-	-	809	966
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	937	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1488	-	-	-	806	966
Mov Cap-2 Maneuver	-	-	-	-	806	-
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	937	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		9.6		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1488	-	-	-	824	
HCM Lane V/C Ratio	0.003	-	-	-	0.043	
HCM Control Delay (s)	7.4	0	-	-	9.6	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Total (2023) SAT Peak Hour

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	16	3	34	29	7	5	34	531	28	5	574	14
Future Vol, veh/h	16	3	34	29	7	5	34	531	28	5	574	14
Conflicting Peds, #/hr	0	0	5	5	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	850	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	1	0
Mvmt Flow	16	3	35	30	7	5	35	547	29	5	592	14






Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1247	1255	604	1265	1248	562	606	0	0	576	0	0
Stage 1	609	609	-	632	632	-	-	-	-	-	-	-
Stage 2	638	646	-	633	616	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	152	173	502	147	175	530	982	-	-	1007	-	-
Stage 1	486	488	-	472	477	-	-	-	-	-	-	-
Stage 2	468	470	-	471	485	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	141	165	500	130	167	530	982	-	-	1007	-	-
Mov Cap-2 Maneuver	141	165	-	130	167	-	-	-	-	-	-	-
Stage 1	469	484	-	455	460	-	-	-	-	-	-	-
Stage 2	440	453	-	430	481	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	22.1		38.5		0.5		0.1	
HCM LOS	C		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	982	-	-	265	149	1007	-
HCM Lane V/C Ratio	0.036	-	-	0.206	0.284	0.005	-
HCM Control Delay (s)	8.8	-	-	22.1	38.5	8.6	0
HCM Lane LOS	A	-	-	C	E	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.8	1.1	0	-






Millbrook Development Phase 2
2: County Road 10 & Fallis Line

HCM 2010 TWSC
Total (2023) SAT Peak Hour

Intersection						
Int Delay, s/veh	61.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	222	211	211	233	235	245
Future Vol, veh/h	222	211	211	233	235	245
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	950	-	-	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	236	224	224	248	250	261
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	946	250	511	0	-	0
Stage 1	250	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	293	794	1065	-	-	-
Stage 1	796	-	-	-	-	-
Stage 2	498	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 231	794	1065	-	-	-
Mov Cap-2 Maneuver	~ 231	-	-	-	-	-
Stage 1	629	-	-	-	-	-
Stage 2	498	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	187.2	4.4		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1065	-	353	-	-	
HCM Lane V/C Ratio	0.211	-	1.305	-	-	
HCM Control Delay (s)	9.3	-	187.2	-	-	
HCM Lane LOS	A	-	F	-	-	
HCM 95th %tile Q(veh)	0.8	-	21.5	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Millbrook Development Phase 2
3: County Road 10 & Community Centre East Driveway

HCM 2010 TWSC
Total (2023) SAT Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	3	4	451	479	11
Future Vol, veh/h	7	3	4	451	479	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	7	3	4	470	499	11





Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	983	505	510	0	-	0
Stage 1	505	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	278	571	1065	-	-	-
Stage 1	610	-	-	-	-	-
Stage 2	628	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	277	571	1065	-	-	-
Mov Cap-2 Maneuver	277	-	-	-	-	-
Stage 1	608	-	-	-	-	-
Stage 2	628	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.3	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1065	-	328	-	-
HCM Lane V/C Ratio	0.004	-	0.032	-	-
HCM Control Delay (s)	8.4	-	16.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-





Millbrook Development Phase 2
4: Street 'A'/Street 'B' South & Fallis Line

HCM 2010 TWSC
Total (2023) SAT Peak Hour

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	78	16	41	83	42	14	0	42	44	0	10
Future Vol, veh/h	11	78	16	41	83	42	14	0	42	44	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	12	85	17	45	90	46	15	0	46	48	0	11
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	136	0	0	102	0	0	327	344	94	344	329	113
Stage 1	-	-	-	-	-	-	118	118	-	203	203	-
Stage 2	-	-	-	-	-	-	209	226	-	141	126	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1461	-	-	1503	-	-	630	582	968	614	593	945
Stage 1	-	-	-	-	-	-	891	802	-	804	737	-
Stage 2	-	-	-	-	-	-	798	721	-	867	796	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1461	-	-	1503	-	-	603	558	968	566	568	945
Mov Cap-2 Maneuver	-	-	-	-	-	-	603	558	-	566	568	-
Stage 1	-	-	-	-	-	-	883	795	-	797	713	-
Stage 2	-	-	-	-	-	-	763	697	-	819	789	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			1.8			9.6			11.5		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	841	1461	-	-	1503	-	-	611				
HCM Lane V/C Ratio	0.072	0.008	-	-	0.03	-	-	0.096				
HCM Control Delay (s)	9.6	7.5	0	-	7.5	0	-	11.5				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.3				




Millbrook Development Phase 2
5: Street 'D'/Street 'I' & Fallis Line

HCM 2010 TWSC
Total (2023) SAT Peak Hour

Intersection												
Int Delay, s/veh	6.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	152	7	143	159	66	4	5	130	66	5	10
Future Vol, veh/h	12	152	7	143	159	66	4	5	130	66	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	13	165	8	155	173	72	4	5	141	72	5	11
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	245	0	0	173	0	0	722	750	169	787	718	209
Stage 1	-	-	-	-	-	-	195	195	-	519	519	-
Stage 2	-	-	-	-	-	-	527	555	-	268	199	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1333	-	-	1416	-	-	345	342	880	312	357	836
Stage 1	-	-	-	-	-	-	811	743	-	544	536	-
Stage 2	-	-	-	-	-	-	538	516	-	742	740	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1333	-	-	1416	-	-	300	295	880	231	308	836
Mov Cap-2 Maneuver	-	-	-	-	-	-	300	295	-	231	308	-
Stage 1	-	-	-	-	-	-	802	735	-	538	467	-
Stage 2	-	-	-	-	-	-	458	450	-	611	732	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0.5		3.1			10.7			26			
HCM LOS						B			D			
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	781	1333	-	-	1416	-	-	258				
HCM Lane V/C Ratio	0.193	0.01	-	-	0.11	-	-	0.341				
HCM Control Delay (s)	10.7	7.7	0	-	7.9	0	-	26				
HCM Lane LOS	B	A	A	-	A	A	-	D				
HCM 95th %tile Q(veh)	0.7	0	-	-	0.4	-	-	1.5				

Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

HCM 2010 TWSC
Total (2023) SAT Peak Hour

Intersection						
Int Delay, s/veh	10.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	160	27	27	431	465	172
Future Vol, veh/h	160	27	27	431	465	172
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	174	29	29	468	505	187

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1125	599	692	0	-	0
Stage 1	599	-	-	-	-	-
Stage 2	526	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	229	505	912	-	-	-
Stage 1	553	-	-	-	-	-
Stage 2	597	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	219	505	912	-	-	-
Mov Cap-2 Maneuver	219	-	-	-	-	-
Stage 1	529	-	-	-	-	-
Stage 2	597	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	69.5	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	912	-	239	-	-
HCM Lane V/C Ratio	0.032	-	0.85	-	-
HCM Control Delay (s)	9.1	0	69.5	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.1	-	6.8	-	-












Millbrook Development Phase 2
7: Fallis Line & Street L

HCM 2010 TWSC
Total (2023) SAT Peak Hour

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	70	71	26	28	4
Future Vol, veh/h	4	70	71	26	28	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	5	80	82	30	32	5
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	112	0	-	0	187	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	90	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1484	-	-	-	804	962
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	936	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1484	-	-	-	801	962
Mov Cap-2 Maneuver	-	-	-	-	801	-
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	936	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		9.6		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1484	-	-	-	818	
HCM Lane V/C Ratio	0.003	-	-	-	0.045	
HCM Control Delay (s)	7.4	0	-	-	9.6	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2023) AM Peak Hour with Improvements

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	246	237	169	257	211	142
Future Volume (vph)	246	237	169	257	211	142
Satd. Flow (prot)	1628	0	1785	1773	1807	1331
Flt Permitted	0.975		0.605			
Satd. Flow (perm)	1628	0	1137	1773	1807	1331
Satd. Flow (RTOR)	81					165
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	10%	0%	0%	6%	4%	20%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	562	0	197	299	245	165
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	53.0		37.0	37.0	37.0	37.0
Total Split (%)	58.9%		41.1%	41.1%	41.1%	41.1%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effct Green (s)	26.6		31.5	31.5	31.5	31.5
Actuated g/C Ratio	0.38		0.45	0.45	0.45	0.45
v/c Ratio	0.84		0.39	0.38	0.30	0.24
Control Delay	29.0		18.5	16.9	16.0	4.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	29.0		18.5	16.9	16.0	4.1
LOS	C		B	B	B	A
Approach Delay	29.0			17.6	11.2	
Approach LOS	C			B	B	
Queue Length 50th (m)	56.0		16.1	24.3	19.2	0.0
Queue Length 95th (m)	83.9		40.7	54.7	44.3	10.4
Internal Link Dist (m)	333.1			460.0	687.0	
Turn Bay Length (m)			95.0			80.0
Base Capacity (vph)	1132		509	794	809	687
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.50		0.39	0.38	0.30	0.24
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 70.2						

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2023) AM Peak Hour with Improvements

Natural Cycle: 55

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 20.2

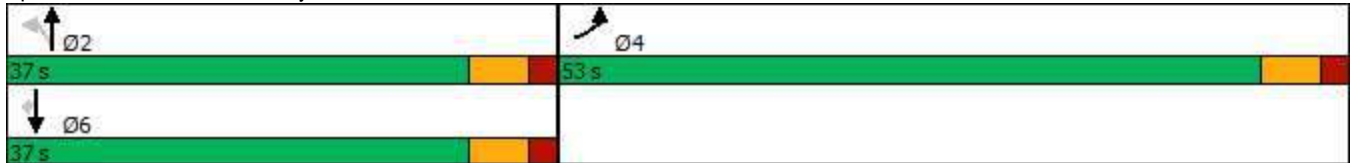
Intersection LOS: C

Intersection Capacity Utilization 63.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 2: County Road 10 & Fallis Line








Millbrook Development Phase 2
5: Street 'D'/Street 'I' & Fallis Line

HCM 2010 TWSC
Total (2023) AM Peak Hour with Improvements

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Traffic Vol, veh/h	14	224	4	51	162	33	5	8	158	65	4	10
Future Vol, veh/h	14	224	4	51	162	33	5	8	158	65	4	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	950	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	10	0	0	20	0	0	0	0	0	0	0
Mvmt Flow	15	243	4	55	176	36	5	9	172	71	4	11
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	212	0	0	247	0	0	587	597	245	670	581	194
Stage 1	-	-	-	-	-	-	275	275	-	304	304	-
Stage 2	-	-	-	-	-	-	312	322	-	366	277	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1370	-	-	1331	-	-	424	419	799	373	428	853
Stage 1	-	-	-	-	-	-	736	686	-	710	667	-
Stage 2	-	-	-	-	-	-	703	655	-	657	685	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1370	-	-	1331	-	-	398	397	799	276	405	853
Mov Cap-2 Maneuver	-	-	-	-	-	-	398	397	-	276	405	-
Stage 1	-	-	-	-	-	-	726	677	-	701	640	-
Stage 2	-	-	-	-	-	-	661	628	-	503	676	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0.4		1.6			11.5			21.2			
HCM LOS						B			C			
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	742	1370	-	-	1331	-	-	307				
HCM Lane V/C Ratio	0.25	0.011	-	-	0.042	-	-	0.28				
HCM Control Delay (s)	11.5	7.7	0	-	7.8	-	-	21.2				
HCM Lane LOS	B	A	A	-	A	-	-	C				
HCM 95th %tile Q(veh)	1	0	-	-	0.1	-	-	1.1				












Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

HCM 2010 TWSC
Total (2023) AM Peak Hour with Improvements

Intersection						
Int Delay, s/veh	6.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	169	29	10	494	343	55
Future Vol, veh/h	169	29	10	494	343	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	850
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	6	18	0
Mvmt Flow	184	32	11	537	373	60
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	932	373	433	0	-	0
Stage 1	373	-	-	-	-	-
Stage 2	559	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	298	678	1137	-	-	-
Stage 1	701	-	-	-	-	-
Stage 2	576	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	295	678	1137	-	-	-
Mov Cap-2 Maneuver	295	-	-	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	576	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	36.1	0.2		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1137	-	322	-	-	
HCM Lane V/C Ratio	0.01	-	0.668	-	-	
HCM Control Delay (s)	8.2	-	36.1	-	-	
HCM Lane LOS	A	-	E	-	-	
HCM 95th %tile Q(veh)	0	-	4.5	-	-	

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2023) PM Peak Hour with Improvements

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	204	168	219	213	269	257
Future Volume (vph)	204	168	219	213	269	257
Satd. Flow (prot)	1717	0	1785	1879	1842	1597
Flt Permitted	0.973		0.554			
Satd. Flow (perm)	1717	0	1041	1879	1842	1597
Satd. Flow (RTOR)	69					306
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	443	0	261	254	320	306
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	53.0		37.0	37.0	37.0	37.0
Total Split (%)	58.9%		41.1%	41.1%	41.1%	41.1%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effct Green (s)	19.0		31.3	31.3	31.3	31.3
Actuated g/C Ratio	0.30		0.50	0.50	0.50	0.50
v/c Ratio	0.78		0.50	0.27	0.35	0.32
Control Delay	26.4		16.3	11.3	12.0	2.7
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	26.4		16.3	11.3	12.0	2.7
LOS	C		B	B	B	A
Approach Delay	26.4			13.8	7.5	
Approach LOS	C			B	A	
Queue Length 50th (m)	38.2		18.3	15.4	20.3	0.0
Queue Length 95th (m)	59.1		42.5	32.9	42.0	9.6
Internal Link Dist (m)	333.1			460.0	699.0	
Turn Bay Length (m)			95.0			80.0
Base Capacity (vph)	1322		522	942	923	953
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.34		0.50	0.27	0.35	0.32
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 62.3						

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2023) PM Peak Hour with Improvements

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 14.8

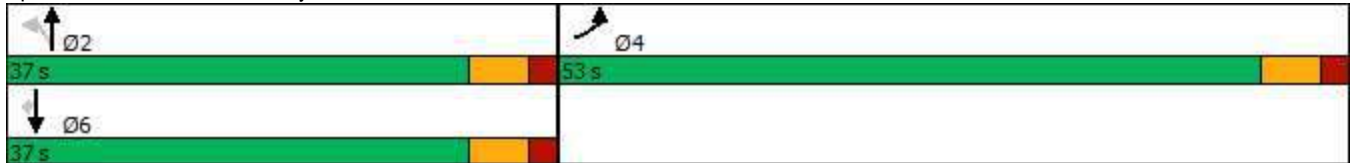
Intersection LOS: B

Intersection Capacity Utilization 62.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 2: County Road 10 & Fallis Line








Millbrook Development Phase 2
5: Street 'D'/Street 'I' & Fallis Line

HCM 2010 TWSC
Total (2023) PM Peak Hour with Improvements

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↙	↘			↕			↕	
Traffic Vol, veh/h	16	114	8	172	177	76	6	8	105	51	8	15
Future Vol, veh/h	16	114	8	172	177	76	6	8	105	51	8	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	950	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	17	124	9	187	192	83	7	9	114	55	9	16
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	275	0	0	133	0	0	783	812	129	832	775	234
Stage 1	-	-	-	-	-	-	163	163	-	608	608	-
Stage 2	-	-	-	-	-	-	620	649	-	224	167	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1300	-	-	1464	-	-	314	315	926	291	331	810
Stage 1	-	-	-	-	-	-	844	767	-	486	489	-
Stage 2	-	-	-	-	-	-	479	469	-	783	764	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1300	-	-	1464	-	-	268	271	926	222	285	810
Mov Cap-2 Maneuver	-	-	-	-	-	-	268	271	-	222	285	-
Stage 1	-	-	-	-	-	-	832	756	-	479	426	-
Stage 2	-	-	-	-	-	-	401	409	-	669	753	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0.9		3.2			11.1			24.1			
HCM LOS						B			C			
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	720	1300	-	-	1464	-	-	268				
HCM Lane V/C Ratio	0.18	0.013	-	-	0.128	-	-	0.3				
HCM Control Delay (s)	11.1	7.8	0	-	7.8	-	-	24.1				
HCM Lane LOS	B	A	A	-	A	-	-	C				
HCM 95th %tile Q(veh)	0.7	0	-	-	0.4	-	-	1.2				












Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

HCM 2010 TWSC
Total (2023) PM Peak Hour with Improvements

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	108	19	31	405	509	181
Future Vol, veh/h	108	19	31	405	509	181
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	850
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	117	21	34	440	553	197
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1061	553	750	0	-	0
Stage 1	553	-	-	-	-	-
Stage 2	508	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	250	537	868	-	-	-
Stage 1	580	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	240	537	868	-	-	-
Mov Cap-2 Maneuver	240	-	-	-	-	-
Stage 1	557	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	33.1	0.7		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	868	-	262	-	-	
HCM Lane V/C Ratio	0.039	-	0.527	-	-	
HCM Control Delay (s)	9.3	-	33.1	-	-	
HCM Lane LOS	A	-	D	-	-	
HCM 95th %tile Q(veh)	0.1	-	2.8	-	-	

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2023) SAT Peak Hour with Improvements

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	222	211	211	233	235	245
Future Volume (vph)	222	211	211	233	235	245
Satd. Flow (prot)	1711	0	1785	1879	1860	1597
Flt Permitted	0.975		0.604			
Satd. Flow (perm)	1711	0	1135	1879	1860	1597
Satd. Flow (RTOR)	79					261
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	460	0	224	248	250	261
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	53.0		37.0	37.0	37.0	37.0
Total Split (%)	58.9%		41.1%	41.1%	41.1%	41.1%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effct Green (s)	19.5		31.3	31.3	31.3	31.3
Actuated g/C Ratio	0.31		0.50	0.50	0.50	0.50
v/c Ratio	0.79		0.40	0.27	0.27	0.28
Control Delay	26.3		14.3	11.6	11.6	2.7
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	26.3		14.3	11.6	11.6	2.7
LOS	C		B	B	B	A
Approach Delay	26.3			12.9	7.1	
Approach LOS	C			B	A	
Queue Length 50th (m)	39.3		14.9	15.3	15.4	0.0
Queue Length 95th (m)	68.3		38.6	36.1	36.4	11.6
Internal Link Dist (m)	333.1			460.0	656.0	
Turn Bay Length (m)			95.0			80.0
Base Capacity (vph)	1309		564	934	924	925
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.35		0.40	0.27	0.27	0.28
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 62.9						

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2023) SAT Peak Hour with Improvements

Natural Cycle: 45

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 15.1

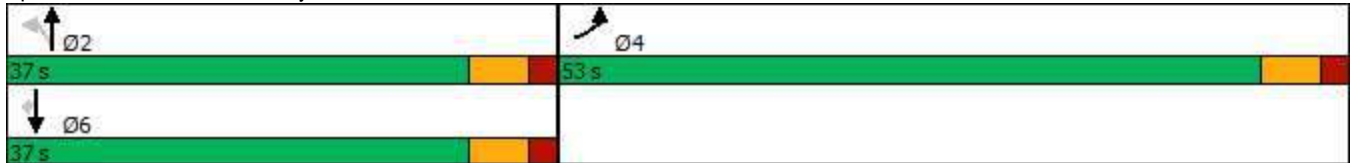
Intersection LOS: B

Intersection Capacity Utilization 64.3%

ICU Level of Service C






Analysis Period (min) 15

Splits and Phases: 2: County Road 10 & Fallis Line








Millbrook Development Phase 2
5: Street 'D'/Street 'I' & Fallis Line

HCM 2010 TWSC
Total (2023) SAT Peak Hour with Improvements

Intersection												
Int Delay, s/veh	6.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	152	7	143	159	66	4	5	130	66	5	10
Future Vol, veh/h	12	152	7	143	159	66	4	5	130	66	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	950	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	13	165	8	155	173	72	4	5	141	72	5	11
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	245	0	0	173	0	0	722	750	169	787	718	209
Stage 1	-	-	-	-	-	-	195	195	-	519	519	-
Stage 2	-	-	-	-	-	-	527	555	-	268	199	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1333	-	-	1416	-	-	345	342	880	312	357	836
Stage 1	-	-	-	-	-	-	811	743	-	544	536	-
Stage 2	-	-	-	-	-	-	538	516	-	742	740	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1333	-	-	1416	-	-	305	301	880	235	315	836
Mov Cap-2 Maneuver	-	-	-	-	-	-	305	301	-	235	315	-
Stage 1	-	-	-	-	-	-	802	735	-	538	478	-
Stage 2	-	-	-	-	-	-	468	460	-	611	732	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			3.1			10.7			25.5		
HCM LOS							B			D		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	783	1333	-	-	1416	-	-	262				
HCM Lane V/C Ratio	0.193	0.01	-	-	0.11	-	-	0.336				
HCM Control Delay (s)	10.7	7.7	0	-	7.9	-	-	25.5				
HCM Lane LOS	B	A	A	-	A	-	-	D				
HCM 95th %tile Q(veh)	0.7	0	-	-	0.4	-	-	1.4				

Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

HCM 2010 TWSC
Total (2023) SAT Peak Hour with Improvements

Intersection						
Int Delay, s/veh	7.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	160	27	27	431	465	172
Future Vol, veh/h	160	27	27	431	465	172
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	850
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	174	29	29	468	505	187

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1031	505	692	0	-	0
Stage 1	505	-	-	-	-	-
Stage 2	526	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	261	571	912	-	-	-
Stage 1	610	-	-	-	-	-
Stage 2	597	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	253	571	912	-	-	-
Mov Cap-2 Maneuver	253	-	-	-	-	-
Stage 1	590	-	-	-	-	-
Stage 2	597	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	47.7	0.5	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	912	-	275	-	-
HCM Lane V/C Ratio	0.032	-	0.739	-	-
HCM Control Delay (s)	9.1	-	47.7	-	-
HCM Lane LOS	A	-	E	-	-
HCM 95th %tile Q(veh)	0.1	-	5.3	-	-

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Total (2026) AM Peak Hour

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔			↔	
Traffic Vol, veh/h	4	5	35	25	2	11	35	598	42	6	350	4
Future Vol, veh/h	4	5	35	25	2	11	35	598	42	6	350	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	850	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	20	0	0	0	0	6	0	0	4	67
Mvmt Flow	5	6	42	30	2	13	42	712	50	7	417	5












Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1263	1280	420	1279	1257	737	422	0	0	762	0	0
Stage 1	434	434	-	821	821	-	-	-	-	-	-	-
Stage 2	829	846	-	458	436	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.4	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.48	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	148	167	597	144	173	422	1148	-	-	859	-	-
Stage 1	604	585	-	371	391	-	-	-	-	-	-	-
Stage 2	368	381	-	587	583	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	137	159	597	125	165	422	1148	-	-	859	-	-
Mov Cap-2 Maneuver	137	159	-	125	165	-	-	-	-	-	-	-
Stage 1	582	579	-	357	377	-	-	-	-	-	-	-
Stage 2	341	367	-	534	577	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	16.4		36.1		0.4		0.2	
HCM LOS	C		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1148	-	-	369	160	859	-
HCM Lane V/C Ratio	0.036	-	-	0.142	0.283	0.008	-
HCM Control Delay (s)	8.3	-	-	16.4	36.1	9.2	0
HCM Lane LOS	A	-	-	C	E	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.5	1.1	0	-

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2026) AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	247	238	170	272	223	142
Future Volume (vph)	247	238	170	272	223	142
Satd. Flow (prot)	1628	0	1785	1773	1807	1331
Flt Permitted	0.975		0.589			
Satd. Flow (perm)	1628	0	1107	1773	1807	1331
Satd. Flow (RTOR)	81					165
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	10%	0%	0%	6%	4%	20%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	564	0	198	316	259	165
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	53.0		37.0	37.0	37.0	37.0
Total Split (%)	58.9%		41.1%	41.1%	41.1%	41.1%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effct Green (s)	26.7		31.5	31.5	31.5	31.5
Actuated g/C Ratio	0.38		0.45	0.45	0.45	0.45
v/c Ratio	0.85		0.40	0.40	0.32	0.24
Control Delay	29.1		19.0	17.3	16.2	4.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	29.1		19.0	17.3	16.2	4.1
LOS	C		B	B	B	A
Approach Delay	29.1			17.9	11.5	
Approach LOS	C			B	B	
Queue Length 50th (m)	56.2		16.3	26.1	20.5	0.0
Queue Length 95th (m)	84.0		41.6	58.4	47.1	10.5
Internal Link Dist (m)	333.1			460.0	687.0	
Turn Bay Length (m)			95.0			80.0
Base Capacity (vph)	1130		495	793	808	686
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.50		0.40	0.40	0.32	0.24
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 70.3						

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2026) AM Peak Hour

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 20.3

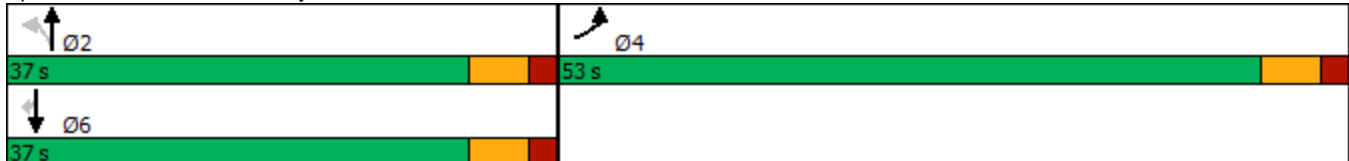
Intersection LOS: C

Intersection Capacity Utilization 64.4%

ICU Level of Service C





Analysis Period (min) 15

Splits and Phases: 2: County Road 10 & Fallis Line



Millbrook Development Phase 2
3: County Road 10 & Community Centre East Driveway

HCM 2010 TWSC
Total (2026) AM Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	4	8	512	358	23
Future Vol, veh/h	8	4	8	512	358	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	6	5	13
Mvmt Flow	9	5	9	602	421	27





Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1055	435	448	0	-	0
Stage 1	435	-	-	-	-	-
Stage 2	620	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	252	625	1123	-	-	-
Stage 1	657	-	-	-	-	-
Stage 2	540	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	250	625	1123	-	-	-
Mov Cap-2 Maneuver	250	-	-	-	-	-
Stage 1	652	-	-	-	-	-
Stage 2	540	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1123	-	313	-	-
HCM Lane V/C Ratio	0.008	-	0.045	-	-
HCM Control Delay (s)	8.2	-	17	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Millbrook Development Phase 2
4: Street 'A'/Street 'B' South & Fallis Line

HCM 2010 TWSC
Total (2026) AM Peak Hour

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	142	6	17	142	16	17	0	48	45	0	11
Future Vol, veh/h	4	142	6	17	142	16	17	0	48	45	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	10	0	0	20	0	0	0	0	0	0	0
Mvmt Flow	4	154	7	18	154	17	18	0	52	49	0	12






Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	171	0	0	161	0	0	371	373	158	391	368	163
Stage 1	-	-	-	-	-	-	166	166	-	199	199	-
Stage 2	-	-	-	-	-	-	205	207	-	192	169	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1418	-	-	1430	-	-	589	561	893	572	564	887
Stage 1	-	-	-	-	-	-	841	765	-	807	740	-
Stage 2	-	-	-	-	-	-	802	734	-	814	763	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1418	-	-	1430	-	-	574	551	893	531	554	887
Mov Cap-2 Maneuver	-	-	-	-	-	-	574	551	-	531	554	-
Stage 1	-	-	-	-	-	-	838	763	-	805	730	-
Stage 2	-	-	-	-	-	-	780	724	-	764	761	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.7			10.1			12		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	780	1418	-	-	1430	-	-	576
HCM Lane V/C Ratio	0.091	0.003	-	-	0.013	-	-	0.106
HCM Control Delay (s)	10.1	7.5	0	-	7.5	0	-	12
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.4






Millbrook Development Phase 2
5: Street 'D'/Street 'I' & Fallis Line

HCM 2010 TWSC
Total (2026) AM Peak Hour

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	226	4	51	163	33	5	8	158	65	4	10
Future Vol, veh/h	14	226	4	51	163	33	5	8	158	65	4	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	950	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	10	0	0	20	0	0	0	0	0	0	0
Mvmt Flow	15	246	4	55	177	36	5	9	172	71	4	11
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	213	0	0	250	0	0	591	601	248	674	585	195
Stage 1	-	-	-	-	-	-	278	278	-	305	305	-
Stage 2	-	-	-	-	-	-	313	323	-	369	280	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1369	-	-	1327	-	-	422	417	796	371	426	851
Stage 1	-	-	-	-	-	-	733	684	-	709	666	-
Stage 2	-	-	-	-	-	-	702	654	-	655	683	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1369	-	-	1327	-	-	396	395	796	274	403	851
Mov Cap-2 Maneuver	-	-	-	-	-	-	396	395	-	274	403	-
Stage 1	-	-	-	-	-	-	723	675	-	700	639	-
Stage 2	-	-	-	-	-	-	660	627	-	500	674	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			1.6			11.5			21.4		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	739	1369	-	-	1327	-	-	305				
HCM Lane V/C Ratio	0.252	0.011	-	-	0.042	-	-	0.282				
HCM Control Delay (s)	11.5	7.7	0	-	7.8	-	-	21.4				
HCM Lane LOS	B	A	A	-	A	-	-	C				
HCM 95th %tile Q(veh)	1	0	-	-	0.1	-	-	1.1				




Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

HCM 2010 TWSC
Total (2026) AM Peak Hour

Intersection						
Int Delay, s/veh	7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	169	29	10	510	355	55
Future Vol, veh/h	169	29	10	510	355	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	850
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	6	18	0
Mvmt Flow	184	32	11	554	386	60
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	962	386	446	0	-	0
Stage 1	386	-	-	-	-	-
Stage 2	576	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	286	666	1125	-	-	-
Stage 1	691	-	-	-	-	-
Stage 2	566	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	283	666	1125	-	-	-
Mov Cap-2 Maneuver	283	-	-	-	-	-
Stage 1	684	-	-	-	-	-
Stage 2	566	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	39.5	0.2		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1125	-	309	-	-	
HCM Lane V/C Ratio	0.01	-	0.696	-	-	
HCM Control Delay (s)	8.2	-	39.5	-	-	
HCM Lane LOS	A	-	E	-	-	
HCM 95th %tile Q(veh)	0	-	4.9	-	-	

Millbrook Development Phase 2
7: Fallis Line & Street L

HCM 2010 TWSC
Total (2026) AM Peak Hour

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	50	63	104	91	11
Future Vol, veh/h	11	50	63	104	91	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	13	57	72	120	105	13
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	192	0	-	0	215	132
Stage 1	-	-	-	-	132	-
Stage 2	-	-	-	-	83	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1388	-	-	-	775	920
Stage 1	-	-	-	-	897	-
Stage 2	-	-	-	-	943	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1388	-	-	-	767	920
Mov Cap-2 Maneuver	-	-	-	-	767	-
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	943	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.4	0		10.4		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1388	-	-	-	781	
HCM Lane V/C Ratio	0.009	-	-	-	0.15	
HCM Control Delay (s)	7.6	0	-	-	10.4	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.5	

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Total (2026) PM Peak Hour

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	4	1	33	29	1	4	29	470	23	10	644	11
Future Vol, veh/h	4	1	33	29	1	4	29	470	23	10	644	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	850	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	25	0	33	0	1	0	0	1	0
Mvmt Flow	5	1	38	33	1	5	33	534	26	11	732	13












Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1377	1387	739	1393	1380	547	745	0	0	560	0	0
Stage 1	761	761	-	613	613	-	-	-	-	-	-	-
Stage 2	616	626	-	780	767	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.35	6.5	6.53	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.725	4	3.597	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	123	144	421	106	146	482	872	-	-	1021	-	-
Stage 1	401	417	-	443	486	-	-	-	-	-	-	-
Stage 2	481	480	-	356	414	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	116	136	421	92	138	482	872	-	-	1021	-	-
Mov Cap-2 Maneuver	116	136	-	92	138	-	-	-	-	-	-	-
Stage 1	386	409	-	426	468	-	-	-	-	-	-	-
Stage 2	457	462	-	318	407	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	18.2		59.6		0.5		0.1	
HCM LOS	C		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	872	-	-	316 103	1021	-	-
HCM Lane V/C Ratio	0.038	-	-	0.137 0.375	0.011	-	-
HCM Control Delay (s)	9.3	-	-	18.2 59.6	8.6	0	-
HCM Lane LOS	A	-	-	C F	A A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5 1.5	0	-	-

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2026) PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	204	170	221	225	285	258
Future Volume (vph)	204	170	221	225	285	258
Satd. Flow (prot)	1717	0	1785	1879	1842	1597
Flt Permitted	0.973		0.536			
Satd. Flow (perm)	1717	0	1007	1879	1842	1597
Satd. Flow (RTOR)	70					307
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	445	0	263	268	339	307
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	53.0		37.0	37.0	37.0	37.0
Total Split (%)	58.9%		41.1%	41.1%	41.1%	41.1%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effct Green (s)	19.1		31.3	31.3	31.3	31.3
Actuated g/C Ratio	0.31		0.50	0.50	0.50	0.50
v/c Ratio	0.78		0.52	0.28	0.37	0.32
Control Delay	26.3		17.0	11.5	12.3	2.7
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	26.3		17.0	11.5	12.3	2.7
LOS	C		B	B	B	A
Approach Delay	26.3			14.2	7.7	
Approach LOS	C			B	A	
Queue Length 50th (m)	38.3		18.8	16.4	21.9	0.0
Queue Length 95th (m)	59.1		44.1	34.9	44.8	9.6
Internal Link Dist (m)	333.1			460.0	699.0	
Turn Bay Length (m)			95.0			80.0
Base Capacity (vph)	1320		504	941	922	953
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.34		0.52	0.28	0.37	0.32
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 62.4						

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2026) PM Peak Hour

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 15.0

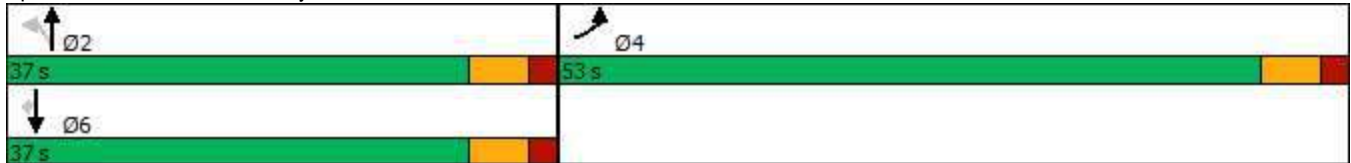
Intersection LOS: B

Intersection Capacity Utilization 64.0%

ICU Level of Service B





Analysis Period (min) 15

Splits and Phases: 2: County Road 10 & Fallis Line



Millbrook Development Phase 2
3: County Road 10 & Community Centre East Driveway

HCM 2010 TWSC
Total (2026) PM Peak Hour

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	26	11	6	421	528	18
Future Vol, veh/h	26	11	6	421	528	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	30	13	7	490	614	21
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1129	625	635	0	-	0
Stage 1	625	-	-	-	-	-
Stage 2	504	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	228	488	958	-	-	-
Stage 1	537	-	-	-	-	-
Stage 2	611	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	226	488	958	-	-	-
Mov Cap-2 Maneuver	226	-	-	-	-	-
Stage 1	533	-	-	-	-	-
Stage 2	611	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	20.9	0.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	958	-	269	-	-	
HCM Lane V/C Ratio	0.007	-	0.16	-	-	
HCM Control Delay (s)	8.8	-	20.9	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0	-	0.6	-	-	

Millbrook Development Phase 2
4: Street 'A'/Street 'B' South & Fallis Line

HCM 2010 TWSC
Total (2026) PM Peak Hour

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	72	19	52	91	48	11	0	31	30	0	7
Future Vol, veh/h	12	72	19	52	91	48	11	0	31	30	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	13	78	21	57	99	52	12	0	34	33	0	8






Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	151	0	0	99	0	0	358	380	89	371	364	125
Stage 1	-	-	-	-	-	-	115	115	-	239	239	-
Stage 2	-	-	-	-	-	-	243	265	-	132	125	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1442	-	-	1507	-	-	601	556	975	589	567	931
Stage 1	-	-	-	-	-	-	895	804	-	769	711	-
Stage 2	-	-	-	-	-	-	765	693	-	876	796	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1442	-	-	1507	-	-	573	527	975	546	538	931
Mov Cap-2 Maneuver	-	-	-	-	-	-	573	527	-	546	538	-
Stage 1	-	-	-	-	-	-	886	796	-	761	681	-
Stage 2	-	-	-	-	-	-	727	664	-	837	788	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	2	9.6	11.5
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	824	1442	-	-	1507	-	-	592
HCM Lane V/C Ratio	0.055	0.009	-	-	0.038	-	-	0.068
HCM Control Delay (s)	9.6	7.5	0	-	7.5	0	-	11.5
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.2






Millbrook Development Phase 2
5: Street 'D'/Street 'I' & Fallis Line

HCM 2010 TWSC
Total (2026) PM Peak Hour

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	115	8	172	179	76	6	8	105	51	8	15
Future Vol, veh/h	16	115	8	172	179	76	6	8	105	51	8	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	950	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	17	125	9	187	195	83	7	9	114	55	9	16
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	278	0	0	134	0	0	787	816	130	836	779	237
Stage 1	-	-	-	-	-	-	164	164	-	611	611	-
Stage 2	-	-	-	-	-	-	623	652	-	225	168	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1296	-	-	1463	-	-	312	314	925	289	330	807
Stage 1	-	-	-	-	-	-	843	766	-	484	487	-
Stage 2	-	-	-	-	-	-	477	467	-	782	763	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1296	-	-	1463	-	-	267	270	925	221	284	807
Mov Cap-2 Maneuver	-	-	-	-	-	-	267	270	-	221	284	-
Stage 1	-	-	-	-	-	-	831	755	-	477	425	-
Stage 2	-	-	-	-	-	-	399	407	-	668	752	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			3.2			11.1			24.2		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	719	1296	-	-	1463	-	-	267				
HCM Lane V/C Ratio	0.18	0.013	-	-	0.128	-	-	0.301				
HCM Control Delay (s)	11.1	7.8	0	-	7.8	-	-	24.2				
HCM Lane LOS	B	A	A	-	A	-	-	C				
HCM 95th %tile Q(veh)	0.7	0	-	-	0.4	-	-	1.2				

Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

HCM 2010 TWSC
Total (2026) PM Peak Hour

Intersection						
Int Delay, s/veh	3.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	108	19	31	418	525	181
Future Vol, veh/h	108	19	31	418	525	181
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	850
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	117	21	34	454	571	197

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1093	571	768	0	-	0
Stage 1	571	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	239	524	855	-	-	-
Stage 1	569	-	-	-	-	-
Stage 2	599	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	229	524	855	-	-	-
Mov Cap-2 Maneuver	229	-	-	-	-	-
Stage 1	546	-	-	-	-	-
Stage 2	599	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	35.8	0.6	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	855	-	250	-	-
HCM Lane V/C Ratio	0.039	-	0.552	-	-
HCM Control Delay (s)	9.4	-	35.8	-	-
HCM Lane LOS	A	-	E	-	-
HCM 95th %tile Q(veh)	0.1	-	3	-	-

Millbrook Development Phase 2
7: Fallis Line & Street L

HCM 2010 TWSC
Total (2026) PM Peak Hour

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	70	71	26	27	4
Future Vol, veh/h	4	70	71	26	27	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	5	80	82	30	31	5
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	112	0	-	0	187	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	90	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1484	-	-	-	804	962
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	936	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1484	-	-	-	801	962
Mov Cap-2 Maneuver	-	-	-	-	801	-
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	936	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		9.6		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1484	-	-	-	-	819
HCM Lane V/C Ratio	0.003	-	-	-	-	0.044
HCM Control Delay (s)	7.4	0	-	-	-	9.6
HCM Lane LOS	A	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-	0.1

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

HCM 2010 TWSC
Total (2026) SAT Peak Hour

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔			↔	
Traffic Vol, veh/h	17	4	35	29	7	5	34	543	28	5	586	14
Future Vol, veh/h	17	4	35	29	7	5	34	543	28	5	586	14
Conflicting Peds, #/hr	0	0	5	5	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	850	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	1	0
Mvmt Flow	18	4	36	30	7	5	35	560	29	5	604	14












Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1272	1280	616	1291	1273	575	618	0	0	589	0	0
Stage 1	621	621	-	645	645	-	-	-	-	-	-	-
Stage 2	651	659	-	646	628	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	146	167	494	142	169	521	972	-	-	996	-	-
Stage 1	478	482	-	464	471	-	-	-	-	-	-	-
Stage 2	461	464	-	464	479	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	135	160	492	124	162	521	972	-	-	996	-	-
Mov Cap-2 Maneuver	135	160	-	124	162	-	-	-	-	-	-	-
Stage 1	461	478	-	447	454	-	-	-	-	-	-	-
Stage 2	433	447	-	421	475	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	23.5		40.4		0.5		0.1	
HCM LOS	C		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	972	-	-	252 143	996	-	-
HCM Lane V/C Ratio	0.036	-	-	0.229 0.296	0.005	-	-
HCM Control Delay (s)	8.8	-	-	23.5 40.4	8.6	0	-
HCM Lane LOS	A	-	-	C E	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9 1.2	0	-	-

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2026) SAT Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	222	213	212	245	248	246
Future Volume (vph)	222	213	212	245	248	246
Satd. Flow (prot)	1711	0	1785	1879	1860	1597
Flt Permitted	0.975		0.596			
Satd. Flow (perm)	1711	0	1120	1879	1860	1597
Satd. Flow (RTOR)	81					262
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	463	0	226	261	264	262
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	53.0		37.0	37.0	37.0	37.0
Total Split (%)	58.9%		41.1%	41.1%	41.1%	41.1%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effct Green (s)	19.6		31.2	31.2	31.2	31.2
Actuated g/C Ratio	0.31		0.50	0.50	0.50	0.50
v/c Ratio	0.79		0.41	0.28	0.29	0.28
Control Delay	26.3		14.6	11.7	11.8	2.7
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	26.3		14.6	11.7	11.8	2.7
LOS	C		B	B	B	A
Approach Delay	26.3			13.0	7.3	
Approach LOS	C			B	A	
Queue Length 50th (m)	39.5		15.2	16.3	16.5	0.0
Queue Length 95th (m)	68.5		39.5	38.1	38.6	11.6
Internal Link Dist (m)	333.1			460.0	656.0	
Turn Bay Length (m)			95.0			80.0
Base Capacity (vph)	1308		556	933	923	925
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.35		0.41	0.28	0.29	0.28
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 62.9						

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2026) SAT Peak Hour

Natural Cycle: 45

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 15.1

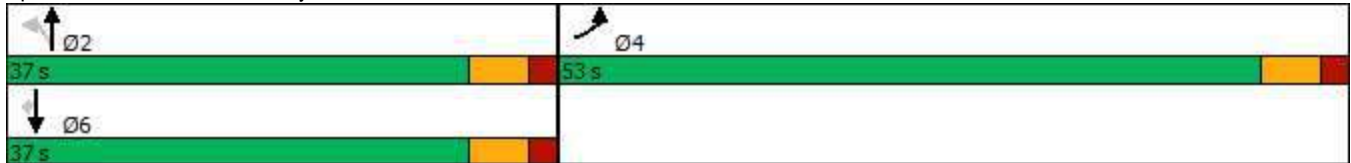
Intersection LOS: B

Intersection Capacity Utilization 65.2%

ICU Level of Service C






Analysis Period (min) 15

Splits and Phases: 2: County Road 10 & Fallis Line



Millbrook Development Phase 2
3: County Road 10 & Community Centre East Driveway

HCM 2010 TWSC
Total (2026) SAT Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	3	4	463	492	11
Future Vol, veh/h	7	3	4	463	492	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	7	3	4	482	513	11





Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1009	519	524	0	-	0
Stage 1	519	-	-	-	-	-
Stage 2	490	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	269	561	1053	-	-	-
Stage 1	601	-	-	-	-	-
Stage 2	620	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	268	561	1053	-	-	-
Mov Cap-2 Maneuver	268	-	-	-	-	-
Stage 1	599	-	-	-	-	-
Stage 2	620	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.7	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1053	-	318	-	-
HCM Lane V/C Ratio	0.004	-	0.033	-	-
HCM Control Delay (s)	8.4	-	16.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-






Millbrook Development Phase 2
4: Street 'A'/Street 'B' South & Fallis Line

HCM 2010 TWSC
Total (2026) SAT Peak Hour

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	80	16	41	85	42	14	0	42	44	0	10
Future Vol, veh/h	11	80	16	41	85	42	14	0	42	44	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	12	87	17	45	92	46	15	0	46	48	0	11
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	138	0	0	104	0	0	331	348	96	348	333	115
Stage 1	-	-	-	-	-	-	120	120	-	205	205	-
Stage 2	-	-	-	-	-	-	211	228	-	143	128	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1458	-	-	1500	-	-	626	579	966	610	590	943
Stage 1	-	-	-	-	-	-	889	800	-	802	736	-
Stage 2	-	-	-	-	-	-	796	719	-	865	794	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1458	-	-	1500	-	-	599	555	966	562	565	943
Mov Cap-2 Maneuver	-	-	-	-	-	-	599	555	-	562	565	-
Stage 1	-	-	-	-	-	-	881	793	-	795	712	-
Stage 2	-	-	-	-	-	-	761	695	-	817	787	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			1.8			9.6			11.6		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	838	1458	-	-	1500	-	-	607				
HCM Lane V/C Ratio	0.073	0.008	-	-	0.03	-	-	0.097				
HCM Control Delay (s)	9.6	7.5	0	-	7.5	0	-	11.6				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.3				






Millbrook Development Phase 2
5: Street 'D'/Street 'I' & Fallis Line

HCM 2010 TWSC
Total (2026) SAT Peak Hour

Intersection												
Int Delay, s/veh	6.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	154	7	143	161	66	4	5	130	66	5	10
Future Vol, veh/h	12	154	7	143	161	66	4	5	130	66	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	950	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	13	167	8	155	175	72	4	5	141	72	5	11
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	247	0	0	175	0	0	726	754	171	791	722	211
Stage 1	-	-	-	-	-	-	197	197	-	521	521	-
Stage 2	-	-	-	-	-	-	529	557	-	270	201	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1331	-	-	1414	-	-	343	341	878	310	355	834
Stage 1	-	-	-	-	-	-	809	742	-	542	535	-
Stage 2	-	-	-	-	-	-	537	515	-	740	739	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1331	-	-	1414	-	-	304	300	878	233	312	834
Mov Cap-2 Maneuver	-	-	-	-	-	-	304	300	-	233	312	-
Stage 1	-	-	-	-	-	-	800	734	-	536	476	-
Stage 2	-	-	-	-	-	-	467	458	-	610	731	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0.5		3			10.7			25.8			
HCM LOS						B			D			
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	781	1331	-	-	1414	-	-	260				
HCM Lane V/C Ratio	0.193	0.01	-	-	0.11	-	-	0.339				
HCM Control Delay (s)	10.7	7.7	0	-	7.9	-	-	25.8				
HCM Lane LOS	B	A	A	-	A	-	-	D				
HCM 95th %tile Q(veh)	0.7	0	-	-	0.4	-	-	1.4				



Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

HCM 2010 TWSC
Total (2026) SAT Peak Hour

Intersection						
Int Delay, s/veh	7.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	160	27	27	443	479	172
Future Vol, veh/h	160	27	27	443	479	172
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	850
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	174	29	29	482	521	187
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1061	521	708	0	-	0
Stage 1	521	-	-	-	-	-
Stage 2	540	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	250	559	900	-	-	-
Stage 1	600	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	242	559	900	-	-	-
Mov Cap-2 Maneuver	242	-	-	-	-	-
Stage 1	581	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	52.9	0.5		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	900	-	264	-	-	
HCM Lane V/C Ratio	0.033	-	0.77	-	-	
HCM Control Delay (s)	9.1	-	52.9	-	-	
HCM Lane LOS	A	-	F	-	-	
HCM 95th %tile Q(veh)	0.1	-	5.7	-	-	


















Millbrook Development Phase 2
7: Fallis Line & Street L

HCM 2010 TWSC
Total (2026) SAT Peak Hour

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	72	73	26	28	4
Future Vol, veh/h	4	72	73	26	28	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	5	83	84	30	32	5
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	114	0	-	0	192	99
Stage 1	-	-	-	-	99	-
Stage 2	-	-	-	-	93	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1481	-	-	-	799	960
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	933	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1481	-	-	-	796	960
Mov Cap-2 Maneuver	-	-	-	-	796	-
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	933	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		9.6		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1481	-	-	-	813	
HCM Lane V/C Ratio	0.003	-	-	-	0.045	
HCM Control Delay (s)	7.4	0	-	-	9.6	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

Lanes, Volumes, Timings
Total (2031) AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	7	36	36	14	12	36	661	45	7	583	217
Future Volume (vph)	42	7	36	36	14	12	36	661	45	7	583	217
Satd. Flow (prot)	0	1594	0	0	1779	0	1785	1761	0	0	1751	0
Flt Permitted		0.843			0.820		0.317				0.994	
Satd. Flow (perm)	0	1376	0	0	1501	0	596	1761	0	0	1741	0
Satd. Flow (RTOR)		40			13			7			37	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	20%	0%	0%	0%	0%	6%	0%	0%	4%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	101	0	0	74	0	43	841	0	0	960	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	30.0	30.0		30.0	30.0		60.0	60.0		60.0	60.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.0			6.0		6.0	6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		9.2			9.2		60.6	60.6			60.6	
Actuated g/C Ratio		0.12			0.12		0.78	0.78			0.78	
v/c Ratio		0.51			0.40		0.09	0.62			0.71	
Control Delay		29.8			32.6		4.4	8.2			10.4	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		29.8			32.6		4.4	8.2			10.4	
LOS		C			C		A	A			B	
Approach Delay		29.8			32.6			8.1			10.4	
Approach LOS		C			C			A			B	
Queue Length 50th (m)		8.3			8.3		1.5	50.2			63.7	
Queue Length 95th (m)		19.5			17.9		4.8	90.4			117.6	
Internal Link Dist (m)		884.7			354.8			385.0			381.6	
Turn Bay Length (m)							85.0					
Base Capacity (vph)		450			470		462	1366			1358	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.22			0.16		0.09	0.62			0.71	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 78.1												

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

Lanes, Volumes, Timings
Total (2031) AM Peak Hour

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 11.2

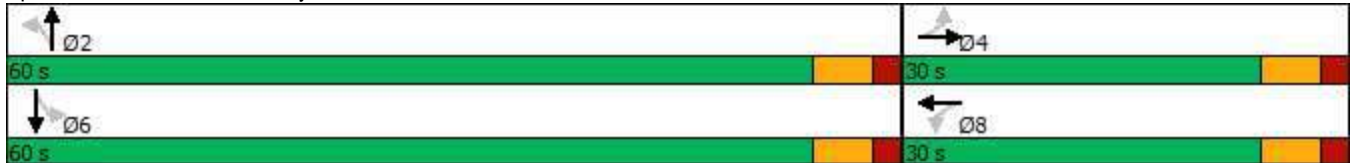
Intersection LOS: B

Intersection Capacity Utilization 65.3%

ICU Level of Service C












Analysis Period (min) 15

Splits and Phases: 1: County Road 10 & Larmer Line



Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2031) AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	319	240	172	402	261	155
Future Volume (vph)	319	240	172	402	261	155
Satd. Flow (prot)	1627	0	1785	1773	1807	1331
Flt Permitted	0.972		0.524			
Satd. Flow (perm)	1627	0	985	1773	1807	1331
Satd. Flow (RTOR)	80					180
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	10%	0%	0%	6%	4%	20%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	650	0	200	467	303	180
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	62.0		28.0	28.0	28.0	28.0
Total Split (%)	68.9%		31.1%	31.1%	31.1%	31.1%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effct Green (s)	27.5		22.5	22.5	22.5	22.5
Actuated g/C Ratio	0.44		0.36	0.36	0.36	0.36
v/c Ratio	0.85		0.56	0.73	0.46	0.30
Control Delay	24.7		27.7	29.0	20.8	5.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	24.7		27.7	29.0	20.8	5.2
LOS	C		C	C	C	A
Approach Delay	24.7			28.6	15.0	
Approach LOS	C			C	B	
Queue Length 50th (m)	54.4		17.3	43.8	25.1	0.0
Queue Length 95th (m)	82.9		#52.3	#111.1	58.4	11.9
Internal Link Dist (m)	333.1			460.0	687.0	
Turn Bay Length (m)			95.0			80.0
Base Capacity (vph)	1469		355	640	652	595
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.44		0.56	0.73	0.46	0.30
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 62.2						

Millbrook Development Phase 2 2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2031) AM Peak Hour

Natural Cycle: 55

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 23.5

Intersection LOS: C

Intersection Capacity Utilization 70.6%

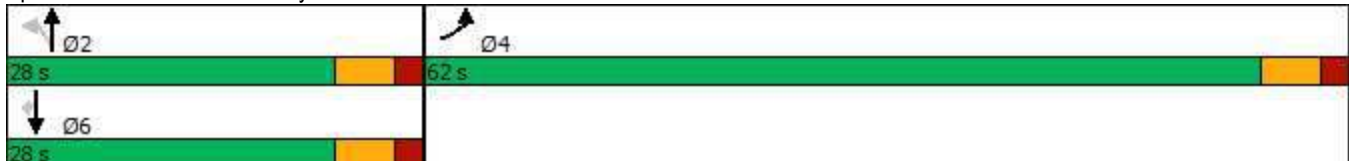
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.






Queue shown is maximum after two cycles.

Splits and Phases: 2: County Road 10 & Fallis Line



Millbrook Development Phase 2
3: County Road 10 & Community Centre East Driveway

HCM 2010 TWSC
Total (2031) AM Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	4	8	714	408	23
Future Vol, veh/h	8	4	8	714	408	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	6	5	13
Mvmt Flow	9	5	9	840	480	27





Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1352	494	507	0	-	0
Stage 1	494	-	-	-	-	-
Stage 2	858	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	167	579	1068	-	-	-
Stage 1	617	-	-	-	-	-
Stage 2	419	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	166	579	1068	-	-	-
Mov Cap-2 Maneuver	166	-	-	-	-	-
Stage 1	612	-	-	-	-	-
Stage 2	419	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.7	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1068	-	218	-	-
HCM Lane V/C Ratio	0.009	-	0.065	-	-
HCM Control Delay (s)	8.4	-	22.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-






Millbrook Development Phase 2
4: Street 'A'/Street 'B' South & Fallis Line

HCM 2010 TWSC
Total (2031) AM Peak Hour

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	175	6	18	149	17	17	0	55	52	0	11
Future Vol, veh/h	4	175	6	18	149	17	17	0	55	52	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	10	0	0	20	0	0	0	0	0	0	0
Mvmt Flow	4	190	7	20	162	18	18	0	60	57	0	12
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	180	0	0	197	0	0	419	422	194	443	416	171
Stage 1	-	-	-	-	-	-	202	202	-	211	211	-
Stage 2	-	-	-	-	-	-	217	220	-	232	205	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1408	-	-	1388	-	-	548	526	853	528	530	878
Stage 1	-	-	-	-	-	-	805	738	-	796	731	-
Stage 2	-	-	-	-	-	-	790	725	-	775	736	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1408	-	-	1388	-	-	533	516	853	484	520	878
Mov Cap-2 Maneuver	-	-	-	-	-	-	533	516	-	484	520	-
Stage 1	-	-	-	-	-	-	803	736	-	794	719	-
Stage 2	-	-	-	-	-	-	767	713	-	719	734	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.7			10.4			12.9		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	747	1408	-	-	1388	-	-	525				
HCM Lane V/C Ratio	0.105	0.003	-	-	0.014	-	-	0.13				
HCM Control Delay (s)	10.4	7.6	0	-	7.6	0	-	12.9				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.4				






Millbrook Development Phase 2
5: Street 'D'/Street 'I' & Fallis Line

HCM 2010 TWSC
Total (2031) AM Peak Hour

Intersection												
Int Delay, s/veh	6.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	273	4	55	172	34	5	8	178	72	4	10
Future Vol, veh/h	14	273	4	55	172	34	5	8	178	72	4	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	950	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	10	0	0	20	0	0	0	0	0	0	0
Mvmt Flow	15	297	4	60	187	37	5	9	193	78	4	11
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	224	0	0	301	0	0	662	673	299	756	657	206
Stage 1	-	-	-	-	-	-	329	329	-	326	326	-
Stage 2	-	-	-	-	-	-	333	344	-	430	331	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1357	-	-	1272	-	-	378	379	745	327	387	840
Stage 1	-	-	-	-	-	-	688	650	-	691	652	-
Stage 2	-	-	-	-	-	-	685	640	-	607	649	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1357	-	-	1272	-	-	353	357	745	227	364	840
Mov Cap-2 Maneuver	-	-	-	-	-	-	353	357	-	227	364	-
Stage 1	-	-	-	-	-	-	679	642	-	682	621	-
Stage 2	-	-	-	-	-	-	640	610	-	438	641	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			1.7			12.4			27.3		
HCM LOS							B			D		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	693	1357	-	-	1272	-	-	253				
HCM Lane V/C Ratio	0.3	0.011	-	-	0.047	-	-	0.369				
HCM Control Delay (s)	12.4	7.7	0	-	8	-	-	27.3				
HCM Lane LOS	B	A	A	-	A	-	-	D				
HCM 95th %tile Q(veh)	1.3	0	-	-	0.1	-	-	1.6				

Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

HCM 2010 TWSC
Total (2031) AM Peak Hour

Intersection						
Int Delay, s/veh	24.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	196	29	10	712	406	60
Future Vol, veh/h	196	29	10	712	406	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	850
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	6	18	0
Mvmt Flow	213	32	11	774	441	65

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1237	441	506	0	-	0
Stage 1	441	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	~ 196	621	1069	-	-	-
Stage 1	653	-	-	-	-	-
Stage 2	448	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 194	621	1069	-	-	-
Mov Cap-2 Maneuver	~ 194	-	-	-	-	-
Stage 1	646	-	-	-	-	-
Stage 2	448	-	-	-	-	-




Approach	EB	NB	SB
HCM Control Delay, s	154.5	0.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1069	-	213	-	-
HCM Lane V/C Ratio	0.01	-	1.148	-	-
HCM Control Delay (s)	8.4	-	154.5	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0	-	11.8	-	-

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon


















Millbrook Development Phase 2
7: Fallis Line & Street L

HCM 2010 TWSC
Total (2031) AM Peak Hour

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	83	70	104	91	11
Future Vol, veh/h	11	83	70	104	91	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	13	95	80	120	105	13
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	200	0	-	0	261	140
Stage 1	-	-	-	-	140	-
Stage 2	-	-	-	-	121	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1378	-	-	-	730	911
Stage 1	-	-	-	-	889	-
Stage 2	-	-	-	-	907	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1378	-	-	-	723	911
Mov Cap-2 Maneuver	-	-	-	-	723	-
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	907	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.9	0		10.8		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1378	-	-	-	739	
HCM Lane V/C Ratio	0.009	-	-	-	0.159	
HCM Control Delay (s)	7.6	0	-	-	10.8	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.6	

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

Lanes, Volumes, Timings
Total (2031) PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	174	10	34	32	4	4	30	661	32	11	732	72
Future Volume (vph)	174	10	34	32	4	4	30	661	32	11	732	72
Satd. Flow (prot)	0	1770	0	0	1446	0	1785	1848	0	0	1838	0
Flt Permitted		0.738			0.743		0.291				0.988	
Satd. Flow (perm)	0	1358	0	0	1117	0	547	1848	0	0	1818	0
Satd. Flow (RTOR)		10			5			5			10	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	0%	0%	25%	0%	33%	0%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	248	0	0	46	0	34	787	0	0	927	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	30.0	30.0		30.0	30.0		60.0	60.0		60.0	60.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.0			6.0		6.0	6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		19.4			19.4		55.7	55.7			55.7	
Actuated g/C Ratio		0.22			0.22		0.64	0.64			0.64	
v/c Ratio		0.80			0.18		0.10	0.67			0.80	
Control Delay		49.9			25.6		8.2	14.3			19.3	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		49.9			25.6		8.2	14.3			19.3	
LOS		D			C		A	B			B	
Approach Delay		49.9			25.6			14.0			19.3	
Approach LOS		D			C			B			B	
Queue Length 50th (m)		36.8			5.4		2.0	75.7			103.7	
Queue Length 95th (m)		60.9			13.6		6.3	123.1			#173.0	
Internal Link Dist (m)		884.7			354.8			385.0			381.6	
Turn Bay Length (m)							85.0					
Base Capacity (vph)		381			311		350	1183			1166	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.65			0.15		0.10	0.67			0.80	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 87.1												

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

Lanes, Volumes, Timings
Total (2031) PM Peak Hour

Natural Cycle: 65

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 21.0

Intersection LOS: C

Intersection Capacity Utilization 75.0%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.












Queue shown is maximum after two cycles.

Splits and Phases: 1: County Road 10 & Larmer Line



Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2031) PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	224	172	223	275	396	315
Future Volume (vph)	224	172	223	275	396	315
Satd. Flow (prot)	1719	0	1785	1879	1842	1597
Flt Permitted	0.972		0.406			
Satd. Flow (perm)	1719	0	763	1879	1842	1597
Satd. Flow (RTOR)	64					375
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	472	0	265	327	471	375
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	53.0		37.0	37.0	37.0	37.0
Total Split (%)	58.9%		41.1%	41.1%	41.1%	41.1%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effct Green (s)	20.5		31.3	31.3	31.3	31.3
Actuated g/C Ratio	0.32		0.49	0.49	0.49	0.49
v/c Ratio	0.79		0.71	0.36	0.52	0.39
Control Delay	27.2		29.0	12.9	15.3	2.9
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	27.2		29.0	12.9	15.3	2.9
LOS	C		C	B	B	A
Approach Delay	27.2			20.1	9.8	
Approach LOS	C			C	A	
Queue Length 50th (m)	42.9		22.6	22.1	35.2	0.0
Queue Length 95th (m)	64.1		#64.3	45.2	69.3	10.6
Internal Link Dist (m)	333.1			460.0	699.0	
Turn Bay Length (m)			95.0			80.0
Base Capacity (vph)	1291		373	919	901	972
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.37		0.71	0.36	0.52	0.39
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 63.9						

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2031) PM Peak Hour

Natural Cycle: 55

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 17.3

Intersection LOS: B

Intersection Capacity Utilization 71.1%

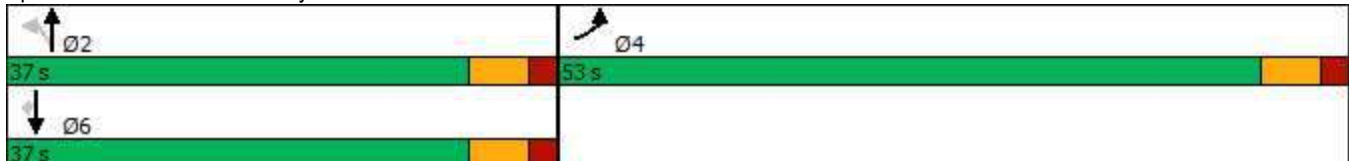
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.





Queue shown is maximum after two cycles.

Splits and Phases: 2: County Road 10 & Fallis Line







Millbrook Development Phase 2
3: County Road 10 & Community Centre East Driveway

HCM 2010 TWSC
Total (2031) PM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	26	11	6	491	695	18
Future Vol, veh/h	26	11	6	491	695	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	30	13	7	571	808	21
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1404	819	829	0	-	0
Stage 1	819	-	-	-	-	-
Stage 2	585	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	155	379	811	-	-	-
Stage 1	437	-	-	-	-	-
Stage 2	561	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	154	379	811	-	-	-
Mov Cap-2 Maneuver	154	-	-	-	-	-
Stage 1	433	-	-	-	-	-
Stage 2	561	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	29.9	0.1		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	811	-	187	-	-	
HCM Lane V/C Ratio	0.009	-	0.23	-	-	
HCM Control Delay (s)	9.5	-	29.9	-	-	
HCM Lane LOS	A	-	D	-	-	
HCM 95th %tile Q(veh)	0	-	0.9	-	-	






Millbrook Development Phase 2
4: Street 'A'/Street 'B' South & Fallis Line

HCM 2010 TWSC
Total (2031) PM Peak Hour

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	83	19	57	119	53	11	0	33	32	0	7
Future Vol, veh/h	12	83	19	57	119	53	11	0	33	32	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	13	90	21	62	129	58	12	0	36	35	0	8
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	187	0	0	111	0	0	413	438	101	427	419	158
Stage 1	-	-	-	-	-	-	127	127	-	282	282	-
Stage 2	-	-	-	-	-	-	286	311	-	145	137	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1399	-	-	1492	-	-	553	515	960	541	528	893
Stage 1	-	-	-	-	-	-	882	795	-	729	681	-
Stage 2	-	-	-	-	-	-	726	662	-	863	787	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1399	-	-	1492	-	-	525	486	960	498	498	893
Mov Cap-2 Maneuver	-	-	-	-	-	-	525	486	-	498	498	-
Stage 1	-	-	-	-	-	-	873	787	-	722	649	-
Stage 2	-	-	-	-	-	-	686	631	-	822	779	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0.8		1.9			9.8			12.2			
HCM LOS						A			B			
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	795	1399	-	-	1492	-	-	541				
HCM Lane V/C Ratio	0.06	0.009	-	-	0.042	-	-	0.078				
HCM Control Delay (s)	9.8	7.6	0	-	7.5	0	-	12.2				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.3				






Millbrook Development Phase 2
5: Street 'D'/Street 'I' & Fallis Line

HCM 2010 TWSC
Total (2031) PM Peak Hour

Intersection												
Int Delay, s/veh	6.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	130	8	188	217	81	6	8	111	53	8	15
Future Vol, veh/h	16	130	8	188	217	81	6	8	111	53	8	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	950	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	17	141	9	204	236	88	7	9	121	58	9	16
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	324	0	0	150	0	0	881	912	146	933	872	280
Stage 1	-	-	-	-	-	-	180	180	-	688	688	-
Stage 2	-	-	-	-	-	-	701	732	-	245	184	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1247	-	-	1444	-	-	269	276	906	248	291	764
Stage 1	-	-	-	-	-	-	826	754	-	440	450	-
Stage 2	-	-	-	-	-	-	433	430	-	763	751	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1247	-	-	1444	-	-	226	233	906	184	246	764
Mov Cap-2 Maneuver	-	-	-	-	-	-	226	233	-	184	246	-
Stage 1	-	-	-	-	-	-	814	743	-	433	387	-
Stage 2	-	-	-	-	-	-	356	369	-	644	740	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			3.1			11.6			30.3		
HCM LOS							B			D		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	682	1247	-	-	1444	-	-	223				
HCM Lane V/C Ratio	0.199	0.014	-	-	0.142	-	-	0.37				
HCM Control Delay (s)	11.6	7.9	0	-	7.9	-	-	30.3				
HCM Lane LOS	B	A	A	-	A	-	-	D				
HCM 95th %tile Q(veh)	0.7	0	-	-	0.5	-	-	1.6				




Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

HCM 2010 TWSC
Total (2031) PM Peak Hour

Intersection						
Int Delay, s/veh	7.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	116	19	31	489	692	203
Future Vol, veh/h	116	19	31	489	692	203
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	850
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	126	21	34	532	752	221
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1352	752	973	0	-	0
Stage 1	752	-	-	-	-	-
Stage 2	600	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	167	413	717	-	-	-
Stage 1	469	-	-	-	-	-
Stage 2	552	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	159	413	717	-	-	-
Mov Cap-2 Maneuver	159	-	-	-	-	-
Stage 1	447	-	-	-	-	-
Stage 2	552	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	85.8	0.6		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	717	-	174	-	-	
HCM Lane V/C Ratio	0.047	-	0.843	-	-	
HCM Control Delay (s)	10.3	-	85.8	-	-	
HCM Lane LOS	B	-	F	-	-	
HCM 95th %tile Q(veh)	0.1	-	5.9	-	-	


















Millbrook Development Phase 2
7: Fallis Line & Street L

HCM 2010 TWSC
Total (2031) PM Peak Hour

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	81	99	26	27	4
Future Vol, veh/h	4	81	99	26	27	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	5	93	114	30	31	5
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	144	0	-	0	232	129
Stage 1	-	-	-	-	129	-
Stage 2	-	-	-	-	103	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1445	-	-	-	758	924
Stage 1	-	-	-	-	899	-
Stage 2	-	-	-	-	924	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1445	-	-	-	755	924
Mov Cap-2 Maneuver	-	-	-	-	755	-
Stage 1	-	-	-	-	895	-
Stage 2	-	-	-	-	924	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		9.9		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1445	-	-	-	773	
HCM Lane V/C Ratio	0.003	-	-	-	0.046	
HCM Control Delay (s)	7.5	0	-	-	9.9	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

Lanes, Volumes, Timings
Total (2031) SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	4	36	30	8	5	36	571	30	5	617	24
Future Volume (vph)	26	4	36	30	8	5	36	571	30	5	617	24
Satd. Flow (prot)	0	1677	0	0	1788	0	1785	1864	0	0	1852	0
Flt Permitted		0.851			0.816		0.430				0.997	
Satd. Flow (perm)	0	1455	0	0	1497	0	808	1864	0	0	1846	0
Satd. Flow (RTOR)		37			5			5			4	
Confl. Peds. (#/hr)			5	5								
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	68	0	0	44	0	37	620	0	0	666	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	30.0	30.0		30.0	30.0		60.0	60.0		60.0	60.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.0			6.0		6.0	6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		7.7			7.7		63.9	63.9			63.9	
Actuated g/C Ratio		0.10			0.10		0.80	0.80			0.80	
v/c Ratio		0.39			0.30		0.06	0.42			0.45	
Control Delay		24.9			34.7		3.2	4.6			4.9	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		24.9			34.7		3.2	4.6			4.9	
LOS		C			C		A	A			A	
Approach Delay		24.9			34.7			4.5			4.9	
Approach LOS		C			C			A			A	
Queue Length 50th (m)		4.7			5.9		1.1	26.4			29.7	
Queue Length 95th (m)		14.8			13.9		3.7	49.2			55.4	
Internal Link Dist (m)		884.7			354.8			385.0			381.6	
Turn Bay Length (m)							85.0					
Base Capacity (vph)		464			454		645	1491			1476	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.15			0.10		0.06	0.42			0.45	
Intersection Summary												
Cycle Length: 90												

Millbrook Development Phase 2
1: County Road 10 & Larmer Line

Lanes, Volumes, Timings
Total (2031) SAT Peak Hour

Actuated Cycle Length: 79.9

Natural Cycle: 55

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 6.6

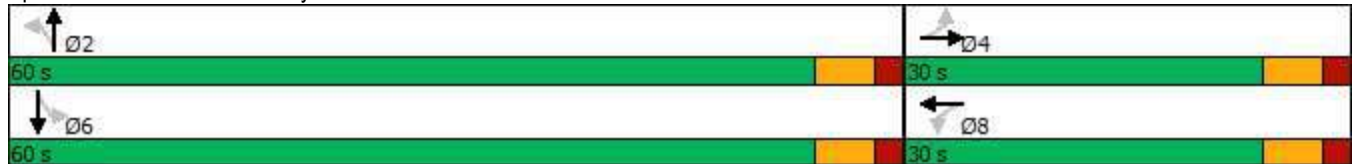
Intersection LOS: A

Intersection Capacity Utilization 53.5%

ICU Level of Service A












Analysis Period (min) 15

Splits and Phases: 1: County Road 10 & Larmer Line



Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2031) SAT Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	225	215	215	272	274	249
Future Volume (vph)	225	215	215	272	274	249
Satd. Flow (prot)	1711	0	1785	1879	1860	1597
Flt Permitted	0.975		0.579			
Satd. Flow (perm)	1711	0	1088	1879	1860	1597
Satd. Flow (RTOR)	80					265
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	468	0	229	289	291	265
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	53.0		37.0	37.0	37.0	37.0
Total Split (%)	58.9%		41.1%	41.1%	41.1%	41.1%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effct Green (s)	19.8		31.3	31.3	31.3	31.3
Actuated g/C Ratio	0.31		0.50	0.50	0.50	0.50
v/c Ratio	0.79		0.43	0.31	0.32	0.29
Control Delay	26.4		15.2	12.2	12.2	2.8
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	26.4		15.2	12.2	12.2	2.8
LOS	C		B	B	B	A
Approach Delay	26.4			13.5	7.7	
Approach LOS	C			B	A	
Queue Length 50th (m)	40.4		15.8	18.5	18.7	0.0
Queue Length 95th (m)	69.7		41.1	42.6	43.1	11.9
Internal Link Dist (m)	333.1			460.0	656.0	
Turn Bay Length (m)			95.0			80.0
Base Capacity (vph)	1302		537	929	919	923
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.36		0.43	0.31	0.32	0.29
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 63.2						

Millbrook Development Phase 2
2: County Road 10 & Fallis Line

Lanes, Volumes, Timings
Total (2031) SAT Peak Hour

Natural Cycle: 45

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 15.3

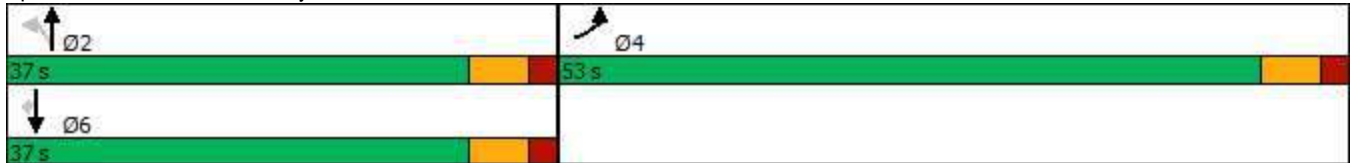
Intersection LOS: B

Intersection Capacity Utilization 67.0%

ICU Level of Service C






Analysis Period (min) 15

Splits and Phases: 2: County Road 10 & Fallis Line



Millbrook Development Phase 2
3: County Road 10 & Community Centre East Driveway

HCM 2010 TWSC
Total (2031) SAT Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	3	4	493	521	11
Future Vol, veh/h	7	3	4	493	521	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	7	3	4	514	543	11





Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1071	549	554	0	-	0
Stage 1	549	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	247	539	1026	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	599	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	246	539	1026	-	-	-
Mov Cap-2 Maneuver	246	-	-	-	-	-
Stage 1	581	-	-	-	-	-
Stage 2	599	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.7	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1026	-	294	-	-
HCM Lane V/C Ratio	0.004	-	0.035	-	-
HCM Control Delay (s)	8.5	-	17.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-






Millbrook Development Phase 2
4: Street 'A'/Street 'B' South & Fallis Line

HCM 2010 TWSC
Total (2031) SAT Peak Hour

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	84	16	41	90	42	14	0	42	44	0	10
Future Vol, veh/h	11	84	16	41	90	42	14	0	42	44	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	12	91	17	45	98	46	15	0	46	48	0	11
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	144	0	0	108	0	0	341	358	100	358	343	121
Stage 1	-	-	-	-	-	-	124	124	-	211	211	-
Stage 2	-	-	-	-	-	-	217	234	-	147	132	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1451	-	-	1495	-	-	617	572	961	601	583	936
Stage 1	-	-	-	-	-	-	885	797	-	796	731	-
Stage 2	-	-	-	-	-	-	790	715	-	860	791	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1451	-	-	1495	-	-	590	548	961	554	559	936
Mov Cap-2 Maneuver	-	-	-	-	-	-	590	548	-	554	559	-
Stage 1	-	-	-	-	-	-	877	790	-	789	707	-
Stage 2	-	-	-	-	-	-	755	691	-	812	784	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			1.8			9.7			11.7		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	830	1451	-	-	1495	-	-	599				
HCM Lane V/C Ratio	0.073	0.008	-	-	0.03	-	-	0.098				
HCM Control Delay (s)	9.7	7.5	0	-	7.5	0	-	11.7				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.3				






Millbrook Development Phase 2
5: Street 'D'/Street 'I' & Fallis Line

HCM 2010 TWSC
Total (2031) SAT Peak Hour

Intersection												
Int Delay, s/veh	6.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	158	7	144	166	66	4	5	131	66	5	10
Future Vol, veh/h	12	158	7	144	166	66	4	5	131	66	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	950	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	13	172	8	157	180	72	4	5	142	72	5	11
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	252	0	0	180	0	0	740	768	176	806	736	216
Stage 1	-	-	-	-	-	-	202	202	-	530	530	-
Stage 2	-	-	-	-	-	-	538	566	-	276	206	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1325	-	-	1408	-	-	335	334	872	303	349	829
Stage 1	-	-	-	-	-	-	805	738	-	536	530	-
Stage 2	-	-	-	-	-	-	531	511	-	735	735	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1325	-	-	1408	-	-	296	293	872	227	306	829
Mov Cap-2 Maneuver	-	-	-	-	-	-	296	293	-	227	306	-
Stage 1	-	-	-	-	-	-	796	730	-	530	471	-
Stage 2	-	-	-	-	-	-	460	454	-	604	727	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			3			10.8			26.5		
HCM LOS							B			D		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	774	1325	-	-	1408	-	-	254				
HCM Lane V/C Ratio	0.197	0.01	-	-	0.111	-	-	0.347				
HCM Control Delay (s)	10.8	7.7	0	-	7.9	-	-	26.5				
HCM Lane LOS	B	A	A	-	A	-	-	D				
HCM 95th %tile Q(veh)	0.7	0	-	-	0.4	-	-	1.5				

Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

HCM 2010 TWSC
Total (2031) SAT Peak Hour

Intersection						
Int Delay, s/veh	9.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	161	27	27	473	508	173
Future Vol, veh/h	161	27	27	473	508	173
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	850	-	-	850
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	175	29	29	514	552	188


Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1124	552	740	0	-	0
Stage 1	552	-	-	-	-	-
Stage 2	572	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	229	537	876	-	-	-
Stage 1	581	-	-	-	-	-
Stage 2	569	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	221	537	876	-	-	-
Mov Cap-2 Maneuver	221	-	-	-	-	-
Stage 1	562	-	-	-	-	-
Stage 2	569	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	68.6	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	876	-	241	-	-
HCM Lane V/C Ratio	0.034	-	0.848	-	-
HCM Control Delay (s)	9.3	-	68.6	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0.1	-	6.8	-	-












Millbrook Development Phase 2
7: Fallis Line & Street L

HCM 2010 TWSC
Total (2031) SAT Peak Hour

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	76	78	26	28	4
Future Vol, veh/h	4	76	78	26	28	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	5	87	90	30	32	5
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	120	0	-	0	202	105
Stage 1	-	-	-	-	105	-
Stage 2	-	-	-	-	97	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1474	-	-	-	789	952
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	929	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1474	-	-	-	786	952
Mov Cap-2 Maneuver	-	-	-	-	786	-
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	929	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		9.7		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1474	-	-	-	804	
HCM Lane V/C Ratio	0.003	-	-	-	0.046	
HCM Control Delay (s)	7.5	0	-	-	9.7	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

Lanes, Volumes, Timings
Total (2031) AM Peak Hour with Improvements

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	196	29	10	712	406	60
Future Volume (vph)	196	29	10	712	406	60
Satd. Flow (prot)	1768	0	1785	1773	1592	1597
Flt Permitted	0.958		0.479			
Satd. Flow (perm)	1768	0	900	1773	1592	1597
Satd. Flow (RTOR)	8					65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	6%	18%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	245	0	11	774	441	65
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	27.0		63.0	63.0	63.0	63.0
Total Split (%)	30.0%		70.0%	70.0%	70.0%	70.0%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effct Green (s)	16.4		59.2	59.2	59.2	59.2
Actuated g/C Ratio	0.19		0.68	0.68	0.68	0.68
v/c Ratio	0.73		0.02	0.65	0.41	0.06
Control Delay	44.9		6.0	12.2	8.4	1.9
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	44.9		6.0	12.2	8.4	1.9
LOS	D		A	B	A	A
Approach Delay	44.9			12.1	7.6	
Approach LOS	D			B	A	
Queue Length 50th (m)	36.5		0.5	65.6	29.1	0.0
Queue Length 95th (m)	60.2		2.5	118.9	53.9	4.1
Internal Link Dist (m)	372.5			283.0	385.0	
Turn Bay Length (m)			85.0			85.0
Base Capacity (vph)	429		608	1198	1076	1100
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.57		0.02	0.65	0.41	0.06
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 87.6						

Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

Lanes, Volumes, Timings
Total (2031) AM Peak Hour with Improvements

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 15.8

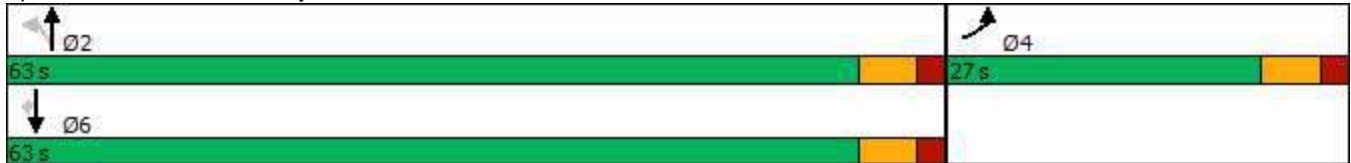
Intersection LOS: B

Intersection Capacity Utilization 60.1%

ICU Level of Service B












Analysis Period (min) 15

Splits and Phases: 6: County Road 10 & Street 'B' North



Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

Lanes, Volumes, Timings
Total (2031) PM Peak Hour with Improvements

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	116	19	31	489	692	203
Future Volume (vph)	116	19	31	489	692	203
Satd. Flow (prot)	1768	0	1785	1879	1842	1597
Flt Permitted	0.959		0.314			
Satd. Flow (perm)	1768	0	590	1879	1842	1597
Satd. Flow (RTOR)	8					221
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	147	0	34	532	752	221
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	24.0		66.0	66.0	66.0	66.0
Total Split (%)	26.7%		73.3%	73.3%	73.3%	73.3%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effect Green (s)	12.4		66.7	66.7	66.7	66.7
Actuated g/C Ratio	0.14		0.73	0.73	0.73	0.73
v/c Ratio	0.60		0.08	0.39	0.56	0.18
Control Delay	43.8		4.9	6.0	8.1	1.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	43.8		4.9	6.0	8.1	1.1
LOS	D		A	A	A	A
Approach Delay	43.8			6.0	6.5	
Approach LOS	D			A	A	
Queue Length 50th (m)	22.8		1.4	28.7	49.1	0.0
Queue Length 95th (m)	38.6		4.9	53.7	92.3	6.2
Internal Link Dist (m)	372.5			271.0	385.0	
Turn Bay Length (m)			85.0			85.0
Base Capacity (vph)	355		431	1375	1348	1228
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.41		0.08	0.39	0.56	0.18
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 91.1						

Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

Lanes, Volumes, Timings
Total (2031) PM Peak Hour with Improvements

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 9.6

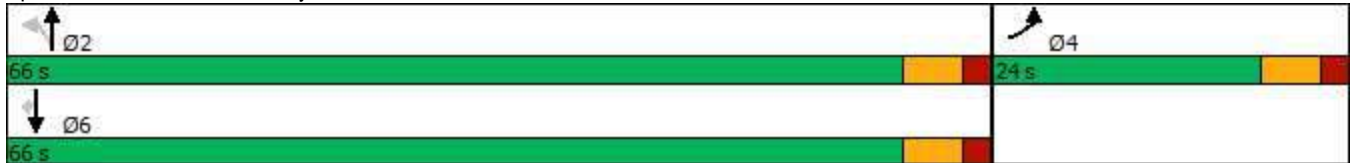
Intersection LOS: A

Intersection Capacity Utilization 54.0%

ICU Level of Service A












Analysis Period (min) 15

Splits and Phases: 6: County Road 10 & Street 'B' North



Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

Lanes, Volumes, Timings
Total (2031) SAT Peak Hour with Improvements

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	161	27	27	473	508	173
Future Volume (vph)	161	27	27	473	508	173
Satd. Flow (prot)	1768	0	1785	1879	1860	1597
Flt Permitted	0.959		0.412			
Satd. Flow (perm)	1768	0	774	1879	1860	1597
Satd. Flow (RTOR)	9					188
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	204	0	29	514	552	188
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	32.0		58.0	58.0	58.0	58.0
Total Split (%)	35.6%		64.4%	64.4%	64.4%	64.4%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	Max
Act Effct Green (s)	14.2		55.9	55.9	55.9	55.9
Actuated g/C Ratio	0.17		0.68	0.68	0.68	0.68
v/c Ratio	0.65		0.06	0.40	0.44	0.16
Control Delay	39.3		5.8	7.6	8.0	1.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	39.3		5.8	7.6	8.0	1.4
LOS	D		A	A	A	A
Approach Delay	39.3			7.5	6.3	
Approach LOS	D			A	A	
Queue Length 50th (m)	27.2		1.3	29.7	32.8	0.0
Queue Length 95th (m)	46.8		4.7	58.3	64.5	6.7
Internal Link Dist (m)	372.5			314.0	385.0	
Turn Bay Length (m)			85.0			85.0
Base Capacity (vph)	566		526	1278	1265	1146
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.36		0.06	0.40	0.44	0.16
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 82.2						

Millbrook Development Phase 2
6: County Road 10 & Street 'B' North

Lanes, Volumes, Timings
Total (2031) SAT Peak Hour with Improvements

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 11.3

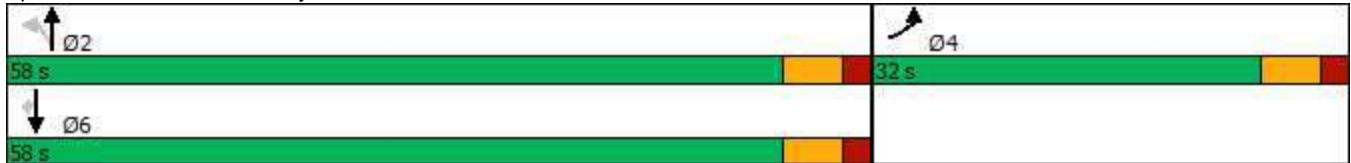
Intersection LOS: B

Intersection Capacity Utilization 47.3%

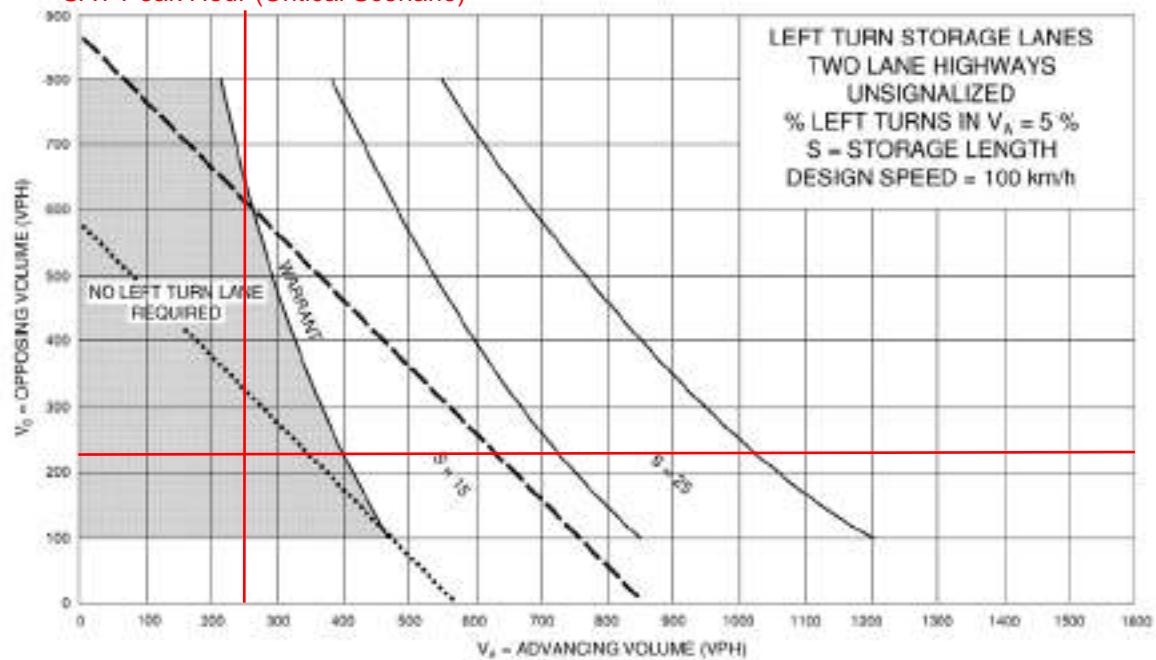
ICU Level of Service A

Analysis Period (min) 15

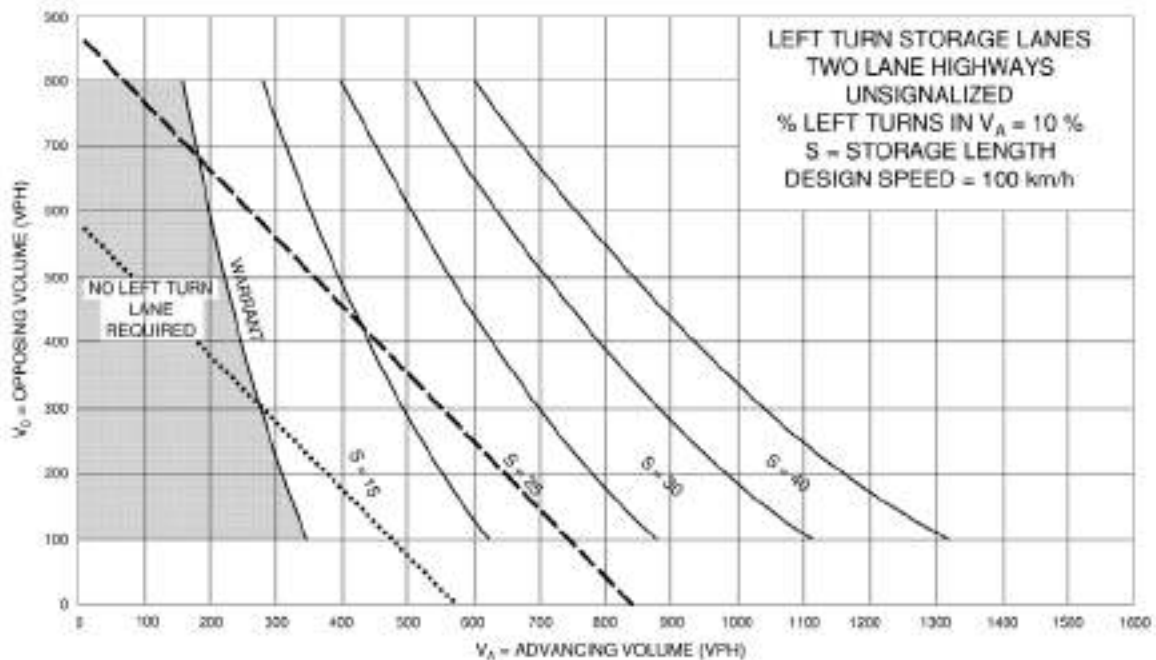
Splits and Phases: 6: County Road 10 & Street 'B' North

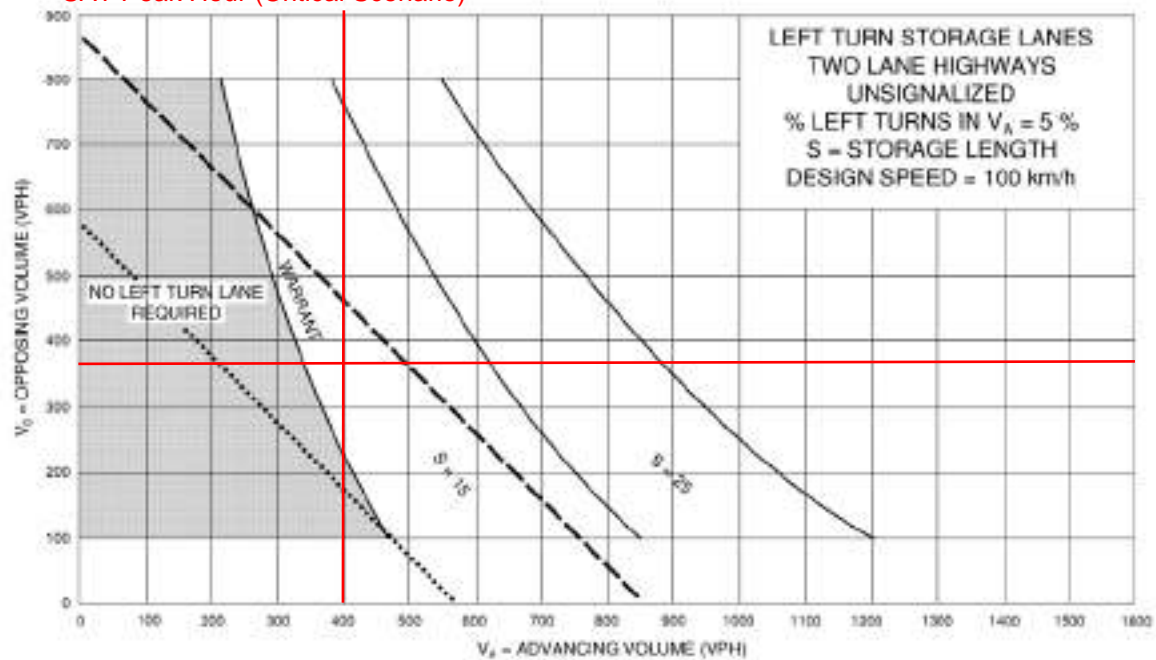


Appendix G – MTO Left Turn Analysis

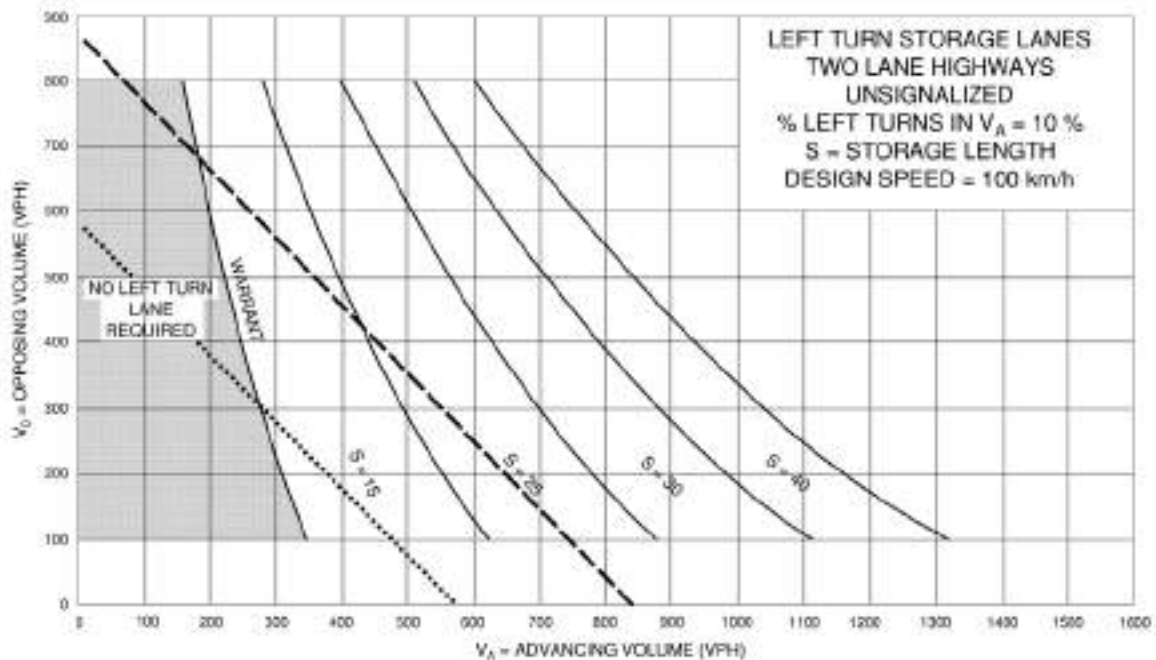
County Road 10 / Larmer LineExisting (2018) - Southbound
SAT Peak Hour (Critical Scenario)**Exhibit 9A-22**

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



County Road 10 / Larmer LineBackground (2023) - Southbound **Exhibit 9A-22**
SAT Peak Hour (Critical Scenario)

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

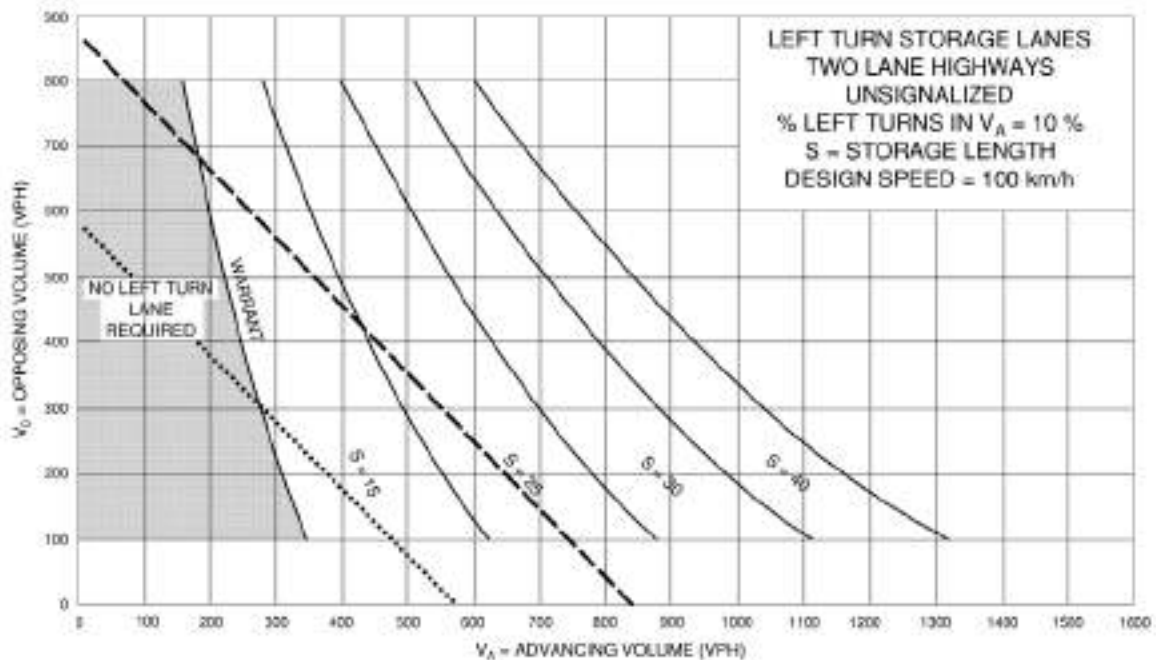
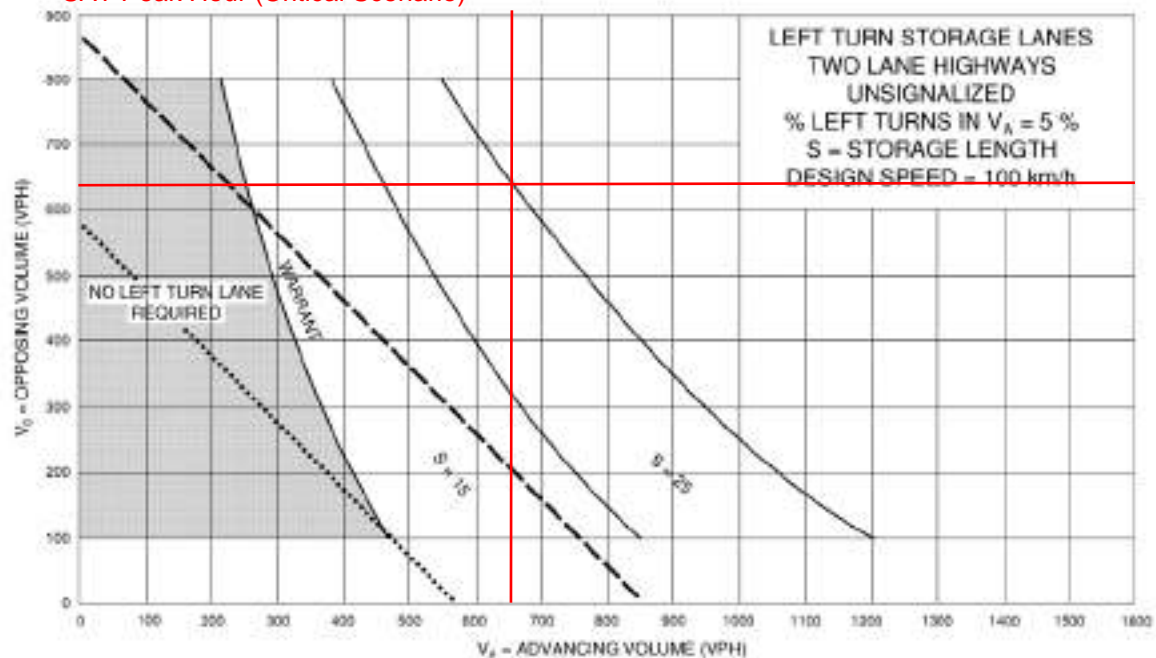


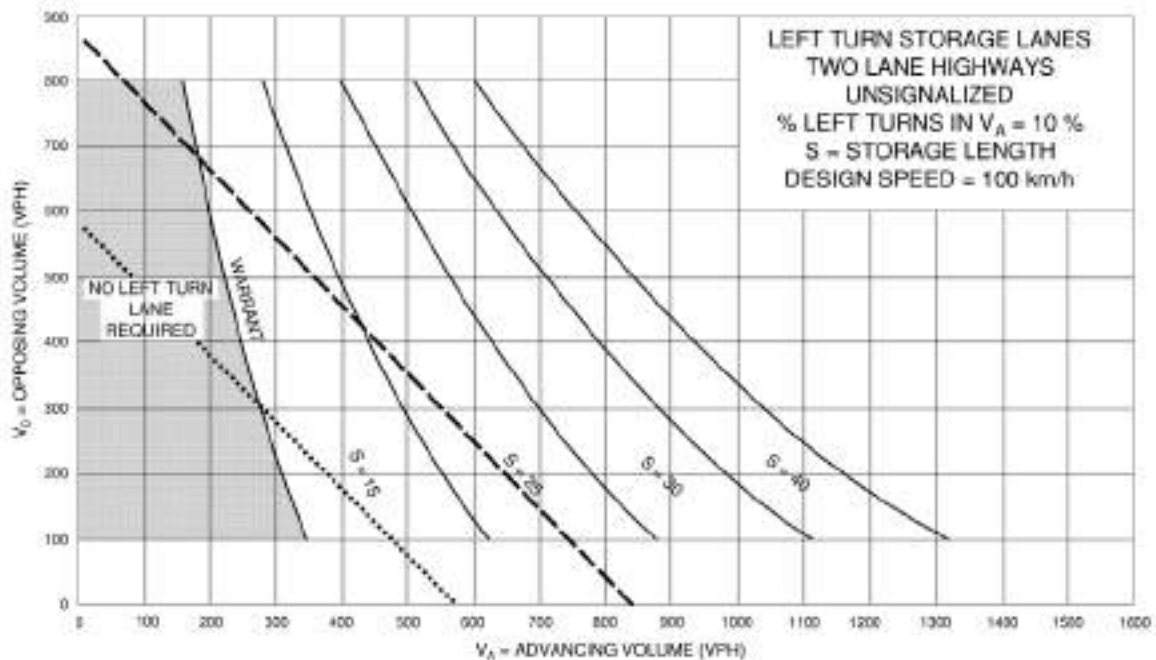
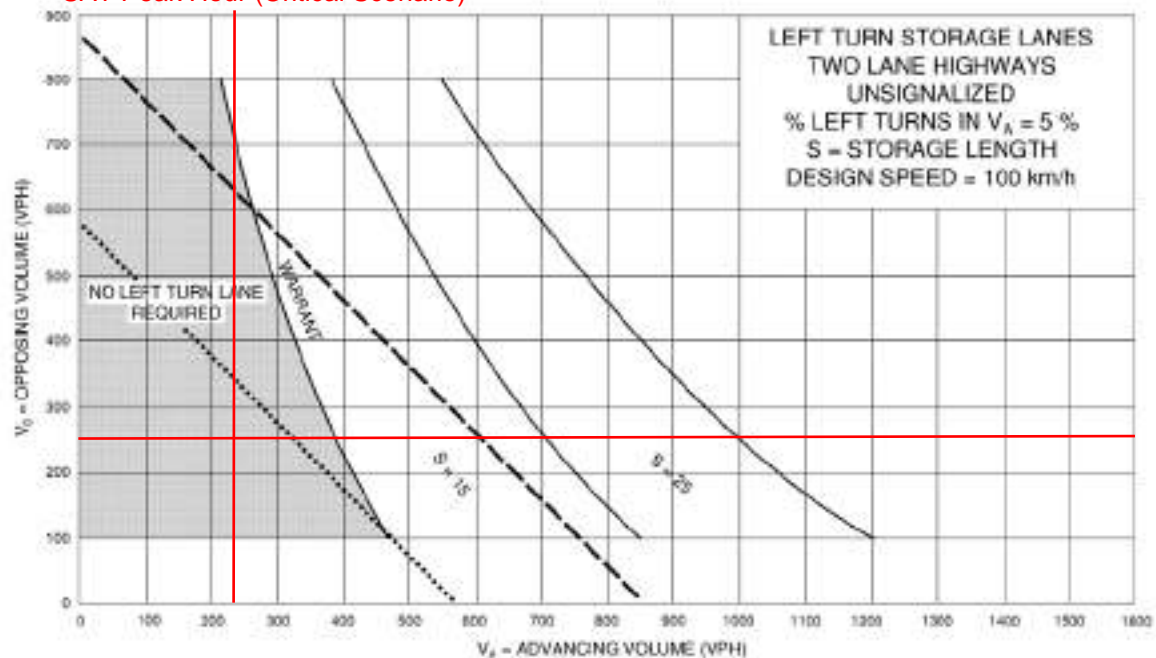
County Road 10 / Larmer Line

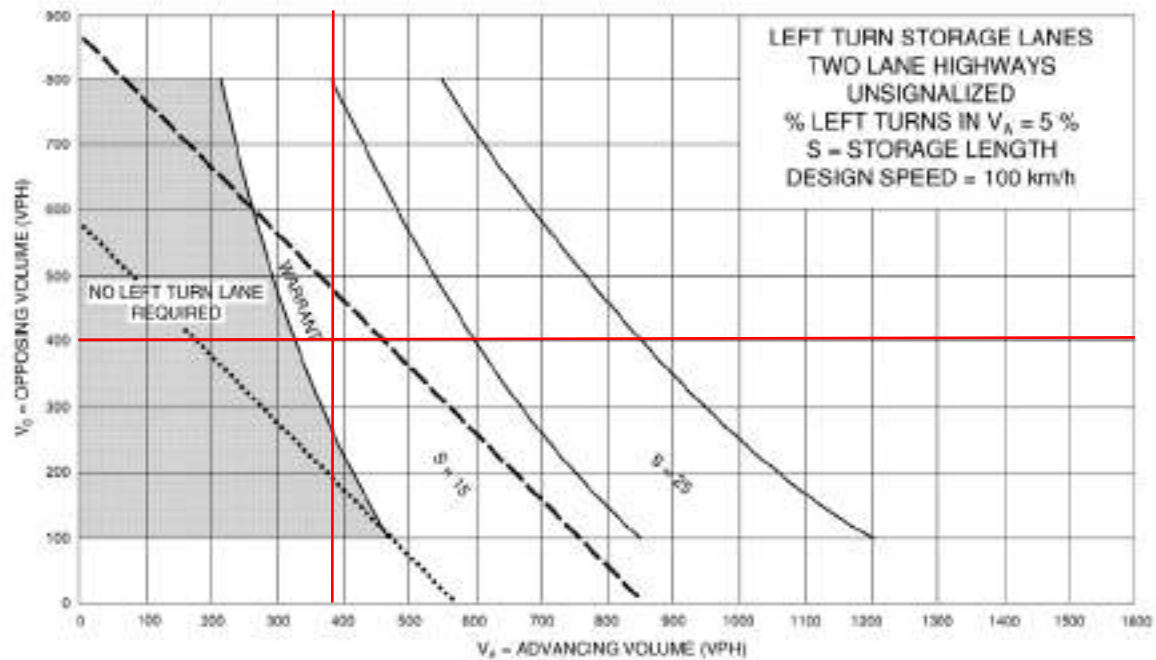
Total (2026) - Southbound

Exhibit 9A-22

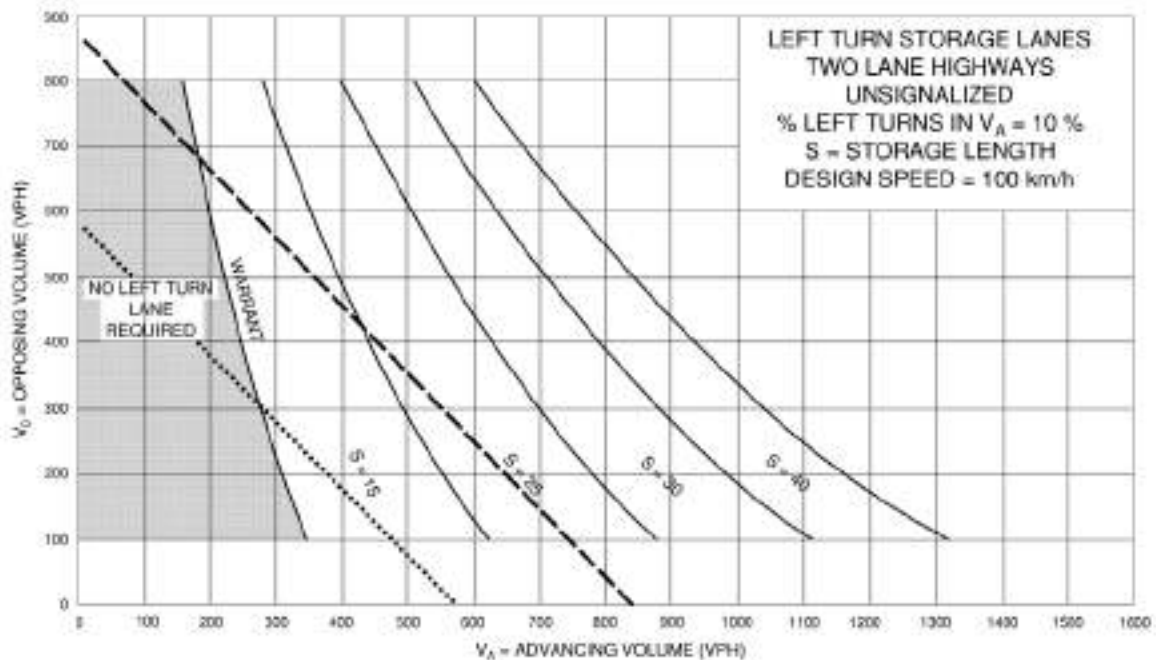
SAT Peak Hour (Critical Scenario)



County Road 10 / Larmer LineExisting (2018) - Northbound
SAT Peak Hour (Critical Scenario)**Exhibit 9A-22**

County Road 10 / Larmer LineBackground (2023) - Northbound
SAT Peak Hour (Critical Scenario)**Exhibit 9A-22**

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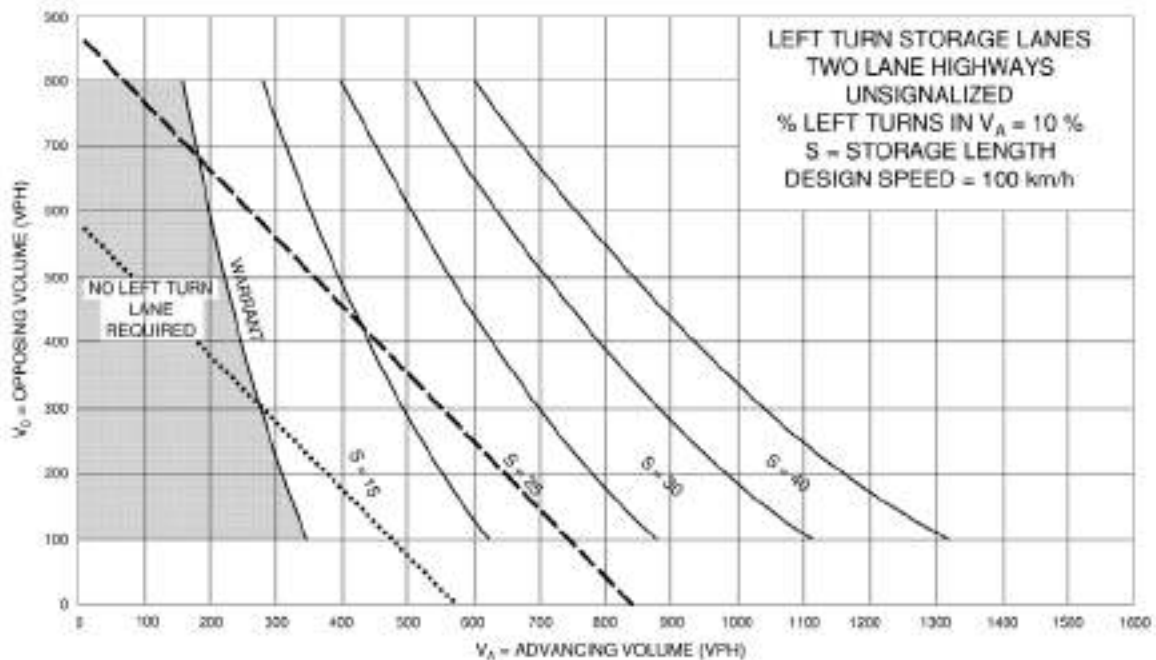
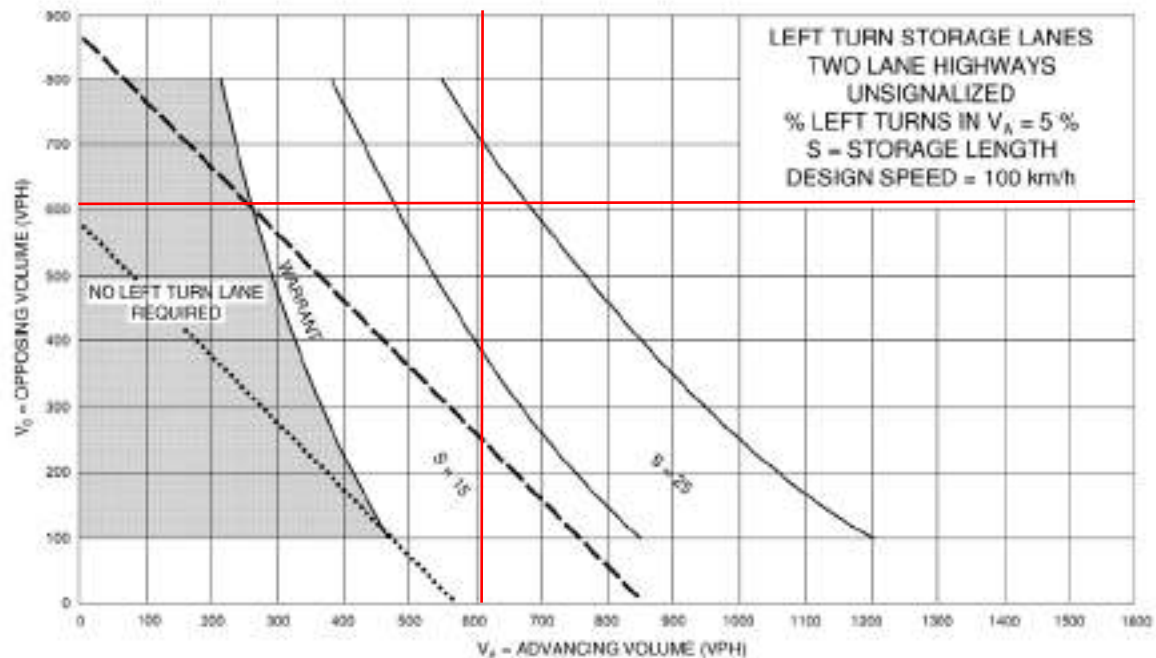


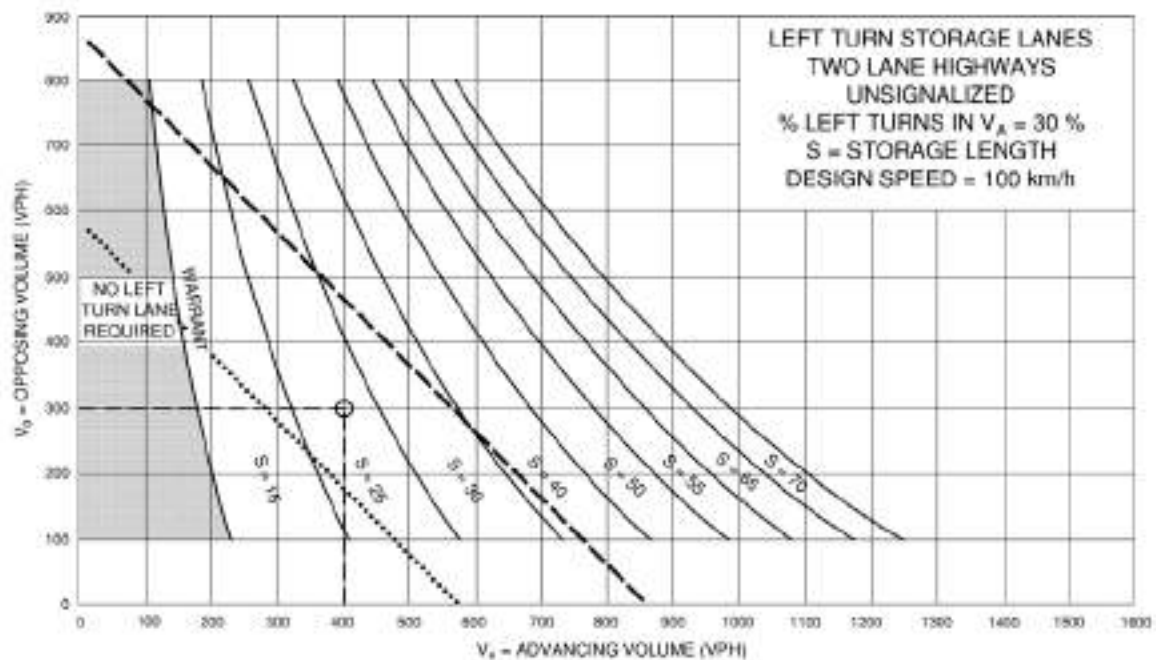
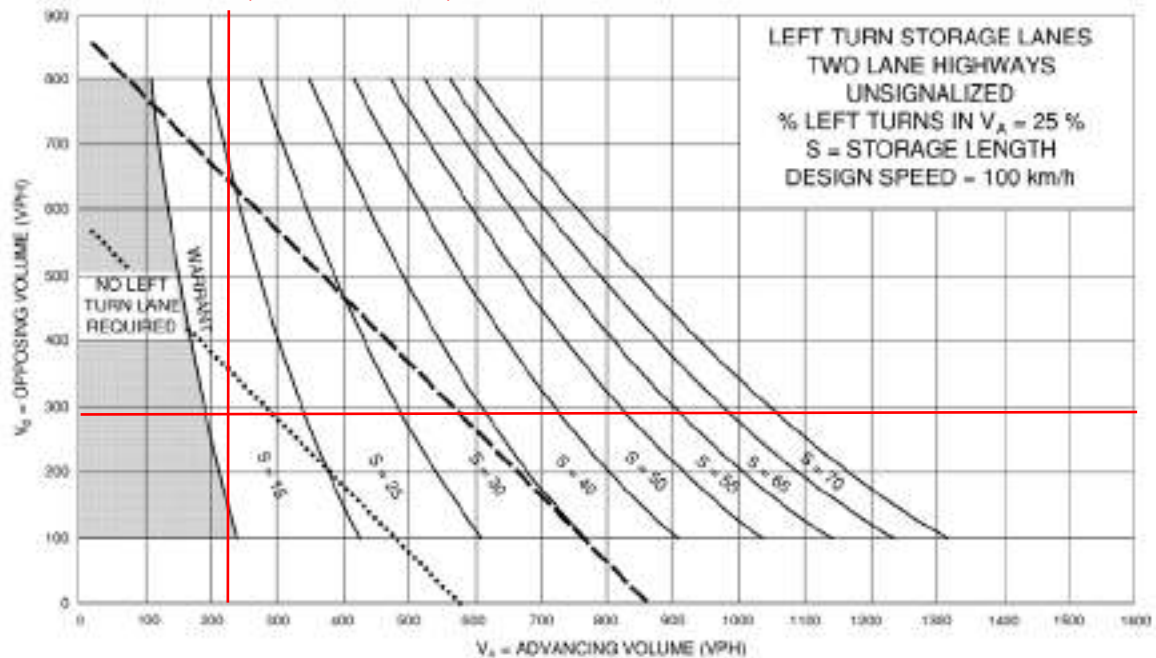
County Road 10 / Larmer Line

Total (2026) - Northbound

Exhibit 9A-22

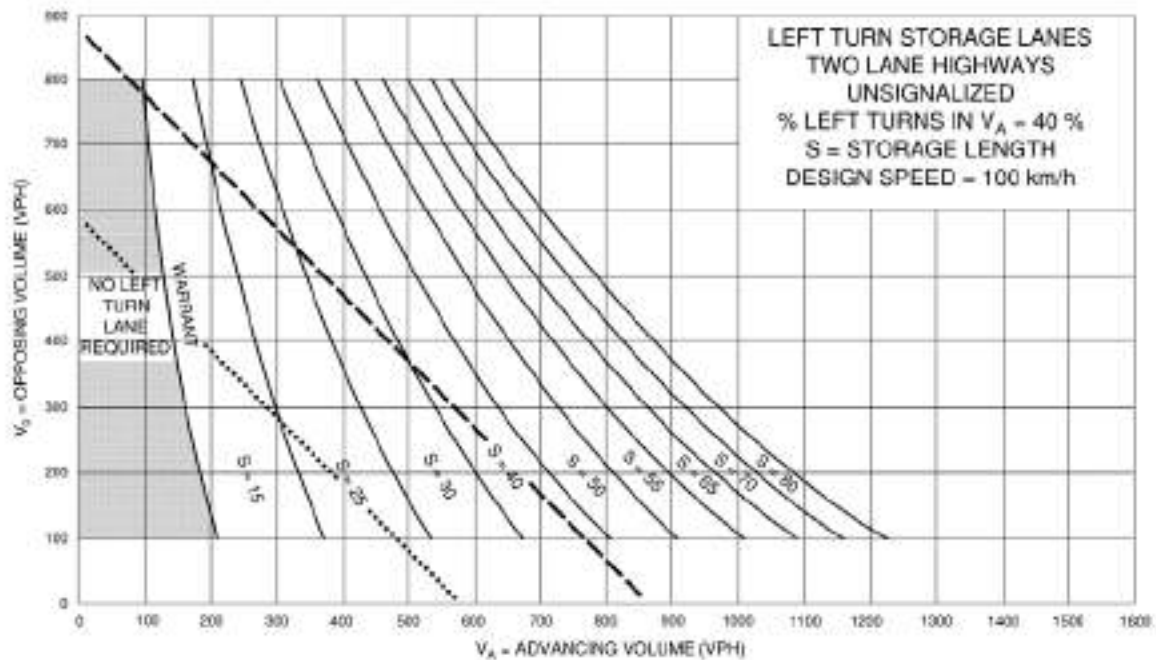
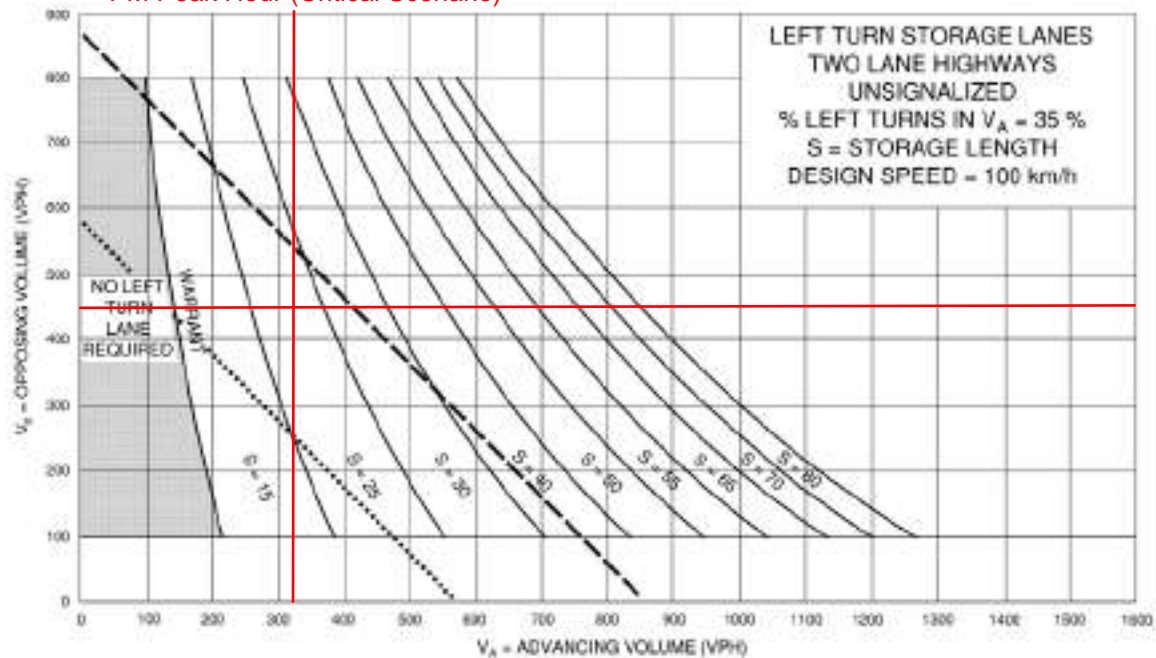
SAT Peak Hour (Critical Scenario)

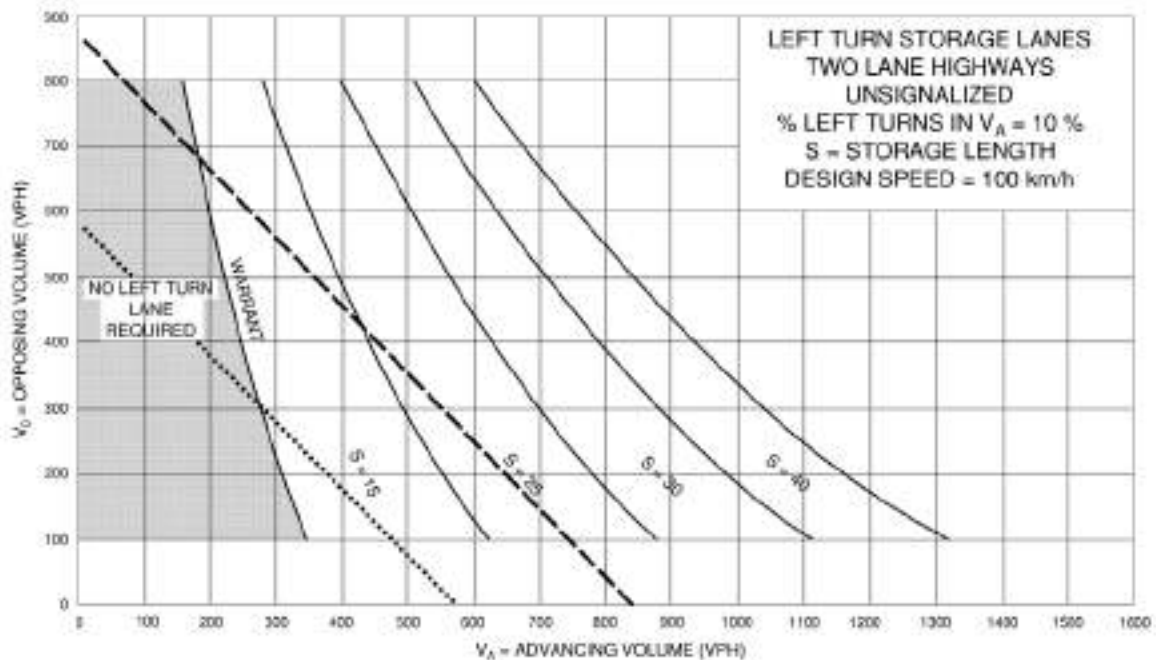
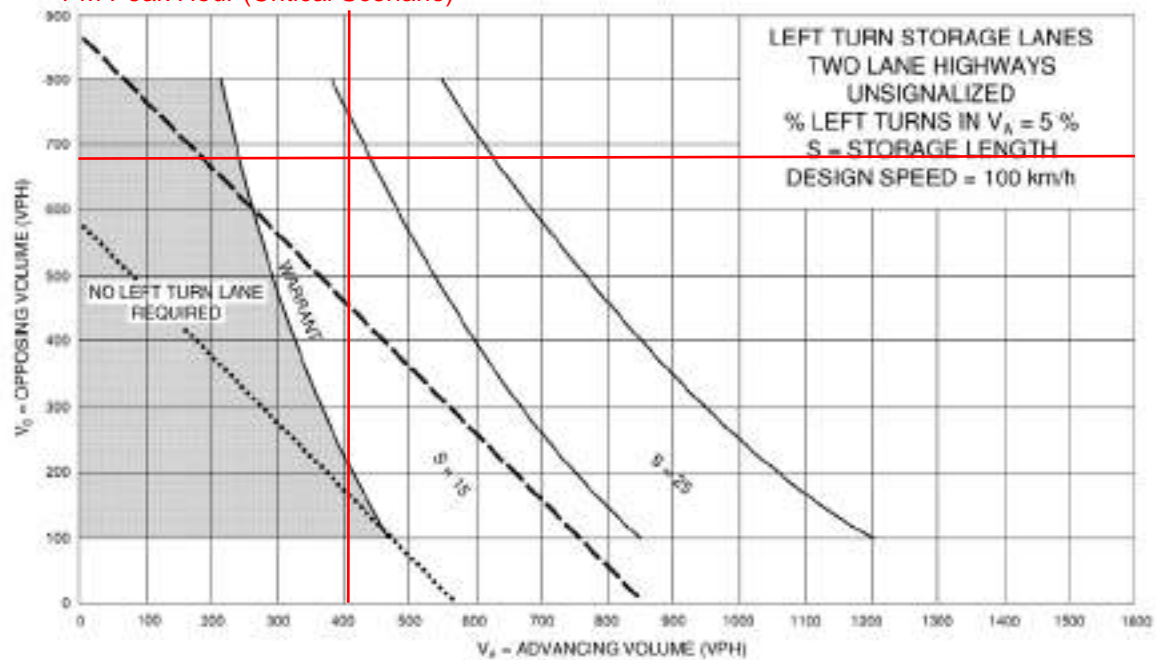


County Road 10 / Fallis LineExisting (2018) - Northbound
PM Peak Hour (Critical Scenario)**Exhibit 9A-24**

County Road 10 / Fallis LineBackground (2023) - Northbound **Exhibit 9A-25**

PM Peak Hour (Critical Scenario)

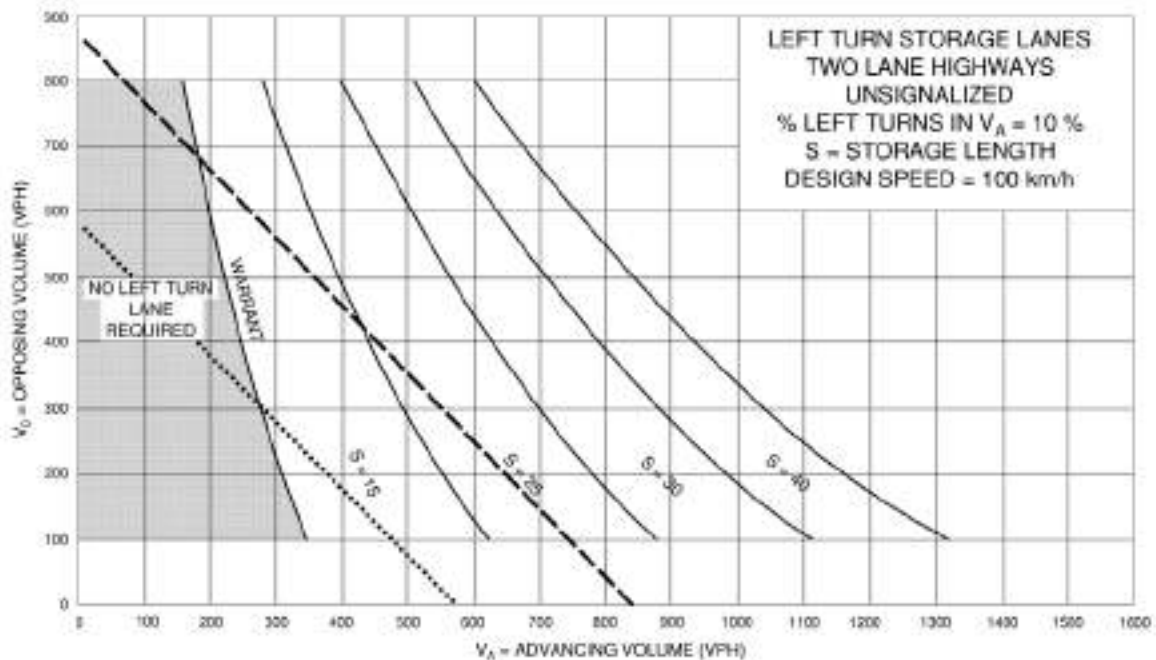
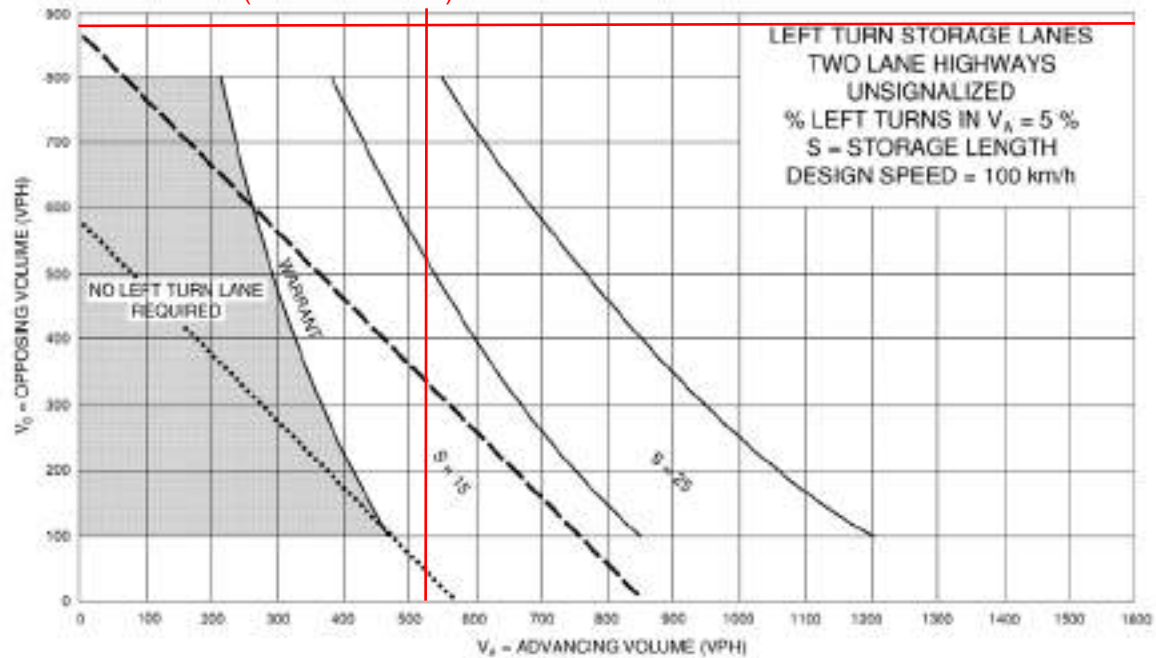


County Road 10 / Street BTotal (2023) - Northbound
PM Peak Hour (Critical Scenario)**Exhibit 9A-22**

County Road 10 / Street B

Total (2031) - Northbound

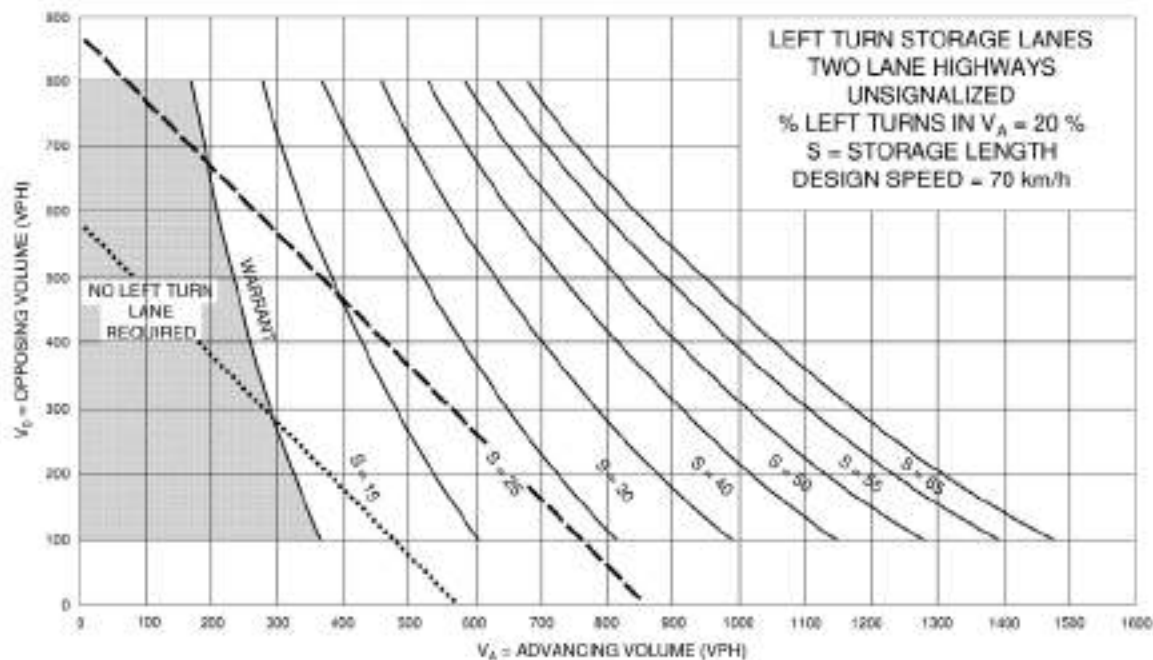
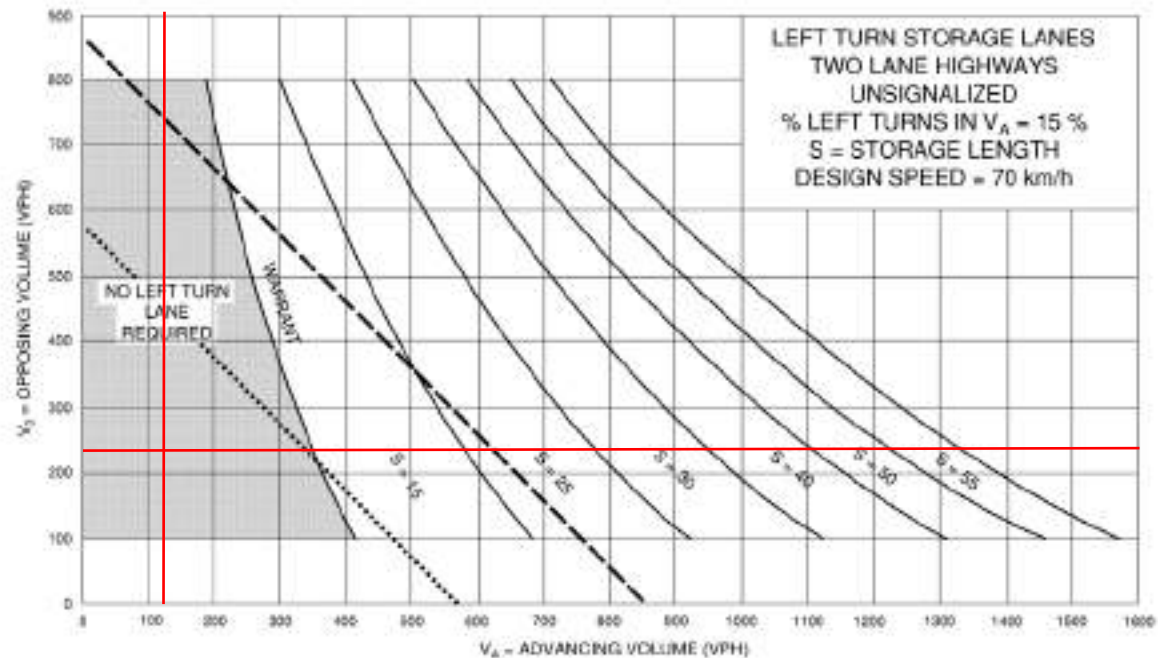
PM Peak Hour (Critical Scenario)

Exhibit 9A-22

Fallis Line / Street B & Street A

Total (2031) - Eastbound

PM Peak Hour (Critical Scenario)

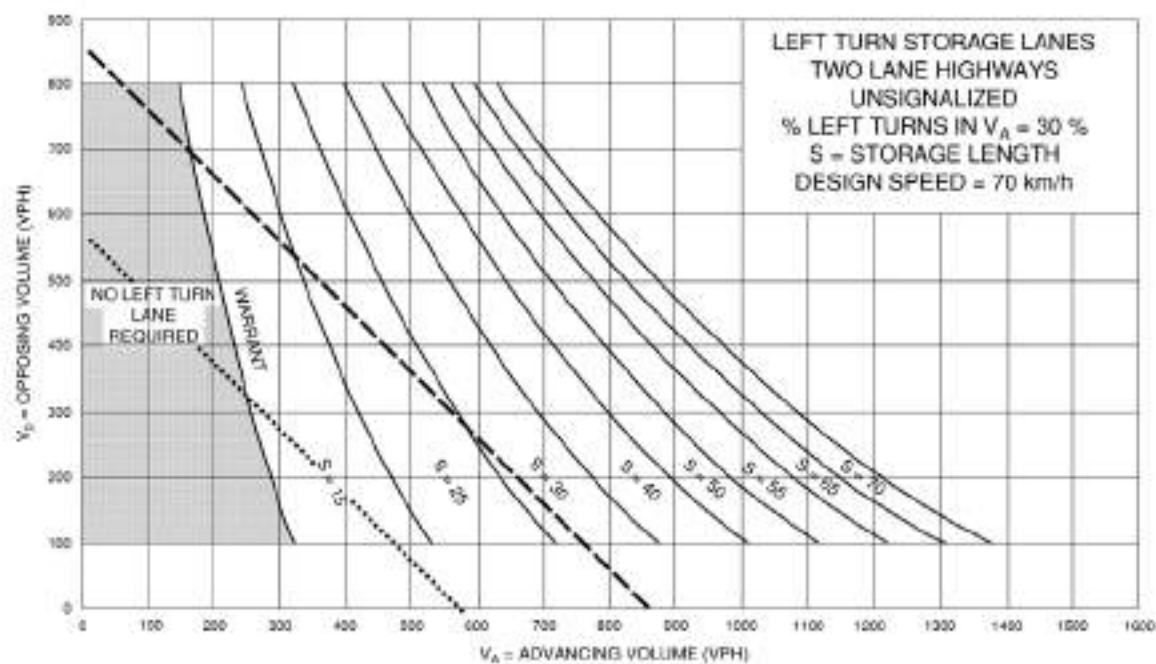
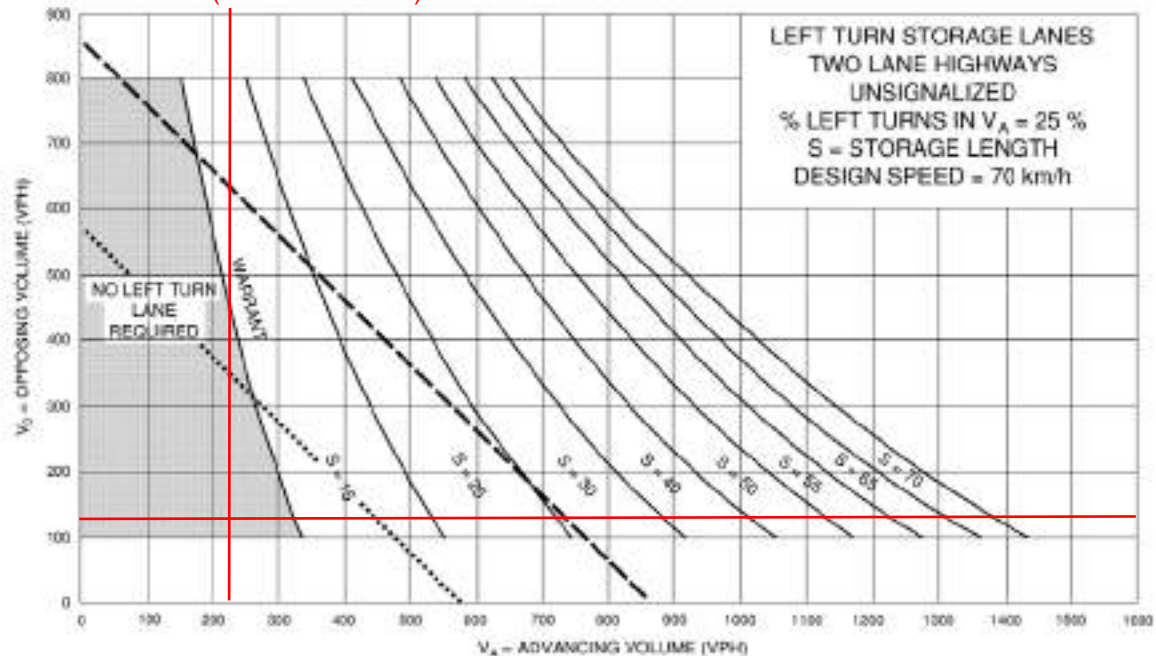
Exhibit 9A-11

Fallis Line / Street B & Street A

Total (2031) - Westbound

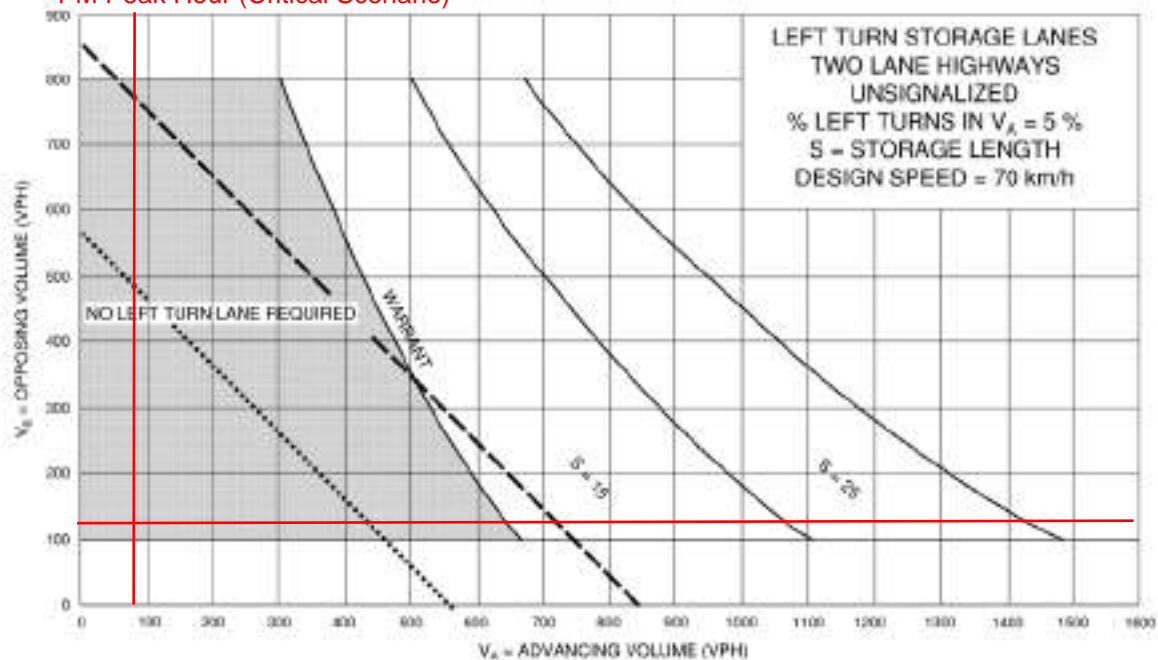
Exhibit 9A-12

PM Peak Hour (Critical Scenario)



Fallis Line / Street L

Total (2031) - Eastbound
PM Peak Hour (Critical Scenario)

Exhibit 9A-10

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

Fallis Line / Street I & Street D

Total (2031) - Eastbound
PM Peak Hour (Critical Scenario)

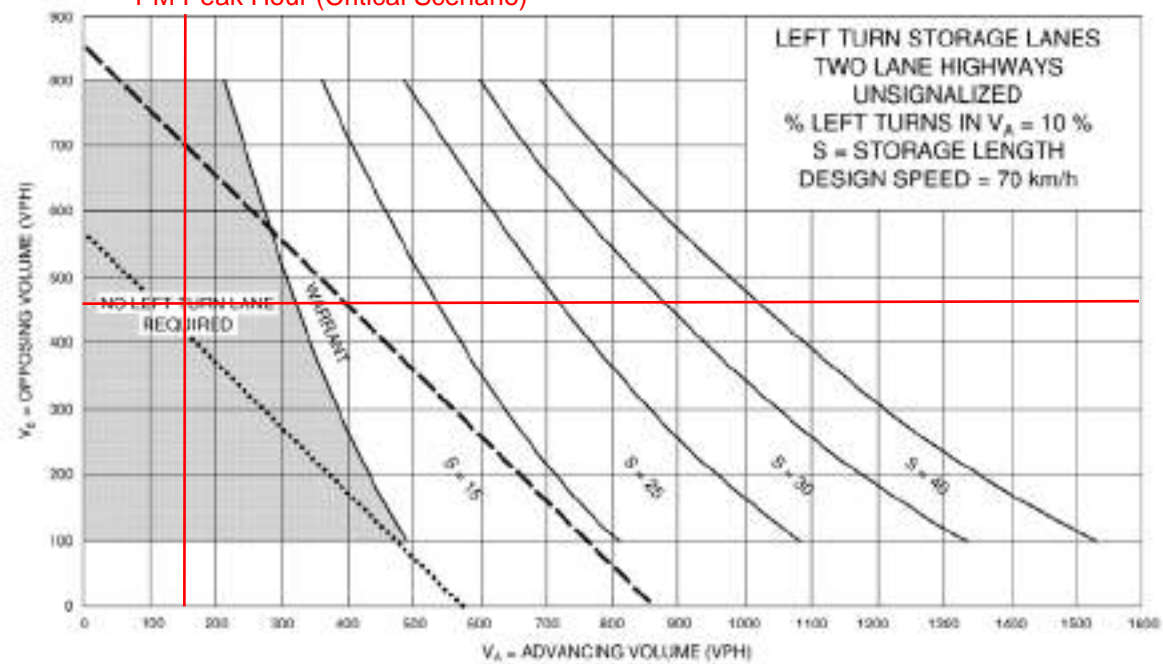
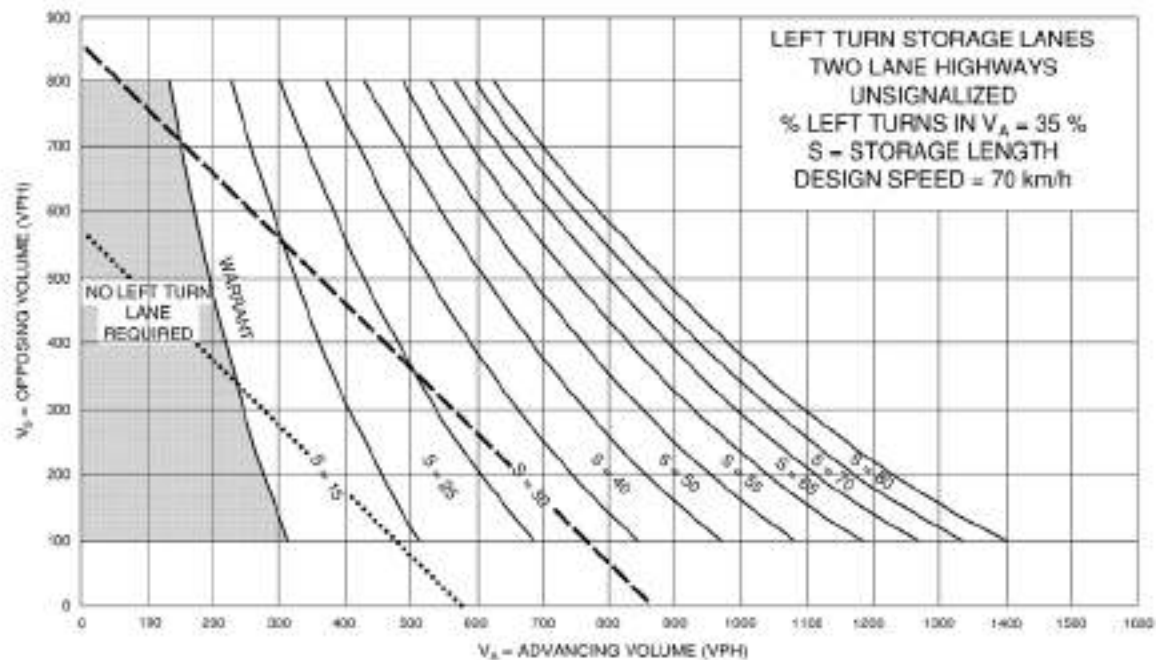


Exhibit 9A-13

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

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

Fallis Line / Street I & Street D

Total (2023) - Westbound

PM Peak Hour (Critical Scenario)

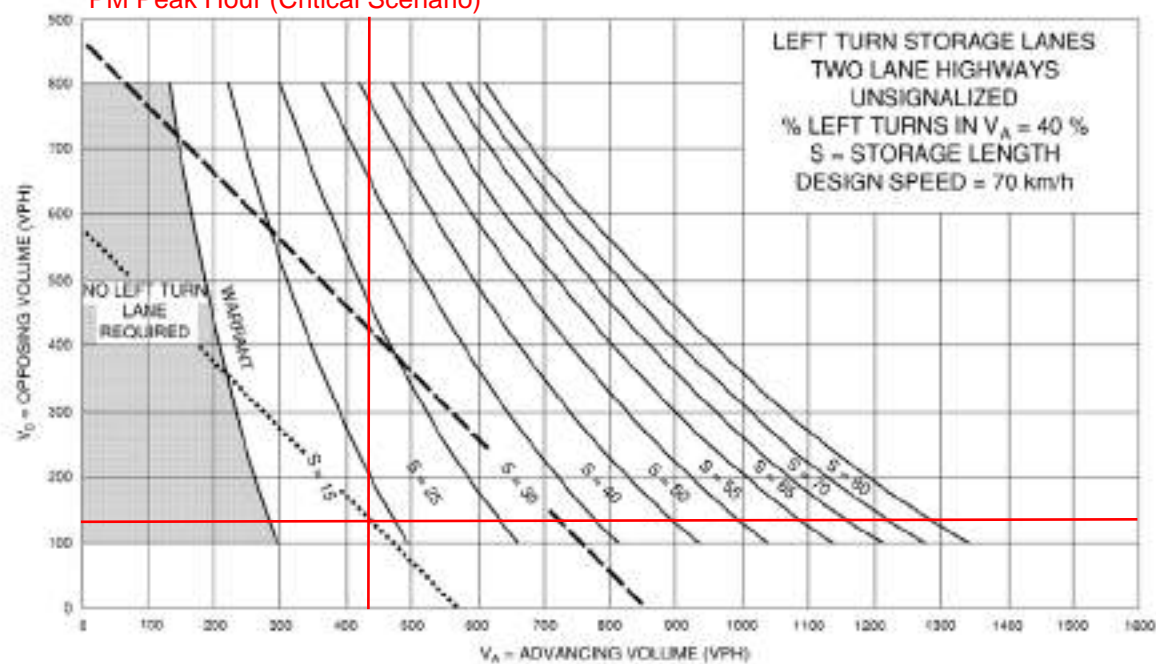
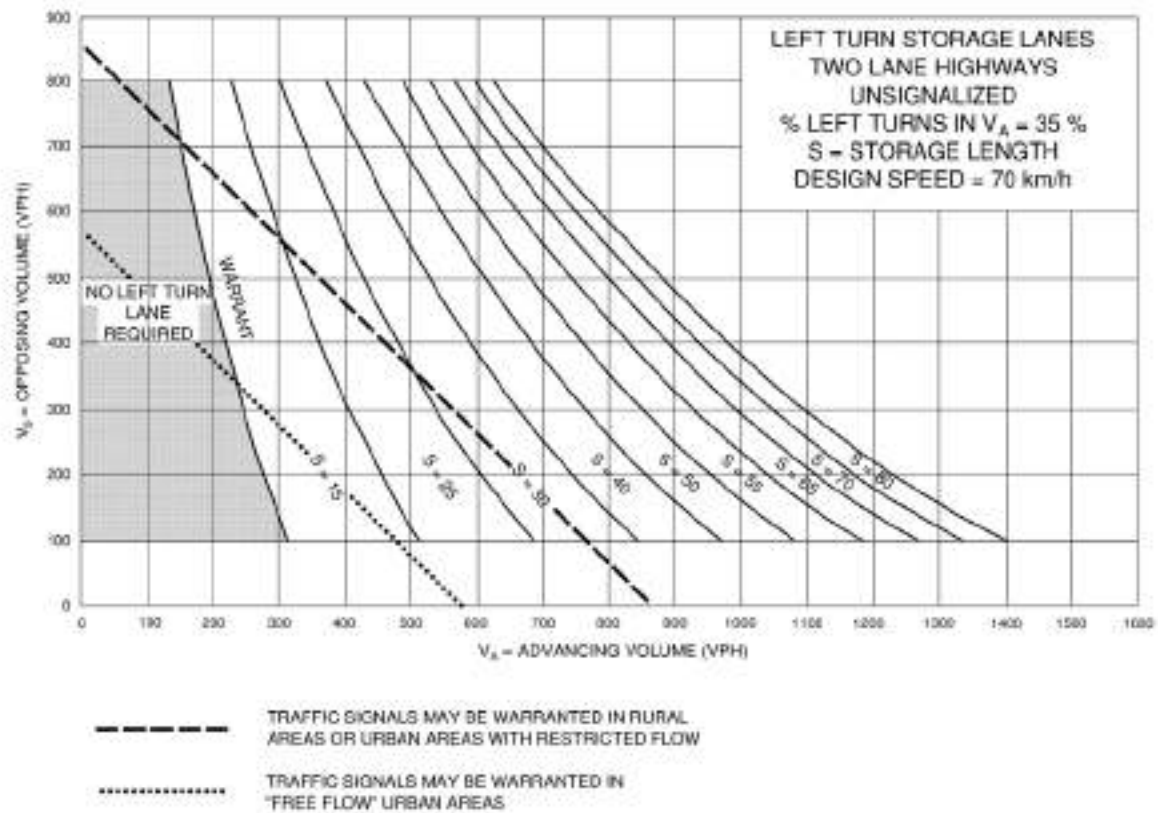
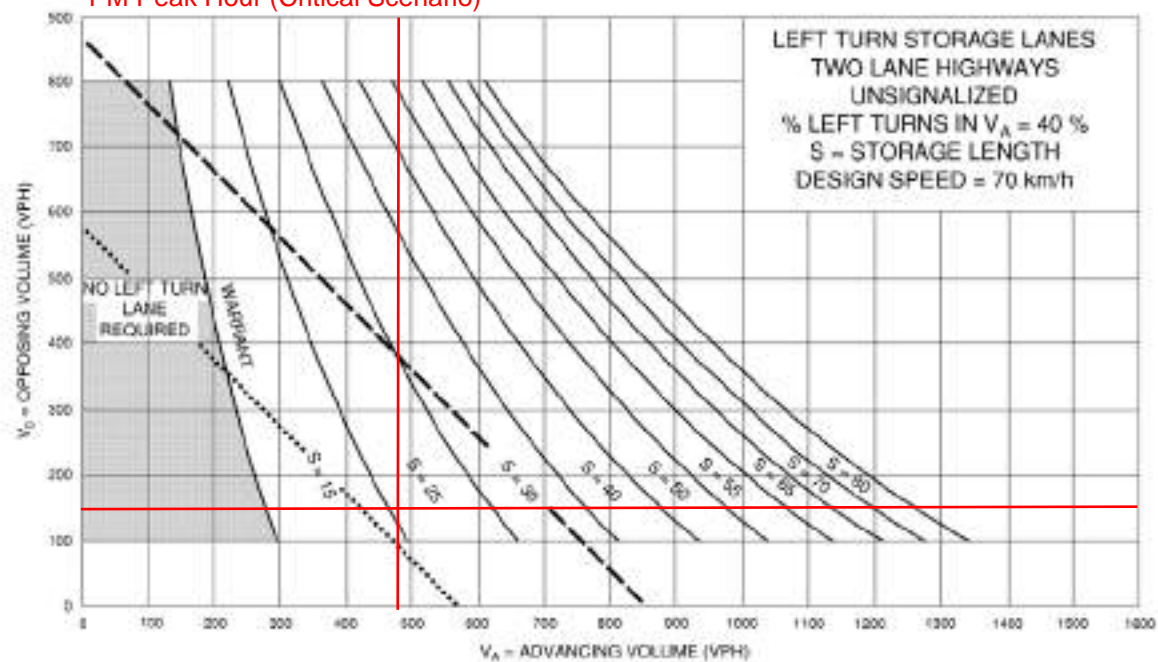


Exhibit 9A-13**Fallis Line / Street I & Street D**

Total (2031) - Westbound

PM Peak Hour (Critical Scenario)



Appendix H – OTM Signal Justification Reports

Justification No. 7 - 2031 Total Traffic (Critical Case)

County Road 10 / Larmer Line

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
			Free Flow	Numerical			
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	873	182%	70%	YES	YES
	B. Vehicle volume, along minor streets (average hour)	120	101	85%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	480	680	142%	118%	YES	YES
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	76	151%		YES	YES

Justification No. 7 - 2031 Total Traffic (Critical Case)

County Road 10 / Fallis Line

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
			Free Flow	Numerical			
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	788	164%	111%	YES	YES
	B. Vehicle volume, along minor streets (average hour)	180	239	133%		YES	YES
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	480	432	90%	75%	NO	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	136	272%		YES	YES

Justification No. 7 - 2031 Total Traffic (Critical Case)

County Road 10 / Street 'B' North

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
			Free Flow	Numerical			
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	741	154%	33%	YES	YES
	B. Vehicle volume, along minor streets (average hour)	180	90	50%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	480	585	122%	81%	NO	YES
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	78	156%		YES	YES

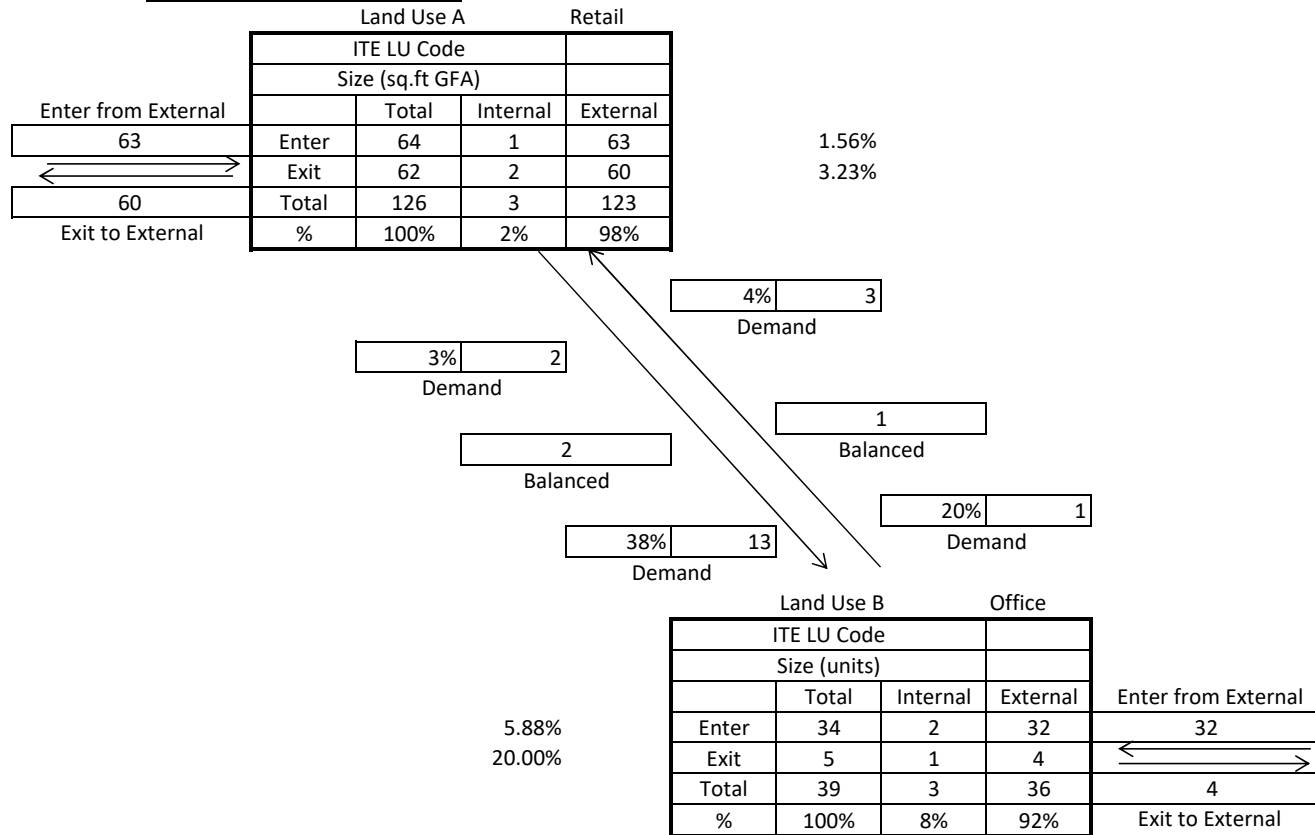
Appendix I – ITE Internal Capture Calculations

MULTI-USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Analyst A. Aresta

Date 23-Sep-18

Time Period AM Peak Hour

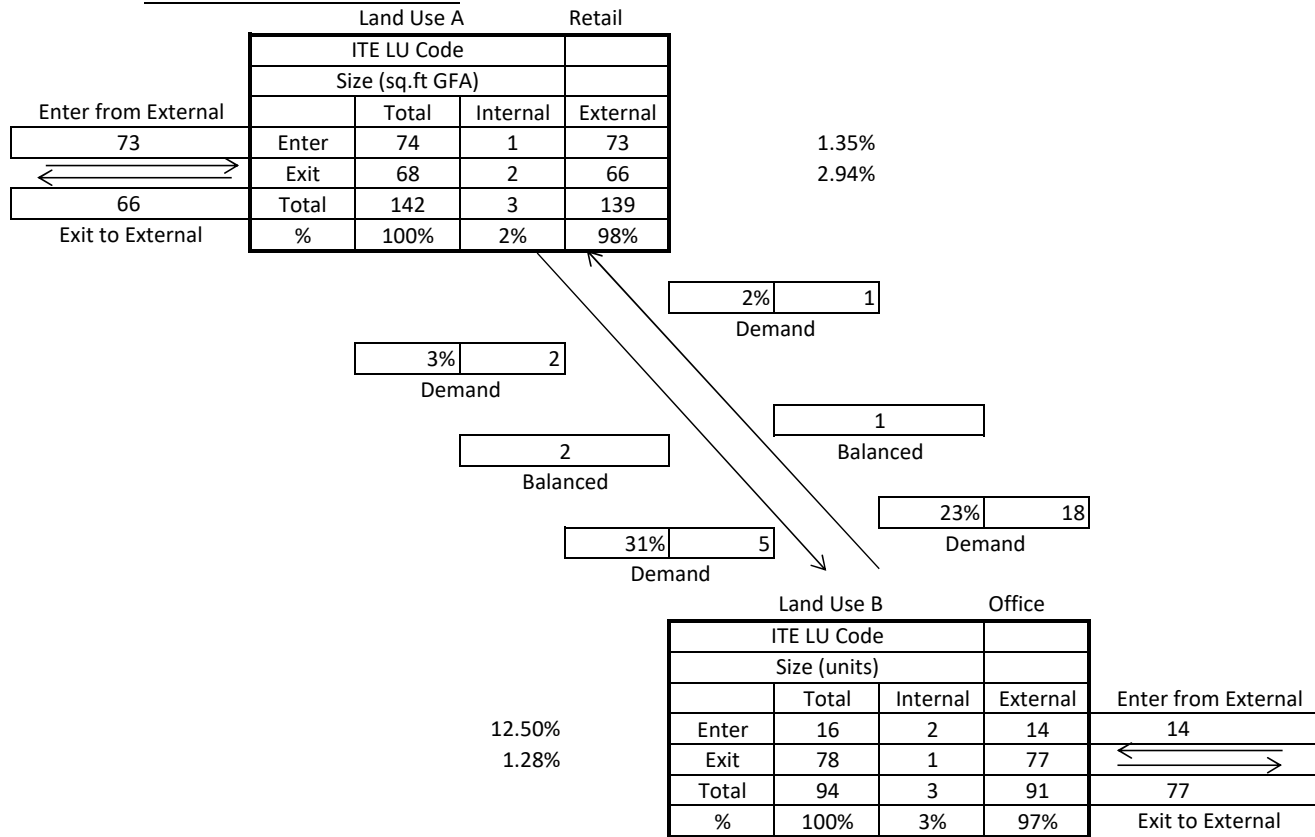


MULTI-USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Analyst A. Aresta

Date 23-Sep-18

Time Period PM Peak Hour

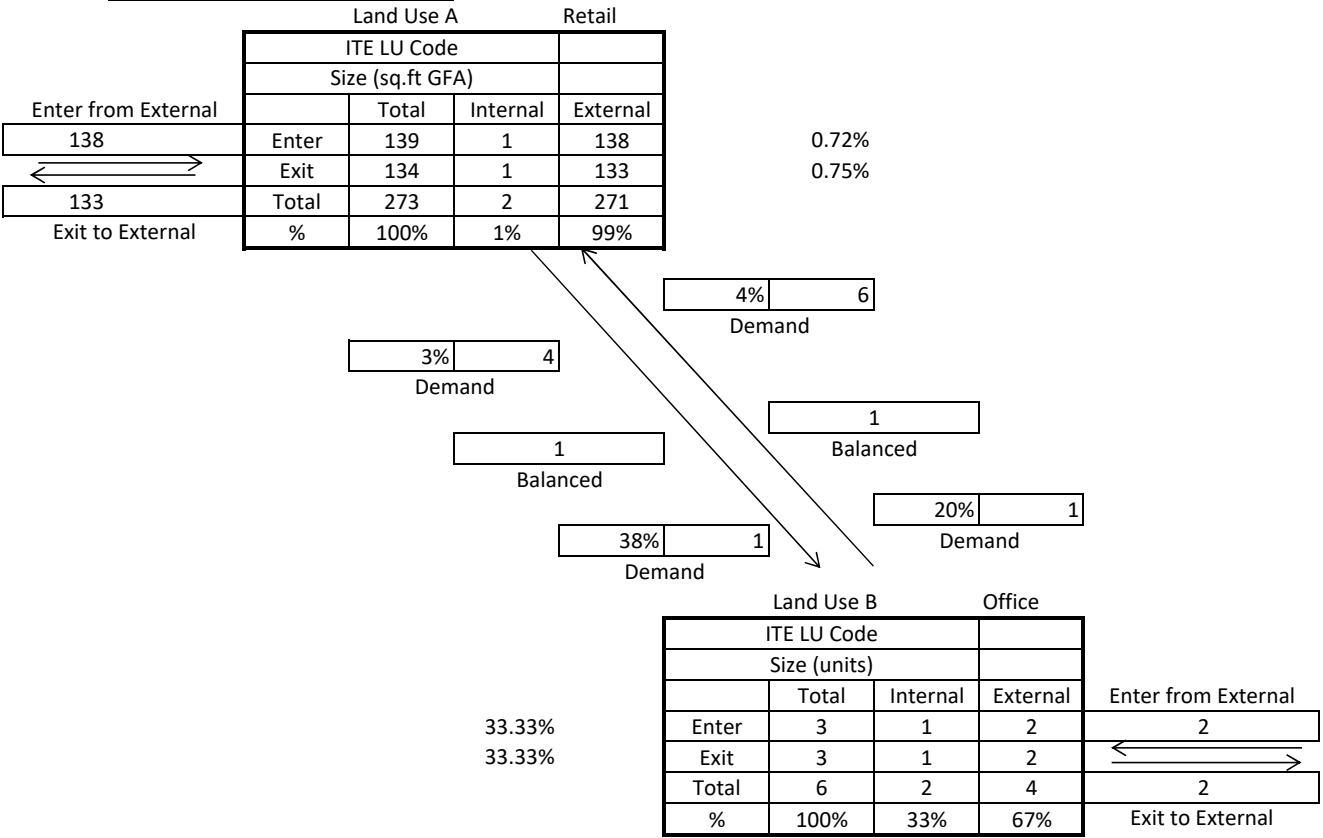


MULTI-USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

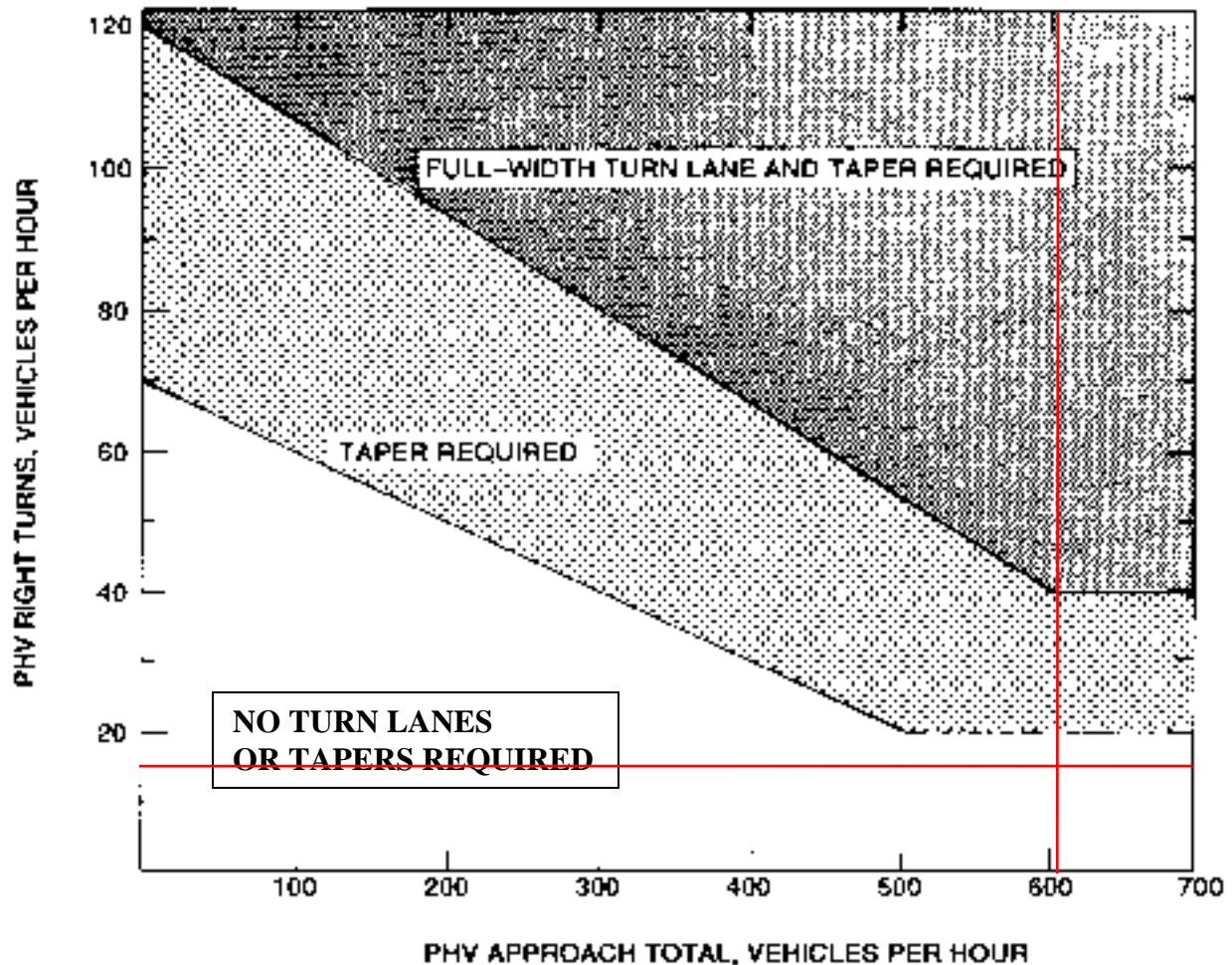
Analyst A. Aresta

Date 23-Sep-18

Time Period Saturday Peak Hour



Appendix J – VDOT Right Turn Analysis



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

LEGEND

PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

Adjustment for Right Turns

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.

Adjusted right turns = PHV Right Turns - 20

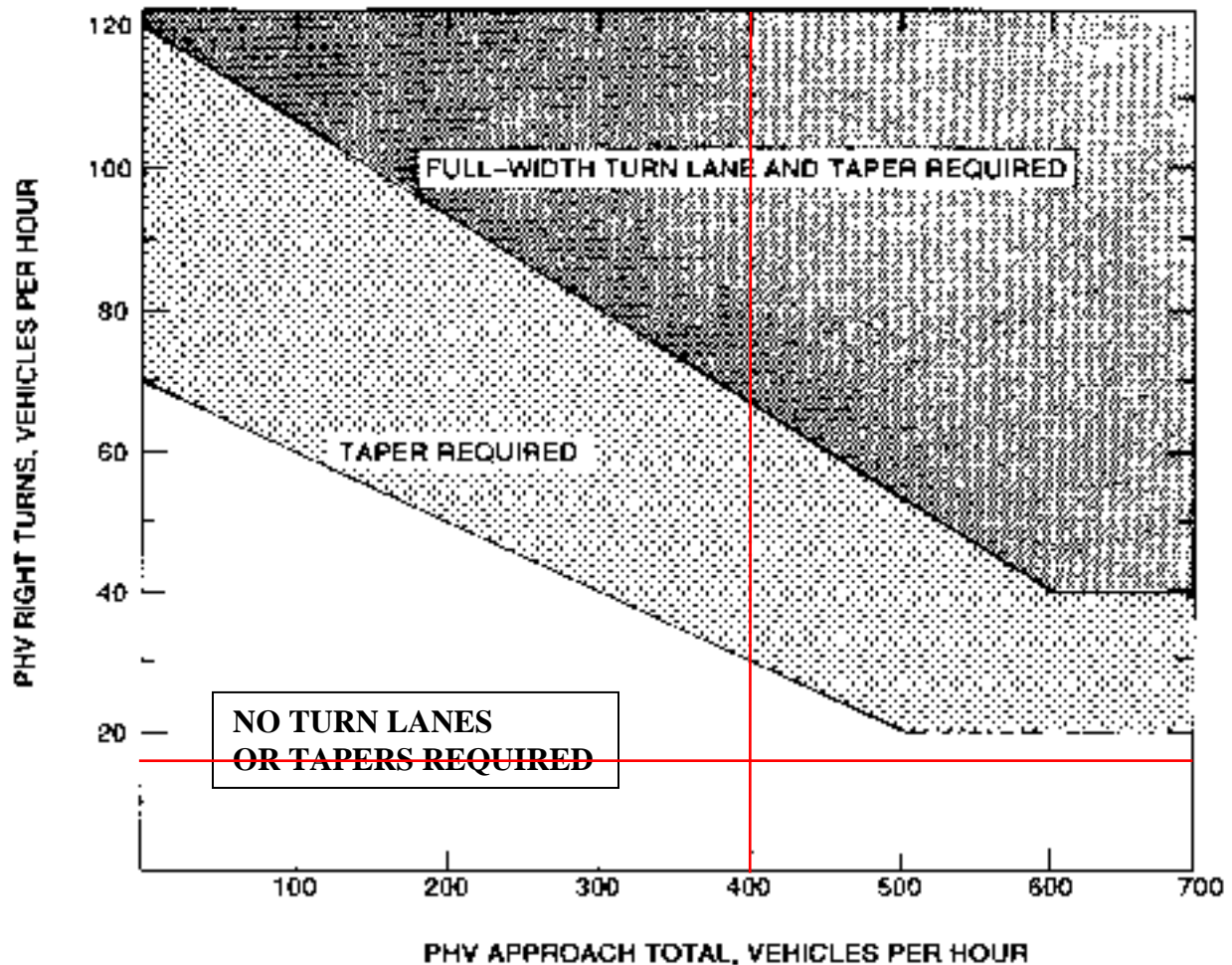
If PHV is not known use formula: $PHV = ADT \times K \times D$

K = the percent of AADT occurring in the peak hour

D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

FIGURE 3-23 GUIDELINES FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

LEGEND

PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

Adjustment for Right Turns

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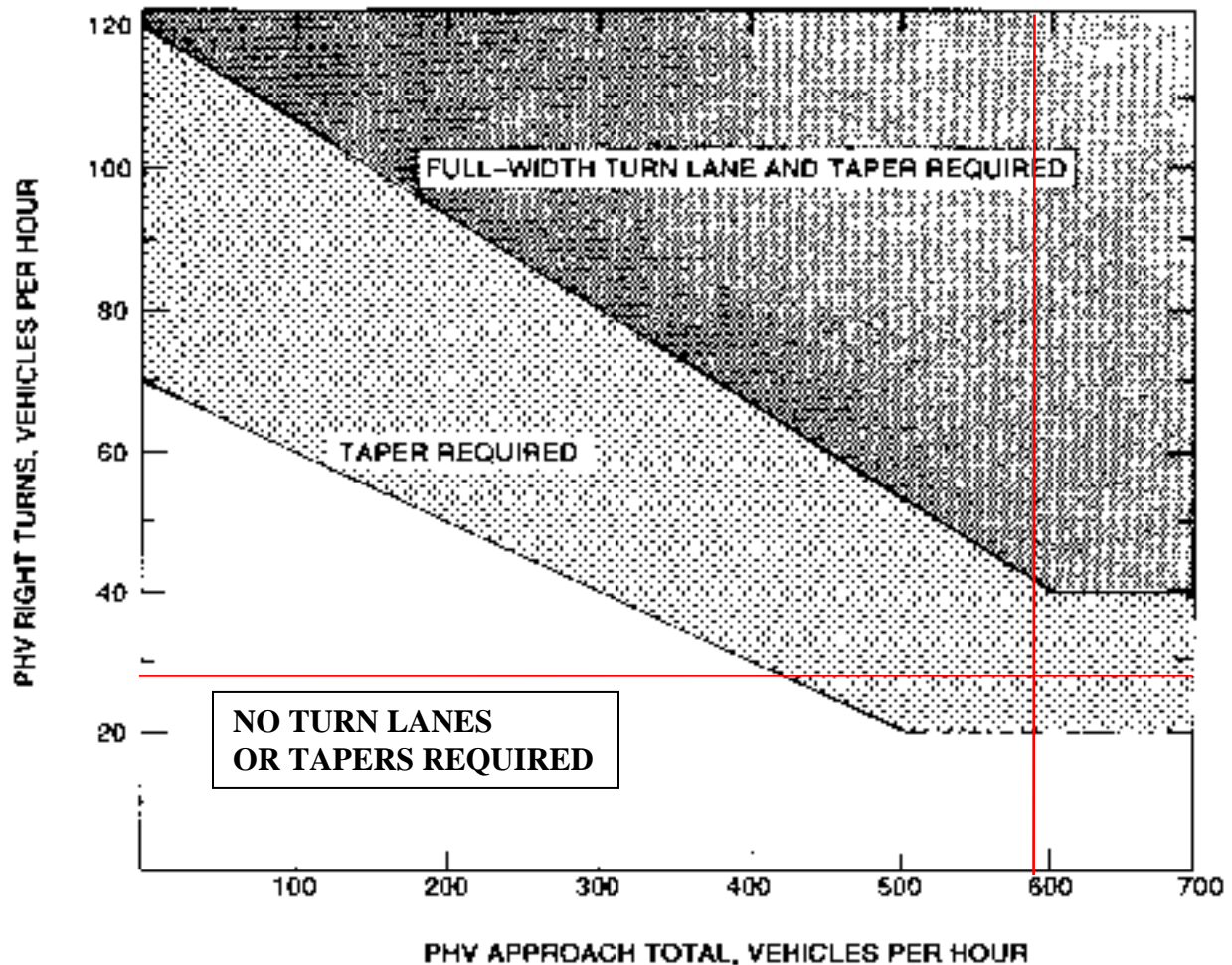
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FIGURE 3-23 GUIDELINES FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

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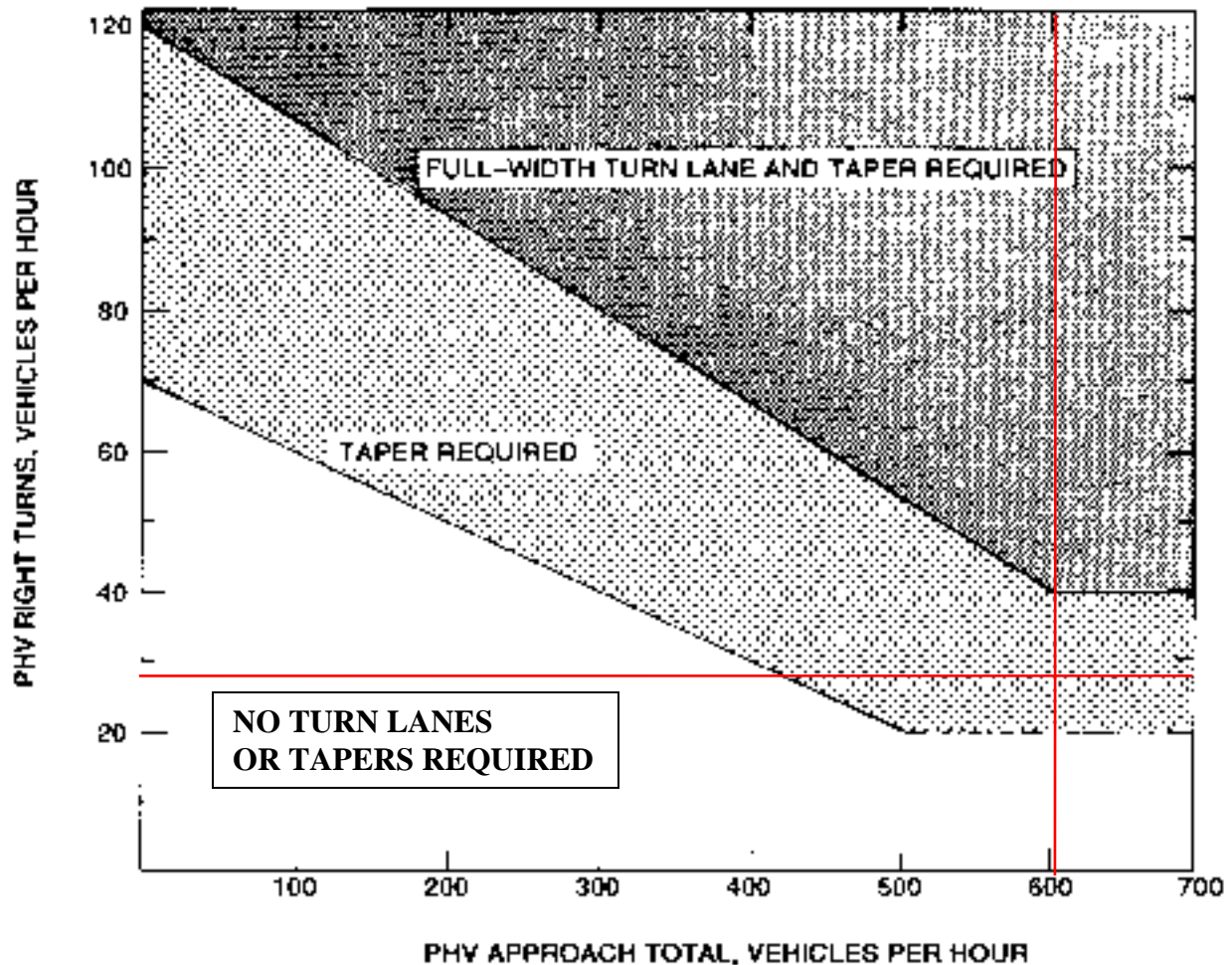
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FIGURE 3-23 GUIDELINES FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

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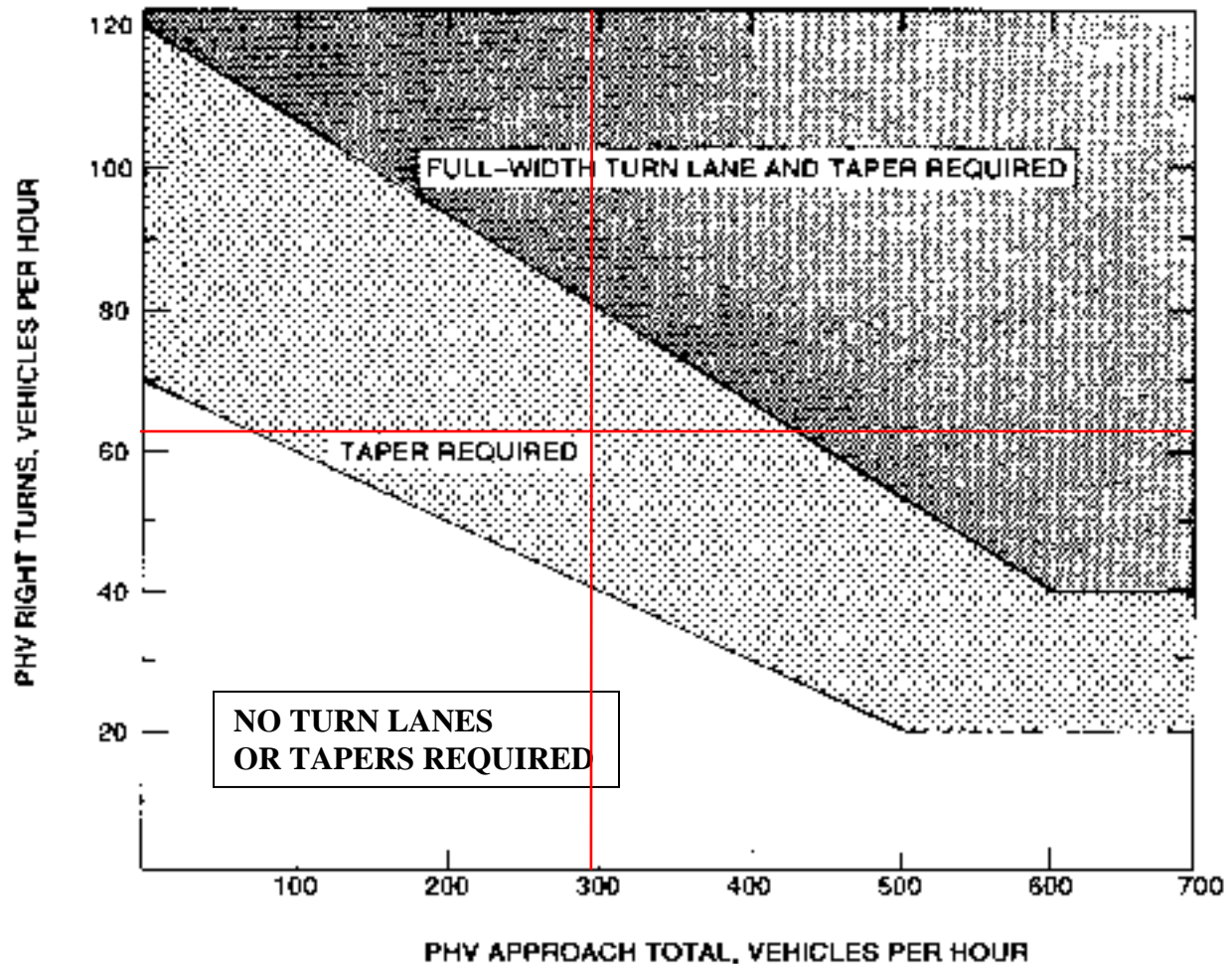
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FIGURE 3-23 GUIDELINES FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

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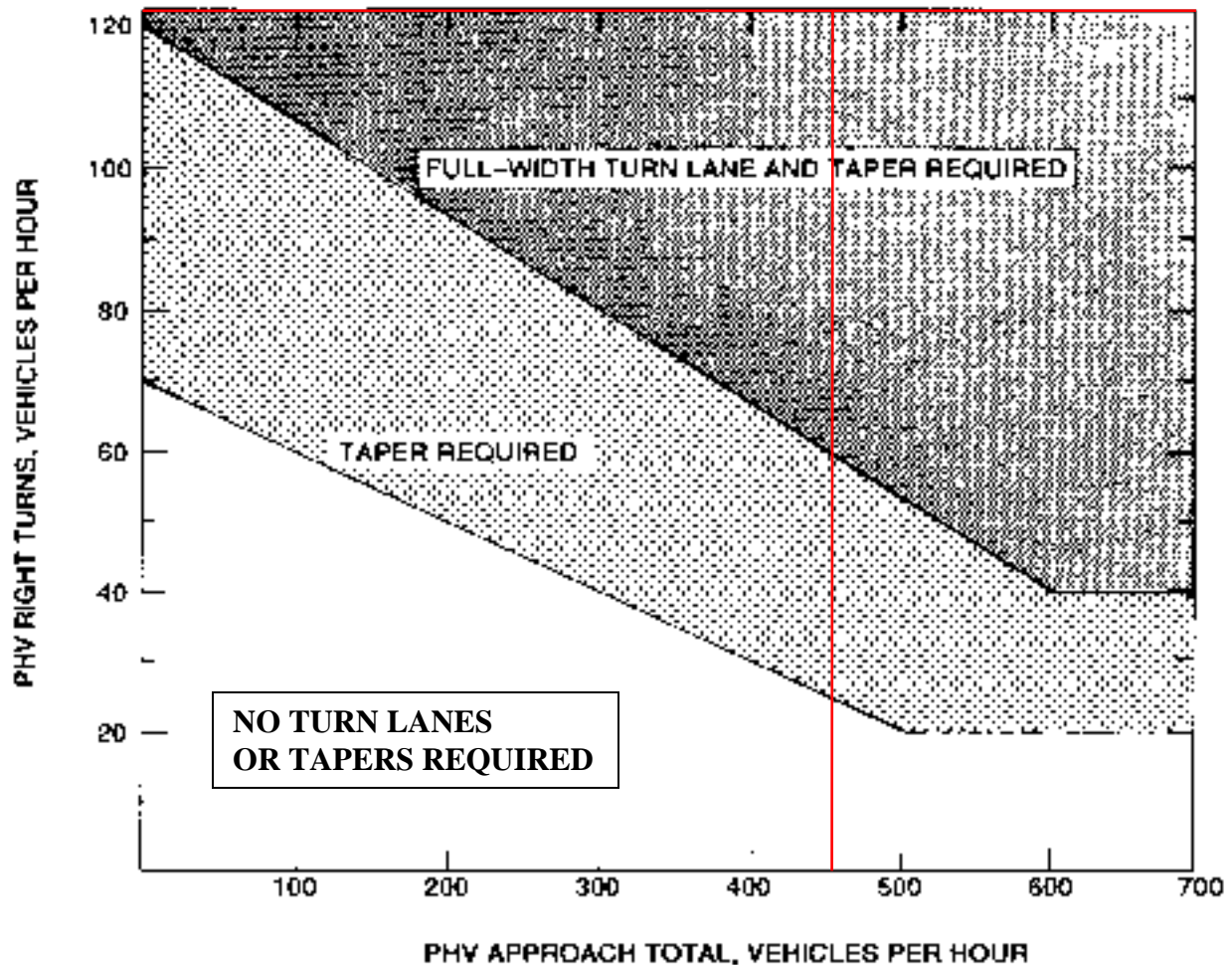
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PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

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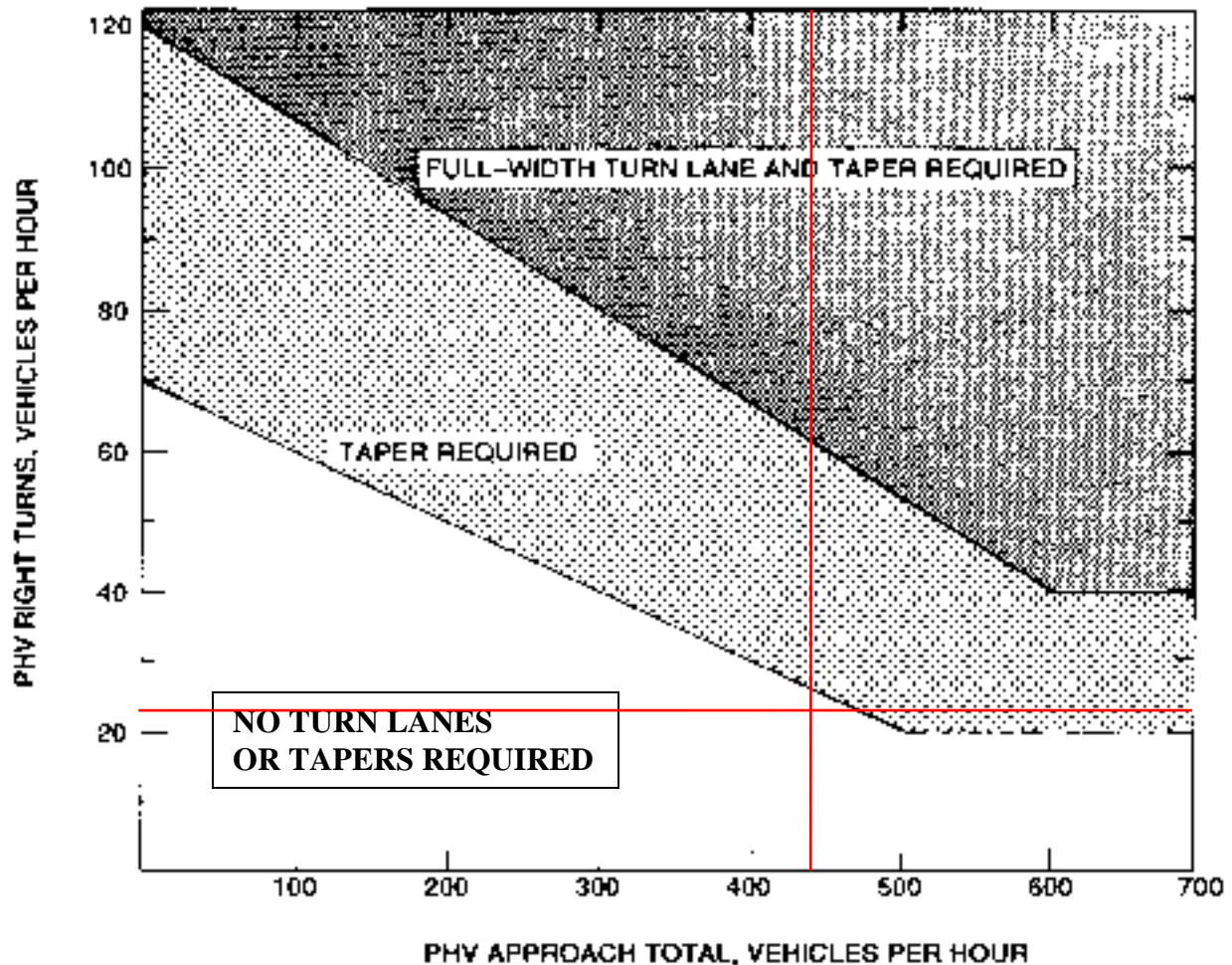
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FIGURE 3-23 GUIDELINES FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

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PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

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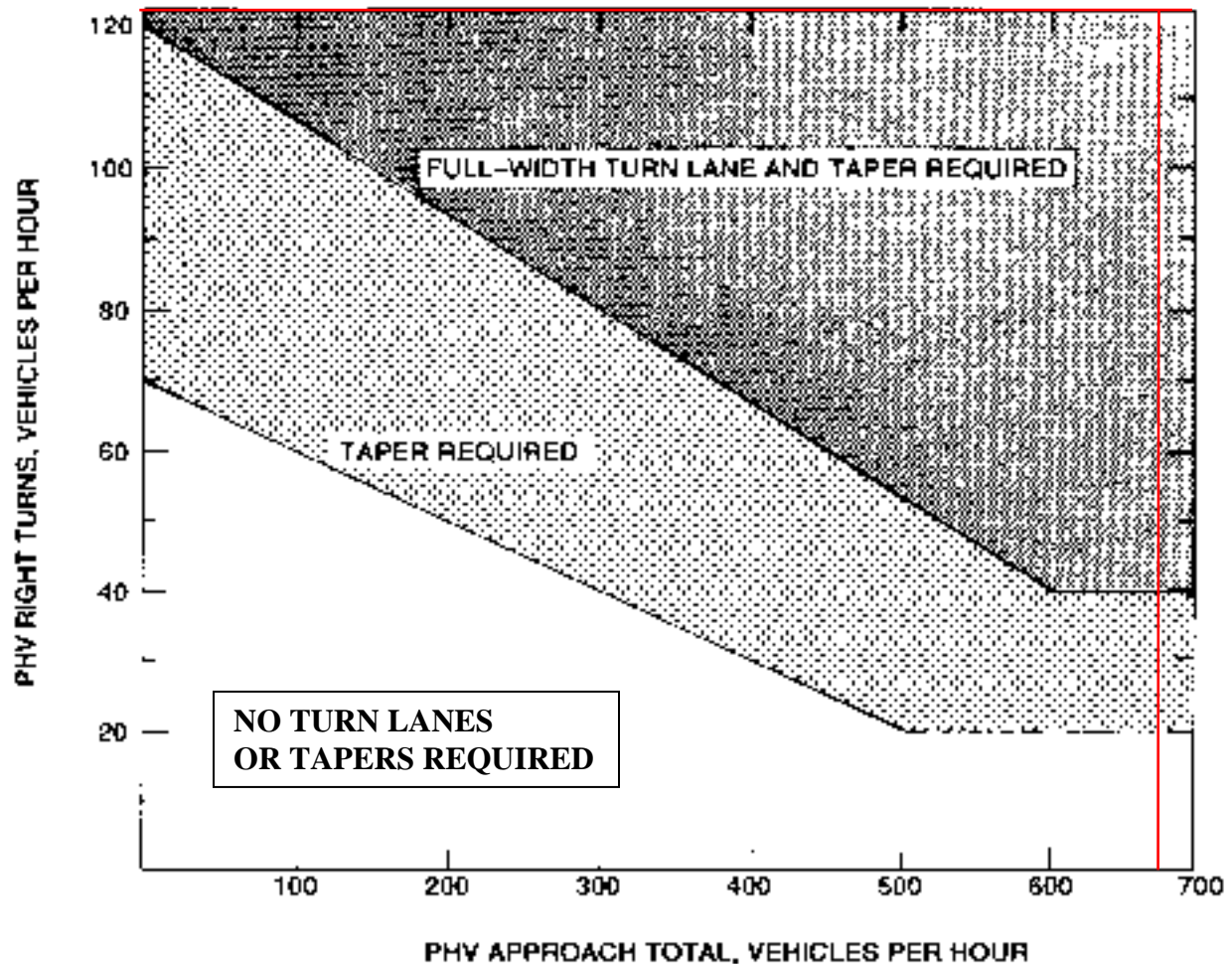
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FIGURE 3-23 GUIDELINES FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

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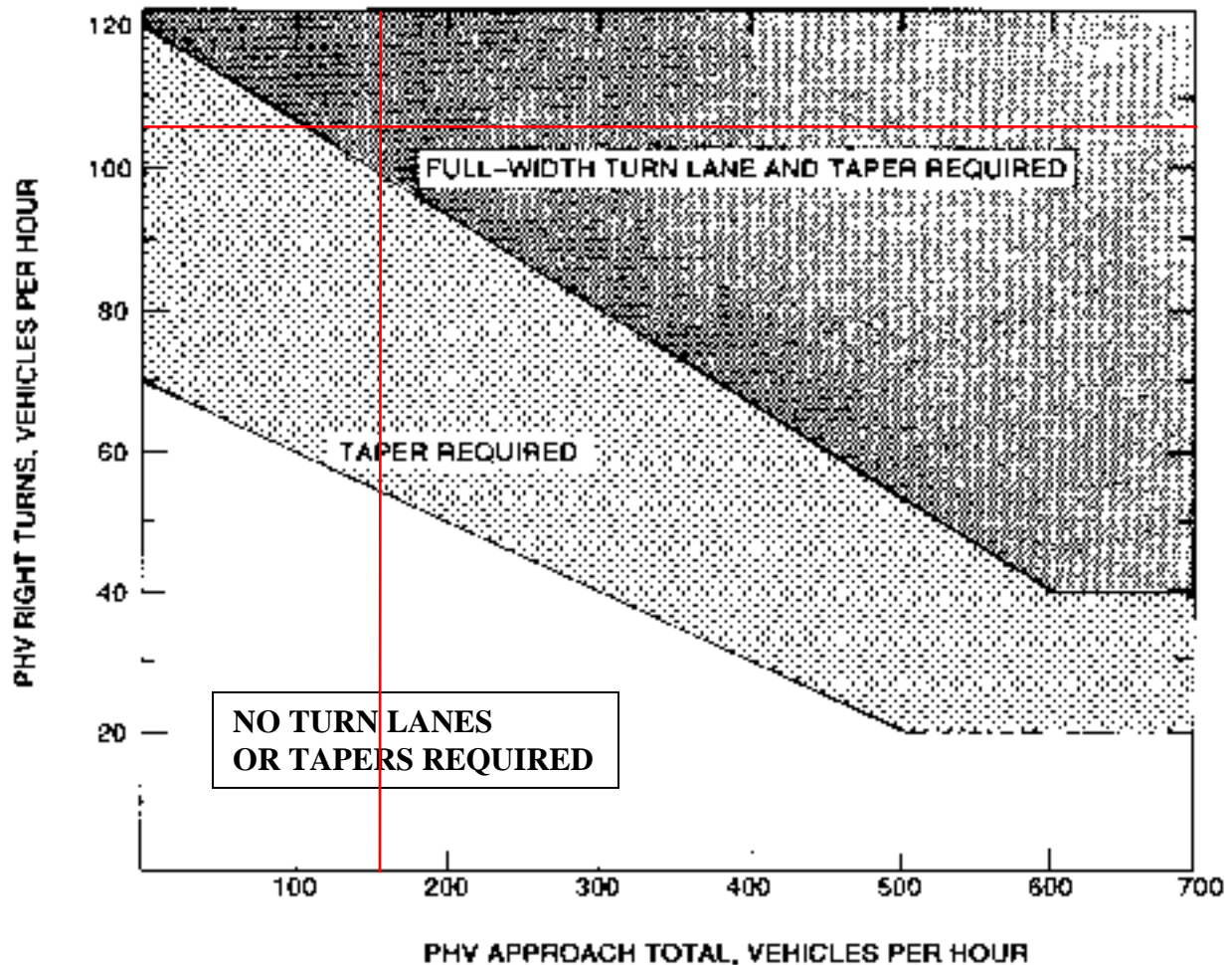
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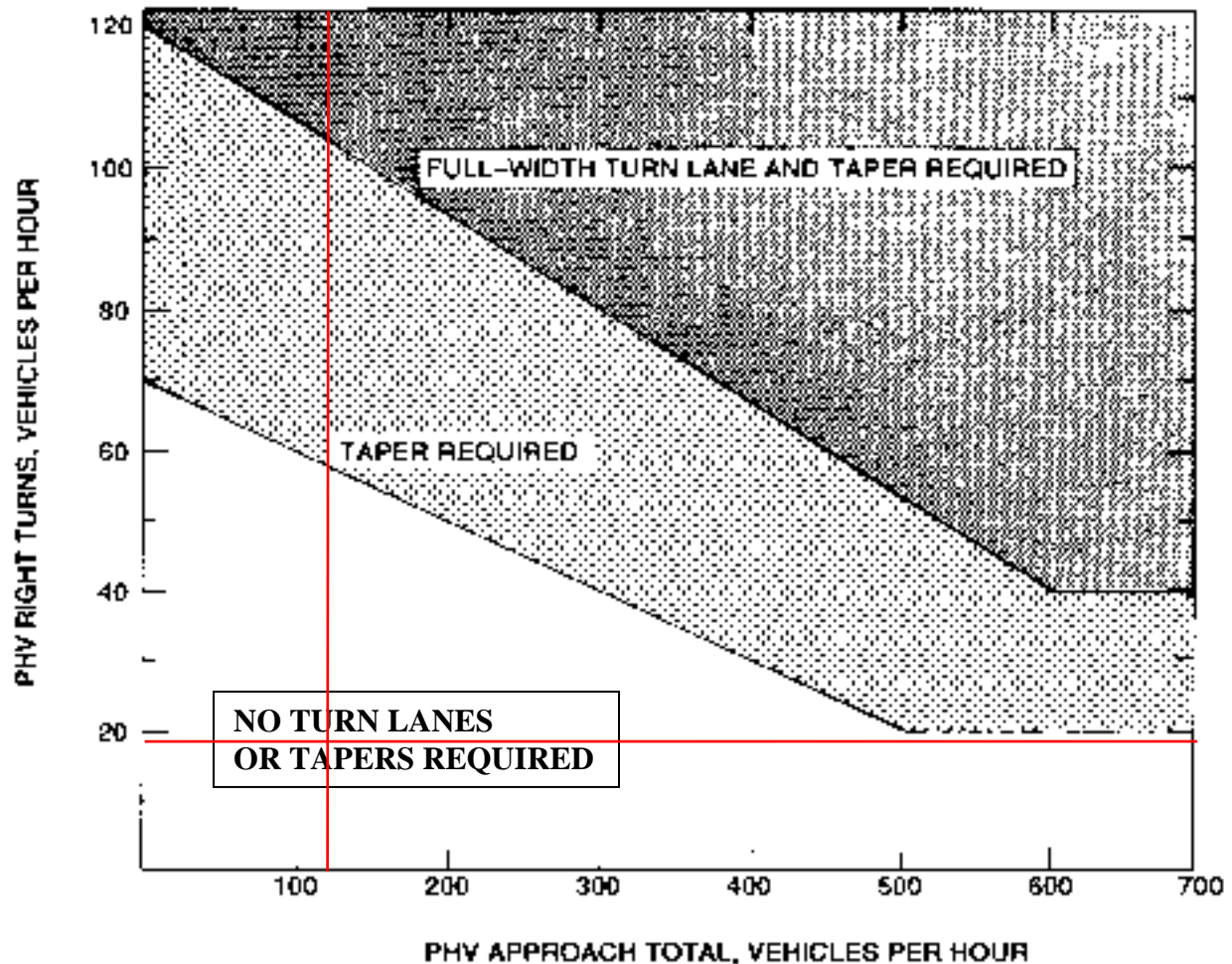
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Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

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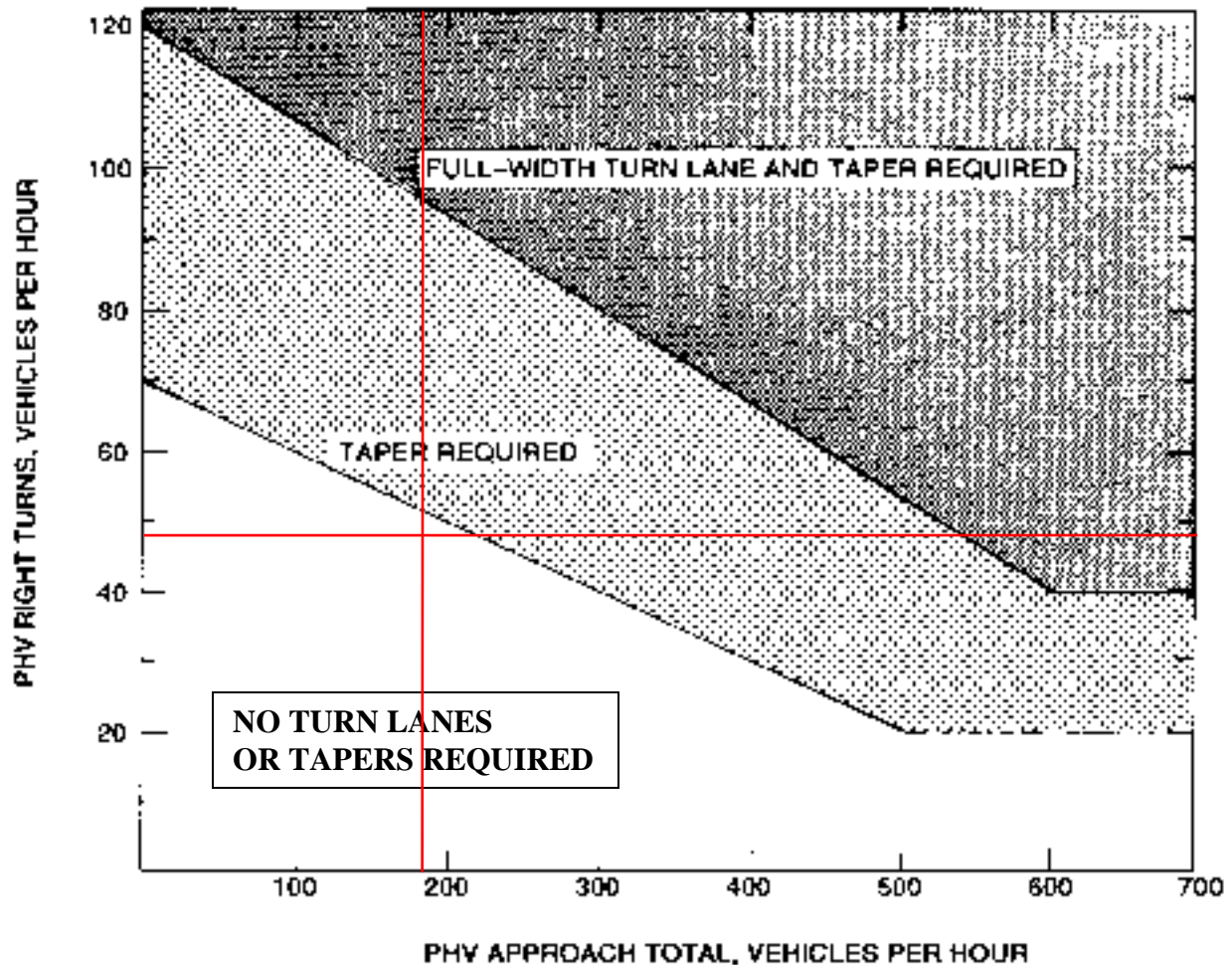
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FIGURE 3-23 GUIDELINES FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

LEGEND

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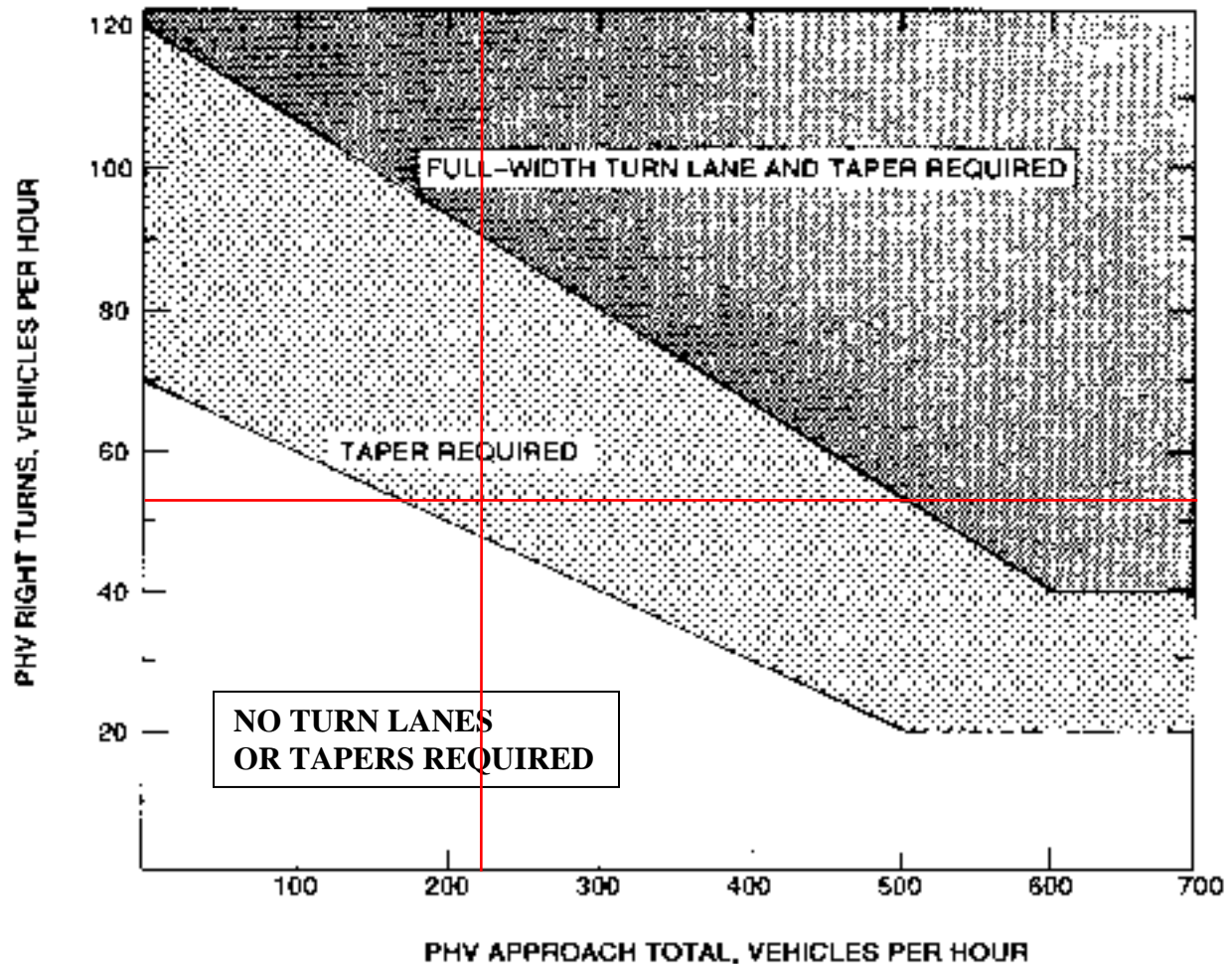
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Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

LEGEND

PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

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Adjusted right turns = PHV Right Turns - 20

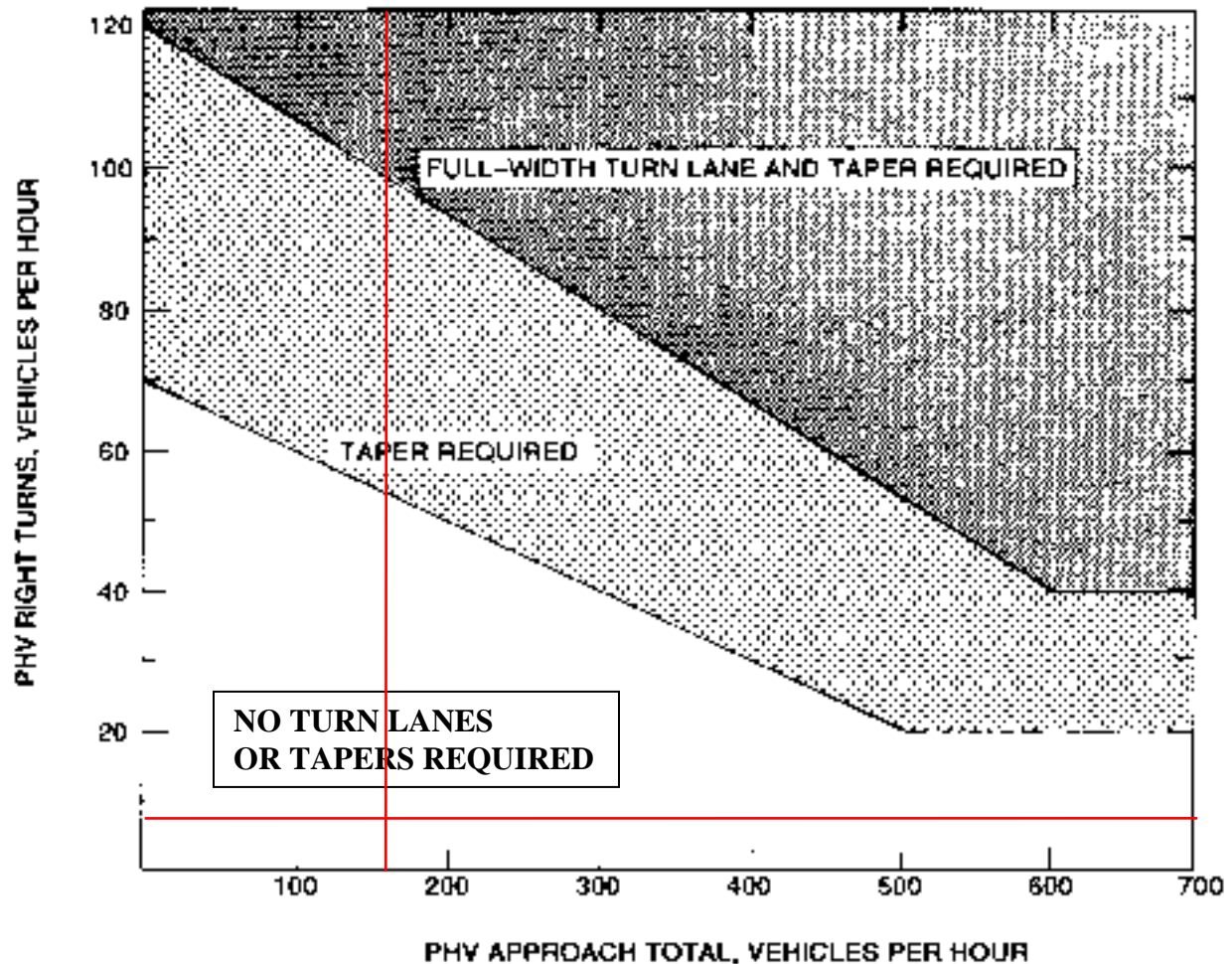
If PHV is not known use formula: $PHV = ADT \times K \times D$

K = the percent of AADT occurring in the peak hour

D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

FIGURE 3-23 GUIDELINES FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

LEGEND

PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

Adjustment for Right Turns

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.

Adjusted right turns = PHV Right Turns - 20

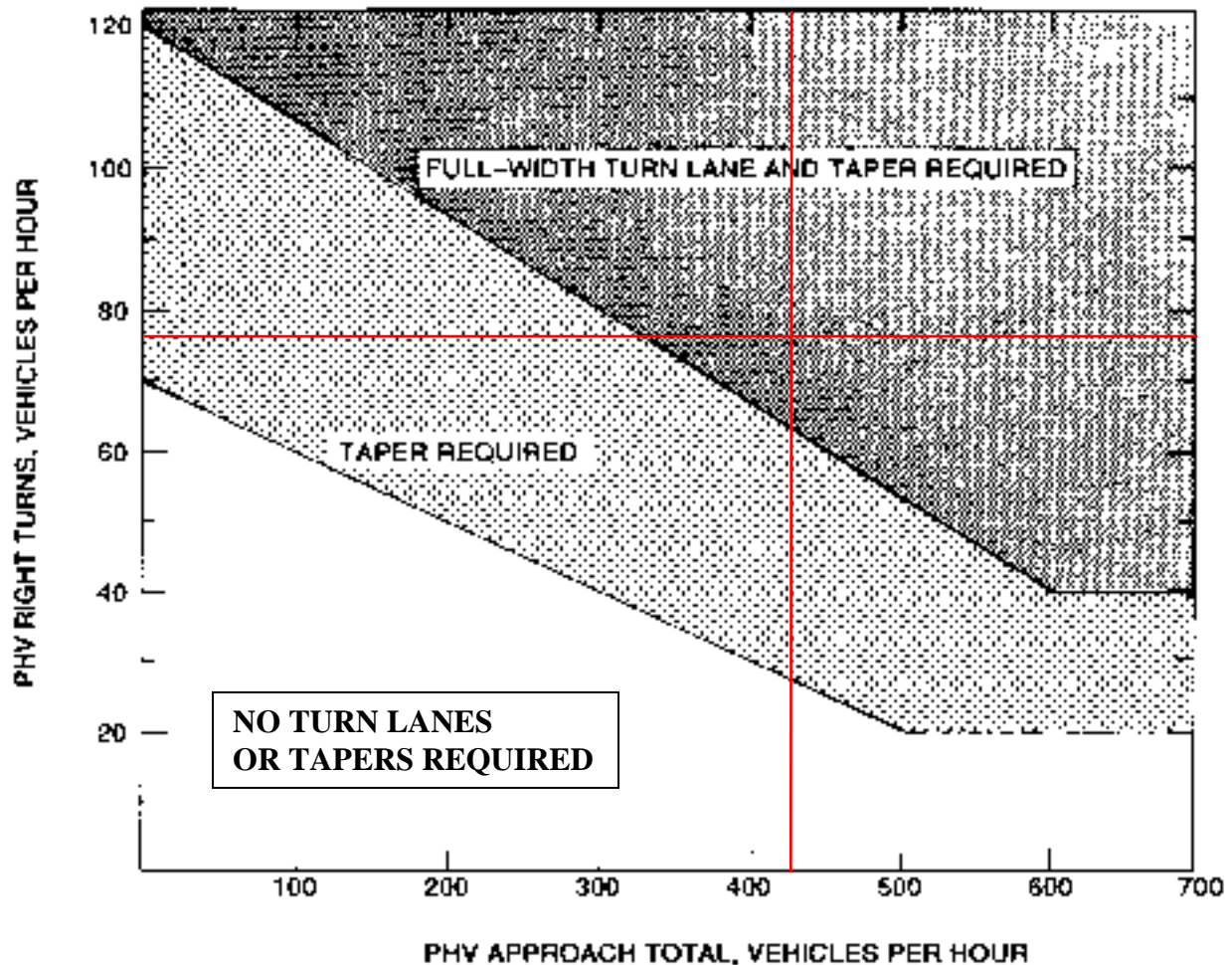
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