April 2024

Proposed Residential Sub-Division Development Port Colborne, Ontario

Prepared For

Mapleview (Port Colborne) Homes 1 Valleybrook Drive, Suite 303 Toronto, ON M3B 2S7

c/o Max Fedchyshak NPG Planning Solutions

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April 3, 2024

Mapleview (Port Colborne) Homes 1 Valleybrook Drive, Suite 303 Toronto, ON M3B 2S7

c/o Max Fedchyshak NPG Planning Solutions

Re: <u>Rosemount Gardens, Proposed Residential Sub-Division Development, Port Colborne, ON,</u> <u>Transportation Study</u>

Dear Mr. Fedchyshak,

TRANS-PLAN is pleased to submit this Transportation Study, in support of the proposed residential subdivision development, located at Pt Lt 31 & 32, Con 1, Humberstone, Killaly Street West, east of Quarry Ponds, in the City of Port Colborne, Niagara Region. The proposed development consists of mid-rise residential and mixed-use buildings, single-family units, and townhouse units.

Our traffic impact study includes traffic counts in the study area, trip generation estimates for the site and an intersection capacity analysis for existing and future traffic conditions. Our findings indicate that, the southbound left movement at the intersection of Killaly Street West at West Side Road are expected to operate with high delays and a LOS of F under future horizon years. A signal warrant analysis and left turn analysis were conducted at critical intersections to determine potential intersection improvements that could help alleviate traffic on the minor roadways.

Our parking review includes the review of the City of Port Colborne Zoning Bylaw in comparison to the proposed parking supply. Our site plan review includes a review of the circulation of loading delivery/waste collection vehicles and emergency vehicles to demonstrate that the vehicles are able to circulate the site to their respective designated areas in a safe and efficient manner.

Sincerely,

Anil Seegobin, P.Eng. Partner, Engineer Trans-Plan Transportation Inc. Transportation Consultants



Vivian Leung Traffic Analyst

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1. INTRODUCTION

Trans-Plan has been retained by Mapleview (Port Colborne) Homes to complete a Transportation Study in support of a proposed residential sub-division development, located at Pt Lt 31 & 32, Con 1, Humberstone, Killaly Street West, east of Quarry Ponds, in the City of Port Colborne, Niagara Region. This study includes the following studies and tasks:

Traffic Impact Study

- Review and assessment of the existing road network
- Assessment of boundary roadway operations under future background conditions, including a review of traffic growth, area developments and proposed transportation improvements in the study area
- Assessment of the impact of site-generated traffic on the study area intersections under future background and total traffic conditions
- Discussion of roadway and intersection improvements, as required, to accommodate the proposed development
- A review of the traffic signal warrant analysis at the intersection of Killaly Street West at West Side Road and Steele Street at Elgin Street West, as per Ontario Traffic Manual (OTM) guidelines, Book 12, Traffic Signals
- A review of left turn lane warrants at the intersection of Killaly Street West at West Side Road and Killaly Street West at Third Avenue, as per MTO turn lane warrant analysis

Site Plan Review

• Vehicle turning template review for the circulation of loading/ waste collection and emergency vehicles so that vehicles can access/egress the designated loading area and circulate the site

2. CORRESPONDENCE

Prior to commencing this study, Transportation and Planning staff at the City of Port Colborne, Niagara Region and Ministry of Transportation Ontario (MTO) Staff were contacted and provided with our study terms of reference for their approval and / or comments. Comments were received from City of Port Colborne Engineering Division and Niagara Region and was incorporated in the study (see Appendix A). MTO did not provide comments at the time of the completion of this report.

3. SITE LOCATION

The site location is shown in Figure 1 is located at Pt Lt 31 & 32, Con 1, Humberstone, Killaly Street West, east of Quarry Ponds, in the City of Port Colborne, Niagara Region. The subject site is currently occupied by some vegetation and trees. Directly north and south of the site are mainly residential uses consisting of single-family dwelling units. Directly west of the site is the Quarry Ponds. Directly east of the site are commercial uses that consist of an automotive service shop, Domino's Pizza, a medical pharmacy and townhouse dwellings.

4. PROPOSED DEVELOPMENT

The proposed site plan, provided by ICON Architects., is shown in Figure 2. The proposed development consists of mid-rise residential and mixed-use buildings, single-family units, and townhouse units. The four



8-storey mid-rise residential buildings and four 8-storey mixed-use, mid-rise residential buildings consist of a total of 1,231 units and a total commercial GFA of 3,196.8 sq.m. A total of 96 single family houses and 783 townhouses (stacked, regular, back to back, rear lane) are also proposed. Vehicle access is proposed via two full movement accesses from Killaly Street West and one access which connects to Elgin Street West.

5. EXISTING CONDITIONS

5.1 Road Network

The roadways located in the study area are described as follows:

Killaly Street West is a regional road that runs an east-west direction under the jurisdiction of the Region of Niagara. Killaly Street West consists of two travel lanes; one in each direction. The posted speed limit on Killaly Street West is 60km/h west of West Side Road and 50km/h east of West Side Road, within the vicinity of the site.

Main Street West is a regional road that runs in an east-west direction under the jurisdiction of the Region of Niagara. Main Street West consists of two travel lanes; one in each direction. The posted speed limit on Main Street West is 60km/h with the vicinity of the site.

Third Avenue is a local road under the jurisdiction of the City of Port Colborne that runs in a north-south direction. Third Avenue consists of two travel lanes; one in each direction. The speed limit is assumed at 50 km/h, within the vicinity of the site.

West Side Road is an arterial road under the jurisdiction of the City of Port Colborne that runs in a northsouth direction. West Side Road consists of two travel lanes; one in each direction. The speed limit is assumed at 50 km/h, within the vicinity of the site.

Elgin Street West is a local road that runs in an east-west direction under the jurisdiction of the City of Port Colborne. Elgin Street West consists of two travel lanes; one in each direction. The speed limit is assumed at 50 km/h, within the vicinity of the site.

Steele Street is an arterial road that runs in a north-south direction under the jurisdiction of the City of Port Colborne. Steele Street consists of two travel lanes; one in each direction. The posted speed limit on Steele Street is 50km/h with the vicinity of the site.

Main Street West, Third Avenue, West Side Road at Killaly Street West and Elgin Street West at Steele Street is controlled by a stop sign at its intersection. The intersection of Killaly Street West at Steele Street is controlled by a traffic signal at its intersection. The existing study area roadway characteristics is shown in Figure 3.

5.2 Traffic Counts

Since existing traffic volumes for the study area intersections are not available, Trans-Plan conducted counts at the study area roadways to determine the existing conditions. The TMCs were conducted on Wednesday December 14, 2022 and Tuesday January 10, 2023. The count hours and peak hours obtained for each intersection is summarized in Table 1. The existing traffic volumes for the weekday AM and PM peak hours is shown in Figure 4. Detailed TMC data are provided in Appendix B.



Intersection	Count Date	Count Hours	Peak Hours
Killaly Street West &	Tuesday January 10, 2023	7:00am - 9:30am	8:00am – 9:00am
Steele Street		4:00pm - 6:30pm	4:00pm - 5:00pm
Killaly Street West &	Wednesday December 14,	7:00am - 9:30am	7:45am - 8:45am
West Side Road	2022	4:00pm - 6:30pm	4:00pm - 5:00pm
Killaly Street West &	Wednesday December 14,	7:00am - 9:30am	8:30am – 9:30am
Third Avenue	2022	4:00pm - 6:30pm	4:30pm - 5:30pm
Killaly Street West &	Wednesday December 14,	7:00am - 9:30am	8:30am – 9:30am
Main Street West	2022	4:00pm - 6:30pm	4:00pm - 5:00pm
Steele Street & Elgin	Wednesday December 14,	7:00am - 9:30am	8:30am – 9:30am
Street West	2022	4:00pm - 6:30pm	4:00pm - 5:00pm

Table 1 – Intersection Turning Movement Count Details

5.3 Transit Service

The site is served by Niagara Region Transit, which connects transit riders to between the Welland Bus Terminal and Port Colborne City Hall.

25 line is a Port Link to Port Colborne bus route. It operates between the Welland Bus Terminal to Port Colborne City Hall, with flag to stop areas within Port Colborne south of Barrick Road, during Mondays to Saturdays from 6:30 AM to 10 PM with frequencies of 60 minutes.

A study area route map is provided in Figure 5.

6. FUTURE BACKGROUND CONDITIONS

Future background traffic volumes were determined based on a review of planned developments, road improvements and future traffic volume growth in the study area. Planned roadway and transit improvements are also reviewed in this section.

6.1 Horizon Years

For our traffic study, the following horizon years were analyzed:

- Existing conditions
- 2-year buildout + 5-year horizon period after full build-out of development, year 2031;
- 10-year horizon period, year 2036

6.2 Background Traffic Growth

Typically, traffic growth in the study area is analyzed through a linear regression analysis of aggregate Annual Average Daily Traffic (AADT) mid-block volumes. However, there was no available AADT data. As a result, based on our correspondence with the City of Port Colborne staff, a conservative 2 percent per annum growth rate for the planning horizon year was applied to the study area roadways.

6.3 Planned Background Developments

Based on our review of the City of Port Colborne Development Website, there are no notable background developments within the vicinity of the subject site.



6.4 Planned Roadway and Transit Improvements

Based on our correspondence with the City of Port Colborne staff and review of the Niagara Region Construction Projects and Studies website, there are no roadway or transit improvements within the vicinity of the subject site.

The future background traffic volumes for the 2031 and 2036 horizon years for the weekday AM and PM peak hours are shown in Figure 6 and Figure 7, respectively.

7. SITE TRAFFIC

7.1 Trip Generation

Site trips for the proposed townhouse units were generated using the Institute of Transportation Engineers (ITE) Trip Generation manuals, 11th Edition. The following ITE Land Use Code (LUC) was utilized to determine suitable trip rates: LUC 221 for Multifamily Housing (Mid-Rise), LUC 210 for Single-Family Detached Housing, LUC 220 for Multifamily Housing (Low-Rise) and LUC 822 for Strip Retail Plaza. The site trip generation for the subject site is shown in Table 2.

	Cino		A	M Peak H	our	PI	M Peak Ho	ur
Land Use	Size		In	Out	Total	In	Out	Total
Multifamily		Dist.	23%	77%	100%	61%	39%	100%
Housing (Mid-	1231	Equation	T =	0.44(X) - 2	11.61	T =	0.39(X) + (0.34
Rise)	units	Rate	0.1	0.33	0.43	0.24	0.15	0.39
ITE Code 221		Trips	122	408	530	293	187	480
Single- Family		Dist.	25%	75%	100%	63%	37%	100%
Detached	96	Equation	Ln(T)=	= 0.91Ln(X) + 0.12	Ln(T)=	0.94Ln(X)	+ 0.27
Housing	units	Rate	0.19	0.56	0.75	0.63	0.37	1
ITE Code 210		Trips	18	54	72	60	36	96
Multifamily		Dist.	24%	76%	100%	63%	37%	100%
Housing (Low-	783	Equation	T =	0.31(X) + 1	22.85	T = (0.43(X) + 2	0.55
Rise)	units	Rate	0.08	0.26	0.34	0.29	0.17	0.46
ITE Code 220		Trips	64	202	266	225	132	357
Strip Retail	34.41	Dist.	60%	40%	100%	50%	50%	100%
Plaza	per	Equation	Ln(T)=	= 0.66Ln(X) + 1.84	Ln(T)=	0.71Ln(X)	+ 2.72
	1000	Rate	1.13	0.75	1.88	2.69	2.69	5.38
ITE Code 822	Sq.ft.	Trips	39	26	65	93	94	187
То	Total Trips			690	933	671	449	1120

Table 2 – Site Trip Generation

The subject site is expected to generate approximately 933 and 1120 two-way trips in the weekday AM and PM peak hours, respectively.



7.2 Trip Distribution and Assignment

Site trips for the proposed development were distributed to / from the site and the boundary roadways using the existing traffic patterns of the study area obtained from traffic counts. The site traffic assignment for the weekday AM and PM peak hours are shown in Figure 8.

8. FUTURE TOTAL TRAFFIC CONDITIONS

Site traffic volumes were added to the future background traffic volumes to obtain future total traffic volumes for the peak hours. The future total traffic volumes for horizon years 2031 and 2036 for the weekday AM and PM peak hours, are shown in Figure 9 and Figure 10, respectively.

9. CAPACITY ANALYSIS

9.1 Traffic Analysis Assumptions

For the intersection of Killaly Street West at Main Street, due to the irregular design of the intersection, the Synchro was modelled with Main Street as a road that runs in an east-west direction with Killaly Street West modelled as a road that runs in the north direction. Main Street is modelled with a westbound through/right movement and with a eastbound through/left movement. Killaly Street West is modelled with a northbound left and a northbound right movement.

9.2 Auto Trip Capacity

A capacity analysis was performed for the study area intersections using Synchro analysis software. The capacity analysis results for existing conditions and for the horizon year 2031 and 2036 is shown in Table 3 and Table 4, respectively.

Capacity analysis sheets, and Level of Service (LOS) definitions are provided in Appendix C and Appendix D, respectively.

Capacity Analysis Thresholds:

No capacity thresholds were identified for the City of Port Colborne. According to the Niagara Region Guidelines for Transportation Impact Studies, volume-to-capacity (v/c) ratio of 0.85 or less is acceptable for through-right or right-turn movements at signalized intersections. Dedicated left-turn movements with a v/c of 0.90 are considered to be acceptable. At unsignalized intersections, a LOS of C or better is considered to be acceptable.

The results of the capacity analysis are discussed in this section for each intersection.

Existing Traffic Operations

• Under existing conditions, the signalized intersection at Killaly Street West and Steele Street operates at a good LOS of B with minimal delays. All unsignalized intersections within the study area operates at an acceptable LOS of C or better with minimal delays.

Horizon Year 2031 Traffic Operations

• The intersection of Killaly Street West and Steele Street is expected to operate similarly to existing conditions with a good LOS of B and minimal delays.



- The eastbound left and westbound left movement at the intersection of Steele Street & Elgin Street in the weekday PM peak hour, are expected to operate at a LOS of E with delays up to 1 minute.
- The northbound through/ left/ right movement at the intersection of Killaly Steet West & West Side Road are expected to operate at an LOS of D in the weekday AM peak hour and at a LOS of F in the weekday PM peak hour with delays of up to approximately 1 minute. The southbound through/ left/ right is expected to operate at an LOS of F with critical delays.
- The northbound left movement at the intersection of Killaly Street West & Main Street is expected to operate at a LOS of D in the weekday PM peak hour.
- All remaining intersections and accesses are expected operate at an acceptable level of service or better with minor delays.

Horizon Year 2036 Traffic Operations

- Similar to the horizon year 2031, the overall intersection of Killaly Street West and Steele Street is expected to operate similarly with an overall LOS of B and minimal delays.
- The eastbound left and westbound left movement at the intersection of Steele Street & Elgin Street in the weekday PM peak hour, are expected to operate at a LOS of F with delays up to 65 seconds.
- The northbound through/ left/ right movement and southbound through/ left/ right movement at the intersection of Killaly Steet West & West Side Road are expected to operate similar to the 2031 horizon year conditions with critical delays.
- The northbound left movement at the intersection of Killaly Street West & Main Street is expected to operate similar to the 2031 horizon year conditions.
- All remaining intersections and movements are expected operate at an acceptable level of service or better with minor delays.

<u>Summary</u>

There are potential areas of improvement for the study area roadways that could help improve the operability of the intersections. The intersection of Killaly Street West at West Side Road and Steele Street at Elgin Street West are the intersections that experience some delays in the future horizon years. Therefore, additional signal warrant and left turn warrant analysis were conducted to determine the improvements that could help alleviate the traffic. Further detailed discussion is provided below. The remaining minor roadway connections are experience delays when turning onto major roadways.



Table 3 - 2031 Capacity Analysis Results, Weekday AM and PM Peak Hours

Intersection		Existi	ng Trafi	fic Cond	itions		203	1 Back	round	Traffic C	Conditio	ons		2031 T	otal Tra	affic Cor	ditions	
Movement	AM	Peak H	-		Peak H	lour		Peak H			Peak H		AM	Peak Ho	our	PN	/ Peak Ho	our
	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Steele Street & Elgin Street West		,			,					<u> </u>	,					<u> </u>		L
Eastbound Left		15	В		21	С		16	С		26	D		20	С		46	Е
Eastbound Right		10	В		11	В		11	В		12	В		12	В		13	В
Westbound Left		14	В		20	С		16	С		24	С		23	С		42	Е
Westbound Through / Right		10	А		12	В		10	В		12	В		11	В		13	В
Northbound Through / Left		1	А		1	А		1	А		1	А		2	А		3	А
Southbound Through / Right		0	А		0	А		0	А		0	А		0	А		0	А
Steele Street & Killaly Street West	0.29	13	В	0.37	15	В	0.34	13	В	0.43	15	В	0.50	17	В	0.59	18	В
Eastbound Left	0.02	18	В	0.04	18	В	0.02	18	В	0.04	18	в	0.01	16	В	0.05	16	В
Eastbound Through	0.45	21	С	0.45	20	С	0.50	21	С	0.50	21	С	0.75	26	С	0.61	21	С
Eastbound Right	0.12	19	В	0.17	19	В	0.14	18	В	0.19	19	В	0.15	16	В	0.19	16	В
Westbound Left	0.15	19	В	0.15	19	В	0.17	19	В	0.17	19	В	0.19	17	В	0.15	16	В
Westbound Through / Right	0.22	19	В	0.49	21	C	0.25	19	В	0.55	21	C	0.32	17	В	0.77	27	C
Northbound Left	0.24	8	А	0.32	9	A	0.28	8	А	0.38	10	A	0.33	13	В	0.47	15	В
Northbound Through / Right	0.20	7	А	0.13	7	А	0.23	7	А	0.15	7	А	0.31	12	В	0.20	11	В
Southbound Left	0.06	6	A	0.03	6	A	0.08	7	A	0.03	6	A	0.09	10	A	0.04	10	A
Southbound Through / Right	0.12	6	A	0.10	7	A	0.14	7	A	0.12	7	A	0.19	11	В	0.23	11	В
Killaly Street West & West Side Road/								-					0.00		_			
Proposed Site Access																		
Eastbound Through / Left		0	А		0	А												
Eastbound Through / Left / Right		-			-			0	А		1	А		0	А		0	А
Westbound Through / Left / Right								0	A		0	A		1	A		2	A
Westbound Through / Right		0	А		0	А		-						_			_	
Northbound Through / Left / Right		Ū			Ū	71		0	А		0	А		34	D		89	F
Southbound Left / Right		12	В		16	С		-						•	_			
Southbound Through / Left / Right					10	Ũ		15	В		27	D		5 mins	F		>14mins	F
Killaly Street West & 3rd Avenue/									_			_						
Proposed Site Access																		
Eastbound Through / Left		0	А		0	А												
Eastbound Through / Left / Right		0	,,		Ū			0	А		0	А		0	А		0	А
Westbound Through / Right		0	А		0	А		U	~~		U	~		U	~~		U	
Westbound Through / Left / Right		5			5			0	А		0	А		2	А		4	А
Northbound Through / Left / Right								0	A		0	A		15	В		19	c
Southbound Left / Right		10	А		10	А		U	~~		U	~		15	5		15	Ũ
Southbound Through / Left / Right					10	71		10	А		10	А		14	В		18	С
Killaly Street West & Main Street								10			10							
Eastbound Through / Right		0	А		0	А		0	А		0	А		0	А		0	А
Westbound Through / Left		0	A		0	A		0	A		0	A		1	A		1	A
Northbound Left		12	В		15	В		13	В		17	c		20	c		31	D
Northbound Right		10	A		10	A		10	В		10	В		11	В		11	В
Elgin Street West & Proposed Site Access		10						10			10							
																	_	
Eastbound Through / Left														8	A		7	A
Westbound Through / Right														7	A		8	A
Southbound Left / Right														8	A		8	A

Table 4 - 2036 Capacity Analysis Results, Weekday AM and PM Peak Hours



Intersection	-			Traffic Conditions			2036 Total Traffic Conditions					
Movement	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Steele Street & Elgin Street West												
Eastbound Left		18	С		32	D		23	С		65	F
Eastbound Right		11	В		12	В		12	В		14	В
Westbound Left		17	С		28	D		26	D		53	F
Westbound Through / Right		11	В		13	В		11	В		14	В
Northbound Through / Left		2	А		1	А		2	А		3	Α
Southbound Through / Right		0	А		0	Α		0	А		0	Α
Steele Street & Killaly Street West	0.38	13	В	0.47	15	В	0.53	17	В	0.63	19	В
Eastbound Left	0.02	18	В	0.05	18	В	0.01	15	В	0.06	15	В
Eastbound Through	0.53	21	С	0.53	21	С	0.76	26	С	0.62	21	С
Eastbound Right	0.15	18	В	0.21	18	В	0.18	16	В	0.21	16	В
Westbound Left	0.19	19	В	0.19	18	В	0.22	17	В	0.17	16	В
Westbound Through / Right	0.26	19	В	0.58	22	С	0.33	17	В	0.78	27	С
Northbound Left	0.32	9	А	0.43	11	В	0.38	14	В	0.53	17	В
Northbound Through / Right	0.26	8	А	0.17	8	Α	0.34	13	В	0.23	12	В
Southbound Left	0.08	7	А	0.04	7	Α	0.10	11	В	0.04	10	В
Southbound Through / Right	0.15	7	А	0.13	7	А	0.21	11	В	0.24	12	В
Killaly Street West & West Side Road/												
Proposed Site Access												
Eastbound Through / Left / Right		0	А		0	А		0	А		0	А
Westbound Through / Left / Right		0	А		0	А		1	А		2	А
Northbound Through / Left / Right		0	А		0	А		39	Е		120	F
Southbound Through / Left / Right		16	С		41	Е		7 mins	F		>14mins	F
Killaly Street West & 3rd Avenue/												
Proposed Site Access												
Eastbound Through / Left / Right		0	А		0	А		0	А		0	А
Westbound Through / Left / Right		0	А		0	А		2	А		3	А
Northbound Through / Left / Right		0	А		0	А		15	В		20	С
Southbound Through / Left / Right		10	В		10	В		15	В		19	С
Killaly Street West & Main Street												
Eastbound Through / Right		0	А		0	А		0	А		0	А
Westbound Through / Left		0	А		0	А		1	А		1	А
Northbound Left		14	В		19	С		23	С		41	Е
Northbound Right		10	В		11	В		11	В		11	В
Elgin Street West & Proposed Site Access												
Eastbound Through / Left								8	А		7	А
Westbound Through / Right								7	А		8	А
Southbound Left / Right								8	А		8	А



10. SIGNAL WARRANT ANALYSIS

A signal warrant analysis, based on OTM Guidelines, Book 12, Traffic Signals, was completed for the intersection of Killaly Street West and West Side Road and at Steele Street at Elgin Street West, due to the expected increase in delays observed in Section 9.2.

As eight-hour volume projection is not available, the Average Hourly Volumes (AHV) method was utilized for this warrant. The AHV equals the AM and PM peak hour volume divided by four, and the future 2031 and 2036 total volumes were utilized. Killaly Street West operates at a 60km/h and Steele Street operates at a 50km/h and the minimum requirement of restricted flow. The combined weekday AM and PM peak hour were utilized for the traffic signal warrant shown in Table 5 for Killaly Street West & West Side Road. The combined weekday AM and PM peak hour were utilized for the traffic signal street West.

			•	e Hourly ume	Compliance (120% required)		
Justification	Description	Minimum Requirement (1 Lane)	Weekday 2031 Total	Weekday 2036 Total	Weekday 2031 Total	Weekday 2036 Total	
1. Minimum	A. Vehicle volume, all approaches	720	682	722	95%	100%	
vehicular volume	B. Vehicle volume, minor streets	170	321	336	189%	198%	
2. Delay to	A. Vehicle volume, major street	720	362	386	50%	54%	
Cross Traffic	B. Vehicle volume, crossing artery from minor street	75	175	190	230%	253%	

Table 5 – Signal Warrant Justification, Killaly Street West & West Side Road

Based on the OTM signal warrant guidelines, traffic signal control is warranted at the intersection of Killaly Street West and West Side Road under future 2031 and 2036 traffic conditions. Therefore, it is recommended a signal be implemented at the intersection of Killaly Street West and West Side Road to help alleviate the delays at the intersection.



-	-		-		1		
			Average	e Hourly	Compliance (120%		
			Volu	ume	required)		
	5	Minimum					
Justification	Description	Requirement	Weekday	Weekday	Weekday	Weekday	
		(1 Lane)	2031	2036	2031	2036	
			Total	Total	Total	Total	
1.	A. Vehicle volume,						
Minimum	all approaches	720	515	558	72%	78%	
vehicular	B. Vehicle volume,						
volume	minor streets	170	119	125	70%	74%	
Volume	A. Vehicle volume,						
2. Delay to	major street	720	397	433	55%	60%	
2. Delay to Cross	B. Vehicle volume,						
Traffic	crossing artery from	75	39	41	52%	55%	
Traffic	minor street	75		41	5270	55%	
	minor street						

Table 6 – Signal Warrant Justification, Steele Street & Elgin Street West

Under future 2031 and 2036 traffic conditions, a traffic signal control is not warranted at the intersection of Steele Street and Elgin Street West. Therefore, it is recommended the intersection remain unsignalized within the study horizon year, but the Town should consider monitoring the intersection for potential increased delays.

11. LEFT TURN WARRANTS

A left turn warrant was completed for the future 2031 and 2036 horizon year and was reviewed for the intersections of Killaly Street West and West Side Road and at Killaly Street West and Third Avenue. These intersections are new access connections to Killaly Street West proposed for the subject site. The MTO Geometric Design Standard warrants were analyzed based on the design speed according to the posted speed limits for study area roadways. The posted speed limit on Killaly Street West is 60km/h within the vicinity of the site.

The traffic volumes used for the analysis were the weekday AM and weekday PM peak hours under future 2031 and 2036 total traffic conditions. The analysis for the 2031 and 2036 horizon year period of the intersection of Killaly Street West and West Side Road is provided in Appendix E and shown below in Table 7 to Table 10. The analysis for the 2031 and 2036 horizon year period of the intersection of Killaly Street West and PM pendix E and shown below in Table 10. The analysis for the 2031 and 2036 horizon year period of the intersection of Killaly Street West and Third Avenue is provided in Appendix E and shown below in Table 10 to Table 14.



Table 7 – Year 2031, Left Turn Warrant Justification, Killa	ly Street West and West Side Road Fast Leg
Table 7 Tear 2001, Left fully warrant Justineation, Kina	Ty Street West and West Side Road, East leg

Criteria	AM Peak Hour Traffic Volumes	PM Peak Hour Traffic Volumes
Westbound Left Turn (WBLT) Traffic Volumes	37	100
Advancing Traffic Volumes (Westbound)	330	611
% Left Turns in Advancing Traffic Volumes (WB)	11%	16%
Opposing Traffic Volumes (Eastbound)	247	258
Warrant at 70km/h design speed justified?	No	Yes

Source: MTO Geometric Design Appendix E, Figure EA-10

Table 8 – Year 2031, Left Turn Warrant Justification, Killaly Street West and West Side Road, West Leg

Criteria	AM Peak Hour Traffic Volumes	PM Peak Hour Traffic Volumes
Eastbound Left Turn (EBLT) Traffic Volumes	1	6
Advancing Traffic Volumes (Eastbound)	247	258
% Left Turns in Advancing Traffic Volumes (EB)	0.4%	2%
Opposing Traffic Volumes (Westbound)	330	611
Warrant at 70km/h design speed justified?	No	No

Source: MTO Geometric Design Appendix E, Figure EA-10

Table 9 – Year 2036, Left Turn Warrant Justification, Killaly Street West and West Side Road, East Leg

Criteria	AM Peak Hour Traffic Volumes	PM Peak Hour Traffic Volumes
Westbound Left Turn (WBLT) Traffic Volumes	37	100
Advancing Traffic Volumes (Westbound)	358	654
% Left Turns in Advancing Traffic Volumes (WB)	10%	15%
Opposing Traffic Volumes (Eastbound)	260	271
Warrant at 70km/h design speed justified?	No	Yes

Source: MTO Geometric Design Appendix E, Figure EA-10

Table 10 – Year 2036, Left Turn Warrant Justification, Killaly Street West and West Side Road, West Leg

Criteria	AM Peak Hour Traffic Volumes	PM Peak Hour Traffic Volumes
Eastbound Left Turn (EBLT) Traffic Volumes	1	6
Advancing Traffic Volumes (Eastbound)	260	271
% Left Turns in Advancing Traffic Volumes (EB)	0.4%	2%
Opposing Traffic Volumes (Westbound)	358	654
Warrant at 70km/h design speed justified?	No	No

Source: MTO Geometric Design Appendix E, Figure EA-10



T 11 N/ 2021	· · · · · · · · · · · · · · · · · · ·	
Table 11 – Year 2031, I	Left Turn Warrant Justification, Kill	aly Street West and Third Avenue, East Leg

Criteria	AM Peak Hour Traffic Volumes	PM Peak Hour Traffic Volumes
Westbound Left Turn (WBLT) Traffic Volumes	36	100
Advancing Traffic Volumes (Westbound)	188	268
% Left Turns in Advancing Traffic Volumes (WB)	19%	37%
Opposing Traffic Volumes (Eastbound)	175	281
Warrant at 70km/h design speed justified?	No	No

Source: MTO Geometric Design Appendix E, Figure EA-10

Table 12 – Year 2031, Left Turn Warrant Justification, Killaly Street West and Third Avenue, West Leg

Criteria	AM Peak Hour Traffic Volumes	PM Peak Hour Traffic Volumes
Eastbound Left Turn (EBLT) Traffic Volumes	1	2
Advancing Traffic Volumes (Eastbound)	175	281
% Left Turns in Advancing Traffic Volumes (EB)	0.4%	3%
Opposing Traffic Volumes (Westbound)	188	268
Warrant at 70km/h design speed justified?	No	No

Source: MTO Geometric Design Appendix E, Figure EA-10

Table 13 – Year 2036, Left Turn Warrant Justification, Killaly Street West and Third Avenue, East Leg

Criteria	AM Peak Hour Traffic Volumes	PM Peak Hour Traffic Volumes
Westbound Left Turn (WBLT) Traffic Volumes	36	100
Advancing Traffic Volumes (Westbound)	197	281
% Left Turns in Advancing Traffic Volumes (WB)	18%	36%
Opposing Traffic Volumes (Eastbound)	186	294
Warrant at 70km/h design speed justified?	No	No

Source: MTO Geometric Design Appendix E, Figure EA-10

Table 14 – Year 2036, Left Turn Warrant Justification, Killaly Street West and Third Avenue, West Leg

Criteria	AM Peak Hour Traffic Volumes	PM Peak Hour Traffic Volumes
Eastbound Left Turn (EBLT) Traffic Volumes	1	3
Advancing Traffic Volumes (Eastbound)	186	294
% Left Turns in Advancing Traffic Volumes (EB)	0.5%	1%
Opposing Traffic Volumes (Westbound)	197	281
Warrant at 70km/h design speed justified?	No	No

Source: MTO Geometric Design Appendix E, Figure EA-10



The overall results indicate that a westbound left turn lane at the intersection of Killaly Street West at West Side Road is warranted for the horizon year 2031 and 2036. Although an eastbound left turn lane is not warranted, it is recommended to match the westbound left turn lane roadway geometry. Left turn lanes are not warranted for the intersection of Killaly Street West at Third Avenue.

12. PARKING REVIEW

The City of Port Colborne Zoning By-law was reviewed to determine parking needs for the site. Source information is provided in Appendix F.

12.1 Parking Requirements

A summary of the parking requirements and proposed parking supply for the proposed land uses is provided in Table 15, based on the City of Port Colborne Zoning By-law.

Land Use	Sizo	Minimum Parking Requirement		Parking Supply	
Land Use	Size	Rate	Rate Required Spaces		
Apartment Building	1231 units	1.25 spaces per unit 1.32	1539	1547	
Retail	3,196.8	1 space per 20 sq.m. GFA	160	1547	
Dwelling, Detached	96 units	1 space per unit	96	96	
Dwelling, Townhouse	783 units	1 space per unit	783	783	
	•	Total Spaces	2578	2426	

Table 15 – Parking Requirements Review

Based on the City of Port Colborne Zoning By-law, the parking requirement for the subject site is 2578 spaces. The proposed parking supply is 2426 spaces, which is deficient of the City's requirements by a minimal 6 percent. Generally, a 10 percent deficiency of the parking supply requirements is acceptable. It is in Trans-Plan's opinion that the proposed parking supply can accommodate the proposed development.

12.2 Shared Parking Analysis Review

To gain a further understanding of the shared parking between the uses, a review of the Institute of Transportation Engineers (ITE) Parking Generation manuals was conducted. Shared parking was applied to the apartment building and retail use as they are expected to peak at different times throughout the day. The time-of-day (hourly) distributions of parking demands were obtained from the ITE Parking Generation manuals, 5th Edition, using ITE Land Use Code (LUC) 221 for Multifamily Housing (Mid-Rise) and LUC 820 for Shopping Centre. Detailed information (for each hour interval) is provided in Appendix F.



Table 16 shows the future peak demands during the critical peak hourly periods, based on the required parking requirements.

Time	Multifamil (Mid- (LUC	Rise)	Shopping Centre (LUC 820)		Parking Demands
	Pct.	Spaces	Pct.	Spaces	(spaces)
12:00	50%	770	77%	123	893
13:00	49%	754	100%	160	914
14:00	49%	754	98%	157	911
15:00	50%	770	90%	144	914
16:00	58%	893	76%	122	1014
17:00	64%	985	82%	131	1116
18:00	67%	1031	89%	142	1174
19:00	70%	1077	90%	144	1221
20:00	76%	1170	84%	134	1304

Table 16 – Shared Parking Analysis, Residential and Retail Use

Based on the shared parking adjusted rates, the peak peaking demand at the site for both the residential and retail uses would be 1304 spaces. Therefore, based on the site context and shared parking analysis, the parking supply between the residential and retail uses is expected to be acceptable.

13. SITE PLAN REVIEW

13.1 Site Circulation Review

A site circulation review was completed using AutoTurn vehicle turning template software to confirm that circulation of loading/waste collection vehicles and emergency vehicles can access/egress the designated areas and circulate the site.

- Figure 11 shows an emergency vehicle (Fire Truck) entering and circulating the site.
- Figure 12 shows a waste collection vehicle entering and circulating the site.
- Figure 13 shows a loading/ delivery vehicle entering and circulating the site.

14. SUMMARY AND RECOMMENDATIONS

14.1 Summary

Our Transportation Study summary and recommendations, for proposed residential sub-division development, located at Pt Lt 31 & 32, Con 1, Humberstone, Killaly Street West, east of Quarry Ponds, in the City of Port Colborne, Niagara Region, are provided as follows:

Traffic Impact Study

• The proposed development consists mid-rise residential and mixed-use buildings, single-family units, and townhouse units. The four 8-storey mid-rise residential buildings and four 8-storey mixed-use



mid-rise residential buildings consists of a total of 1231 units and a total commercial GFA of 3,196.8 sq.m.. A total of 96 single family houses and 783 townhouses are also proposed. Vehicle access is proposed via two full movement accesses from Killaly Street West and one access which connects to Elgin Street West. A total proposed parking supply of 1547 spaces is provided for the mid-rise residential and mixed-used buildings. The single family units and townhouse units will have a minimum of one space per unit.

- Site trips for the development was based on rates provided in the ITE Trip Generation manual. The subject site is expected to generate 933 and 1120 trips in the weekday AM and PM peak hours, respectively.
- Based on the capacity analysis, the southbound left movement at the intersection of Killaly Street West at West Side Road are expected to operate with high delays and a LOS of F under future horizon years.
- Signal warrant analysis and left turn lane warrants were conducted to determine potential roadway improvements that would help alleviate traffic at intersections expected to experience increased delays. It is determined that a signal is warranted for the intersection of Killaly Street West & West Side Road.
- A westbound left turn lane at the intersection of Killaly Street West at West Side Road is warranted in the future. Although an eastbound left turn lane is not warranted, it is also recommended to match the westbound left turn lane roadway geometry.

Parking Review

- Based on the City of Port Colborne Zoning By-law, the parking requirement for the subject site is 2578 spaces. The proposed parking supply is 2426 spaces, which is deficient of the City's requirements by a minimal 6%.
- Generally, a 10 percent deficiency of the parking supply requirements is acceptable. It is in Trans-Plan's opinion that the proposed parking supply can accommodate the proposed development.

Site Plan Review

• A site circulation review confirms that the circulation loading/ delivery vehicles, waste collection vehicles and emergency vehicles can access/egress the designated parking areas and circulate the site with minimal issues.

14.2 Recommendations

The intersection of Killaly Street West at West Side Road is expected to experience delays for movements from the minor road connections. Based on traffic signal warrants and left turn warrants, the intersection of Killaly Street West at West Side Road warrants a signal and requires a westbound left turn lane to help alleviate future delays. Although an eastbound left turn lane is not warranted, it is also recommended to match the westbound left turn lane roadway geometry. The intersection of Steele Street at Elgin Street West does not warrant a signal and should be maintained as an unsignalized intersection, however, the intersection should be monitored in the future to determine when a traffic signal could be implemented.



Respectfully submitted,

Anil Seegobin, P.Eng. Partner, Engineer

Trans-Plan Transportation Inc. Transportation Consultants

1/

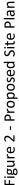
Vivian Leung Traffic Analyst

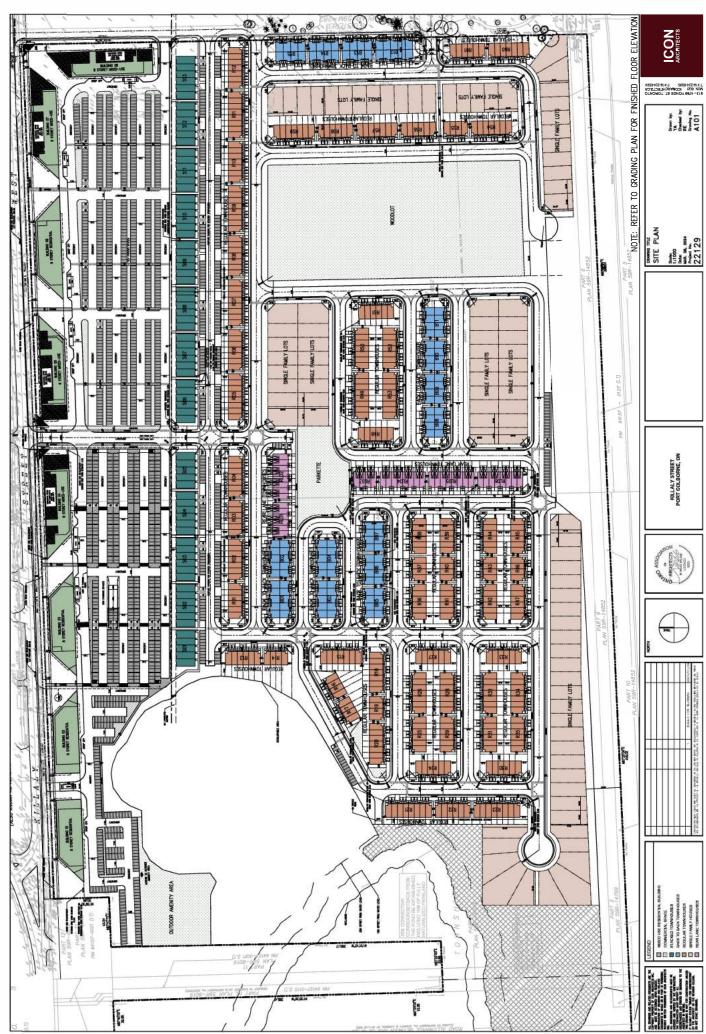


Figure 1 – Site Location



Source: Google Earth



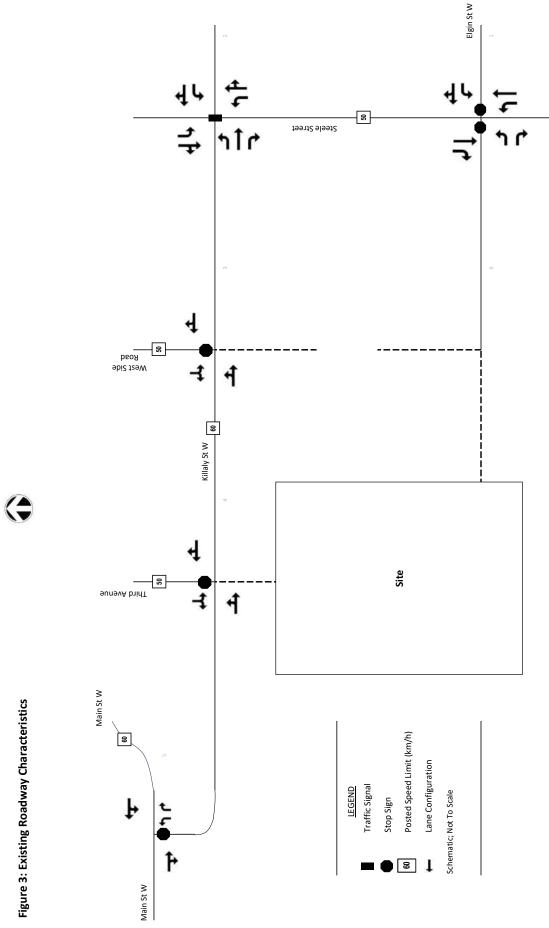




Proposed Residential Sub-Division Development

Pt Lt 31 & 32, Con 1, Port Colborne, ON

Figure 3: Existing Roadway Characteristics



TRANS-PLAN

TRANSPORTATION STUDY

Proposed Residential Sub-Division Development

Pt Lt 31 & 32, Con 1, Port Colborne, ON



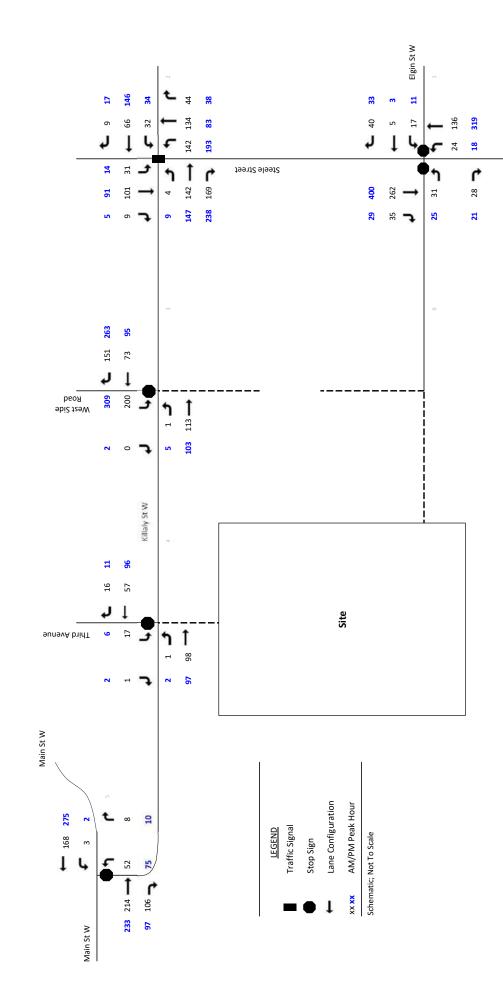




Figure 5- Transit Map

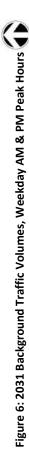


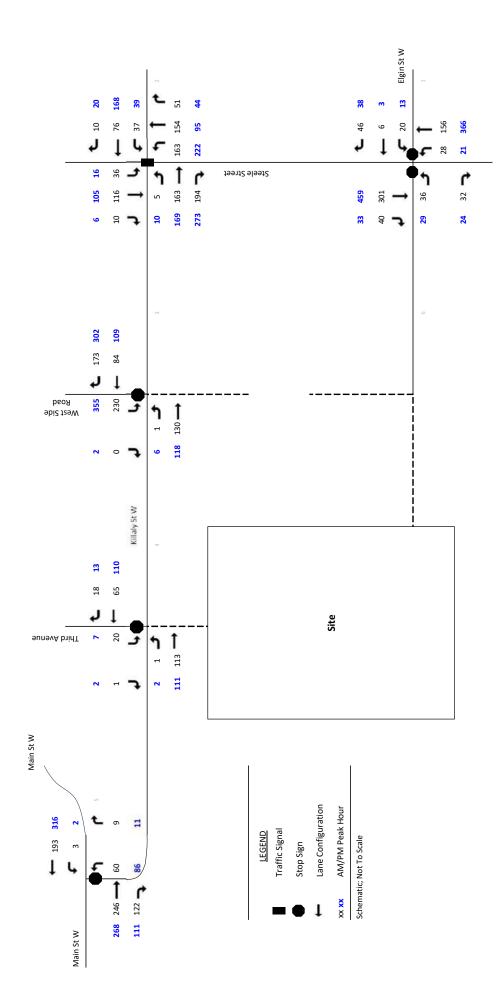
TR/NS-PL/N

TRANSPORTATION STUDY

Proposed Residential Sub-Division Development

Pt Lt 31 & 32, Con 1, Port Colborne, ON

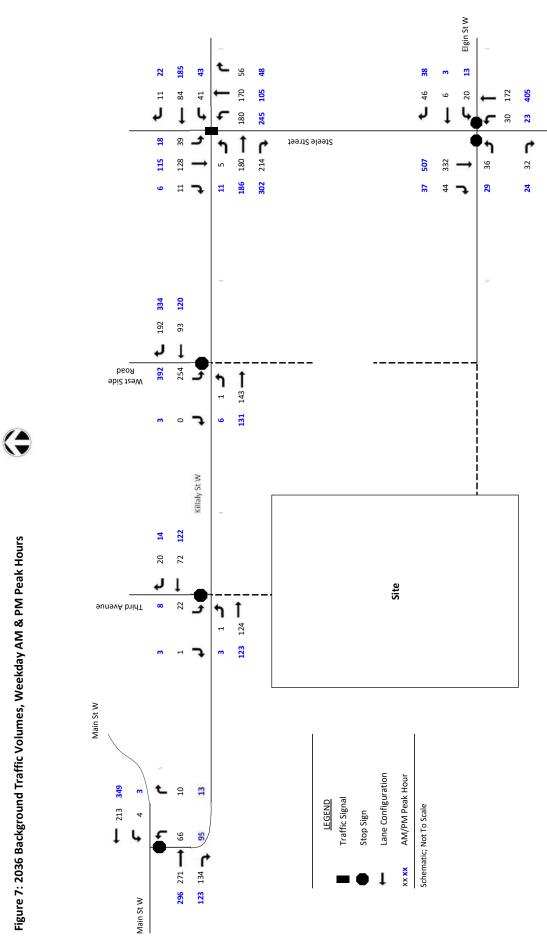






Proposed Residential Sub-Division Development

Pt Lt 31 & 32, Con 1, Port Colborne, ON

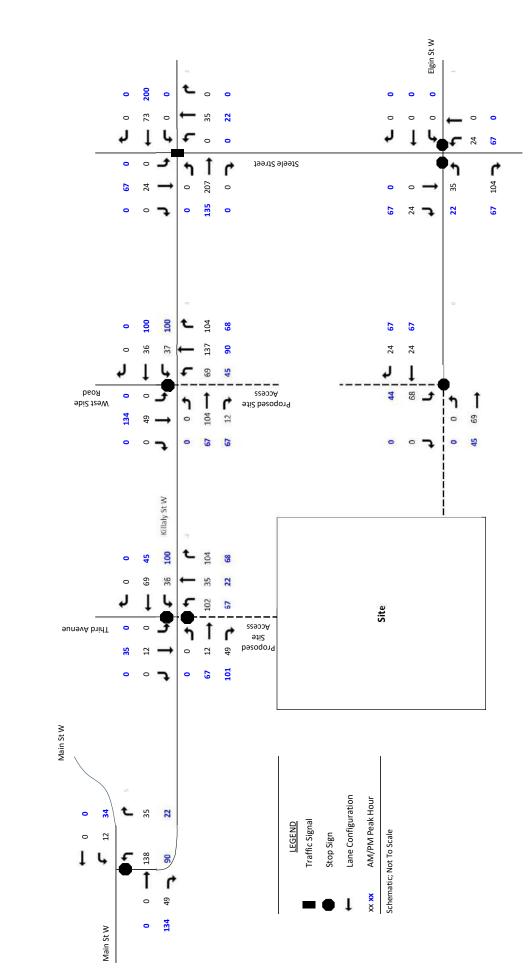




Proposed Residential Sub-Division Development

Pt Lt 31 & 32, Con 1, Port Colborne, ON

Figure 8: Site Traffic Volumes, Weekday AM & PM Peak Hours

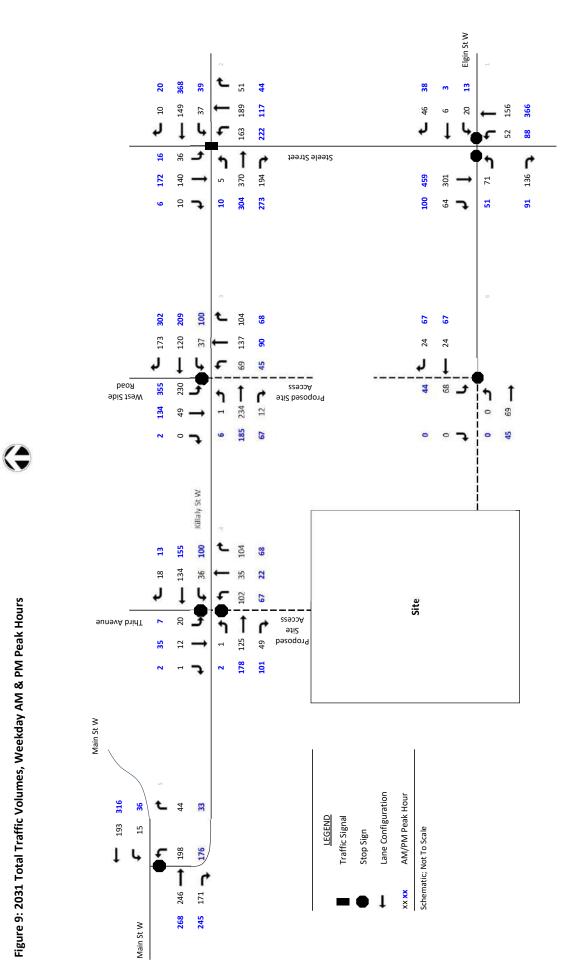




Proposed Residential Sub-Division Development

Pt Lt 31 & 32, Con 1, Port Colborne, ON

Figure 9: 2031 Total Traffic Volumes, Weekday AM & PM Peak Hours

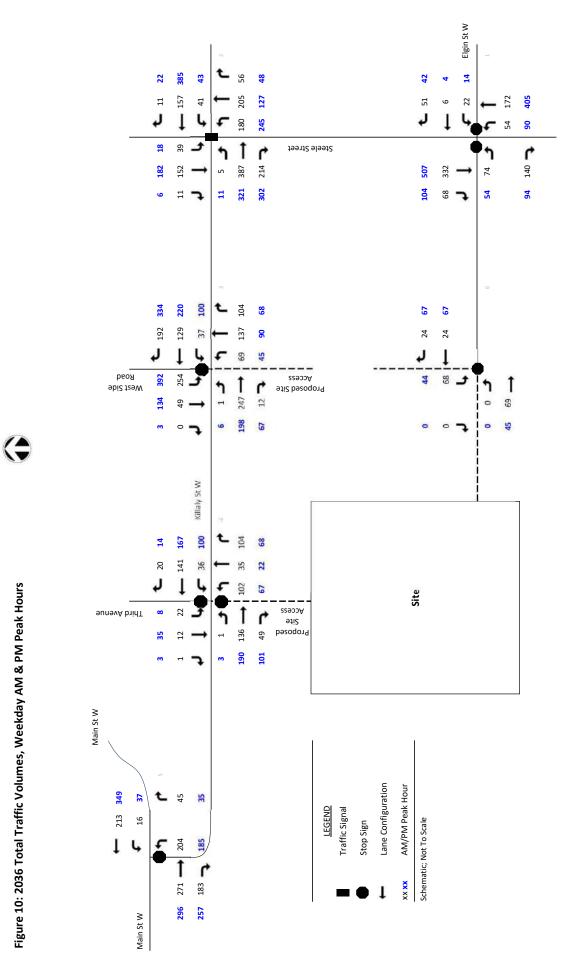


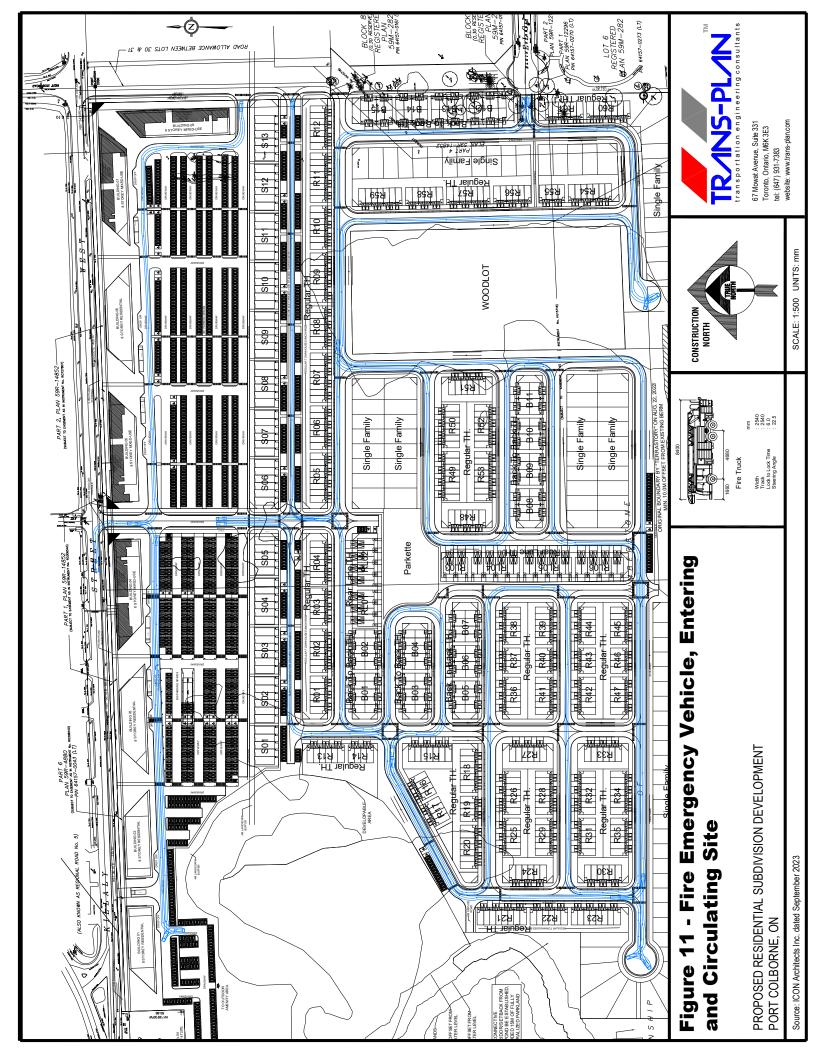


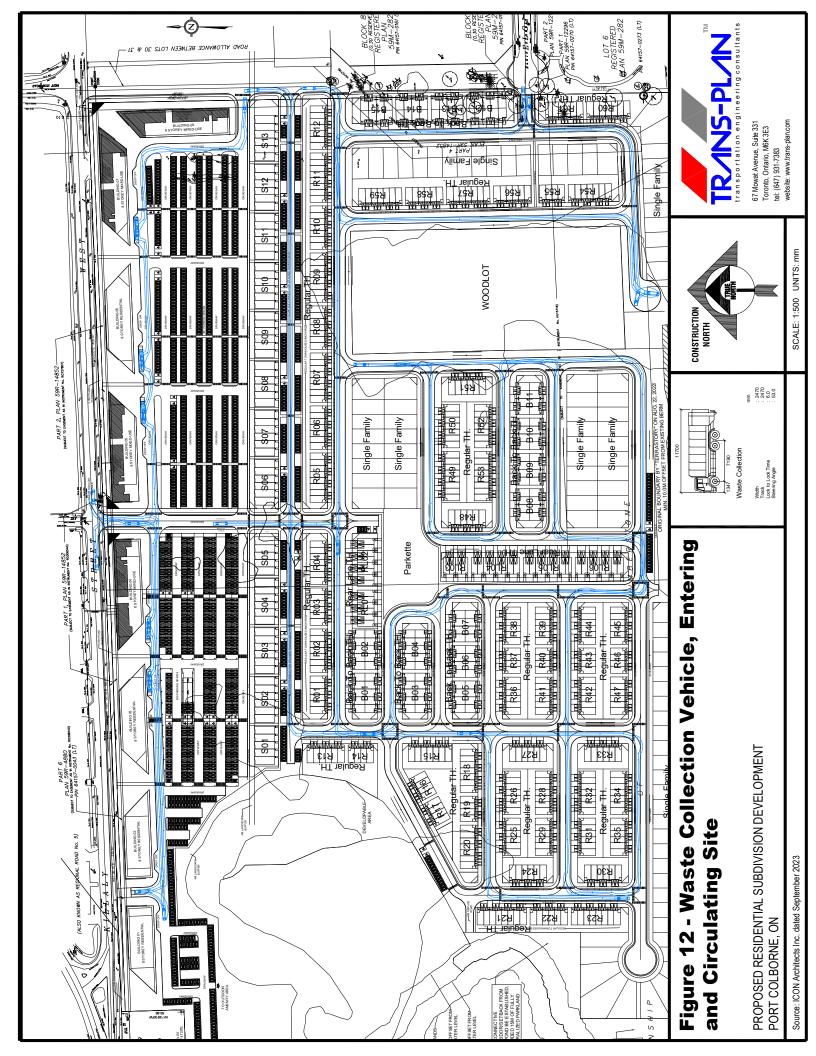
Proposed Residential Sub-Division Development

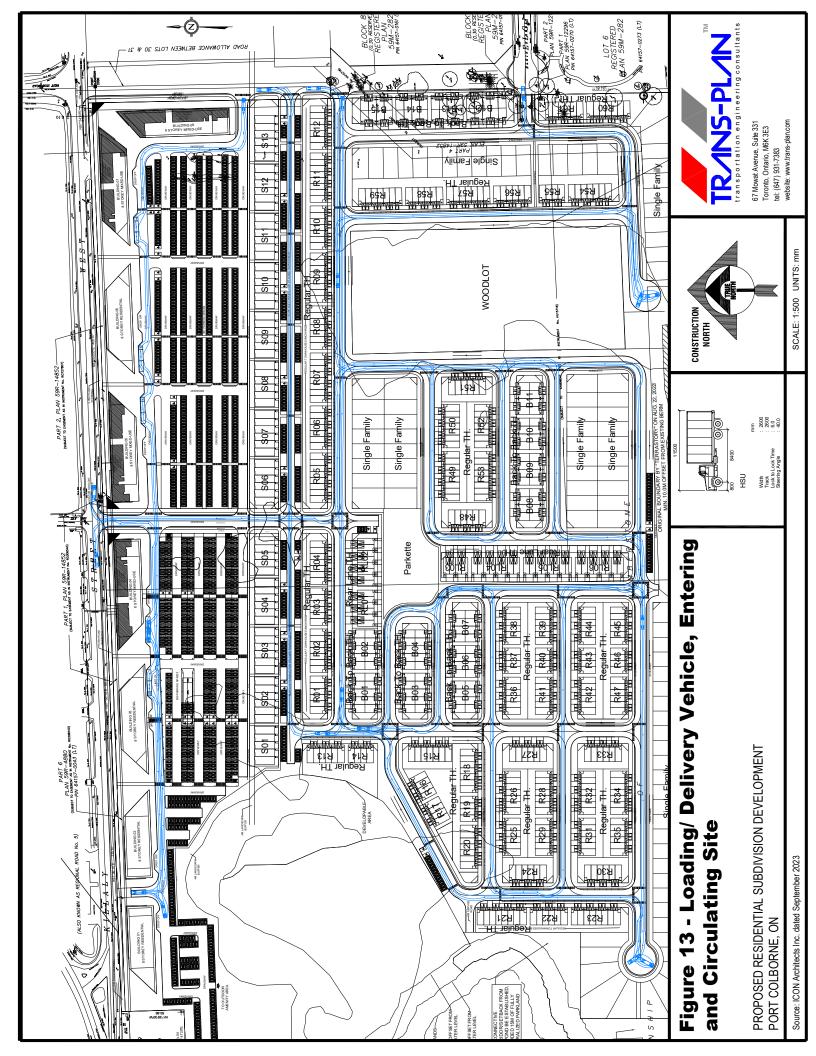
Pt Lt 31 & 32, Con 1, Port Colborne, ON

Figure 10: 2036 Total Traffic Volumes, Weekday AM & PM Peak Hours











APPENDICES

- Appendix A Correspondence with City of Port Colborne
- Appendix B Turning Movement Counts and Signal Timing Plans
- Appendix C Capacity Analysis Sheets
- Appendix D Level of Service Definitions
- Appendix E Left Turn Lane Warrants
- Appendix F City of Port Colborne Zoning By-law, Excerpts



RE: Terms of Reference - Residential Sub-Division

Mathew Pilon < Mathew.Pilon@portcolborne.ca>

Fri 2022-12-09 2:12 PM

To:Vivian Leung <vivian.leung@trans-plan.com>

Cc:Eliza Durant <Eliza.Durant@portcolborne.ca>;Joe Colasurdo <Joe.Colasurdo@portcolborne.ca>;Denise Landry <Denise.Landry@portcolborne.ca>;Nicholas Olschansky <Nicholas.Olschansky@portcolborne.ca> Hi Vivian,

Thanks for the phone call today. As discussed, I can provide the following information on your data requests.

1. No roadway improvements for the intersections are currently planned within the study area.

2. No current active transportation improvements planned within the Study Area. It should be noted that Kilally Street West is a Regional Road. You may wish to reach out to them to confirm, but we have not heard anything from them regarding active transportation in this area.

3. 2% growth rate is suitable for the traffic data.

Engineering has no issues with the Terms of Reference, but I would ask that you also get confirmation from those in planning, (Denise and Nick) to make sure there isn't anything they think should be added.

Hope this information helps!

Regards, Mat

-----Original Message-----

From: Joe Colasurdo < Joe.Colasurdo@portcolborne.ca>

Sent: December 8, 2022 11:25 AM

To: Denise Landry <Denise.Landry@portcolborne.ca>; Nicholas Olschansky <Nicholas.Olschansky@portcolborne.ca> Cc: Janice Peyton <Janice.Peyton@portcolborne.ca>; vivian.leung@trans-plan.com; Mathew Pilon <Mathew.Pilon@portcolborne.ca>; Eliza Durant <Eliza.Durant@portcolborne.ca> Subject: FW: Terms of Reference - Residential Sub-Division

All, please see request below from Vivian Leung who has been retained to complete a traffic study for future sub-

division.

Mat/Eliza, if you can review the attached and provide any background info to Vivian that may assist, that would be great.

Thanks,

Joe



APPENDIX B

Turning Movement Counts and Signal Timing Plan



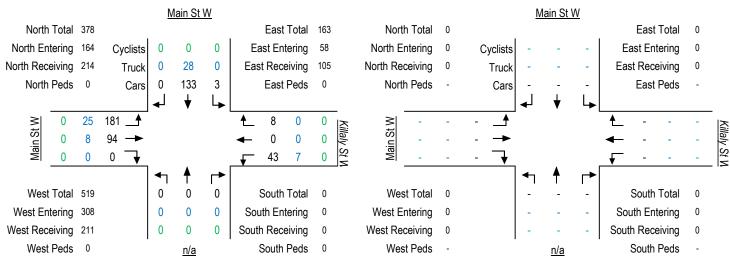
Intersection: Killaly Street West and Main Street West Municipality: Port Colborne, Ontario

AM Peak Hour: 7:45 to 8:45

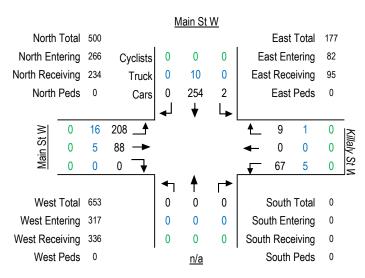
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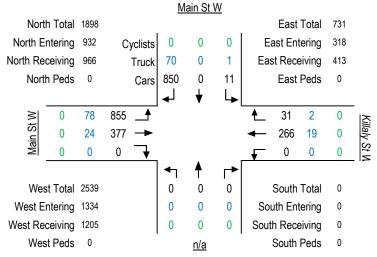
Date: Wednesday, December 14, 2022

MD Peak Hour: to



PM Peak Hour: 16:00 to 17:00





Total 8-Hour Count







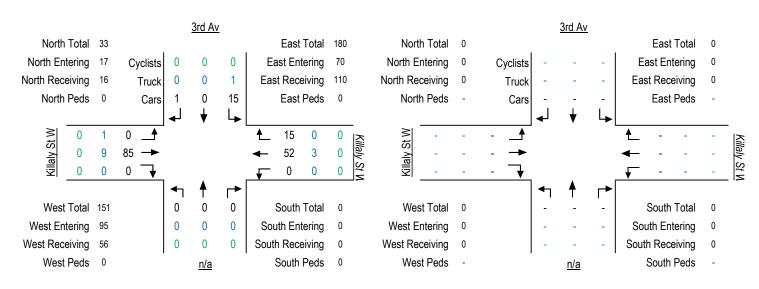
Intersection: Killaly Street West and 3rd Avenue Municipality: Port Colborne, Ontario

AM Peak Hour: 8:30 to 9:30

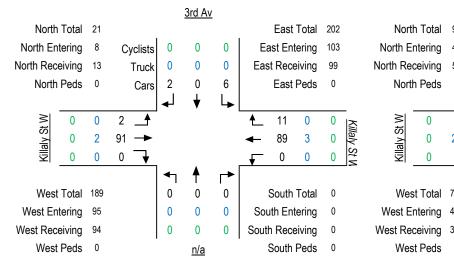
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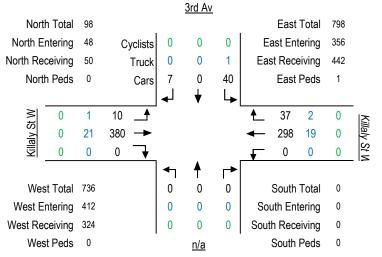
MD Peak Hour: - to -



PM Peak Hour: 16:30 to 17:30



Total 8-Hour Count







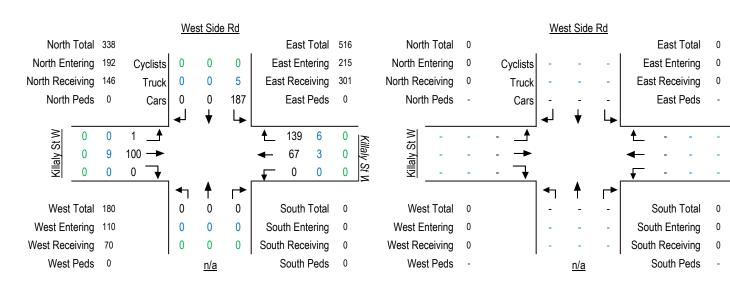
Intersection: Killaly Street West and West Side Road Municipality: Port Colborne, Ontario

AM Peak Hour: 8:30 to 9:30

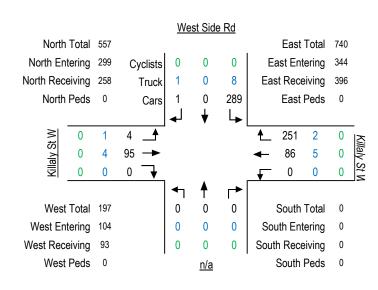
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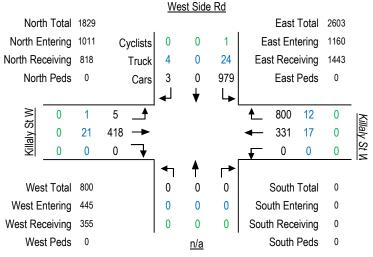
Date: Wednesday, December 14, 2022

MD Peak Hour: - to -



PM Peak Hour: 16:00 to 17:00





Total 8-Hour Count



D

Killaly St M



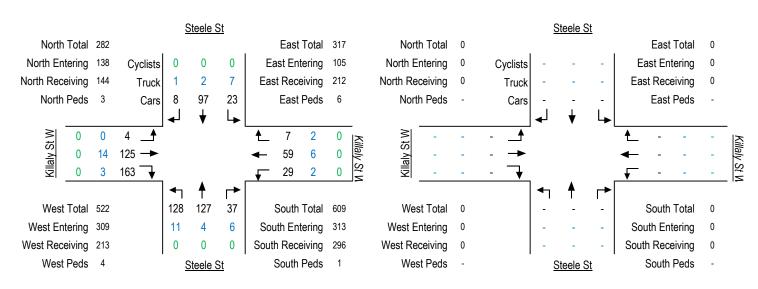
Intersection: Killaly Street West and Steele Street Municipality: Port Colborne, Ontario

AM Peak Hour: 8:00 to 9:00

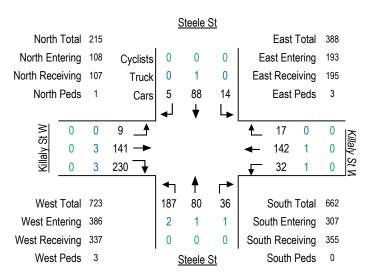
Intersection ID:

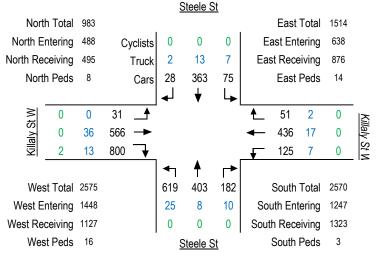
Date: Tuesday, January 10, 2023

MD Peak Hour: - to -



PM Peak Hour: 16:00 to 17:00





Total 8-Hour Count

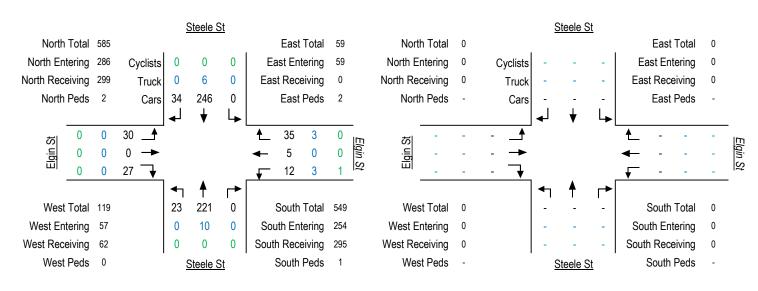




Intersection: Elgin Street and Steele Street Municipality: Port Colborne, Ontario Intersection ID:

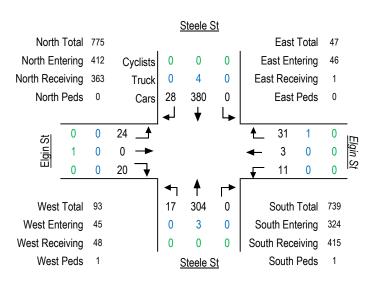
Date: Wednesday, December 14, 2022

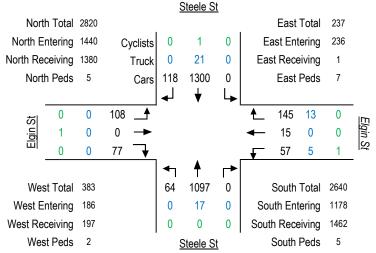
MD Peak Hour: - to -



PM Peak Hour: 16:00 to 17:00

AM Peak Hour: 8:30 to 9:30





Total 8-Hour Count



Signal Code: 005STL

Intersection: RR5 (KILLALY ST.) & STEELE ST.

Municipality: ptcolborne

Owner: region

Last Modified: 2014-12-08 9:45:09 AM

Timing Parameters	EBD & WBD THRU KILLALY ST.	NBD & SBD THRU STEELE ST.	n/a	n/a	n/a	n/a
Min Green	10	8	0	0	0	0
Walk	11	10	0	0	0	0
Ped Clearance	20	17	0	0	0	0
Vehicle Ext.	2.8	2.8	0	0	0	0
Max Green	35	30	0	0	0	0
Yellow	4.1	4.1	0	0	0	0
All Red	3.3	2.9	0	0	0	0
				Off	set	
Ν	Ainimum Cycle	32.4		C)	
P	edestrian Cycle	72.4				
Ν	1aximum Cycle	79.4		C)	
	Operation	FA				
Installed On:		2010-11-29				
Count Date:		2012-08-01				
FA = Fully Actuated	SA = Semi Ac	tuated FT =	= Fixed	d Time	9	
	Copyright 2001 ©	Regional Niagara				





I. Steele Street & EIG	EIGIN STREET	มีม									3	00 FI F0FI
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Aovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	F		R	F	4			ŧ			t t	
raffic Volume (veh/h)	31	0	28	17	5	40	24	136	0	0	262	35
⁻ uture Volume (Veh/h)	31	0	28	17	5	40	24	136	0	0	262	35
Sign Control		Stop			Stop			Free			Free	
Grade		%0			%0			%0			%0	
^o eak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	0	30	18	2	43	26	148	0	0	285	88
Dedestrians		2						2			2	
ane Width (m)		3.6						3.6			3.6	
Valking Speed (m/s)		1.2						1.2			1.2	
^D ercent Blockage		0						0			0	
Right turn flare (veh)												
Median type								None			None	
Aedian storage veh)												
Upstream signal (m)											370	
X, platoon unblocked												
/C, conflicting volume	554	506	308	536	525	150	325			148		
C1, stage 1 conf vol												
/C2, stage 2 conf vol												
Cu, unblocked vol	554	506	308	536	525	150	325			148		
C, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.1		
C, 2 stage (s)												
F (s)	3.5	4.0	3.3	3.6	4.0	3.5	2.2			2.2		
o0 queue free %	92	100	96	96	66	95	86			100		
cM capacity (veh/h)	412	461	734	420	450	850	1244			1446		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
/olume Total	34	30	18	48	174	323						
/olume Left	34	0	18	0	26	0						
/olume Right	0	30	0	43	0	38						
SH	412	734	420	778	1244	1700						
/olume to Capacity	0.08	0.04	0.04	0.06	0.02	0.19						
Queue Length 95th (m)	2.1	1.0	1.	1.6	0.5	0.0						
Control Delay (s)	14.5	10.1	14.0	9.9	1.3	0.0						
ane LOS	ш	ш	ш	4	۷							
Approach Delay (s)	12.5		11.0		1.3	0.0						
pproach LOS	ш		ш									
ntersection Summary												
Average Delay			2.8									
ntersection Capacity Utilization			42.9%	<u>0</u>	ICU Level of Service	f Service			4			

Timings 2: Steele Street & Killaly Street West	illaly St	reet V	Vest					4	<existing> AM Peak Hour 03-27-2024</existing>	⊃eak Hour 03-27-2024
	1	Ť	۲	1	ŧ	1	+	٠	+	
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Configurations	F	*	×	F	\$	F	£,	F	4 3	
Traffic Volume (vph)	4	142	169	32	99	142	134	31	101	
Future Volume (vph)	4	142	169	32	99	142	134	31	101	
Turn Type	Perm	AN	Perm	Perm	AA	Perm	ΝA	Perm	NA	
Protected Phases		4			∞		2		9	
Permitted Phases	4		4	∞		2		9		
Detector Phase	4	4	4	∞	∞	2	2	9	9	
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	38.4	38.4	38.4	38.4	38.4	34.0	34.0	34.0	34.0	
Total Split (s)	42.4	42.4	42.4	42.4	42.4	37.0	37.0	37.0	37.0	
Total Split (%)	53.4%	53.4%	53.4%	53.4%	53.4%	46.6%	46.6%	46.6%	46.6%	
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	
All-Red Time (s)	3.3	3.3	3.3	3.3	<u>3.</u> 3	2.9	2.9	2.9	2.9	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.4	7.4	7.4	7.4	7.4	7.0	7.0	7.0	7.0	
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	Max	Мах	Мах	Max	
Act Effct Green (s)	11.0	11.0	11.0	11.0	11.0	30.6	30.6	30.6	30.6	
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20	0.55	0.55	0.55	0.55	
v/c Ratio	0.02	0.46	0.41	0.15	0.24	0.24	0.20	0.06	0.12	
Control Delay	17.8	24.4	6.7	19.9	18.7	8.2	6.6	6.9	<u>6.6</u>	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.8	24.4	6.7	19.9	18.7	8.2	<u>6.</u> 6	6.9	9.9	
ros	в	ပ	A	8	8	A	۷	۷	A	
Approach Delay		14.8			19.1		7.3		6.7	
Approach LOS		B			в		A		A	
Intersection Summary										
Cycle Length: 79.4										
Actuated Cycle Length: 56										
Natural Cycle: 75										
Control Type: Actuated-Uncoordinated	ordinated									
Maximum v/c Ratio: 0.46										
Intersection Signal Delay: 11.3	3				Intersection LOS: B	LOS: B				
Intersection Capacity Utilization 62.3%	on 62.3%			2	CU Level of Service B	t Service	я			
Analysis Period (min) 15										

AL. č Cileb. 0.0 ć

Splits and Phases:	Splits and Phases: 2: Steele Street & Killaly Street West	
▲↑ 02		- Data -
37 s		42,4s
↓ Ø6		408
87 <i>s</i>		42.4.8

Residential Development Rosemount Gardens Trans-Plan

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Residential Development Rosemount Gardens Trans-Plan

HCM Unsignalized Intersection Capacity Analysis 3: Killaly Street West & West Side Road	terseo & We	ction C est Side	apacit <mark>:</mark> e Roac	y Analy	/sis	<existing> AM Peak Hour 03-27-2024</existing>	A Peak Hour 03-27-2024
	1	Ť	ł	1	٠	~	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		¢\$	*		4		
Traffic Volume (veh/h)	-	113	73	151	200	0	
Future Volume (Veh/h)	~	113	73	151	200	0	
Sign Control		Free	Free		Stop		
Grade		%0	%0		%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	-	123	79	164	217	0	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	243				286	161	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	243				286	161	
tC, single (s)	4.1				6.4	6.2	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				69	100	
cM capacity (veh/h)	1335				702	889	
Direction, Lane #	EB 1	WB 1	SB 1				
Volume Total	124	243	217				
Volume Left	-	0	217				
Volume Right	0	164	0				
cSH	1335	1700	702				
Volume to Capacity	00.00	0.14	0.31				
Queue Length 95th (m)	0.0	0.0	10.5				
Control Delay (s)	0.1	0.0	12.4				
Lane LOS	۷		ш				
Approach Delay (s)	0.1	0.0	12.4				
Approach LOS			в				
Intersection Summary							
Average Delav			4.6				
Intersection Capacity Utilization			30.9%	<u>כ</u>	CU Level of Service	Service A	
Analvsis Period (min)			15				

	1	Ť	1	1	ŧ	4	-	+	*	مر		7
Moriomont	0	CDT		Id/V	10/DT		IDI	NDT		CDI	CDT	CDD
I ane Confinurations	ĕ K	•		*	4			4				
Traffic Volume (vph)	4	142	169	32	99	б	142	134	44	31	101	6
Future Volume (vph)	4	142	169	32	99	6	142	134	4	31	101	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00		1.00	1.00	
Ft	1.00	1.00	0.85	1.00	0.98		1.00	0.96		1.00	0.99	
FIt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1801	1727	1550	1702	1682		1662	1720		1463	1822	
FIt Permitted	0.70	00.1	00.1	0.00	1.00		0.68	00'L		0.04	00.1	
Satd. Flow (perm)	1334	1/2/	1550	1181	1682		1190	1/20		8/8	1822	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	154	184	35	72	9	154	146	48	8	110	10
RTOR Reduction (vph)	0	0	148	0	8	0	0	7	0	0	m	0
Lane Group Flow (vph)	4	154	36	35	74	0	154	183	0	8	117	0
Confl. Peds. (#/hr)	e C		-	-		m	9		4	4		9
Heavy Vehicles (%)	%0	10%	2%	6%	6%	22%	8%	3%	14%	23%	2%	11%
Turn Type	Perm	AA	Perm	Perm	AN		Perm	Ν		Perm	AN	
Protected Phases		4			80			2			9	
Permitted Phases	4		4	∞			2			9		
Actuated Green, G (s)	11.0	11.0	11.0	11.0	11.0		30.6	30.6		30.6	30.6	
Effective Green, g (s)	11.0	11.0	11.0	11.0	11.0		30.6	30.6		30.6	30.6	
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20		0.55	0.55		0.55	0.55	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	2.8	2.8	2.8	2.8	2.8		2.8	2.8		2.8	2.8	
Lane Grp Cap (vph)	262	339	304	231	330		650	939		534	995	
v/s Ratio Prot		c0.09			0.04			0.11			0.06	
v/s Ratio Perm	0.00	1	0.02	0.03	000		c0.13	000		0.03	010	
V/C Katio	0.02	0.45	0.1Z	61.0	0.22		0.24	0.20		0.00	71.0	
Unirorm Delay, a I Drazoscion Ecotor	0.1	19.9	001	100	100.4		0.0	4.0		0.0	0.4	
neromental Delay, 42	001	00	00.1	0.5	00.1		001	201		00.1	00.1	
Delay (c)	18.2	202	18.7	18.0	19.2		7.5	99		6.9 6.3	9.4 9	
Lovel of Service	4 C	- 	2	2	4 CC		2. ⊲	0.0		4 A	5 d	
Approach Delav (s)	נ	19.6	נ	L	19.1			7.2			6.4	
Approach LOS		B			ш			4			A	
Intersection Summan												
			100		UCM 2000 Lavia Lat Canias	0 10 01 0			6			
HCM 2000 Collinol Delay HCM 2000 Volume to Canacity ratio	ity ratio		0.00	É			מואותם		c			
Activated Pircle Length (c)	ing ratio		56.0	Ū	Sum of loct time (c)	time (c)			14.4			
Actuated Cycle cerigur (s) Intersection Canacity Itilization	6		70°C	3 2	CITI aval of Sanira	E Sanvina			r a			
Analysis Perind (min)	5		15	2					ſ			

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	Ť	1	1	ţ	1	•	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	4			ţ	F	R	
Traffic Volume (veh/h)	214	106	ę	168	52	.80	
Future Volume (Veh/h)	214	106	e	168	52	8	
Sign Control	Free			Free	Stop		
Grade	%0			%0	%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	233	115	e.	183	57	б	
Pedestrians							
Lane Width (m)							
walking speed (m/s)							
Percent blockage Pinht turn flare (veh)							
	Mana			Mana			
Meulan type	INNIE			NUIR			
Median storage ven)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume			233		480	290	
vC1, stage 1 conf vol							
vCZ, stage 2 conf vol							
vCu, unblocked vol			233		480	290	
tC, single (s)			4.1		6.4	6.2	
tC, 2 stage (s)			4		•		
tr (s)			7.7		3.5 0.0	3.3	
bo dnene use »			1001		06 F	55	
cM capacity (veh/h)			1335		544	749	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2			
Volume Total	348	186	57	6			
Volume Left	0	e	57	0			
Volume Right	115	0	0	6			
cSH	1700	1335	544	749			
Volume to Capacity	0.20	0.00	0.10	0.01			
Queue Length 95th (m)	0.0	0.1	2.8	0.3			
Control Delay (s)	0.0	0.1	12.4	<u>6</u> 6			
Lane LOS		۷	ш	A			
Approach Delay (s)	0.0	0.1	12.0				
Approach LOS			в				
Intersection Summary							
Average Delay			1.4				
Interception Connection I Hilitration							

	ŝ	H	1		140		
20	1	t	ţ	1	٠	•	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		4	4		A		
Traffic Volume (veh/h)	-	98	57	16	17	-	
Future Volume (Veh/h)	-	86	57	16	17	-	
Sign Control		Free	Free		Stop		
		%0	%0		%0		
	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	-	107	62	17	18	+	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	79				180	70	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	79				180	70	
tC, single (s)	5.1				6.4	6.2	
tC, 2 stage (s)							
tF (s)	3.1				3.5	3.3	
	100				98	100	
cM capacity (veh/h) 1	1074				814	998	
Direction, Lane # E	EB 1	WB 1	SB 1				
Volume Total	108	62	19				
Volume Left	-	0	18				
ne Right	0	17	-				
	1074	1700	822				
	0.00	0.05	0.02				
Queue Length 95th (m)	0.0	0.0	0.6				
Control Delay (s)	0.1	0.0	9.5				
Lane LOS	۲ ک		۲				
Approach Delay (s)	L.0	0.0	9.5				
Approach LOS			A				
Intersection Summary							
Average Delay			0.9				
Intersection Capacity Utilization			16.0%	<u>כ</u>	J Level o	ICU Level of Service	A
Analysis Dariod (min)							

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1. Steele Street & Eigin Street	gin Str	eer										00 FI F0FI
	1	Ť	1	4	ţ	~	•	-	•	٨	t	7
Aovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	F		K	F	4			ŧ			the state	ĺ
raffic Volume (veh/h)	25	0	21	=	e	33	18	319	0	0	400	29
⁻ uture Volume (Veh/h)	25	0	21	11	e	33	18	319	0	0	400	29
Sign Control		Stop			Stop			Free			Free	
Grade		%0			%0			%0			%0	
^o eak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	0	23	12	e	36	20	347	0	0	435	32
edestrians		2						2			2	
-ane Width (m)		3.6						3.6			3.6	
Valking Speed (m/s)		1.2						1.2			1.2	
^D ercent Blockage		0						0			0	
Right turn flare (veh)												
Median type								None			None	
Aedian storage veh)												
Jpstream signal (m)											370	
X, platoon unblocked												
C, conflicting volume	880	840	455	863	856	349	469			347		
C1, stage 1 conf vol												
/C2, stage 2 conf vol												
Cu, unblocked vol	880	840	455	863	856	349	469			347		
C, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.1		
C, 2 stage (s)												
F (s)	3.5	4.0	3.3	3.6	4.0	3.5	2.2			2.2		
0 queue free %	89	100	96	95	66	94	98			100		
cM capacity (veh/h)	249	298	607	254	291	654	1101			1223		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
olume Total	27	23	12	39	367	467						
/olume Left	27	0	12	0	20	0						
olume Right	0	23	0	36	0	32						
SH	249	607	254	597	1101	1700						
/olume to Capacity	0.11	0.04	0.05	0.07	0.02	0.27						
Queue Length 95th (m)	2.9	0.9	1.2	1.7	0.4	0.0						
Control Delay (s)	21.2	11.2	19.9	11.5	0.6	0.0						
ane LOS	ပ	æ	ပ	æ	4							
Approach Delay (s)	16.6		13.4		0.6	0.0						
vpproach LOS	ပ		ш									
ntersection Summary												
Average Delay			1.9									
ntersection Capacity Utilization	_		46.6%	<u>ठ</u>	ICU Level of Service	f Service			4			

Timings 2: Steele Street & Killaly Street West	illaly St	rreet V	Vest					7	<existing> PM Peak Hour 03-27-2024</existing>	Peak Hour 03-27-2024
	1	Ť	1	4	ŧ	4	+	٠	+	
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Configurations	*	*	K.	F	4	F	4	F	4	
Traffic Volume (vph)	6	147	238	34	146	193	83	14	91	
Future Volume (vph)	6	147	238	34	146	193	83	14	91	
Turn Type	Perm	AN	Perm	Perm	AN	Perm	AN	Perm	NA	
Protected Phases		4			∞		2		9	
Permitted Phases	4		4	∞		2		9		
Detector Phase	4	4	4	∞	∞	2	2	9	9	
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	38.4	38.4	38.4	38.4	38.4	34.0	34.0	34.0	34.0	
Total Split (s)	42.4	42.4	42.4	42.4	42.4	37.0	37.0	37.0	37.0	
Total Split (%)	53.4%	53.4%	53.4%	53.4%	53.4%	46.6%	46.6%	46.6%	46.6%	
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	
All-Red Time (s)	3.3	3.3	3.3	3.3	3.3	2.9	2.9	2.9	2.9	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.4	7.4	7.4	7.4	7.4	7.0	7.0	7.0	7.0	
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	
Act Effct Green (s)	11.4	11.4	11.4	11.4	11.4	30.1	30.1	30.1	30.1	
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20	0.54	0.54	0.54	0.54	
v/c Ratio	0.04	0.45	0.50	0.15	0.50	0.32	0.14	0.03	0.11	
Control Delay	17.8	23.9	6.7	19.7	24.0	9.4	5.9	7.0	7.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.8	23.9	6.7	19.7	24.0	9.4	5.9	7.0	7.0	
ros	в	ပ	۷	в	ပ	۷	A	۷	A	
Approach Delay		13.4			23.3		8.1		7.0	
Approach LOS		В			ပ		A		A	
Intersection Summary										
Cycle Length: 79.4										
Actuated Cycle Length: 55.9										
Natural Cycle: 75										
Control Type: Actuated-Uncoordinated	ordinated									
Maximum v/c Ratio: 0.50										
Intersection Signal Delay: 13.0	0			<u>t</u> (Intersection LOS: B	LOS: B				
Intersection Capacity Utilization 64.2%	on 64.2%			<u>ں</u>	CU Level of Service C	t Service	<u>ن</u>			
Analysis Period (min) 15										

	Splits and Phases: 2: Steele Street & Killaly Street West		
1 02		+04+ 40.45	
90 1		\$0 ▲	
37s		42.4s	

Residential Development Rosemount Gardens Trans-Plan

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HCM Unsignalized Intersection Capacity Analysis 3: Killaly Street West & West Side Road	terseo & We	ction C st Side	apacit <mark>.</mark> e Roac	/ Analy	/sis	<existing> P</existing>	<existing> PM Peak Hour 03-27-2024</existing>
	1	Ť	ł	~	٠	*	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		ŧ	4		¥		
Traffic Volume (veh/h)	5	103	95	263	309	2	
Future Volume (Veh/h)	2	103	95	263	309	2	
Sign Control		Free	Free		Stop		
Grade		%0	%0		%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	2	112	103	286	336	2	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	389				368	246	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	389				368	246	
tC, single (s)	4.1				6.4	6.2	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				46	100	
cM capacity (veh/h)	1181				627	798	
Direction, Lane #	EB 1	WB 1	SB 1				
Volume Total	117	389	338				
Volume Left	5	0	336				
Volume Right	0	286	2				
cSH	1181	1700	628				
Volume to Capacity	0.00	0.23	0.54				
Queue Length 95th (m)	0.1	0.0	25.7				
Control Delay (s)	0.4	0.0	17.2				
Lane LOS	A		ပ				
Approach Delay (s)	0.4	0.0	17.2				
Approach LOS			ပ				
Intersection Summary							
Average Delav			6.9				
Intersection Capacity Utilization			45.1%	<u>כ</u>	CU Level of Service	Service A	
Analysis Period (min)			15				

	1	Ť	1	\$	ł	~	1		•	٨		7
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	*	*	R	F	4		F	4		F	4	
raffic Volume (vph)	б	147	238	34	146	17	193	83	38	14	91	5
-uture Volume (vph)	6	147	238	34	146	17	193	83	38	4	91	S
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
otal Lost time (s)	7.4	7.4	7.4	7.4	7.4		7.0	7.0		7.0	7.0	
ane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
rpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	
Ipb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00		1.00	1.00	
H.	1.00	1.00	0.85	1.00	0.98		1.00	0.95		1.00	0.99	
-It Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1801	1727	1550	1702	1692		1662	1688		1462	1839	
-It Permitted	0.65	1.00	1.00	0.66	1.00		0.69	1.00		0.67	1.00	
Satd. Flow (perm)	1224	1727	1550	1174	1692		1207	1688		1036	1839	
^b eak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	160	259	37	159	<u>8</u>	210	6	41	15	66	
TOR Reduction (vph)	0	0	206	0	~	0	0	15	0	0	2	
ane Group Flow (vph)	10	160	22	37	170	0	210 Č	116	-	15	102	0
	r i	1001	Ì	- ò	200	ς γου	οò	/00	440/	4	ò	140/
Teavy venicies (70)	85	%_01	%.7	<u>%</u> 0	9/6	0/.77	%0	0/0	14.70	%.C7	0/_7	2
Turri Type Distocted Dhosee	Lei	K I	Leill	Lei	ž		Leill	Ę		Lellia	ξď	
Parmittad Phaces	V	t	V	¢	0		6	V		G	Ð	
Actuated Green. G (s)	11.4	11.4	11.4	11.4	11.4		30.0	30.0		30.0	30.0	
Effective Green, g (s)	11.4	11.4	11.4	11.4	11.4		30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20		0.54	0.54		0.54	0.54	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4		7.0	7.0		7.0	7.0	
(ehicle Extension (s)	2.8	2.8	2.8	2.8	2.8		2.8	2.8		2.8	2.8	
ane Grp Cap (vph).	250	352	316	239	345		648	907		556	988	
//s Ratio Prot		0.09			c0.10			0.07			0.06	
//s Ratio Perm	0.01		0.03	0.03			c0.17			0.01	4	
//c Ratio	0.04	0.45	0.17	0.15	0.49		0.32	0.13		0.03	0.10	
Unitorm Delay, d1	1/.8	19.5	18.3	18.2	19.6		7.00	6.4		9.1	6.3 1 00	
rogression Factor	00.1	00.1	00.1	00.1	00.1		00.1	00 ⁻¹		00.1	00 ⁻¹	
ncremental Delay, d2	0.1	8.0	2.0	5.0	1.0			0.3 2			7.0	
Jelay (s)	6./I	20.3	0.01	C.01	0.02		α.5 •	0.1		0	C.0	
Level of Service	n	ې د د	'n	'n	ר היי גייני		×	4 ° ~		×	4 4 9	
		7.61			C.U2			0',			0.0	
		٥			د			¢			¢	
ntersection Summary												
HCM 2000 Control Delay			14.5	Ŧ	HCM 2000 Level of Service	Level of S	Service		в			
HCM 2000 Volume to Capacity ratio	city ratio		0.37									
Actuated Cycle Length (s)			55.8	'S	Sum of lost time (s)	time (s)			14.4			
ntersection Capacity Utilization	ION		64.2%	2	ICU Level of Service	1 Service			د.			
Nalveis Period (min)			4									

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HCM Unsignalized Intersection Capacity Analysis 5: Killaly Street West & Main Street	tersec & Ma	tion C	apacity et	/ Anal)	'SiS	<exis< th=""><th><existing> PM Peak Hour 03-27-2024</existing></th></exis<>	<existing> PM Peak Hour 03-27-2024</existing>
	Ť	1	4	ŧ	*	~	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	\$			ţ	F	×	
Traffic Volume (veh/h)	233	67	2	275	75	10	
Future Volume (Veh/h)	233	67	2	275	75	10	
Sign Control	Free			Free	Stop		
Grade	%0			%0	%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	253	105	2	299	82	11	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume			253		608	306	
vC1, stage 1 conf vol							
vC2, stage 2 conf vo							
vCu, unblocked vol			253		608	306	
tC, single (s)			4.1		6.4	6.2	
tC, 2 stage (s)							
任 (s)			2.2		3.5	3.3	
p0 queue free %			100		82	66	
cM capacity (veh/h)			1312		458	734	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2			
Volume Total	358	301	82	11			
Volume Left	0	2	82	0			
Volume Right	105	0	0	1			
cSH	1700	1312	458	734			
Volume to Capacity	0.21	00.00	0.18	0.01			
Queue Length 95th (m)	0.0	0.0	5.2	0.4			
Control Delay (s)	0.0	0.1	14.6	10.0			
Lane LOS		A	ш	4			
Approach Delay (s)	0.0	0.1	14.0				
Approach LOS			ю				
Intersection Summary							
Average Delay			1.8				
Intersection Capacity Utilization	_		29.0%	Ö	CU Level of Service	Service	A
Analysis Period (min)			c[

Moment Ell Fin No Lare Configurations Ell Fin No Sin Lare Configurations Ell Fin No Sin Sin Carlie (Mathine (Mathin) 2 97 96 11 6 2 Sign Control Configurations Ene Fiee Fiee Sign Control 2 2 Sign Control 2 03 <t< th=""><th>HCM Unsignalized Intersection Capacity Analysis 4: Killaly Street West & 3rd Avenue</th><th>ttersed & 3rd</th><th>tion C. Avenu</th><th>apacit) Je</th><th>/ Anal)</th><th>'SiS</th><th><existing> PM Peak Hour 03-27-2024</existing></th><th>Peak Hour 03.27-2024</th></t<>	HCM Unsignalized Intersection Capacity Analysis 4: Killaly Street West & 3rd Avenue	ttersed & 3rd	tion C. Avenu	apacit) Je	/ Anal)	'SiS	<existing> PM Peak Hour 03-27-2024</existing>	Peak Hour 03.27-2024
EBI MBT MBR SBL SBR 2 97 96 11 6 2 Free Free Stop 0% 0% 2 C0% 0% 0% 0% 0% 2 C0% 0% 0% 0% 0% 3 C0% 0% 0% 0% 0% 3 C0% 0% 0% 0% 0% 3 C092 032 032 032 032 032 C011 None None None 10 10 File A 219 110 10 10 File Si 33 33 33 33 33 File Si 219 110 10 10 10 103 103 10 3 33 33 33 33 103 103 10 9 5 10 10 </th <th></th> <th>1</th> <th>Ť</th> <th>ŧ</th> <th>~</th> <th>٨</th> <th>•</th> <th></th>		1	Ť	ŧ	~	٨	•	
2 97 96 11 6 2 2 97 96 11 6 2 7 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 101 101 12 7 2 2 116 None None None 10 10 116 12 219 110 10 10 116 116 51 219 110 10 116 116 51 33 33 33 116 116 51 51 51 51 116 116 51 51 51 51 116 116 51 51 51 51 100 00 0.3 5	Movement	EBL	EBT	WBT	WBR	SBL	SBR	
2 97 96 11 6 2 Fee Fee 79 0% 0% 0% 0% 0% 0% 0% 0% 0% 105 104 12 7 2 105 106 104 12 7 2 116 None None None 10 110 116 2.19 110 2 110 10 116 3.1 2.19 110 10 10 116 3.1 3.1 3.1 3.3 3.3 3.3 116 5.1 6.4 6.2 0.0 0.0 10 100 1	Lane Configurations		t	4		×		
2 97 96 11 6 2 10e Free Stop 092 092 092 105 104 12 7 2 105 104 12 7 2 116 219 110 116 219 110 116 219 110 116 219 110 116 219 110 116 219 110 116 219 110 116 219 110 116 219 110 116 35 33 116 35 33 116 31 35 116 31 35 116 31 35 116 31 33 116 31 33 117 35 33 118 31 35 119 31 35 110 35 33 111 35 33 111 35 33 111 35 33 111 35 34 111 35 34	Traffic Volume (veh/h)	2	97	96	5	9	2	
Free Free Stop 03% 03% 03% 039 039 039 1031 104 12 0 1031 None None None 116 219 110 116 219 110 5.1 83 33 3.1 3.1 3.5 3.3 116 2.19 110 5.1 6.4 6.2 103 10 9 103 9 100 103 9 100 103 9 100 103 9 100 103 9 100 103 11 6.4 6.2 103 10 9 100 103 10 9 100 103 10 9 10 103 10 9 10 101 9 4 A	Future Volume (Veh/h)	2	67	96	11	9	2	
0.92 0.92 0.92 0.92 0.92 2 105 104 12 7 2 105 104 12 7 2 116 12 7 2 116 2 219 110 116 2.19 110 116 2.19 110 116 2.19 110 116 2.19 110 117 116 6.4 107 116 3.3 103 113 3.5 107 116 9 103 116 9 103 116 9 103 116 9 103 116 9 103 116 9 103 116 9 103 116 9 103 116 116 103 116 116 103 116 116 103 10 0.1 103 10 0.1 104 0.1 9.5 105 0.1 9.5 106 0.1 9.5 107 0.5 0.5 <tr< td=""><td>Sign Control</td><td></td><td>Free</td><td>Free</td><td></td><td>Stop</td><td></td><td></td></tr<>	Sign Control		Free	Free		Stop		
0.32 0.92 <th0.92< th=""> 0.92 0.92 <th0< td=""><td>Grade</td><td></td><td>%0</td><td>%0</td><td></td><td>%0</td><td></td><td></td></th0<></th0.92<>	Grade		%0	%0		%0		
2 105 104 12 7 2 None None 219 110 116 219 110 5.1 6.4 6.2 3.1 3.5 3.3 100 10 9 107 116 9 107 116 9 107 15 9 107 15 9 107 15 172 949 108 00 103 0.0 0.1 2 0 7 0.1 2 0 0.3 0 2 0.0 3.5 0.2 0.0 0.3 0.2 0.0 0.3 0.3 157 0.0 0.0 0.3 0.3 16 17 0.0 0.0 0.3 0.3 1770 0.01 0.0 0.0 0.3 0.0 0.0 0.3 0.0 0.0 0.3 0.0 0.0 0.3 0.0 0.0 0.0 0.3 0.0 0.0 0.0 0.3 0.0 0.0 0.0 0.3 0.0 0.0 0.3 0.0 0.0 0.0 0.3 0.0 0.0 0.3 0.0 0.0 0.0 0.0 0.3 0.0 0.0 0.0 0.0 0.3 0.0 0.0 0.0 0.3 0.0 0.0 0.0 0.3 0.0 0.0 0.0 0.0 0.3 0.0 0.0 0.0 0.0 0.3 0.0 0.0 0.0 0.0 0.0 0.3 0.0 0.0 0.0 0.0 0.3 0.0 0.0 0.0 0.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
None None None 116 219 110 5.1 219 110 5.1 6.4 6.2 3.1 3.5 3.3 100 99 100 103 116 772 00 12 2 103 12 2 103 100 0.3 0.0 0.1 0.1 0.1 1.6 4 0.2 0.0 0.3 0.2 0.0 0.3 0.2 0.0 0.3 0.2 0.0 0.3 0.2 0.0 0.3 0.2 0.0 0.3 0.2 0.0 0.3 0.2 0.0 0.3 0.2 0.1 0.5 0.1 0.5 0.0 15 5 5	Hourly flow rate (vph)	2	105	104	12	2	2	
None None None 116 219 110 5.1 2.19 110 5.1 5.1 5.3 3.1 3.5 3.3 3.1 3.5 3.3 100 101 116 101 116 9 102 9 100 103 116 9 101 116 9 102 116 9 103 116 9 103 116 9 103 116 9 103 116 9 103 116 9 103 116 9 103 100 0.3 103 9.5 4 103 9.5 4 103 9.5 4 103 9.5 4 103 9.5 5 103 9.5 5 115	Pedestrians							
None None None 116 219 110 116 219 110 5.1 5.1 5.1 110 116 2.19 110 110 5.1 5.1 5.1 2.9 116 3.5 3.3 3.1 5.1 5.1 5.4 6.2 100 100 99 100 107 116 9 772 2 0 7 949 107 116 9 772 2 0 7 949 107 116 9 772 0 12 2 10 10 0.0 0.0 0.3 100 10 0.0 0.1 0.1 10 10 0.1 0.2 0.1 9 10 0.2 0.0 9 10 10 0.1 0.1 0.1	Lane Width (m)							
None None None 116 219 110 5.1 5.1 5.1 5.3 5.1 5.4 5.2 3.1 3.5 3.3 103 99 100 103 116 99 103 110 99 103 110 99 103 110 99 103 110 99 103 110 99 103 110 99 103 116 9 103 116 9 103 116 9 103 116 9 103 116 9 103 100 0.3 103 0.0 0.3 104 9.5 10.1 105 0.1 9.5 102 0.3 0.5 103 15.7 9.4	Walking Speed (m/s)							
None None 116 219 110 5.1 2.19 110 5.1 6.4 6.2 3.1 5.3 3.3 100 5.1 5.4 6.2 117 6.4 6.2 3.3 100 103 772 949 107 116 9 772 107 116 9 772 107 116 9 772 107 712 949 772 103 7 9 100 103 7 9 100 103 7 9 100 103 116 9 100 103 0.0 0.0 9.5 0.1 0.5 0.0 9.5 0.2 0.0 9.5 100 105 A 5.5 10.5 116 9.5 6.5 10.5	Percent Blockage							
None None 116 219 110 5.1 5.1 219 110 5.1 5.1 5.1 5.3 3.1 3.5 3.3 3.1 100 100 99 100 107 116 9 772 949 107 116 9 772 949 107 116 9 772 949 107 116 9 772 949 107 116 9 772 949 107 0.16 7 0.0 0.1 108 8.1 772 949 0.0 100 116 9 772 949 0.0 0.0 0.1 0.1 1.0 0.1 10 0.1 0.1 1.0 0.1 0.1 0.1 0.1 1.0 0.2 0.0 9.5 1.0 1.0	Right turn flare (veh)							
116 219 110 116 219 110 5.1 6.4 6.2 5.1 6.4 6.2 3.1 8.4 6.2 3.1 3.5 3.3 100 0.0 99 107 116 9 107 116 9 107 116 9 107 116 9 107 116 9 108 006 0.00 0.0 0.1 0.0 0.0 0.3 0.2 0.0 9.5 0.2 0.0 9.5 0.2 0.0 9.5 108 A A A A A A A A A A A A A A A A A A A	Median type		None	None				
116 219 110 116 219 110 5.1 6.4 6.2 3.1 3.5 3.3 3.1 5.4 6.2 3.1 3.5 3.3 100 9 100 107 116 9 107 116 9 107 116 9 103 103 0.0 0.0 0.0 0.3 0.0 0.0 0.3 0.1 0.3 1 0.2 0.0 9.5 0.3 0.2 0.5 0.4 5.5 1 0.2 0.0 9.5 0.1 0.5 0.0 0.2 0.0 9.5 0.2 0.0 9.5 0.2 0.0 9.5 0.2 0.0 9.5 0.1 0.5 0.0 0.5 0.0 9.5 0.6 9.5 0.0 15 15 15	Median storage veh)							
116 219 110 118 219 110 5.1 5.1 5.4 6.2 5.1 6.4 6.2 100 103 99 100 107 116 9 772 949 107 116 9 772 949 107 116 9 772 949 107 116 9 772 949 100 0.7 0.9 9 100 101 116 9 772 949 102 0 7 0.9 9 103 0.7 0.1 0.1 10 104 116 9 10 10 105 0.0 0.3 10 10 0.0 0.0 0.3 10 10 0.1 0.5 0.0 9.5 10 0.2 0.0 9.5 10 10 104 16.7% CU Level of Service	Upstream signal (m)							
116 219 110 5.1 5.1 6.4 6.2 5.1 6.4 6.2 3.1 3.5 3.3 100 99 100 107 16 9 107 16 9 107 16 9 107 16 9 107 16 9 107 16 9 107 16 9 107 16 9 107 16 9 107 16 9 107 16 9 107 0.0 0.1 107 16 9 107 16 9 108 0.0 0.3 0.0 0.3 0.4 0.1 0.5 0.0 10 9.5 1 10 9.5 1 11 15 1 11 16 1 11 16 1 12 10 1 13 1 1 14 1 1 15 1 1 16 1 1 <td>pX, platoon unblocked</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	pX, platoon unblocked							
116 219 110 5.1 6.4 6.2 3.1 5.4 6.2 3.1 3.5 3.3 100 100 9 101 16 9 107 116 9 103 172 949 107 116 9 107 116 9 103 170 0.1 0.0 0.0 0.3 0.0 0.3 9.5 0.1 9.5 1 0.2 0.0 9.5 0.1 9.5 1 0.2 0.0 9.5 0.1 9.5 1 0.2 0.0 9.5 0.1 9.5 1 0.2 0.0 9.5 0.1 9.5 1 0.2 0.0 9.5 0.1 9.5 1 0.1 9.5 1 0.1 9.5 1 0.1 9.5 1 0.1 9.5 1	vC, conflicting volume	116				219	110	
116 219 110 5.1 6.4 6.2 3.1 5.4 6.2 3.1 3.5 3.3 100 99 100 103 72 949 107 116 9 107 116 9 107 116 9 103 72 2 103 0.0 0.0 0.0 0.7 0.1 0.0 0.3 4 0.0 0.3 4 0.2 0.0 9.5 0.2 0.0 9.5 0.2 0.0 9.5 0.2 0.0 9.5 0.2 0.0 9.5 0.2 0.0 9.5 0.2 0.0 9.5 0.1 9.5 10.5 0.1 9.5 10.5 0.1 9.5 10.5	vC1, stage 1 conf vol							
116 219 110 5.1 6.4 6.2 3.1 3.5 3.3 100 103 99 100 107 116 9 772 949 107 116 9 772 949 107 116 9 772 949 107 116 9 772 949 100 116 9 772 949 101 116 9 772 949 103 0.12 2 0 7 0.0 112 2 103 0.01 0.0 0.01 0.01 0.01 0.01 0.0 0.0 0.3 4 4 0.2 0.0 9.5 4 4 0.2 0.0 9.5 4 4 0.2 0.0 9.5 4 4 0.1 0.5 0.0 9.5 4 10.2 0.0 9.5 4 4 10.2 0.0 9.5 5 4 10.3 10.7 9.5 5 5	vC2, stage 2 conf vol							
5.1 6.4 6.2 3.1 3.5 3.3 103 9 100 103 772 949 EB1 WB1 SB1 772 107 116 9 772 107 116 9 772 107 116 9 772 107 116 9 7 107 116 9 7 107 10 0.01 0.01 0.0 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.0 0.3 0.1 0.2 0.0 0.3 0.1 0.2 0.0 0.3 0.1 0.2 0.0 0.3 0.1 0.2 0.0 0.3 0.1 0.2 0.0 0.5 0.1 0.2 0.1 9.5 0.1 0.2 0.1 9.5 0.1 0.2 0.1 9.5 0.1 0.2 0.1 9.5 0.1 0.2 0.1 9.5 0.1 0.2 0.1 9.5 0.1	vCu, unblocked vol	116				219	110	
3.1 3.5 3.3 100 1035 772 949 EB1 WB1 SB1 772 949 EB1 WB1 SB1 772 949 107 116 9 2 0 7 0 0 7 0.0 0.07 0.01 0.00 0.07 0.01 0.0 0.03 0.0 0.03 0.0 0.03 0.0 0.03 0.0 0.07 0.01 0.0 0.07 0.01 0.0 0.07 0.01 0.0 0.03 0.0 0.07 0.01 0.0 0.07 0.01 0.00 0.00 0.07 0.01 0.00 0.01 0.01 0.01 0.00 0.00 0.01 0.01	tC, single (s)	5.1				6.4	6.2	
3.1 3.5 3.3 100 103 72 949 107 116 9 700 107 116 9 100 107 116 9 100 107 116 9 100 100 12 2 103 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.3 100 0.0 0.0 0.3 100 0.1 0.0 0.3 100 0.2 0.0 0.3 100 0.2 0.0 9.5 100 0.2 0.0 9.5 100 0.1 0.5 0.0 9.5 0.2 0.0 9.5 100 10.1 10.5 10.5 100	tC, 2 stage (s)							
100 99 100 1035 772 949 EB1 WB1 SB1 772 107 116 9 9 103 170 0.0 7.72 0.0 12 2 100 0.0 12 2 103 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.3 0.1 0.1 0.1 0.1 0.1 0.2 0.0 0.3 0.2 0.2 0.0 9.5 0.2 0.2 0.0 9.5 0.2 0.2 0.0 9.5 0.2 0.2 0.0 9.5 0.2 0.2 0.0 9.5 0.2 0.2 0.0 9.5 0.2 1.5 A 1.5 1.5 1.5 1.5 1.5 1.5	tF (s)	3.1				3.5	3.3	
1035 772 949 EB1 WB1 SB1 772 949 107 116 9 7 0 1 2 0 7 7 2 0 0.01 0.07 0.01 0.01 0.0 0.0 0.0 0.0 0.3 9.5 4 A A 0.1 0.0 0.3 9.5 A	p0 queue free %	100				66	100	
EB1 WB1 SB1 107 116 9 0 7 2 0 7 2 0 7 2 1035 1700 806 0.00 0.07 0.01 0.0 0.0 9.5 0.2 0.0 9.5 0.2 0.0 9.5 0.2 0.0 9.5 0.2 0.0 9.5 A A A 0.2 0.0 9.5 A A A A A A 1.5 1.5 1.5	cM capacity (veh/h)	1035				772	949	
107 116 9 2 0 7 2 10 7 1036 170 806 0.00 0.07 0.01 0.0 0.0 0.3 0.0 0.0 9.5 0.0 9.5 0.0 9.5 1.2 0.0 9.5 0.1 0.0 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	Direction, Lane #	EB 1	WB 1	SB 1				
2 0 7 0 12 2 1035 107 0.01 0.00 0.07 0.01 0.0 0.0 0.3 0.2 0.0 9.5 0.2 0.0 9.5 0.2 0.0 9.5 1.2 0.0 1.2 1.5 CU Level of Service 15 7% ICU Level of Service	Volume Total	107	116	6				
0 12 2 1035 1700 806 0.00 0.07 0.01 0.0 0.0 0.3 0.2 0.0 9.5 0.2 0.0 9.5 A A 0.2 0.0 9.5 A A A A A A A A A A A A A A A A A A A	Volume Left	2	0	7				
1035 1700 806 0.0 0.07 0.01 0.0 0.0 0.3 0.2 0.0 9.5 A A 0.2 0.0 9.5 A A 1.2 0.0 9.5 A A A A 1.2 0.1 0.5 A A 1.2 0.5 A A 1.2 0.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1	Volume Right	0	12	2				
0.00 0.07 0.01 0.0 0.0 3 0.2 0.0 9.5 A A 0.2 0.0 9.5 A A A A A A A A A A A A A A A A A A A	cSH	1035	1700	806				
0.0 0.0 3 0.2 0.0 9.5 0.2 0.0 9.5 0.2 0.0 9.5 A 1.2 0.0 1.5 A 1.2 CU Level of Service 15 15	Volume to Capacity	0.00	0.07	0.01				
0.2 0.0 9.5 A A 0.2 0.0 9.5 A 0.5 Utilization 16.7% ICU Level of Service 15.7% ICU Level of Service	Queue Length 95th (m)	0.0	0.0	0.3				
A A 0.2 0.0 9.5 0.0 9.5 0.0 0.5 0.0 0.5 0.0 0.5 0.0 0.5 0.0 0.5 0.0 0.5 0.0 0.5 0.0 0.5 0.5	Control Delay (s)	0.2	0.0	9.5				
v.2 v.0 5.3 A 0.5 Utilization 16.7% ICU Level of Service 15	Lane LOS	A C	00	A a				
A 0.5 Utilization 16.7% ICU Level of Service 15		7.0	0.0	0 ×				
r 0.5 Utilization 16.7% ICU Level of Service 15	Approacn LUS			¥				
0.5 Utilization 16.7% ICU Level of Service 15	Intersection Summary							
Utilization 16.7% ICU Level of Service 15	Average Delay			0.5				
	Intersection Capacity Utilization	ſ		16.7%	<u>0</u>	J Level of		
	Analysis Period (min)			15				

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	1	Ť	1	4	ŧ	4	•	+-	•	٨	+	7
Aovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	*		R	F	4			t t			4	
raffic Volume (veh/h)	36	0	32	20	9	46	28	156	0	0	301	40
⁻ uture Volume (Veh/h)	36	0	32	20	9	46	28	156	0	0	301	40
Sign Control		Stop			Stop			Free			Free	
Grade		%0			%0			%0			%0	
^p eak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	39	0	35	22	7	50	30	170	0	0	327	43
bedestrians		2						2			2	
ane Width (m)		3.6						3.6			3.6	
Valking Speed (m/s)		1.2						1.2			1.2	
^D ercent Blockage		0						0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Jpstream signal (m)											370	
bX. platoon unblocked												
/C. conflicting volume	636	580	352	616	602	172	372			170		
AC1, stage 1 conf vol												
/C2, stage 2 conf vol												
/Cu, unblocked vol	636	580	352	616	602	172	372			170		
C, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.1		
C, 2 stage (s)												
F (s)	3.5	4.0	3.3	3.6	4.0	3.5	2.2			2.2		
o0 queue free %	89	100	95	94	98	94	26			100		
cM capacity (veh/h)	356	417	693	366	405	826	1196			1420		
Direction. Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
/oliime Total	30	35	22	57	200	370						
/olume Left	39	, c	3	; 0	30	0						
Volume Right	0	35	0	50	0	43						
SH	356	693	366	732	1196	1700						
/olume to Capacity	0.11	0.05	0.06	0.08	0.03	0.22						
Queue Length 95th (m)	2.9	1.3	1.5	2.0	0.6	0.0						
Control Delay (s)	16.3	10.5	15.5	10.3	1.4	0.0						
ane LOS	ပ	ш	ပ	ш	A							
Approach Delay (s)	13.6		11.8		1.4	0.0						
Approach LOS	ш		в									
ntersection Summary												
Averado Delav			21									
sterrection Canacity Hilization	tion		17 0%	<u></u>	CIII aval of Canvica	Control			<			
וונהוהההנוהוו המשמחול הנוודה				2								

Timings 2: Steele Street & Killaly Street West	illaly St	rreet V	Vest				<203	1 Back	<2031 Background> AM Peak Hour 03-27-2024
	1	Ť	1	1	ŧ	4	+	٠	+
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	F	*	K.	F	4	F	4	F	(*
Traffic Volume (vph)	5	163	194	37	76	163	154	36	116
Future Volume (vph)	5	163	194	37	76	163	154	36	116
Turn Type	Perm	AN	Perm	Perm	AA	Perm	ΝA	Perm	NA
Protected Phases		4			∞		2		9
Permitted Phases	4		4	∞		2		9	
Detector Phase	4	4	4	∞	∞	2	2	9	9
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0
Minimum Split (s)	38.4	38.4	38.4	38.4	38.4	34.0	34.0	34.0	34.0
Total Split (s)	42.4	42.4	42.4	42.4	42.4	37.0	37.0	37.0	37.0
Total Split (%)	53.4%	53.4%	53.4%	53.4%	53.4%	46.6%	46.6%	46.6%	46.6%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	3.3	3.3	3.3	3.3	<u>3.</u> 3	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	7.4	7.4	7.4	7.4	7.0	7.0	7.0	7.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Мах	Max	Max	Max
Act Effct Green (s)	11.5	11.5	11.5	11.5	11.5	30.0	30.0	30.0	30.0
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21	0.54	0.54	0.54	0.54
v/c Ratio	0.02	0.50	0.44	0.17	0.27	0.28	0.24	0.08	0.14
Control Delay	17.4	25.0	6.5	19.9	18.8	9.1	7.3	7.4	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	25.0	6.5	19.9	18.8	9.1	7.3	7.4	7.1
ros	B	ပ	A	8	8	A	۷	A	A
Approach Delay		14.9			19.1		8.1		7.2
Approach LOS		ш			в		A		A
Intersection Summary									
Cycle Length: 79.4									
Actuated Cycle Length: 55.9									
Natural Cycle: 75									
Control Type: Actuated-Uncoordinated	ordinated								
Maximum v/c Ratio: 0.50									
Intersection Signal Delay: 11.7	2			<u> </u>	Intersection LOS: B	LOS: B			
Intersection Capacity Utilization 73.9%	on 73.9%			<u>0</u>	ICU Level of Service D	f Service	۵		
Analysis Period (min) 15									

Spi

	A04	42,4 s	₹8	42.4s
splits and Phases: 2: Steele Street & Killaly Street West	100 D			
plits and Phases:	 ▲ Ø2 	7 s	₽ ⁰⁶	7s

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Aovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	F	*	ĸ	F	<u>t</u> ,		F	£,		F	t ,	
raffic Volume (vph)	5	163	194	37	76	10	163	154	51	36	116	10
⁻ uture Volume (vph)	2	163	194	37	76	10	163	154	51	36	116	9
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
otal Lost time (s)	7.4	7.4	7.4	7.4	7.4		0.7	0.7		0.7	0.7	
ane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
-rpb, ped/bikes	001	001	0.98	1.00	1.00		1.00	0.99		00.1	1.00	
-Ipb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00		00.1	1.00	
-R Tii Dintented	1.00	001	0.65	1.00	0.98		1.00	0.90		1.00	0.99	
It Protected	0.95 1001	1.00	1.00	0.95	1.00		0.95	1.00		CS.U	1.00	
Sato. Flow (prot)	1001	1/2/1		1/02	1004		0001	1/20		1403	1024	
R Femiliteu Satd. Flow (perm)	0.70 1319	1727	1550	0.00 1156	1684		1172	1720		954	1824	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	177	211	40	83	£	177	167	55	39	126	£
RTOR Reduction (vph)	0	0	168	0	6	0	0	£	0	0	ო	0
ane Group Flow (vph).	5	177	43	40	85	0	177	211	0	39	134	0
Confl. Peds. (#/hr)	ო		~	-		с С	9		4	4		9
Heavy Vehicles (%)	%0	10%	2%	6%	6%	22%	8%	3%	14%	23%	2%	11%
um Type	Perm	NA	Perm	Perm	NA		Perm	AN		Perm	AN	
Protected Phases		4			œ			2			9	
Permitted Phases	4		4	20 L			2 00	0.00		9 9	0.00	
Actuated Green, G (s)	C.I.I	011	C.I.I	11.5	C.I.I		30.0	30.0		0.05	30.0	
cirective Green, g (s) Actuated a/C Datio	1.0	1.0	0.01	1.0	11.0		0.6A	30.U		0.64	0.00	
Clearance Time (s)	74	74	74	74	74		7.0	0 2		0 2	0 2	
/ehicle Extension (s)	2.8	2.8	2.8	2.8	2.8		2.8	2.8		2.8	2.8	
ane Grp Cap (vph)	271	355	318	237	346		628	923		511	978	
<pre>//s Ratio Prot</pre>		c0.10			0.05			0.12			0.07	
/s Ratio Perm	0.00	0	0.03	0.03	10 0		c0.15	000		0.04		
/c Katio Iniform Dolovi -11	0.02	0.50	0.14	10.1/	10.25		7.1	0.23		0.08	0.14	
Progression Factor	100	1 00	100	1 00	1 00		100	100		001	100	
ncremental Delay. d2	0.0	1.0	0.2	0.3	0.3		1	0.6		0.3	0.3	
Delay (s)	17.7	20.6	18.3	18.6	18.9		8.2	7.4		6.5	6.8	
evel of Service	в	ပ	ш	в	ш		A	A		A	A	
Approach Delay (s)		19.4			18.8			7.8			6.7	
vpproach LOS		ш			ш			A			A	
ntersection Summary												
HCM 2000 Control Delay			13.1	H	3M 2000 I	HCM 2000 Level of Service	Service		ш			
HCM 2000 Volume to Capacity ratio	ty ratio		0.34									
vctuated Cycle Length (s)			55.9	Su	Sum of lost time (s)	time (s)			14.4			
ntersection Capacity Utilization	ы		73.9%	<u>5</u>	ICU Level of Service	t Service			2			

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<2031 Background> AM Peak Hour 03-27-2024 ۶ * +-+ 1 HCM Unsignalized Intersection Capacity Analysis 3: Killaly Street West & West Side Road ŧ 1 1 t 1

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			8	ŝ			-			64	•	i.
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (veh/h)	-	130	0	0	84	173	0	0	0	230	0	0
Future Volume (Veh/h)	-	130	0	0	84	173	0	0	0	230	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	-	141	0	0	91	188	0	0	0	250	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	279			141			328	422	141	328	328	185
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	279			141			328	422	141	328	328	185
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	60	100	100
cM capacity (veh/h)	1295			1442			625	523	907	623	590	862
Direction. Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	142	279	0	250								
Volume Left	-	0	0	250								
Volume Right	0	188	0	0								
cSH	1295	1442	1700	623								
Volume to Capacity	0.00	0.00	0.00	0.40								
Queue Length 95th (m)	0.0	0.0	0.0	15.4								
Control Delay (s)	0.1	0.0	0.0	14.6								
Lane LOS	۷		۷	ш								
Approach Delay (s)	0.1	0.0	0.0	14.6								
Approach LOS			A	ш								
Intersection Summary												
Average Delay			5.5									
Intersection Capacity Utilization	_		34.5%	<u>ں</u>	CU Level of Service	f Service			4			
Analysis Period (min)			15									

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (veh/h)	-	113	0	0	65	18	0	0	0	20	0	-
Future Volume (Veh/h)	-	113	0	0	65	18	0	0	0	20	0	-
Sign Control		Free			Free			Stop			Stop	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	-	123	0	0	71	20	0	0	0	22	0	-
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX. platoon unblocked												
vC. conflicting volume	6			123			207	216	123	206	206	81
AC1. stage 1 conf vol												
vC2. stage 2 conf vol												
/Cu. unblocked vol	91			123			207	216	123	206	206	81
tC. single (s)	5.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
C. 2 stage (s)												
F (s)	3.1			2.2			3.5	4.0	3.3	3.5	4.0	3.3
o0 aueue free %	100			100			100	100	100	67	100	100
cM capacity (veh/h)	1061			1464			749	681	928	756	690	385
							:	:				
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
/olume Total	124	91	0	23								
Volume Left	.	0	0	22								
Volume Right	0	20	0	-								
SH	1061	1464	1700	763								
Volume to Capacity	00.00	00.0	0.00	0.03								
Queue Length 95th (m)	0.0	0.0	0.0	0.7								
Control Delay (s)	0.1	0.0	0.0	6.6								
ane LOS	A		A	A								
Approach Delav (s)	0.1	0.0	0.0	6 <u>.</u> 6								
Approach LOS			A	۷								
Intercention Cummany												
			4									
Average Delay			1.0	Ċ	Citt of Conductor	Con inco			<			
ireiseuriuri vapauriy uriirari	5		0. / %	2	רבעבו ס	201100			ζ			
									:			

HCM Unsignalized Intersection Capacity Analysis 5: Killaly Street West & Main Street	itersec & Ma	tion C	apacity et	/ Anal)	/sis		<2031 Background> AM Peak Hour 03-27-2024
	Ť	1	*	ţ	*	•	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	\$			4	F	ĸ	
Traffic Volume (veh/h)	246	122	e	193	09	6	
Future Volume (Veh/h)	246	122	ę	193	09	6	
Sign Control	Free			Free	Stop		
Grade	%0			%0	%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	267	133	m	210	65	9	
Pedestrians							
Lane widtii (m) Walking Speed (m/c)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume			267		550	334	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			267		550	334	
tC, single (s)			4.1		6.4	6.2	
tC, 2 stage (s)			0		L C	0	
t+ (s) , , , , , , , , , , , , , , , , , , ,			272		3.5		
pu queue tree %			100		8/	66	
cM capacity (ven/n)			1671		495	/08	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2			
Volume Total	400	213	65	10			
Volume Left	0	e	65	0			
Volume Right	133	0	0	9			
cSH	1700	1297	495	708			
Volume to Capacity	0.24	0.00	0.13	0.01			
Control Dolog (n)			0.0	0.0			
cultitut Delay (s) Lane LOS	0.0	- ×	2 2	P.F			
Approach Delav (s)	0.0	0.1	12.9	1			
Approach LOS			в				
Intersection Summary							
Averade Delav			15				
Intersection Capacity Utilization	e		30.4% 15	<u>0</u>	ICU Level of Service	Service	Α
			2				

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	1	Ť	1	*	ţ	~	•	+	•	هر	†	7
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
-ane Configurations	F		K	F	4			t			t t	
Traffic Volume (veh/h)	29	0	24	13	m	38	21	366	0	0	459	33
⁻ uture Volume (Veh/h)	29	0	24	13	m	38	21	366	0	0	459	33
Sign Control		Stop			Stop			Free			Free	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	0	26	14	e.	41	23	398	0	0	499	36
Pedestrians		2						2			2	
-ane Width (m)		3.6						3.6			3.6	
Valking Speed (m/s)		1.2						1.2			1.2	
^D ercent Blockage		0						0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Jpstream signal (m)											370	
oX, platoon unblocked												
/C, conflicting volume	1008	963	521	686	981	400	537			398		
/C1, stage 1 conf vol												
vC2, stage 2 conf vol												
/Cu, unblocked vol	1008	963	521	686	981	400	537			398		
.C, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.1		
.C, 2 stage (s)												
FF (s)	3.5	4.0	3.3	3.6	4.0	3.5	2.2			2.2		
o0 queue free %	84	100	95	93	66	93	98			100		
cM capacity (veh/h)	200	251	557	206	245	612	1040			1172		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	32	26	14	44	421	535						
/olume Left	32	0	14	0	23	0						
/olume Right	0	26	0	41	0	36						
cSH	200	557	206	555	1040	1700						
Volume to Capacity	0.16	0.05	0.07	0.08	0.02	0.31						
Queue Length 95th (m)	4.5	1.2	1.7	2.1	0.5	0.0						
Control Delay (s)	26.4	11.8	23.8	12.0	0.7	0.0						
ane LOS	۵	8	ပ	œ	4							
Approach Delay (s)	19.8		14.9		0.7	0.0						
Approach LOS	ပ		в									
ntersection Summary												
Average Delay			2.2									
ntersection Capacity Utilization	L		51.7%	<u>C</u>	ICU Level of Service	f Service			A			
And the Derived (min)												

Timings 2: Steele Street & Killaly Street West	llaly St	rreet V	Vest				<203	l Back	<2031 Background> PM Peak Hour 03-27-2024	ak Hour 03-27-2024
	1	Ť	1	4	ŧ	•		٨	1	
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Configurations	F	*	×.	*	4	×	4	F	4	
Traffic Volume (vph)	9	169	273	39	168	222	95	16	105	
Future Volume (vph)	10	169	273	39	168	222	95	16	105	
Turn Type	Perm	AN	Perm	Perm	A	Perm	AA	Perm	NA	
Protected Phases		4			∞		2		9	
Permitted Phases	4		4	œ		2		9		
Detector Phase	4	4	4	∞	∞	2	2	9	9	
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	38.4	38.4	38.4	38.4	38.4	34.0	34.0	34.0	34.0	
Total Split (s)	42.4	42.4	42.4	42.4		37.0	37.0	37.0	37.0	
Total Split (%)	53.4%	53.4%	53.4%	53.4%	53.4%	46.6%	46.6%	46.6%	46.6%	
Yellow Time (s)	4.1	4.1	4.1	4.1		4.1	4.1	4.1	4.1	
All-Red Time (s)	3.3	3.3	3.3	<u>3.</u> 3	3.3	2.9	2.9	2.9	2.9	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.4	7.4	7.4	7.4	7.4	7.0	7.0	7.0	7.0	
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	Мах	Max	Max	Max	
Act Effct Green (s)	12.1	12.1	12.1	12.1	12.1	30.1	30.1	30.1	30.1	
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21	0.53	0.53	0.53	0.53	
v/c Ratio	0.04	0.50	0.53	0.17	0.56	0.38	0.17	0.03	0.12	
Control Delay	17.5	24.5	6.5	19.6	24.9	10.7	6.4	7.6	7.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.5	24.5	6.5	19.6	24.9	10.7	6.4	7.6	7.5	
ros	8	ပ	۷	8	ပ	8	A	A	A	
Approach Delay		13.5			24.0		9.1		7.5	
Approach LOS		в			ပ		A		A	
Intersection Summary										
Cycle Length: 79.4										
Actuated Cycle Length: 56.6										
Natural Cycle: 75	the state of the state									
Control Lype: Actuated-Uncoordinated	orginated									
Maximum V/C Ratio: 0.56				2						
Intersection Signal Delay: 13.5 Intersection Canacity I Hilization 66 3%	o nn 66 3%				Intersection LUS: B	LUS: B	Ċ			
Analysis Pariod (min) 15	0/0.00			2			,			

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		Ť	1	1	ŧ	~	-	+	•	٨	-	7
Movement	FBI	FBT	FBR	WBI	WBT	WBR	NBI	NBT	NBR	SBI	SBT	SBR
Lane Configurations	*	*	R	¥	4		*	4		*	4	
Traffic Volume (vph)	10	169	273	39	168	20	222	95	4	16	105	9
Future Volume (vph)	10	169	273	39	168	20	222	95	4	16	105	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	00.1	001	0.98	00.1	00.1		00.1	0.99		00.1	00.1	
FIPD, pea/bikes	8	0.1	0.95	001	00.1		0.99	0.05		0.1	00.1	
Flt Protected	0.95	1 00	1 00	0.95	1 00		0.95	1 00		0.95	1 00	
Satd. Flow (prot)	1801	1727	1550	1702	1689		1662	1686		1462	1834	
FIt Permitted	0.63	1.00	1.00	0.64	1.00		0.68	1.00		0.66	1.00	
Satd. Flow (perm)	1193	1727	1550	1149	1689		1189	1686		1018	1834	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	₽	184	297	42	183	22	241	103	48	17	114	2
RTOR Reduction (vph)	0	0	234	0	~	0	0	16	0	0	2	0
Lane Group Flow (vph)	1	184	63	42	197	0	241	135		17	119	0
Contl. Peds. (#/hr)		1001	- i	- ,00	200	5 200	e č	Ĭ	4	4	à	9
Heavy Vehicles (%)	%0	10%	2%	%9	6%	22%	8%	3%	14%	23%	2%	11%
Turn Type	Perm	AN.	Perm	Perm	A ,		Perm	A ,		Perm	A ,	
Protected Phases		4	•	c	×		¢	7		¢	æ	
Permitted Phases	4 4	101	t t	× ×	* * *		7 7	F UC		0 1	F OC	
Actuated Green, G (S)	171	171	171	17.1	17.1		30.1	30.1		30.1	30.1	
Effective Green, g (s)	1.21	1.21	1.21	1.21	1.21		30. I	3U. I		30. I	30.1 0 5 3	
	17.0	17.0	17.0	12.0	12.0		0.0	0 L		0.5	CC.0	
Vehicle Extension (s)	t 80	t. 0	- C	2 8	- 4 - 6 - 7		0.0	2.8		0.7	2.8	
l ana Grn Can (vnh)	255	360	331	245	361		632	806		541	075	
v/s Ratio Prot	200	0.11	- 60	013	c0.12		100	0.08		5	0.06	
v/s Ratio Perm	0.01		0.04	0.04			c0.20			0.02		
v/c Ratio	0.04	0.50	0.19	0.17	0.55		0.38	0.15		0.03	0.12	
Uniform Delay, d1	17.7	19.6	18.2	18.2	19.8		7.8	6.7		6.3	6.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.9	0.3	0.3	1.5		1.7	0.4		0.1	0.3	
Delay (s)	17.7	20.5	18.5	18.5	21.4		9.5	7 1		6.4	6.9	
Level of Service	ю	י י	n	ъ	:) ;;		A	₹ 0		A	₹ 0	
Approacn Uelay (s)		Z 61			20.9			0.0 •			0.X	
Approach LUS		n			ပ			A			A	
Intersection Summary												
HCM 2000 Control Delay			14.9	H	CM 2000 L	HCM 2000 Level of Service	ervice		В			_
HCM 2000 Volume to Capacity ratio	ity ratio		0.43									
Actuated Cycle Length (s)			56.6	ß	Sum of lost time (s)	time (s)			14.4			
Intersection Capacity Utilization Analysis Period (min)	uo		66.3% 15	<u>0</u>	CU Level of Service	f Service			o			
1												

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<2031 Background> PM Peak Hour 03-27-2024 0 Stop 0 0 355 355 0.92 386 424 ۶ SBI 0.92 0 00 128 * **R** Stop 0 0% 0.92 0 0.92 0 NBT 588 +--0.92 0 00 426 + B 302 302 0.92 328 1 NBR None ŧ VBT HCM Unsignalized Intersection Capacity Analysis 3: Killaly Street West & West Side Road 00 0.92 0 4 128 MBL 0.92 0 00 EBR 1 118 118 118 118 0% 0.92 128 None t EBT 0.92 e ç 446 1 EBL

0.92

SBR

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+

4.0 100 519 424 424 6.5 424 7.1 3.5 28 536 128 6.2 3.3 100 922 < 588 6.5 4.0 419 426 7.1 3.5 100 535 ICU Level of Service SB 1 388 386 2 537 537 072 47.4 27.2 27.2 27.2 0 0 128 4.1 2.2 100 1458 11.0 50.8% 15 0 0.00 0.00 0.0 0.0 0.0 0.0 A NB 1 WB 1 446 328 328 1458 0.00 0.00 0.0 0:0 EB 1 135 7 7 0 0 1125 0.01 0.2 0.5 0.5 446 4.1 2.2 99 1125 Intersection Summary Average Delay Intersection Capacity Utilization Analysis Period (min) Direction, Lane # Volume Total Volume Left Volume Right cSH Volume to Capacity Cureue Length 95th (m) Control Delay (s) Approach Delay (s) Approach LOS Lane Configurations Traffic Solume (vehr) Sign Control Grade Peak Hour Factor Hourly flow rate (vph) Pedestrians Lane Width (m) Walking Soed (ms) Pedestrians Making Soed (ms) Percent Blockage Right (m) Walking Soed (ms) Percent Blockage Right (m) Distream signal (m) Upstream signal (m) Upstream signal (m) Distream signal (m) C. conficting volume wCu. unblocked vol C. single (s) C. stage 1 conf vol vC. stage 2 conf vol vC. stage 2 conf vol vC. stage 2 conf vol vC. stage 1 conf vol vC. stage 1 conf vol vC. stage 2 conf vol vC. stage 1 conf vol vC. stage 2 conf vol vC. stage 1 conf vol vC. stage 1 conf vol vC. stage 1 conf vol vC. stage 2 conf vol vC. sta

282 6.2

282

3.3 100 762

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(2000		5000								4 0 0	4707-17-00
	•	Ť	1	*	ţ	∢	-	+	•	٨	t	7
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
-ane Configurations		4			4			4			¢	
raffic Volume (veh/h)	2	111	0	0	110	13	0	0	0	7	0	2
⁻ uture Volume (Veh/h)	2	111	0	0	110	13	0	0	0	7	0	7
Sign Control		Free			Free			Stop			Stop	
Grade		%0			%0			%0			%0	
⊃eak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	121	0	0	120	14	0	0	0	8	0	~
Dedestrians												
-ane Width (m)												
Valking Speed (m/s)												
^D ercent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Instream signal (m)												
C conflicting volume	134			101			254	250	101	252	252	127
	5			1			54	202	1	124	101	9
in the stage i colli vol												
	101			101			014	010	101	010	010	-07
Cu, unblocked vol	134			121			254	259	121	252	252	127
C, single (s)	5.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
C, 2 stage (s)												
F (s)	3.1			2.2			3.5	4.0	3.3	3.5	4.0	3.3
o0 queue free %	100			100			100	100	100	66	100	100
cM capacity (veh/h)	1017			1467			269	644	930	704	650	929
Direction I ane #	FB 1	WB 1	NR 1	SB 1								
/olime Total	123	134		10								
	6 <u>7</u> 6	5		2 0								
Volume Leit	N C	,		о с								
		± ;	0	7 7								
HS	1017	1467	1700	740								
Volume to Capacity	0.00	0.00	0.00	0.01								
Queue Length 95th (m)	0.0	0.0	0.0	0.3								
Control Delay (s)	0.2	0.0	0.0	6.6								
-ane LOS	4		4	4								
Annroach Delav (s)	0.2	00	00	66								
Approach LOS			A	A								
C												
ntersection Summary												
Average Delay			0.4									
ntersection Capacity Utilization			17 4%	ō	CU Level of Service	6 Service			4			
			2									

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HCM Unsignalized Intersection Capacity Analysis 5: Killaly Street West & Main Street	iterseo & Ma	tion C in Stre	apacit) et	/ Anal)	sis		<2031 Background> PM Peak Hour 03-27-2024
	Ť	1	*	ţ	4	•	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	\$			ţ	F	K_	
Traffic Volume (veh/h)	268	111	2	316	86	=	
Future Volume (Veh/h)	268	111	2	316	86	£	
Sign Control	Free			Free	Stop		
Grade	%0			%0	%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	291	121	2	343	93	12	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume			291		698	352	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			291		698	352	
tC, single (s)			4.1		6.4	6.2	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			100		17	98	
cM capacity (veh/h)			1271		406	692	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2			
Volume Total	412	345	93	12			
Volume Left	0	2	93	0			
Volume Right	121	0	0	12			
cSH	1700	1271	406	692			
Volume to Capacity	0.24	0.00	7.0	0.02			
Queue Lengtn 95th (m)	0.0	0.0	1.U 16.F	4 0 4			
Control Deliay (a)	2	. ⊲	0	<u>,</u> 8			
Approach Delay (s)	0.0	0.1	15.8				
Approach LOS			ပ				
Intersection Summary							
Average Delav			19				
Intersection Capacity Utilization	_		32.3%	<u>0</u>	ICU Level of Service	Service	A
Analysis Period (min)			15				

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Residential Development Rosemount Gardens	
Residential Devel	Trans-Plan

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Residential Development Rosemount Gardens Trans-Plan

I. SIEEIE SILEEL & EIGITI SILEEL	igin st	leel									z-00	03-21-2024
	1	Ť	1	1	ţ	1	•	•	٩.	٨	-	7
Aovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	F		ĸ	F	\$			ŧ			<u>*</u>	
raffic Volume (veh/h)	71	0	136	20	9	46	52	156	0	0	301	64
⁻ uture Volume (Veh/h)	71	0	136	20	9	46	52	156	0	0	301	64
Sign Control		Stop			Stop			Free			Free	
Grade		%0			%0			%0			%0	
Deak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	0	148	22	7	50	57	170	0	0	327	70
Dedestrians		2						2			2	
ane Width (m)		3.6						3.6			3.6	
Valking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type								None			None	
Aedian storage veh)												
Jostream signal (m)											370	
oX. platoon unblocked												
/C. conflicting volume	704	648	366	796	683	172	399			170		
C1. stage 1 conf vol												
vC2. stage 2 conf vol												
Cu. unblocked vol	704	648	366	796	683	172	399			170		
C, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.1		
C, 2 stage (s)												
F (s)	3.5	4.0	3.3	3.6	4.0	3.5	2.2			2.2		
o0 queue free %	76	100	78	<u> 06</u>	86	94	95			100		
cM capacity (veh/h)	314	372	681	224	355	826	1169			1420		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	11	148	22	57	227	397						
/olume Left	11	0	22	0	57	0						
/olume Right	0	148	0	50	0	20						
SH	314	681	224	710	1169	1700						
Volume to Capacity	0.24	0.22	0.10	0.08	0.05	0.23						
Queue Length 95th (m)	7.5	6.6	2.6	2.1	1.2	0.0						
Control Delay (s)	20.1	11.7	22.8	10.5	2.4	0.0						
-ane LOS	ပ	ш	ပ	ш	∢							
Approach Delay (s)	14.6		13.9		2.4	0.0						
Approach LOS	ш		ш									
ntersection Summary												
Average Delay			5.3									
ntersection Capacity Utilization	uo		51.6%	<u>0</u>	ICU Level of Service	Service			4			
				!								

Lare Group Exit	Timings 2: Steele Street & Killaly Street West	illaly St	treet V	Vest					<203	<2031 Total> AM Peak Hour 03-27-2024
EBL EBT EBR WBL WBT NBL NBT SBL SBL <th></th> <th>1</th> <th>Ť</th> <th>1</th> <th>*</th> <th>ŧ</th> <th>*</th> <th></th> <th>٨</th> <th>Ť</th>		1	Ť	1	*	ŧ	*		٨	Ť
5 7 194 37 149 163 189 36 5 370 194 37 149 163 189 36 5 370 194 37 149 163 189 36 6 4 4 8 2 2 6 10. 10. 10. 10. 10. 80 80 36 38.4 34.0 34.0 34.0 34.0 34.0 34.0 34.0 38.4 42.4 42.4 42.4 42.4 37.0 37.0 37.0 53.4% 53.4% 53.4% 53.4% 53.4% 42.4 37.0 37.0 37.0 53.4% 53.4% 53.4% 53.4% 53.4% 42.4 47.1 41 41 3 3 3 3 3 33 33 33 33 33 41 41 41 41 41 41 41 41 3 3 3 3 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 3	Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
5 370 194 37 149 163 189 36 5 370 194 37 149 163 189 36 6 5 370 194 37 149 163 189 36 7 4 4 8 2 2 6 4 4 8 8 2 2 6 4 4 8 8 2 2 6 10.0 10.0 10.0 10.0 10.0 8.0 8.0 8.0 8.0 3.6 33.4% 53.4% 53.4% 53.4% 53.4% 56.% 46.% 46.% 41 </td <td>Lane Configurations</td> <td>F</td> <td>*</td> <td>×.</td> <td>*</td> <td>£,</td> <td>F</td> <td>£,</td> <td>*</td> <td>¢</td>	Lane Configurations	F	*	×.	*	£,	F	£,	*	¢
5 370 194 37 149 163 189 36 Perm NA	Traffic Volume (vph)	ъ	370	194	37	149	163	189	36	140
Perm NA Perm Perm Perm Perm Per	Future Volume (vph)	5	370	194	37	149	163	189	36	140
4 4 8 2 2 6 4 4 8 8 2 2 6 10 10 10 10 10 8 8 2 5 10 10 10 10 10 10 8 <	Turn Type	Perm	AA	Perm	Perm	A	Perm	ΝA	Perm	NA
4 4 4 8 2 5 6 1 4 4 4 8 8 2 2 6 100 100 100 100 100 100 80 80 80 384 384 384 384 384 340 370 <td>Protected Phases</td> <td></td> <td>4</td> <td></td> <td></td> <td>∞</td> <td></td> <td>2</td> <td></td> <td>9</td>	Protected Phases		4			∞		2		9
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Permitted Phases	4		4	œ		2		9	
100 100 100 100 100 100 8.4 8.6 8.6%	Detector Phase	4	4	4	œ	∞	2	2	9	9
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Switch Phase									
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Minimum Split (s)	38.4	38.4	38.4	38.4	38.4	34.0	34.0	34.0	34.0
53.4% 53.4% 53.4% 53.4% 53.4% 53.4% 53.4% 53.4% 55.4% 45.6% <th< td=""><td>Total Split (s)</td><td>42.4</td><td>42.4</td><td>42.4</td><td>42.4</td><td></td><td>37.0</td><td>37.0</td><td>37.0</td><td>37.0</td></th<>	Total Split (s)	42.4	42.4	42.4	42.4		37.0	37.0	37.0	37.0
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Total Split (%)	53.4%	53.4%	53.4%	53.4%		46.6%	46.6%	46.6%	46.6%
3.3 3.0 3.0 <td>Yellow Time (s)</td> <td>4.1</td> <td>4.1</td> <td>4.1</td> <td>4.1</td> <td></td> <td>4.1</td> <td>4.1</td> <td>4.1</td> <td>4.1</td>	Yellow Time (s)	4.1	4.1	4.1	4.1		4.1	4.1	4.1	4.1
i) 0.0	All-Red Time (s)	3.3	3.3	3.3	3.3		2.9	2.9	2.9	2.9
7.4 7.4 7.4 7.4 7.0 7.0 7.0 7 None None None None Nax Max Max <td>Lost Time Adjust (s)</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td></td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td>	Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
7 None Max Max <td>Total Lost Time (s)</td> <td>7.4</td> <td>7.4</td> <td>7.4</td> <td>7.4</td> <td></td> <td>7.0</td> <td>7.0</td> <td>7.0</td> <td>7.0</td>	Total Lost Time (s)	7.4	7.4	7.4	7.4		7.0	7.0	7.0	7.0
7 8 More None Max Max <td>Lead/Lag</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Lead/Lag									
None None None None None Max Max 20.0 20.0 20.0 20.0 30.3	Lead-Lag Optimize?									
20.0 20.0 20.0 20.0 30.3 <td< td=""><td>Recall Mode</td><td>None</td><td>None</td><td>None</td><td>None</td><td>None</td><td>Мах</td><td>Max</td><td>Max</td><td>Max</td></td<>	Recall Mode	None	None	None	None	None	Мах	Max	Max	Max
0.31 0.31 0.31 0.31 0.47 <th< td=""><td>Act Effct Green (s)</td><td>20.0</td><td>20.0</td><td>20.0</td><td>20.0</td><td>20.0</td><td>30.3</td><td>30.3</td><td>30.3</td><td>30.3</td></th<>	Act Effct Green (s)	20.0	20.0	20.0	20.0	20.0	30.3	30.3	30.3	30.3
0.01 0.75 0.34 0.19 0.33 0.33 0.32 0.09 0.12 2.95 4.8 17.8 17.6 15.0 12.7 12.7 0.12 0.0 0.0 0.0 0.0 0.0 0.0 0.0 14.2 29.5 4.8 17.8 17.6 15.0 12.7 12.7 B C A B B B B B B 20.9 17.1 B T B B B B B B 20.9 20.9 17.7 B<	Actuated g/C Ratio	0.31	0.31	0.31	0.31	0.31	0.47	0.47	0.47	0.47
14.2 29.5 4.8 17.8 17.6 15.0 12.7 12.7 0.0 0.	v/c Ratio	0.01	0.75	0.34	0.19	0.33	0.33	0.32	0.09	0.19
0.0 0.0 <td>Control Delay</td> <td>14.2</td> <td>29.5</td> <td>4.8</td> <td>17.8</td> <td>17.6</td> <td>15.0</td> <td>12.7</td> <td>12.7</td> <td>12.2</td>	Control Delay	14.2	29.5	4.8	17.8	17.6	15.0	12.7	12.7	12.2
14.2 29.5 4.8 17.8 17.6 15.0 12.7 12.7 * B C A B C A D <td>Queue Delay</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td>	Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B C A B D <thd< th=""> D <thd< th=""> <thd< th=""></thd<></thd<></thd<>	Total Delay	14.2	29.5	4.8	17.8	17.6	15.0	12.7	12.7	12.2
v 20.9 17.7 13.6 mmary C B B mmary C B B mmary C B B mmary B B B Length: 64.8 E E E Landed-Uncoordinated E E E atio: 0.75 Intersection LOS: B E E pacity Utilization 80.1% ICU Level of Service D (min) F	ros	в	ပ	A	Β	в	в	8	8	в
C B B many mmary C B B C C C C C C C C C C C C C C C C	Approach Delay		20.9			17.7		13.6		12.3
	Approach LOS		ပ			ш		ш		в
	Intersection Summary									
Ш	Cycle Length: 79.4									
	Actuated Cycle Length: 64.8									
	Natural Cycle: 75									
1 80.1%	Control Type: Actuated-Uncor	ordinated								
ו 1 80.1%	Maximum v/c Ratio: 0 75									
lization 80.1%	Intersection Signal Delay: 17.	÷			h	tersection	LOS: B			
Analysis Period (min) 15	Intersection Capacity Utilization	on 80.1%			<u>ں</u>	U Level o	f Service	۵		
	Analysis Period (min) 15									

M ł all all a 5 C ć Splits

Residential Development Rosemount Gardens Trans-Plan

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Residential Development Rosemount Gardens Trans-Plan

HCM Signalized Intersection Capacity Analysis 2: Steele Street & Killaly Street West	ersectio Ilaly St	n Cap reet M	acity A /est	nalysi	s			<203	1 Tota	> AM	<2031 Total> AM Peak Hour 03-27-2024	ak Hour 03-27-2024
	1	Ť	1	1	ŧ	4	•	+	•	٠	→	7
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	*	ĸ	F	4		F	4		F	4	
Traffic Volume (vph)	ŝ	370	194	37	149	6 6	163	189	51	36	140	10
Future volume (vpn)	C 0001	3/0	194	3/	149	1000	103	1000	10001	30	140	1000
Total Low (vpnpi)	1900	1900	1900	1900	1900	1900	1900	1900	1300	1900	1900	1900
I and Lust unite (s)	1 00	1 00	<u>t</u> 0	1 00	100		100	100		1 00	100	1
Ernh ned/hikes	1 00	100	0.98	1 00	100		100	0000		100	100	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00		1.00	1.00	
Ft	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	0.99	Ľ
Fit Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1801	1727	1550	1702	1711		1662	1738		1463	1830	1
Plt Permitted	0.65	1.00	1.00	0.38	1.00		0.65	1.00		0.60	1.00	
Satd. Flow (perm)	9771	1711	0961	C R Q	11/1		1144	1/38		176	1830	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vpn)	<u>ہ</u>	402	112	6	102	= <	//1	\$07	çç Q	θŷ o	261	Ē
L 200 Croup Elever (vice)	. .	0 00	13/		160 4	-	0 771	11000	-	D Q	0. 160	
Confl. Peds (#/hr)	ი ო	704	ŧ-	- t	601	> m	9	643	• 4	6 4	201	<u>ي</u> د
Heavy Vehicles (%)	%0	10%	2%	6%	6%	22%	8%	3%	14%	23%	2%	11%
Turn Type	Perm	AN	Perm	Perm	AA		Perm	AN		Perm	NA	
Protected Phases		4			œ			2			9	
Permitted Phases	4		4	∞			2			9		
Actuated Green, G (s)	20.0	20.0	20.0	20.0	20.0		30.3	30.3		30.3	30.3	
Effective Green, g (s)	20.0	20.0	20.0	20.0	20.0		30.3	30.3		30.3	30.3	
Actuated g/C Ratio	0.31	0.31	0.31	0.31	0.31		0.47	0.47		0.47	0.47	1
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	2.8	2.8	2.8	2.8	2.8		2.8	2.8		2.8	2.8	
Lane Grp Cap (vph)	379	533	479	211	528		535	813		431	857	
v/s Ratio Prot		c0.23			0.10			0.14			0.09	1
v/s Ratio Perm	0.00	0 7E	0.05	0.06	0 22		c0.15	0.24		0.04	010	
Uniform Delay d1	15.5	20.1	16.2	16.4	17 1		10.8	10.7		9.5	10.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	Ľ
Incremental Delay, d2	0.0	5.9	0.1	0.4	0.3		1.7	1.0		0.4	0.5	
Delay (s)	15.5	26.0	16.4	16.8	17.4		12.5	11.7		10.0	10.5	
Level of Service	ю	ပ	ю	ю	ш		ш	ш		۷	в	
Approach Delay (s)		22.6			17.3			12.0			10.4	
Approach LOS		ပ			в			ш			в	
Intersection Summary												
HCM 2000 Control Delay			17.0	Ĭ	HCM 2000 Level of Service	evel of S	ervice		8			
HCM 2000 Volume to Capacity ratio	ly ratio		0.50									
Actuated Cycle Length (s)			64.7	Su	Sum of lost time (s)	time (s)			14.4			
Intersection Capacity Utilization	u		80.1%	<u>0</u>	ICU Level of Service	Service			۵			
Analysis Period (min)			15									
c Critical Lane Group												

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EBL	WBL	WBR 173 173 188 188	0.92 69 69 75	NBT NBT 137 137 137 137 0.92 0.92 149	101 102 103 NBR	250 230 250 250 ×	53 53 53 53 53 53 53 53 53 53 54 54 54 54 54 54 55 55 55 55 55 55 55	א פא ⁰
ment EBL EBT Configurations -0 Configurations -0 Configurations -0 Configurations -0 Advice (veh/h) 1 234 Control Veh/h) 1 234 Control Free -0% Advartactor 0.92 0% Advartactor 0.92 0.22 Advartation 0.92 0.32 Advartations 0.92 0.32 Advartation 0.92 0.33 Advartation 0.01 318 Advartation 318 Advartation Advartation 318 Advartation Advartation 318 Advartation Advartation 318 Advartation Advartation 318 Advartatio			NBL 69 75 75	NBT 37 8top 0.92 0.92 149	NBR 104 104 104 113	SBL 230 230 250 250 250 250 250 250 250 250 250 25	SBT 49 49 8top 0% 53	SBR
Configurations 40 Configurations 40 - Volume (veh/h) 1 234 - Volume (veh/h) 1 234 - Inter (veh/h) 1 234 - Inter (veh/h) 1 234 - Inter (veh/h) 1 234 - Interactor 0.92 0.92 - Interactor 0.92 0.92 - Montatic (veh) 1 254 - Intype - 0.92 - Intype - 1 - Intype - 1 - Intype - - - Intype -<			69 69 75 75	137 137 Stop 0% 0.92 149	104 0.92 113	230 230 0.92 250	49 49 8top 0% 0.92 53	0
Volume (veh/h) 1 234 Volume (veh/h) 1 234 Volume (veh/h) 1 234 Hour Factor 0.92 0.92 Nidth (m) 1 254 Nidth (m) 138 18 Attains 138 19 Attaise			69 69 75	137 137 137 0% 0.92 149	104 1032 132	230 230 250 250	49 8top 0% 53	00
> Volume (Veh/h) 1 234 > ontrol Free 0% Hour Factor 0.92 0.92 Hour Factor 0.92 0.92 Affwar rate (vph) 1 254 Affwar rate (vph) 318 41 Affwar rate (vph) 318 43 Affwar rate (vph) 138 43 Affwar rate (vph) 123 44 Affwar rate (vph) 123 44 Affwar rate (vph) 123 56 Affwar rate (vph) 123			0.92	137 Stop 0.92 0.92 0.92	104 0.92 113	230 250 250	49 Stop 0% 53	0
Sontrol Free 5 out factor 0.92 4 w rate (vph) 1 2.94 Allw rate (vph) 0.92 0.75 Allw rate (vph) 0.92 0.92 All allockage 0.01 1 All allockage veh) 318 2.34 Allow in storage veh) 2.31 2.34 Allow in storage veh) 318 2.34 Allow in storage veh) 318 2.3 Allow in storage veh) 318 318 Allow in vold 318 2.2 Allow in vold 318 318			0.92	Stop 0% 149	0.92	250	Stop 0% 53	
Perior 0% Hour Factor 0.92 0.92 Hour Factor 0.92 0.92 Hour Factor 0.92 0.92 Antians 0.00 1 254 Antians 0.00 1 254 Width (m) 1 254 1 Width (m) 1 254 1 Width (m) 1 254 1 Midting volume 318 1 1 anticing volume 318 1 1 anticing volume 318 1 1 atage 1 cont vol 318 1 1 atage 1 cont vol 318 2 2 atage 1 cont vol 318 <td>C Z</td> <td></td> <td>0.92</td> <td>0% 0.92 149</td> <td>0.92</td> <td>0.92</td> <td>0% 53</td> <td></td>	C Z		0.92	0% 0.92 149	0.92	0.92	0% 53	
Hour Factor 0.92 0.92 1.254 Aflow rate (vph) 1 254 1.254 Width (m) 1 254 1.254 Width (m) 1 256 1.254 Speed (m/s) 1 254 1.254 Int Mark Nothe 1.254 1.254 Int Mark Nothe 1.254 1.254 ans signal (m) 318 1.318 1.318 and signal (m) 318 1.318 1.318 atage 1 conf vol 318 2.2 2.2 atage (s) 2.2 2.318 2.2 2.2 atage (s) 2.3 2.6 3.58 2.6	z		0.92	0.92	0.92	0.92	0.92 53	
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trians With (m) y Speed (ms) th Bhockage turn flare (xeh) th Bhockage turn flare (xeh) th Phockage an signal (m) atom unblocked mitching vulme atoge toori vol atoge (s) atoge (s) atog								0
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mt Blockage tun flare (veh) tun flare (veh) tun flare (veh) an storage veh) an storage veh) an storage veh) an storage veh and flicting volume atage 1 conf vol atage 1 conf vol atage 1 conf vol atage (s) atage (s) at								
turn flare (veh) n type n type n type n totorge veh) am storage veh) am storage veh am storage veh am storage veh am storage veh atter to root vol atter t								
n type None None an storage veh) en storage tim blocked vol 318 atom vol atage 1 conf vol 318 gel (s) 4.1 atage (s) 2.2 ever fre % 100 pacity (veh/h) 1253 pacity (veh/h) 1253 et e Total 268 358 35								
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tage (s) 2.2 aue free % 100 pacity (veh/h) 1253 ion. Lane # EB1 WB1 N et Total 268 358 3	4.1		7.1	6.5	6.2	7.1	6.5	6.2
ue free % 2.2 pacity (veh/h) 1253 poin_time # EB 1 WB 1 N iertotal 268 358 3								
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Volume to Capacity 0.00 0.03 0.75	1.47							
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lelay (s) 0.0 1.1 33.5	279.4							
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Intersection Summary								
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nacity I Itilization		CIII aval of Sanrica			6			
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Residential Development Rosemount Gardens Trans-Plan

EBL EBL EBR WBL W rations EBL EBR WBL W rations (Veh/h) 1 125 49 36 e (Veh/h) 1 125 49 36 e (Veh/h) 1 125 49 36 refor 0.92 0.92 0.92 0.92 0 d (m/s) 53 39 0 d (m/s) 53 39 0 d (m/s) 1 136 53 39 0 e (veh) None None None 189 e (veh) None 189 e (veh) 80 0 d vol 166 189 so of vol 166 180	VBT 134 134 146 0.92 0.92 0.92	MBR NBL 102 0.92 0.92 1111 406	VIBL NBT 102 35 50 002 35 50 002 35 50 002 5	0 10 10 10 NBK	22 23 20 29 5 20	45 Stop 12 Stop 13 0.92 13 0.92	→ ¹ ¹ ¹ ¹ ¹ ¹ ¹
ent EBL EBT EBR WBL V onfigurations 1 125 49 36 olume (vehrh) 1 125 49 36 olume (vehrh) 1 125 49 36 ontrol Free 7 9 36 our Factor 0.92 0.92 0.92 0.92 0 flow rate (vph) 1 136 53 39 1 in flow rate (vph) 1 136 53 39 1 in flow rate (vph) 166 169 189 16 189 age 1 conf vol 5.1 5.1 4.1 36 53 22	WBT 134 134 134 0% 0% 0% 0% 0%			NBR 0.92 104 113	SBL 20 20 20 22 20 22 20 22 20 22 20 22 20 22 20 22 20 22 20 22 20 22 20 20	SBT 12 12 12 12 13 13 13 13	SBR 0:92 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
onfigurations A and a configurations on fourmer (verhn) 1 125 49 36 volumer (verhn) 1 125 49 36 volumer (verhn) 1 125 49 36 and a configuration of the second of the secon	134 134 138 108 0.0% 0.02 0.02 0.02 0.02 0.02			104 0.92 113	20 292 292	40% Stop 12 12 12 12 12 12 12 12 12 12 13 13 13 13 13 13 13 13 13 13 13 13 13	0.92
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g Speed (m(s) n type tun flack (sel) n type am storage vel) am stora		40				425	
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n storage veh) aam sjonal (m) aam sjonal (m) aag stora unbokeed mificting volume tage 2 conf vol tage 2 conf vol tage c) 5.1 gel c) 5.1 atge (s) 3.1 aue free % 100 aactiy (veh/h) 985 on Lane # EB 1 WB 1 NB 1 5 con Ann Ann Ann Ann Ann Ann Ann		40				425	
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ation unblocked inficing volume 166 tage 2 cont vol atage 2 cont vol tage (s) 5.1 atage (s) 3.1 tage (s) 3.1 tage (s) 3.1 aue free % 100 pacity (veh/h) 985 on Lane # EB1 WB1 81 con non non non non non non non non non	189 189 189	40		44		425	
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Alge 2 control mblocked vol 166 gle (s) 5.1 stage (s) 3.1 pacity (veh/h) 985 fon Lane # EB1 WB1 NB1 5 on Lane # EB1 WB1 NB1 5	189						
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minutocea vu tage (s) 5.1 tage (s) 3.1 aue free % 100 pacity (veh/h) 985 ion_Lane # EB1 WB1 NB1 5 ion_Lane # EB1 WB1 NB1 5	201	01		162	530	175	156
ue (⊳)		2 F	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	701	14	140	200
uage (s) 3.1 3.1 pacity (veh/h) 985 pacity (veh/h) 985 on Lame # EB1 WB1 NB1 S	+ .			7.0	1.1	0.0	0
3.1 sue free % 3.1 pacity (veh/h) 985 1. 0n1_anne # EB1 WB1 NB1 5 anne # EB1 WB1 NB1 5							
100 985 EB 1 WB 1 NB 1 400 000 000	2.2	с.		3.3	3.5	4.0	с. З
985 EB1 WB1 NB1 400 005 000	97	2	79 93	87	56	67	100
EB1 WB1 NB1 SI	1385	53		882	372	506	895
400 005 000	SB 1						
707	36						
	22						
20 113	-						
985 1385 639	419						
0.03	0.09						
(m) 0.0 0.7 16.0	2.2						
Control Delay (s) 0.1 1.7 14.5 14.4	14.4						
A A	œ						
Delav (s) 0.1 1.7 14	14.4						
ш	в						
Intersection Summan							
0./	Citt and a form	a daa		<			
				¢			

HCM Unsignalized Intersection Capacity Analysis 5: Killaly Street West & Main Street	nterseo t & Ma	stion C in Stre	apacit _i et	/ Analy	/sis		<2031 Total> AM Peak Hour 03-27-2024
	Ť	1	1	ŧ	1	•	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	4			ŧ	F	×	
Traffic Volume (veh/h)	246	171	15	193	198	44	
Future Volume (Veh/h)	246	171	15	193	198	44	
Sign Control	Free			Free	Stop		
Grade	%0			%0	%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	267	186	16	210	215	48	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume			267		602	360	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			267		602	360	
tC, single (s)			4.1		6.4	6.2	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			66		53	93	
cM capacity (veh/h)			1297		457	684	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2			
Volume Total	453	226	215	48			
Volume Left	0	16	215	0			
Volume Right	186	0	0	48			
cSH	1700	1297	457	684			
Volume to Capacity	0.27	0.01	0.47	0.07			
Queue Length 95th (m)	0.0	0.3	19.7	1.8			
Control Delay (s)	0.0	0.7	19.7	10.7			
Lane LOS		۷	ပ	ш			
Approach Delay (s)	0.0	0.7	18.0				
Approach LOS			ပ				
Internetion Cummons							

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ICU Level of Service

5.2 41.0% 15

Intersection Summary Average Delay Intersection Capacity Utilization Analysis Period (min)

Residential Development Rosemount Gardens Trans-Plan

HCM Unsignalized Intersection Capacity Analysis 6: Proposed Site Access/Elgin Street	ersec ss/El	tion C gin Sti	apacit) reet	/ Analy	sis		<2031 Total> AM Peak Hour 03-27-2024
	1	Ť	Ŧ	1	٨	7	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		ŧ	\$		2		
Sign Control		Stop	Stop		Stop		
Traffic Volume (vph)	0	69	24	24	68	0	
Future Volume (vph)	0	69	24	24	68	0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	75	26	26	74	0	
Direction, Lane #	EB 1	WB 1	SB 1				
Volume Total (vph)	75	52	74				
Volume Left (vph)	0	0	74				
Volume Right (vph)	0	26	0				
Hadj (s)	0.03	-0.27	0.23				
Departure Headway (s)	4.2	3.9	4.4				
Degree Utilization, x	0.09	0.06	0.09				
Capacity (veh/h)	844	902	788				
Control Delay (s)	7.6	7.1	7.8				
Approach Delay (s)	7.6	7.1	7.8				
Approach LOS	×	A	A				
Intersection Summary							
Delay			7.5				
Level of Service			۷				
Intersection Capacity Utilization			14.1%	<u>ठ</u>	CU Level of Service	Service	A
Analysis Period (min)			15				

						Î				Ì	ł	
	1	t	1	4	ţ	1	•	•	•	١	-	7
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F		×.	F	\$			4			£,	
Traffic Volume (veh/h)	51	0	91	13	m	38	88	366	0	0	459	100
Future Volume (Veh/h)	51	0	91	13	m	38	88	366	0	0	459	100
Sign Control		Stop			Stop			Free			Free	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	55	0	66	14	m	41	96	398	0	0	499	109
Pedestrians		2 2						2 2			2 2	
_ane Width (m) Malking Conod (m/a)		3.0 1 2						3.0 1 2			0.5 C F	
Malking Speed (mis)		2						2			<u>v</u> c	
Percent blockage Rinht turn flare (veh)		-						-			>	
Median type								None			None	
Median storage veh)												
Jpstream signal (m)											370	
pX, platoon unblocked												
vC, conflicting volume	1190	1146	558	1244	1200	400	610			398		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
/Cu, unblocked vol	1190	1146	558	1244	1200	400	610			398		
.C, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.1		
C, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.5	2.2			2.2		
p0 queue free %	61	100	81	87	98	93	60			100		
cM capacity (veh/h)	141	181	532	110	168	612	677			1172		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	55	66	14	44	494	608						
Volume Left	55	0	14	0	96	0						
Volume Right	0	66	0	41	0	109						
cSH	141	532	110	518	677	1700						
Volume to Capacity	0.39	0.19	0.13	0.08	0.10	0.36						
Queue Length 95th (m)	13.3 Ac 4	5.4	3.4	2.2 17.6	2.6	0.0						
	- -	<u>.</u> a	т. 177	0.21	V	2						
Approach Delav (s)	25.0	ı	19.8	ı	2.7	0.0						
Approach LOS			ပ									
ntersection Summary												
Average Delav			4.8									
ntersection Capacity Utilization	_		74 1%	C	CLLI evel of Service	f Sanira			c			
				2					C			

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	1 1	1	1	N	ŧ	1	*	ŧ	٩	فر	-
	e:		l			95	-	-		1	H
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	F	*	k.	F	æ,		F	¢¢		F	\$
Traffic Volume (vph)	10	304	273	39	368	20	222	117	44	16	172
Future Volume (vph)	9	304	273	6 6	368	20	222	117	44	16	172
ldeal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4		7.0	7.0		7.0	7.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.96		1.00	0.99
FIt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1802	1727	1550	1702	1717		1662	1707		1462	1845
Fit Permitted	0.36	1.00	1.00	0.49	1.00		0.64	1.00		0.65	1.00
Satd. Flow (perm)	1.99	1711	NGCI	8/8	11/1		71.1.1	10/1		GRA	C481
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj Flow (vph)	£ '	330	297	42	400	52	241	127	48	17	187
RTOR Reduction (vph)	0	0	203	0	m i	0	0	15	0	0	2
Lane Group Flow (vph)	÷.	330	8	42	419	0	241	160	0	17	192
Confl. Peds. (#/hr)	m		-	-		m	9		4	4	
Heavy Vehicles (%)	%0	10%	2%	6%	6%	22%	8%	3%	14%	23%	2%
Turn Type	Perm	AA	Perm	Perm	AA		Perm	AA		Perm	AA
Protected Phases		4			∞			2			9
Permitted Phases	4		4	8			2			9	
Actuated Green, G (s)	20.6	20.6	20.6	20.6	20.6		30.2	30.2		30.2	30.2
Effective Green, g (s)	20.6	20.6	20.6	20.6	20.6		30.2	30.2		30.2	30.2
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32		0.46	0.46		0.46	0.46
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4		7.0	7.0		7.0	7.0
Vehicle Extension (s)	2.8	2.8	2.8	2.8	2.8		2.8	2.8		2.8	2.8
Lane Grp Cap (vph)	215	545	489	277	542		515	790		460	854
V/S Katio Prot	000	0.19	000	10.0	CU. 24		000	60.0		000	01.0
V/S Kallo Perin	0.02	500	0.00	0.00	<u> </u>		CU.22			70.0	
Vic Raud	50.0	10.0	0.19	0.10	11.0		10.41	0.20		to 0	10.40
Dimonin Delay, di Disarection Eactor	001	100	100	1 00	1 00		1 00	1.00		1 00	001
horemental Delay 40	10	00-1 0	00.0	00.0	6 4		3.0	90		00.0	90
Delav (s)	15.6	20.6	16.4	16.2	26.9		15.0	10.9		2.6	111
Level of Service	-	O	ш	-	ပ		B	ш		×	-
Approach Delay (s)		18.6			25.9			13.3			11.0
Approach LOS		ш			ပ			8			ш
Intersection Summary											
HCM 2000 Control Delav			18.4	H	HCM 2000 Level of Service	P. Jul P. P.	Price		8		
HCM 2000 Control Cold HCM 2000 Volume to Capacity ratio	vity ratio		0.50	É					c		
Actuated Cycle Length (s)	יווא ומווט		65.2	J.	Sum of lost time (s)	time (s)			14 4		
Intersection Canacity Utilization	ion		85.0%	<u> </u>	CULLEVEL of Service	Service			ш		
Analysis Period (min)			15	2		201			ı		
for the second second second			2								

Timings 2: Steele Street & Killaly Street West	llaly S	treet V	Vest					<203	1 Total> PI	<2031 Total> PM Peak Hour 03-27-2024
	1	Ť	1	*	ł	4		۲	†	
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Configurations	F	*	ĸ	F	*	F	*	F	\$	
Traffic Volume (vph)	9	304	273	39	368	222	117	16	172	
Future Volume (vph)	9	304	273	39	368	222	117	16	172	
Turn Type	Perm	AA	Perm	Perm	AA	Perm	AN	Perm	AA	
Protected Phases		4			œ		2		9	
Permitted Phases	4		4	∞		2		9		
Detector Phase	4	4	4	∞	∞	2	2	9	9	
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	38.4	38.4	38.4	38.4	38.4	34.0	34.0	34.0	34.0	
Total Split (s)	42.4	42.4	42.4	42.4	42.4	37.0	37.0	37.0	37.0	
Total Split (%)	53.4%	53.4%	53.4%	53.4%	53.4%	46.6%	46.6%	46.6%	46.6%	
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	
All-Red Time (s)	3.3	3.3	3.3	3.3	3.3	2.9	2.9	2.9	2.9	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.4	7.4	7.4	7.4	7.4	7.0	7.0	7.0	7.0	
Lead/Lag										
Lead-Lag Optimize?	:	:	:	:	:	:	:	:	:	
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	
Act Effet Green (s)	20.6	20.6	20.6	20.6	20.6	30.2	30.2	30.2	30.2	
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32	0.46	0.46	0.46	0.46	
v/c Ratio	0.05	0.61	0.43	0.15	0.78	0.47	0.22	0.04	0.23	
Control Delay	15.0	23.6	4.2	16.6	30.4	17.7	11.1	12.6	12.8 ô.ô	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	15.0	23.6	4.2	16.6	30.4	17.7	11.1	12.6	12.8 	
ros	8	ပ	4	8	ပ	œ	8	œ	в	
Approach Delay		14.4			29.2		14.9		12.8	
Approach LOS		ю			ပ		в		ш	
Intersection Summary										
Cycle Length: 79.4										
Actuated Cycle Length: 65.3										
Natural Cycle: 75										
Control Type: Actuated-Uncoordinated	ordinated									
Maximum v/c Ratio: 0.78										
Intersection Signal Delay: 18.3	3			<u> </u>	Intersection LOS: B	LOS: B	L			
Intersection Capacity Utilization 85.0% Analysis Period (min) 15	%0.05 II			<u>د</u>	ICU LEVEI OT SERVICE E		Ц			
Splits and Phases: 2: Steele	e Street 8	Killaly S	2: Steele Street & Killaly Street West	÷.						
**				-	N.					
1 02			-		104					
2 /0				ri	A EN					
♦ Ø6			-10-		¥ Ø8					
37s				1	2.4s					

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
-ane Configurations		4			4			4			4	
Fraffic Volume (veh/h)	9	185	67	100	209	302	45	60	68	355	134	2
⁻ uture Volume (Veh/h)	9	185	67	100	209	302	45	60	68	355	134	2
Sign Control		Free			Free			Stop			Stop	
Grade		%0			%0			%0			%0	
^D eak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	201	73	109	227	328	49	86	74	386	146	2
^b edestrians												
-ane Width (m)												
Nalking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Jpstream signal (m)												
oX, platoon unblocked												
vC, conflicting volume	555			274			936	1024	238	984	897	391
/C1, stage 1 conf vol												
vC2, stage 2 conf vol												
/Cu, unblocked vol	555			274			936	1024	238	984	897	391
C, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
C, 2 stage (s)												
F (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
00 queue free %	66			92			61	54	91	0	43	100
cM capacity (veh/h)	1026			1289			125	214	801	124	254	662
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	281	664	221	534								
Volume Left	7	109	49	386								
Volume Right	73	328	74	2								
SH	1026	1289	234	144								
Volume to Capacity	0.01	0.08	0.94	3.70								
Queue Length 95th (m)	0.2	2.2	66.5	Err								
Control Delay (s)	0.3	2.2	89.3	Ъ								
ane LOS	4	4	ш	ш								
Approach Delay (s)	0.3	2.2	89.3	Err								
Approach LOS			ш	ш								
ntersection Summary												
Average Delay			3153.4									
ntersection Capacity Utilization	c	÷	100.7%	<u>0</u>	ICU Level of Service	Service			U			

	000	0.32	ø					731		731	7.1	3.5	67	272											
	0.00	78.0	4					248		248	6.2	3.3	91	791											
olup	%0	0.9Z	4					652		652	6.5	4.0	<u> 8</u> 3	353											
	000	72	3					666		666	7.1	3.5	11	317											
	000	14	4																						
- 100	%0	160	001			None																			
	000	100	601					303		303	4.1	2.2	91	1258	SB 1	48	∞	2	328	0.15	4.1	17.9	ပ	17.9	ပ
	000	110	2												NB 1	171	73	74	436	0.39	14.7	18.5	ပ	18.5	ပ
	%0	102	133			None									WB 1	291	109	14	1258	0.09	2.3	3.5	۷	3.5	
	000	0.3Z	7					182		182	5.1	3.1	100	970	EB 1	305	2	110	970	0.00	0.0	0.1	۷	0.1	

200

Lane Configurations Traffic Volume (vehh) Sign Control Grade Grade Hour Factor Heuty flow rate (vph) Pedestrians atten Width (m) Walking Speed (ms) Percent Blockage Right m flare (veh) Wedian type Median type Median type Median type Median type Wedian type Wedian type C. conficting volume vC. stage to orf volume vC. stage to for the VC. stage to orf volume vC. stage to for the VC. stage to orf volume vC. stage to for the VC. stage to orf volume vC. stage to for the VC. stage to orf volume vC. stage to for the VC. stage to orf volume vC. stage to for the VC. stage to orf volume vC. stage to for the VC. stage to orf volume vC. stage to volume vC. stage to orf volume vC. stage to volume volume vC. stage to volume vC. stage to volume volume vC. stage to volume volu

3.3 100 874

4.0 89 331

175 6.2

700 6.5

<2031 Total> PM Peak Hour 03-27-2024

HCM Unsignalized Intersection Capacity Analysis 4: Proposed Site Access/3rd Avenue & Killaly Street West

SBR +

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1 VBR

ŧ NBT

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1 EBR 101 178 178 Free

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1 EBL

EBT

0.92

68 68

67 67

13 13

155 155 Free

100 MBL

22 23 24

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ICU Level of Service

6.2 55.8% 15

Intersection Summary Average Delay Intersection Capacity Utilization Analysis Period (min)

Direction, Lane # Volume Total Volume Left Volume Right cSH Volume to Capacity Cureue Length 95th (m) Control Delay (s) Approach Delay (s) Approach LOS

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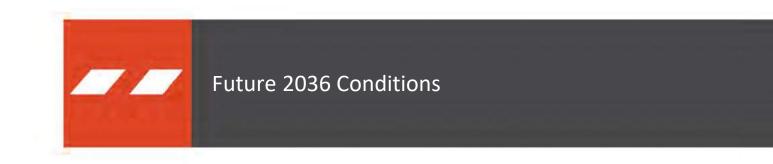
HCM Unsignalized Intersection Capacity Analysis 5: Killaly Street West & Main Street	ntersec t & Ma	tion C in Stre	apacit eet	y Analy	SIS		<2031 Total> PM Peak Hour 03-27-2024	
	t	1	1	Ļ	1	•		
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	\$:	4	F	R.		
Traffic Volume (veh/h)	268	245	36	316	176	33		
Future Volume (Veh/h)	268	245	36	316	176	33		
Sign Control	Free			Free	Stop			
Grade	%0	1		%0	%0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	291	266	39	343	191	36		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None			None				
Median storage veh)								
Upstream signal (m)								
pX, platoon unblocked								
vC, conflicting volume			291		845	424		
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			291		845	424		
tC, single (s)			4.1		6.4	6.2		
tC, 2 stage (s)								
tF (s)			2.2		3.5	3.3		
p0 queue free %			67		41	94		
cM capacity (veh/h)			1271		323	630		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2				
Volume Total	557	382	191	36				
Volume Left	0	39	191	0				
Volume Right	266	0	0	36				
cSH	1700	1271	323	630				
Volume to Capacity	0.33	0.03	0.59	0.06				
Queue Length 95th (m)	0.0	0.8	28.6	1.5				
Control Delay (s)	0.0	1.1	31.1	11.1				
Lane LOS		4		ш				
Approach Delay (s)	0.0	1.1	27.9					
Approach LOS			۵					
Intersection Summary								
Average Delay			5.8					
Intersection Capacity Utilization	u		63.1%	<u>ה</u>	ICU Level of Service	Service	в	
Analysis Period (min)			15					

HCM Unsignalized Intersection Capacity Analysis 6: Proposed Site Access/Elgin Street	tersed ess/E	ction C Igin Sti	apacit <u>.</u> eet	/ Anal)	/sis		<2031 Total> PM Peak Hour 03-27-2024
	1	Ť	ţ	~	٠	*	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		ŧ	\$		¥		
Sign Control		Stop	Stop		Stop		
Traffic Volume (vph)	0	45	67	67	44	0	
Future Volume (vph)	0	45	67	67	44	0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	49	73	73	48	0	
Direction, Lane #	EB 1	WB 1	SB 1				
Volume Total (vph)	49	146	48				
Volume Left (vph)	0	0	48				
Volume Right (vph)	0	73	0				
Hadj (s)	0.03	-0.27	0.23				
Departure Headway (s)	4.2	3.8	4.5				
Degree Utilization, x	0.06	0.15	0.06				
Capacity (veh/h)	840	931	755				
Control Delay (s)	7.4	7.5	7.8				
Approach Delay (s)	7.4	7.5	7.8				
Approach LOS	A	A	A				
Intersection Summary							
Delay			7.5				
Level of Service			A				
Intersection Capacity Utilization	_		17.6%	<u>0</u>	ICU Level of Service	Service	A
Analysis Period (min)			15				

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Aovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
-ane Configurations	F		K	F	4			4			4	
Fraffic Volume (veh/h)	39	0	36	22	9	51	30	172	0	0	332	4
⁻ uture Volume (Veh/h)	39	0	36	22	9	51	30	172	0	0	332	44
Sign Control		Stop			Stop			Free			Free	
Grade		%0			%0			%0			%0	
Deak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	42	0	39	24	7	55	33	187	0	0	361	48
Dedestrians		2						2			2	
ane Width (m)		3.6						3.6			3.6	
Valking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Jostream signal (m)											370	
X nation unblocked												
vc. conflicting volume	200	640	389	679	664	189	411			187		
C1 stare 1 ronf vol	2	2	222	5	8	2				5		
urno stade com vol												
roz, stage z com vo	200	640	200	670	GEA	100	444			107		
	0 F	0+0 L	202	610	+00	102	+			201		
C, single (s)	-1	0.0	7.0	1.2	0.5	0.4	4.1			4.1		
C, Z stage (s)	4					4	4			4		
t+ (s)	3.5	4.0	3.3	3.6	4.0	3.5	2.2			2.2		
o0 queue free %	87	100	94	93	86	60	67			100		
cM capacity (veh/h)	319	384	661	328	372	808	1157			1399		
Direction. Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
/olume Total	42	65	24	69	220	409						
/olime Left	42	3 0	74	; c	33							
/ollime Richt	ic	9 0č	; -	55	3 0	48						
	310	89	378	712	1167	1700						
	010		070		1010							
	0.13	00'N		0.09	0.U3	0.24						
Queue Length 95th (m)	3.6	1.5	1.9	2.3	0.7	0.0						
Control Delay (s)	18.0	10.8	16.8	10.5	1.5	0.0						
-ane LOS	ပ	ш	ပ	ш	A							
pproach Delay (s)	14.5		12.3		1.5	0.0						
Approach LOS	в		в									
ntersection Summary												
			6									
Average Delay			3.2									
ntersection Capacity Utilization	c		50.0%	<u>5</u>	CU Level of Service	t Service			4			
									:			

Timings 2: Steele Street & Killaly Street West	llaly St	reet V	Vest				<203	6 Back	<2036 Background> AM Peak Hour 03-27-2024	our 2024
	1	Ť	1	4	ŧ	4	+	٠	+	
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Configurations	F	*	×.	F	4	F	4	F	¢Ť.	
Traffic Volume (vph)	2	180	214	41	84	180	170	39	128	
Future Volume (vph)	5	180	214	41	84	180	170	39	128	
Turn Type	Perm	NA	Perm	Perm	AN	Perm	AN	Perm	NA	
Protected Phases		4			∞		2		9	
Permitted Phases	4		4	∞		2		9		
Detector Phase	4	4	4	∞	∞	2	2	9	9	
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	38.4	38.4	38.4	38.4	38.4	34.0	34.0	34.0	34.0	
Total Split (s)	42.4	42.4	42.4	42.4	42.4	37.0	37.0	37.0	37.0	
Total Split (%)	53.4%	53.4%	53.4%	53.4%	53.4%	46.6%	46.6%	46.6%	46.6%	
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	
All-Red Time (s)	3.3	3.3	3.3	3.3	3.3	2.9	2.9	2.9	2.9	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.4	7.4	7.4	7.4	7.4	7.0	7.0	7.0	7.0	
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	Max	Max	Мах	Max	
Act Effct Green (s)	12.0	12.0	12.0	12.0	12.0	30.0	30.0	30.0	30.0	
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21	0.53	0.53	0.53	0.53	
v/c Ratio	0.02	0.54	0.46	0.19	0.28	0.32	0.27	0.08	0.16	
Control Delay	17.2	25.5	6.3	20.0	18.9	9.8	7.8	7.8	7.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.2	25.5	6.3	20.0	18.9	9.8	7.8	7.8	7.5	
LOS	8	ပ	4	8	8	۷	A	A	A	
Approach Delay		15.1			19.2		8.7		7.6	
Approach LOS		В			в		A		A	
Intersection Summary										
Cycle Length: 79.4										
Actuated Cycle Length: 56.4										
Natural Cycle: 75										
Control Type: Actuated-Uncoordinated	ordinated									
Maximum v/c Ratio: 0.54										
Intersection Signal Delay: 12.1	100			<u>t</u> (Intersection LOS: B	LOS: B	c			
Intersection Capacity Utilization 74.8%	in /4.8%			<u>ں</u>	ICU Level of Service D	1 Service				
Analysis Period (min) 10										

Splits and Phases:	Splits and Phases: 2: Steele Street & Killaly Street West	
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37s		42.448

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
-ane Configurations	F	*	ĸ	F	4		¥	4		F	4	
Fraffic Volume (vph)	5	180	214	41	84	=	180	170	56	39	128	=
⁻ uture Volume (vph)	5	180	214	41	84	1	180	170	56	39	128	1
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
fotal Lost time (s)	7.4	7.4	7.4	7.4	7.4		7.0	7.0		7.0	7.0	
ane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
⁻ rpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	
Ipb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00		1.00	1.00	
T.	1.00	1.00	0.85	1.00	0.98		1.00	0.96		1.00	0.99	
Fit Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1801	1727	1550	1702	1685		1663	1720		1463	1824	
Fit Permitted	0.69	1.00	1.00	0.63	1.00		0.66	1.00		0.61	1.00	
Satd. Flow (perm)	1309	1727	1550	1137	1685		1157	1720		934	1824	
^p eak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	196	233	45	91	12	196	185	61	42	139	12
<pre>TOR Reduction (vph)</pre>	0	0	183	0	6	0	0	÷	0	0	ო	0
ane Group Flow (vph).	5	196	20	45	94	0	196	235	0	42	148	0
Confl. Peds. (#/hr)	°		-			e	9		4	4		9
Heavy Vehicles (%)	%0	10%	2%	6%	6%	22%	8%	3%	14%	23%	2%	11%
um Type	Perm	ΑN	Perm	Perm	ΡN		Perm	AN		Perm	NA	
Protected Phases		4			8			2			9	
^p ermitted Phases	4		4	∞			2			9		
Actuated Green, G (s)	12.0	12.0	12.0	12.0	12.0		30.0	30.0		30.0	30.0	
Effective Green, g (s)	12.0	12.0	12.0	12.0	12.0		30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21		0.53	0.53		0.53	0.53	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4		7.0	7.0		7.0	7.0	
/ehicle Extension (s)	2.8	2.8	2.8	2.8	2.8		2.8	2.8		2.8	2.8	
ane Grp Cap (vph)	278	367	329	241	358		615	914		496	970	
//s Katio Prot		c0.11			0.06			0.14			0.08	
//s Ratio Perm	0.00	5	0.03	0.04			c0.17	000		0.04	14.0	
//C Raliu Iniferent Dataut al 1	17 E	20°-0	1 0	10.19	10 5		7 C D	07.0		0.00	CI .0	
Dimonin Delay, u i Dimoreción Factor	001	1.00	100	1 00	001		101	1 00		0.0	100	
rogression racion acremental Dalay, d'9	00	11	00.1	0.2	001		11	201		0.2	00.0	
Delay (c)	17.6	211	18.2	18.5	18.0		8	7.8		89	7 1	
oud (J) evel of Service			4 C	2	2		0.0	2. ⊲		• ⊲	4	
Approach Delay (s)	c	19.5	c	נ	18.8		c	8.3		c	2 ^{.0}	
Approach LOS		ш			ш			٩			A	
ntersection Summary												
HCM 2000 Control Delav			13.4	H	M 2000 I	HCM 2000 Level of Service	ervice		8			
HCM 2000 Volume to Capacity ratio	tv ratio		0.38						I			
Actuated Cycle Length (s)			56.4	Su	im of lost	time (s)			14.4			
ntersection Capacity Utilization	uo		74.8%	<u>0</u>	CU Level of Service	f Service						

HCM Unsignalized Intersection Capacity Analysis 3: Killaly Street West & West Side Road	iterseo	ction C est Side	apacit) e Roac	/ Analy	/sis		<2036	Back	<2036 Background> AM Peak Hour 03-27-2024	> AM	Peak I 03-2	ak Hour 03-27-2024
	1	Ť	1	4	ŧ	4	•	+	•	٠	-	\mathbf{r}
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (veh/h)	-	143	0	0	93	192	0	0	0	254	0	0
Future Volume (Veh/h)	-	143	0	0	93	192	0	0	0	254	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	-	155	0	0	101	209	0	0	0	276	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC. conflicting volume	310			155			362	467	155	362	362	206
vC1, stage 1 conf vo												
vC2, stage 2 conf vol												Ĺ
vCu, unblocked vol	310			155			362	467	155	362	362	206
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	53	100	100
cM capacity (veh/h)	1262			1425			593	493	891	591	565	840
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	156	310	0	276								
Volume Left	-	0	0	276								
Volume Right	0	209	0	0								
cSH	1262	1425	1700	591								
Volume to Capacity	0.00	0.00	0.00	0.47								
Queue Length 95th (m)	0.0	0.0	0.0	19.8								
Control Delay (s)	0.1	0.0	0.0	16.3								1
Lane LOS	4		<	ပ								
Approach Delay (s)	0.1	0.0	0.0	16.3								1
Approach LOS			A	ပ								
Intersection Summary												
Average Delav			6.1									
Intersection Capacity Utilization	_		37.4%	<u>0</u>	ICU Level of Service	f Service			A			
Analysis Period (min)			15									

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
-ane Configurations		4			4			4			ţ	
raffic Volume (veh/h)	-	124	0	0	72	20	0	0	0	22	0	-
uture Volume (Veh/h)	~	124	0	0	72	20	0	0	0	22	0	-
Sign Control		Free			Free			Stop			Stop	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	-	135	0	0	78	22	0	0	0	24	0	-
Dedestrians												
-ane Width (m)												
Valking Speed (m/s)												
^D ercent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Jostream signal (m)												
oX, platoon unblocked												
/C. conflicting volume	100			135			227	237	135	226	226	89
C1. stage 1 conf vol												
vC2, stage 2 conf vol												
/Cu, unblocked vol	100			135			227	237	135	226	226	89
tC, single (s)	5.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
C, 2 stage (s)												
tF (s)	<u>3.</u> 1			2.2			3.5	4.0	3.3	3.5	4.0	3.3
o0 queue free %	10			100			100	100	100	67	100	100
cM capacity (veh/h)	1052			1449			727	663	914	733	673	975
Direction I and #	FR 1	WR 1	NR 1	SR 1								
/olime Totol	120	100		35								
	<u></u>	8		5								
/olume cent		2 C	-	ţ								
	1050	1440	1700	- 40								
		1443		/40								
	0.00	0.0	0.0	0.03								
Jueue Length 95th (m)	0.0	0.0	0.0	0.8								
Control Delay (s)	0.1	0.0	0.0	10.0								
ane LOS	4		4	œ								
Approach Delay (s)	0.1	0.0	0.0	10.0								
Approach LOS			۷	ш								
ntersection Summary												
Average Delay			1.0									
ntersection Capacity Utilization			17 20/		CLLL aval of Sanica	f Convice			<			
			0/0-1-	2	ר בינו י				٢			

HCM Unsignalized Intersection Capacity Analysis 5: Killaly Street West & Main Street

<2036 Background> AM Peak Hour

5: Killaly Street West & Main Street	& Mai	n Stre	et .				03-27-2024
	Ť	1	1	ţ	•	•	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	4			ŧ	F	ĸ	
Traffic Volume (veh/h)	271	134	4	213	99	10	
Future Volume (Veh/h)	271	134	4	213	<u>66</u>	10	
Sign Control	Free			Free	Stop		
Grade	%0			%0	%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	295	146	4	232	72	1	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume			295		608	368	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			295		608	368	
tC, single (s)			4.1		6.4	6.2	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			100		84	98	
cM capacity (veh/h)			1266		457	677	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2			
Volume Total	441	236	72	11			
Volume Left	0	4	72	0			
Volume Right	146	0	0	1			
cSH	1700	1266	457	677			
Volume to Capacity	0.26	0.00	0.16	0.02			
Queue Length 95th (m)	0.0	0.1	4.4	0.4			
Control Delay (s)	0.0	0.2	14.3	10.4			
Lane LOS		۷	ш	ш			
Approach Delay (s)	0.0	0.2	13.8				
Approach LOS			в				
Intersection Summary							
Average Delay			1.6				
Intersection Capacity Utilization	-		32.8%	<u>o</u>	ICU Level of Service	Service	A
Analysis Period (min)			15				

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1: Steele Street & El	Elgin Street	eet									U3-Z	03-27-2024
	1	Ť	1	4	ţ	∢	•	•	٩	٨	+	7
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F		R	¥	4			t)			4	
Traffic Volume (veh/h)	32	0	27	14	4	42	23	405	0	0	507	37
Future Volume (Veh/h)	32	0	27	14	4	42	23	405	0	0	507	37
Sign Control		Stop			Stop			Free			Free	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	35	0	29	15	4	46	25	440	0	0	551	40
Pedestrians		2						2			2	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											370	
pX, platoon unblocked												
vC, conflicting volume	1113	1063	575	1092	1083	442	593			440		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1113	1063	575	1092	1083	442	593			440		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.5	2.2			2.2		
p0 queue free %	79	100	94	91	98	92	67			100		
cM capacity (veh/h)	166	219	520	173	213	578	991			1131		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	35	29	15	50	465	591						
Volume Left	35	0	15	0	25	0						
Volume Right	0	53	0	46	0	40						
cSH	166	520	173	509	991	1700						
Volume to Capacity	0.21	0.06	0.09	0.10	0.03	0.35						
Queue Length 95th (m)	6.1	1.4	2.3	2.6	0.6	0.0						
Control Delay (s)	32.4	12.3	27.8	12.8	0.8	0.0						
Lane LOS		ш		œ	4							
Approach Delay (s)	23.3		16.3		0.8	0.0						
Approach LOS	ပ		ပ									
Intersection Summary												
Average Delay			2.4									
Intersection Capacity Utilization	u		55.5%	ō	ICU Level of Service	f Service			m			
Analysis Perind (min)			5									

Ame Count EBI MBI MBI </th <th>2: Steele Street & Killaly Street West</th> <th>llaly St</th> <th>reet V</th> <th>Vest</th> <th></th> <th></th> <th></th> <th>~2036</th> <th>o back</th> <th><∠USO BACKGROURIQ> FINI FEAK FOUR 03-27-2024</th> <th>03-27-2024</th>	2: Steele Street & Killaly Street West	llaly St	reet V	Vest				~2036	o back	<∠USO BACKGROURIQ> FINI FEAK FOUR 03-27-2024	03-27-2024
EBL EBT EBR WBL WBT NBL NBT SBL 11 186 302 43 185 245 105 18 11 186 302 43 185 245 105 18 11 186 302 43 185 245 105 18 11 186 302 43 185 245 105 18 11 186 302 43 185 245 105 18 11 186 302 43 84 84 84 84 11 13 34 384 384 384 340 340 340 534% 534% 534% 334 342 424 426 41 41 41 13 3 3 33 33 33 33 33 33 33 33 33 33 33 33 33		•	Ť	1	4	ŧ	4	-	٨	+	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Lane Configurations	F	*	×.	*	£,	F	\$	*	1 ,	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Traffic Volume (vph)	=	186	302	43	185	245	105	18	115	
Perm NA Perm S1 2 6 6 6 6 8.0	Future Volume (vph)	1	186	302	43	185	245	105	18	115	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Turn Type	Perm	NA	Perm	Perm	AN	Perm	AA	Perm	NA	
4 4 4 8 2 6 4 4 4 8 8 2 6 10.0 10.0 10.0 10.0 10.0 8.0 8.0 8.0 38.4 38.4 38.4 38.4 38.4 37.0 37.0 37.0 38.4 38.4 38.4 38.4 38.4 37.0 37.0 37.0 42.4 42.4 42.4 42.4 42.4 42.4 41.4 41.4 41 41 41.4 41.4 41.4 41.4 41.4 53.4% 53.4% 53.4% 53.4% 53.4% 45.6% 41.4 7.4 7.4 7.4 7.4 7.4 7.0 7.0 7.0 7.4 7.4 7.4 7.4 7.4 7.1 7.1 7.1 7.4 7.4 7.4 7.4 7.0 7.0 7.0 7.0 7.2 7.2 7.2 127 127 30.1 30.1 10.2 0.2 0.20 0.0 0.0 0.0 0.0 7.3 24.9 6.4 19.6 25.7 118 6.9 8.0 17.3 <td>Protected Phases</td> <td></td> <td>4</td> <td></td> <td></td> <td>∞</td> <td></td> <td>2</td> <td></td> <td>9</td> <td></td>	Protected Phases		4			∞		2		9	
4 4 4 8 8 2 2 6 10.0 10.0 10.0 10.0 10.0 10.0 8.0 8.0 38.4 38.4 38.4 38.4 38.4 34.0 34.0 34.0 38.4 38.4 38.4 38.4 38.4 34.0 34.0 34.0 38.4 53.4% 53.4% 53.4% 53.4% 54.6% 46.6% 46.6% 41.1 4.1 4.1 4.1 4.1 4.1 4.1 3.3 3.3 3.3 3.3 2.9 2.9 2.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 1.1 4.1 4.1 4.1 4.1 3.3 3.3 3.3 2.9 2.9 2.9 0.0 0.0 0.0 0.0 0.0 0.0 0.1 1.27 1.27 1.27 1.27 30.1 0.1 0.22 0.23 0.53 0.53 0.53 0.20 0.0 0.0 0.0 0.0 0.0 1.1 2.127 127 127 127 1.2 1.2 1	Permitted Phases	4		4	œ		2		9		
100 100 100 100 100 100 80 80 80 38.4 38.4 38.4 38.4 34.0 34.0 34.0 38.4 38.4 38.4 38.4 34.0 34.0 34.0 42.4 42.4 42.4 42.4 37.0 37.0 37.0 53.4% 53.4% 53.4% 53.4% 56.6% 46.6% 46.6% 4.1 4.1 4.1 4.1 4.1 4.1 4.1 3.3 3.3 3.3 3.3 3.3 3.3 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 7.4 7.4 7.4 7.4 7.0 7.0 7.0 7.1 7.27 127 127 127 30.1 30.1 0.22 0.23 0.25 0.19 0.59 0.3 0.3 17.3 24.9 6.4 19.6 2.57 11.8 6.9 8.0 17.3 24.9 6.4 19.6 2.57 11.8 6.9 8.0 17.3 24.9 6.4 19.6 2.57 11.8 6.9 8.0 17.3	Detector Phase	4	4	4	∞	∞	2	2	9	9	
10.0 10.0 10.0 10.0 10.0 10.0 8.0 8.0 8.0 42.4 42.4 42.4 42.4 42.4 37.0<	Switch Phase										
38.4 38.4 38.4 38.4 38.4 38.4 38.4 38.0 37.0 <td< td=""><td>Minimum Initial (s)</td><td>10.0</td><td>10.0</td><td>10.0</td><td>10.0</td><td>10.0</td><td>8.0</td><td>8.0</td><td>8.0</td><td>8.0</td><td></td></td<>	Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	
42.4 42.4 42.4 42.4 42.4 42.4 42.4 42.4 43.0 37.0 37.0 37.0 53.4% 53.4% 53.4% 53.4% 55.4% 55.6% 46.6%	Minimum Split (s)	38.4	38.4	38.4	38.4	38.4	34.0	34.0	34.0	34.0	
53.4% 53.4% 53.4% 53.4% 53.4% 53.4% 55.4% 45.6% 46.6% 41 41 41 41 41 41 41 41 41 41 1 1 41 41 41 41 41 41 1 1 41 41 41 41 41 41 1 1 41 41 41 41 41 1 0.0 0.0 0.0 0.0 0.0 0.0 1 1 7 7 7 7 7 7 1 1 7 7 7 7 7 7 7 1 1 4 7 7 7 7 7 7 1 1 1 7 7 7 7 7 7 1 12 12 12 12 12 13 8 63 17.3 24.9 6.4 196 25.7 118 69 80 17.3 24.9 6.4 196 25.7 118 69 80 13.5 2 6.4 196 25.7 <t< td=""><td>Total Split (s)</td><td>42.4</td><td>42.4</td><td>42.4</td><td>42.4</td><td>42.4</td><td>37.0</td><td>37.0</td><td>37.0</td><td>37.0</td><td></td></t<>	Total Split (s)	42.4	42.4	42.4	42.4	42.4	37.0	37.0	37.0	37.0	
4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 3.3 3.3 3.3 3.3 3.3 2.9 2.9 7.4 7.4 7.4 7.4 7.4 7.0 7.0 7.0 7.4 7.4 7.4 7.4 7.4 7.0 7.0 7.0 7.4 7.4 7.4 7.4 7.0 7.0 7.0 7.0 7.4 7.4 7.4 7.4 7.0 7.0 7.0 7.0 7.4 7.2 7.2 12.7 12.7 12.7 3.0.1 30.1 0.22 0.23 0.59 0.43 0.63 0.0 0.0 0.23 0.23 0.55 0.13 0.61 8.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 17.3 24.9 6.4 19.6 25.7 118 6.9 8.0 1 1.5 1.96 25.7 118 6.9 9.0 9.0 1.3 24.9 6.4 19.6 25.7 118 6.9 9.0 1.5 1.5 2.6 5.7 118 6.9 9.0	Total Split (%)	53.4%	53.4%	53.4%	53.4%	53.4%	46.6%	46.6%	46.6%	46.6%	
3.3 3.3 3.3 3.3 3.3 2.9 2.9 2.9 7.4 7.4 7.4 7.4 7.4 7.4 7.0 7.0 7.4 7.4 7.4 7.4 7.4 7.4 7.0 7.0 7.4 7.4 7.4 7.4 7.4 7.4 7.0 7.0 7.4 7.4 7.4 7.4 7.4 7.0 0.0 0.0 7.7 12.7 12.7 12.7 12.7 30.1 30.1 0.22 0.53 0.55 0.19 0.39 0.43 0.9 0.05 0.53 0.55 0.19 0.39 0.43 0.18 0.09 0.17 2.2 0.2 0.2 0.2 0.5 0.53 0.53 0.17 2.17 12.7 11.8 6.9 8.0 0.17 2.4 B C B A A 13.5 2.4.6 2.4.6 9.9 9.9 9.9 13.5 2.4.6 B C A A 7.2 2.1 1.18 6.9 9.9 13.5 2.4.6 9.9 9.9 9.9 13	Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 7.4 7.4 7.4 7.4 7.4 7.0 7.0 7.0 None None None None None Max Max Max None None None None None Max Max Max 17.1 12.7 12.7 12.7 12.7 30.1 30.1 0.22 0.23 0.55 0.19 0.59 0.33 0.38 0.33 0.15 0.23 0.55 0.19 0.57 118 6.9 8.0 17.3 24.9 6.4 196 2.5.7 118 6.9 8.0 13.5 2 2 2 2 9.9 9.9 1 13.5 2 4 196 2.5.7 118 6.9 8.0 13.5 2 2 18 6.9 9.9 1 2.2	All-Red Time (s)	3.3	3.3	3.3	3.3	3.3	2.9	2.9	2.9	2.9	
7.4 7.4 7.4 7.4 7.4 7.0 7.0 7.0 None None None None None Max Max Max 12.7 12.7 12.7 12.7 12.7 30.1 30.1 12.7 12.7 12.7 12.7 30.1 30.1 0.12 0.22 0.22 0.22 0.53 0.53 0.05 0.53 0.59 0.43 0.18 6.9 17.3 24.9 6.4 19.6 25.7 118 6.9 17.3 24.9 6.4 19.6 25.7 118 6.9 8.0 17.3 24.9 6.4 19.6 25.7 118 6.9 8.0 17.3 24.9 6.4 19.6 25.7 118 6.9 8.0 17.3 24.9 2.7 2.4 6.9 9.9 9.9 13.5 A B C A A 17.2 2.1 2.1 B 9.9 9.9 17.2 2.1 2.1 10.6 0.0 0.0 13.5 A B C A A 13.5 A <td>Lost Time Adjust (s)</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td></td>	Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
None None None None None Max Ma	Total Lost Time (s)	7.4	7.4	7.4	7.4	7.4	7.0	7.0	7.0	7.0	
None None None None None None Nax Max M	Lead/Lag										
None None None None None Max Max Max 127 127 127 127 127 30.1 30.1 30.1 0.25 0.25 0.25 0.25 0.25 0.33 0.33 0.33 0.33 0.33 0.33 0.33 0.33 0.33 0.33 0.33 0.33 0.33 0.33 0.35 0.19 0.59 0.43 0.18 0.04 104 17.3 24.9 6.4 19.6 2.57 11.8 6.9 8.0 10 17.3 24.9 6.4 19.6 2.57 11.8 6.9 8.0 10 11 12.5 13.5 24.6 9.9 8.0 12.1 12.1 12.1 12.1 12.1 12.1 12.1 12.1 12.1 12.1 12.1 13.5 13.5 24.6 9.9 9.9 13.5 12.1 12.1 12.1 12.1 12.1 12.1 12.1 12.1 12.1 <td>Lead-Lag Optimize?</td> <td></td>	Lead-Lag Optimize?										
12.7 12.7 12.7 12.7 12.7 12.7 30.1 30.1 0.22 0.22 0.22 0.23 0.35 0.05 0.22 0.23 0.55 0.19 0.59 0.33 0.05 0.0 0.0 0.0 0.59 0.53 0.35 0.05 0.0 0.0 0.0 0.0 0.0 0.0 0.0 17.3 24.9 6.4 19.6 25.7 11.8 6.9 8.0 17.3 24.9 6.4 19.6 25.7 11.8 6.9 8.0 17.3 24.9 6.4 19.6 25.7 11.8 6.9 8.0 13.5 2 2 2 2 24.6 9.9 9.9 13.5 2 2 2 2 2 6.4 19.6 19.6 17.3 13.5 2 2 4 A A A A A 13.5 2 2 4 2 5 C A A 14.0	Recall Mode	None	None	None	None	None	Max	Мах	Мах	Max	
0.22 0.22 0.22 0.23 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.5	Act Effct Green (s)	12.7	12.7	12.7	12.7	12.7	30.1	30.1	30.1	30.1	
0.05 0.53 0.55 0.19 0.59 0.43 0.18 0.04 1.3 29 6.4 196 2.5.7 11.8 6.9 8.0 1.3 24.9 6.4 19.6 2.5.7 11.8 6.9 8.0 1.3.5 A B C B A A 1.3.5 24.6 9.9 1.3.5 24.6 9.9 1.3.5 24.6 9.9 1.3.5 24.6 9.9 1.3.5 1.1.8 6.9 8.0 1.3.5 1.1.8 6.9 8.0 1.3.5 24.6 9.9 1.3.5 1.1.8 6.9 8.0 1.3.5 1.1.8 6.0 8.0 8.0 1.3.5 1.1.8 6.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8	Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22	0.53	0.53	0.53	0.53	
17.3 24.9 6.4 19.6 25.7 11.8 6.9 8.0 0.0<	v/c Ratio	0.05	0.53	0.55	0.19	0.59	0.43	0.18	0.04	0.14	
0.0 0.0 <td>Control Delay</td> <td>17.3</td> <td>24.9</td> <td>6.4</td> <td>19.6</td> <td>25.7</td> <td>11.8</td> <td>6.9</td> <td>8.0</td> <td>7.9</td> <td></td>	Control Delay	17.3	24.9	6.4	19.6	25.7	11.8	6.9	8.0	7.9	
17.3 24.9 6.4 19.6 25.7 11.8 6.9 8.0 13.5 C A B C B A A 13.5 C A C B C B A 13.5 C A C B C B A 13.5 C A C B C A 13.5 C A C A 13.5 C A C A 13.5 C A C 13.5 A C A 13.5 A C A 13.2 A C A 13.2 A A 14.0 Intersection LOS: B 12.14.0 Intersection LOS: B	Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
B C A B C B A A 13.5 24.6 9.9 9.9 7 77.2 17.2	Total Delay	17.3	24.9	6.4	19.6	25.7	11.8	6.9	8.0	7.9	
13.5 24.6 9.9 B C A A 7.2 Incoordinated Incoordinated Intersection LOS: B 14.0 Intersection LOS: B Eation 80.9% CU Level of Service D	ros	В	ပ	۷	В	ပ	в	A	A	A	
R C A 7.2 Incoordinated Intersection LOS: B 14.0 Intersection LOS: B Ization 80.9% ICU Level of Service D	Approach Delay		13.5			24.6		6.6		7.9	
7.2 Jrcoordinated 14.0 Ization 80.9%	Approach LOS		В			ပ		A		A	
17.2 Incoordinated : 14.0 Ization 80.9%	Intersection Summary										
7.2 Incoordinated 14.0 Ization 80.9%	Cycle Length: 79.4										
Incoordinated 14.0 Ization 80.9%	Actuated Cycle Length: 57.2										
Incoordinated : 14.0 Ization 80.9%	Natural Cycle: 75										
: 14.0 lization 80.9%	Control Type: Actuated-Uncoo	rdinated									
: 14.0 I lization 80.9% I	Maximum v/c Ratio: 0.59										
ization 80.9%	Intersection Signal Delay: 14.0	-				ersection	LOS: B				
Analysis Period (min) 15	Intersection Capacity Utilizatio	n 80.9%			<u>ں</u>	U Level o	f Service	۵			
	Analysis Period (min) 15										

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eet West	A04	42,4 s	80	42.48
plits and Phases: 2: Steele Street & Killaly Street West				
plits and Phases:	A Ø2	7 8	₽ Ø6	7s

Residential Development Rosemount Gardens Trans-Plan

Synchro 11 Report Page 1

Residential Development Rosemount Gardens Trans-Plan

Adventent EBL EBL EBL are Configurations 1 186 -uture Valume (xph) 11 186 -uture Valume (xph) 11 186 -uture Valume (xph) 11 186 -uture Valume (xph) 1900 1900 (ctal Lost time (s) 7.4 7.4 imp, ped/bikes 1.00 1.00 1.00 rip, ped/bikes 1.00 1.00 1.00 each Flow (prh) 1.172 1.127 202 each Flow (prh) 1.12 2.02 202 out Flow (prh) 1.12 2.02 202 out Flow (prh) 1.2		WBT 185 185 185 185 185 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	WBR 22 22 1900 0.92 24 24 23 3 3	NBL 245 245 7.0 7.0 11.00 0.95 0.67 0.95 0.67 0.95 266 0.92 266 0.92 266 8%	NBT 105 105 105 7.0 7.0 1.00 0.95 0.95 0.95 0.95 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	NBR 48 48 48 1900 0.92 0.92 0.92 0.92	SBL 18 7.0 1900 1.000 1.000 1.000 1.000 1.000 0.95 0.95 0.95 0.95 0.95 0.95 0.95	SBT 115 115 115 115 100 1000 1000 1100 1137 1137 1137 125 125 2 2	SBR 6 0 0 0 0 0 0 0 0 0 0 0
11 186 11 186 11 186 11 186 124 7.4 100 100 100 100 100 100 100 100 100 100 100 100 1172 1727 1032 0.92 1172 1727 1172 1727 1172 1727 0.92 0.92 0.92 0.92 0.93 100 112 202 0.3 0.92 0.93 0.92 0.93 0.92 0.93 10% 0.94 4 12.7 12.7 12.7 12.7				245 245 7.0 7.0 1.000 1.000 0.99 0.05 266 266 266 266 8%	105 105 105 105 7.0 7.0 1.00 0.99 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	48 1900 52 0	18 1900 1900 1.00 1.00 1.00 0.95 0.95 0.95 0.92 20 20 20 20 20 20 20	115 115 115 1100 1000 1100 1100 1100 11	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
11 186 11 186 1300 1300 1.00 1.00 1.00 1.00 0.62 1.02 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.12 1.27 1.27 1.27				245 245 245 7.0 1.00 0.99 0.99 0.99 0.95 266 266 266 266 266 266 266 266 266 26	105 105 105 7.0 7.0 0.99 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.14 1.14 1.14 1.14 1.16 1.16 1.16 1.10 1.10 1.10 1.00 1.00	48 48 52 52 0 0	18 1900 7.0 7.0 1.000 1.000 0.95 0.95 0.95 0.95 0.92 20 20 20 20 20 20 20 20 20 20 20 20 20	115 115 7.0 7.0 1.00 1.00 1.00 1.00 1.00 1.00 1	6 1900 0.92 7 0 0 6
11 186 7.4 7.4 7.4 7.4 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.02 0.02 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 1.02 1.12 1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27				245 7.0 7.0 1.00 1.00 0.99 0.95 0.95 0.95 0.95 0.95 0.92 0.67 0.92 0.67 0.92 0.67 0.92 266 8%	105 1900 7.0 7.0 1.00 1.00 1.00 1.00 1.00 1.00	0.92 0.92 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	18 7.0 7.0 1.00 1.00 1.00 0.95 0.95 0.95 0.95 0.95 0.95 20 20 20 20 20 20 20 20 20 20 20 20 20	115 1900 7.0 7.0 1.00 1.00 1.00 1.00 1.00 1.00	6 1900 0.92 0 6
1900 1900 1900 1900 100 100 100 100 100				1900 7.0 7.0 1.00 0.99 0.95 0.95 0.95 0.92 0.67 0.92 0 8%	1900 7.0 7.0 0.99 0.95 0.95 1.00 1.00 1.00 1.00 1.10 1.14 1.14 1.14	00 0 0 0 0	1900 7.0 1.00 1.00 1.00 1.00 0.95 0.95 0.95 0.95 0.95 20 20 20 20 20 20	1900 7.0 7.0 1.00 1.00 0.99 0.99 1.00 1.00 1.00 1.	1900 0.92 0 6
7.4 7.4 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00				7.0 1.00 1.00 0.95 0.67 0.67 0.67 0.95 0.67 266 8% 8%	7.0 1.00 0.99 0.95 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	7.0 1.00 1.00 1.00 0.95 0.65 0.65 0.65 0.65 0.65 0.65 0.65 0.6	7.0 1.00 1.00 0.99 0.99 1.00 1.00 1.00 1.	0.92
100 100 100 100 100 100 100 100 100 100				1.00 1.00 0.99 0.67 0.67 0.95 0.67 266 8% 8%	1.00 0.99 0.95 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.10 1.1	0 0 0 0 0 0 0 0	1.00 1.00 1.00 0.95 0.95 0.95 0.95 0.95 0.92 20 20 20 20 4	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0.02
100 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.95 1.00 0.62 1.00 0.62 1.00 0.62 1.00 1.127 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 1.02 0.92 1.02 0.92 1.02 0.92 1.02 0.92 1.02 1.127 1.07 1.127 1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27				1.00 0.99 0.95 0.95 0.95 0.92 0.92 0 266 8%	0.99 0.95 0.95 0.95 1.00 0.92 0.92 150	× 0 0 0.92	1.00 1.00 1.00 0.95 0.65 0.65 0.95 0.92 20 20 20 20 20 4	1.00 1.00 0.99 1.00 1.00 1.837 1.837 1.837 0.92 0.92 2.2	0 0 0
100 100 1.00 1.00 0.95 1.00 0.95 1.00 1172 1727 1172 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 10% 0.93 10% 0.94 4 Perm A A 12.7 12.7 12.7 12.7				0.99 1.00 0.95 0.67 0.67 0.92 266 8% 8%	1.00 0.95 1.00 1688 1.00 1688 1.00 0.92 0.92 114 114 116 150	× 0 0 52 0	1.00 1.00 0.95 0.95 0.95 0.92 0.92 0.92 0.92 0 20	1.00 0.99 1.00 1.00 1.00 1.837 1.837 0.92 0.92 0.92	0.92 0 6
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00				1.00 0.95 0.67 0.67 266 266 8%	0.95 1.00 1.00 1.00 1.00 0.92 114 150	0.92 52 0	1.00 0.95 0.65 0.65 0.92 20 20 20 20 20 4	0.99 1.00 1.00 1.00 0.92 0.92 2 2	0.92 0 0 6
0.95 1.00 1001 1727 0.62 1.00 1172 1727 1172 1727 1172 127 0.92 0.92 0.92 0.92 12 100 0% 10% 0% 10% 0% 10% 10% 12.7 12.7 12.7 12.7				0.95 1662 0.67 11177 266 266 266 8%	1.00 1688 1.00 1.00 0.92 114 114 150	0 0 0 0	0.95 1463 0.65 0.92 20 20 20 4	1.00 1837 1.00 1.92 0.92 2 2	0.92 6 6
127 1172 1172 1172 1172 1172 1172 1172				1662 0.67 0.67 0.92 266 266 266 8%	1688 1.00 1.00 1.02 1.14 114 150	0 0 0 0	1463 0.65 0.92 20 20 20 4	1837 1.00 1837 0.92 2 2	0.92 0 0
0.62 1.00 1172 1727 0.92 0.92 12 202 0 12 202 0 10% 12 202 0 10% 12 127 12.7 12.7 12.7 12.7		1.00 1690 0.92 201 217 217 29%		0.67 1177 0.92 266 266 266 8%	1.00 1688 0.92 114 16 150	0.92 52 0	0.65 1004 20 20 20 20 20 20	1.00 1837 125 2 2	0.92 0 0 6
Perm NA 127 127 112 112 112 112 112 112 112 112		0.92 0.92 201 217 217 9%		0.92 266 266 266 8%	0.92 114 150	0.92 52 0	0.92 20 20 4	0.92 125 2	0.92 0 0 6
U32 032 U32 032 U12 202 0 12 202 0% 10% 0% 10% Perm NA 4 4 12.7 12.7 12.7 12.7		201 201 217 9%		0.32 266 266 266 8%	114 114 150	0.92 0 0 0	20 20 20 4	125 2	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
(1) 0 0 0 (1) 12 202 (3) 10% 0% 10% Perm NA Perm NA 12.7 12.7 12.7 12.7	1	201 217 9%		200 266 8%	150 150	2005	4 50 0 50	5	- 0 0 0
() 12 202 3 202 9 202 9 202 10% 10% 10% 10% 1127 12.7 12.7	1	217 9%		266 6 8%	150	0.	4 50 ¢	4 4 4 4	90 C
9 22 22 23 24 24 24 24 24 24 24 24 24 24 24 24 24		%6		9%	2	~	4	130	e e
0% 10% Perm NA 4 4 12.7 12.7 12.7 12.7		%6		8%		;			
Perm NA 4 4 12.7 12.7 12.7 12.7		?>		20	3%	14%	23%	2%	11%
4 4 12.7 12.7 12.7 12.7	Perm Perm	NA		Perm	NA		Perm	NA	
4 12.7 12.7		80			2			9	
) 12.7 12.7				2			9		
12.7		12.7		30.1	30.1		30.1	30.1	
	12.7 12.7	12.7		30.1	30.1		30.1	30.1	
0.22 (0.22		0.53	0.53		0.53	0.53	
Clearance Lime (s) 7.4 7.4	74 74	7.4		0.7	0.7		0.7	0.7	
5) 2.8		7.8		8.7	7.8		2.8	2.8	
(vph)	344 250	375		619	888		528	966	
0.04		CU. 13		00.0-	0.03		000	0.0/	
//s Ratio //c Ratio	0.0 10 10 10 10 10 10 10 10 10 10 10 10 10	0.58		0.43	0 17		0.04	0 13	
Delav. d1 17.5		19.9		8.3	7.0		6.6	6.9	
r 1.00	1.00 1.00	1.00		1.00	1.00		1.00	1.00	
ncremental Delay, d2 0.1 1.2	0.3 0.3	2.0		2.2	0.4		0.1	0.3	
17.6 20	184 184	21.9		10.5	7.5		6.7	7.2	
ю	В	ပ		ш	A		۷	۷	
Approach Delay (s) 19.3		21.3			9.3			7.1	
		ပ			۷			A	
ntersection Summary									
HCM 2000 Control Delay		HCM 2000 Level of Service	evel of Se	inice		в			
HCM 2000 Volume to Capacity ratio									
		Sum of lost time (s)	ne (s)			14.4			
ntersection Capacity Utilization 8 Analvsis Period (min)	80.9% I	ICU Level of Service	Service						

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Synchro	

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ICU Level of Service

16.5 55.4% 15

Intersection Summary Average Delay Intersection Capacity Utilization Analysis Period (min)

n Summary

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<2036 Background> PM Peak Hour 03-27-2024

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MBL

HCM Unsignalized Intersection Capacity Analysis 3: Killaly Street West & West Side Road

0.92

0.92 426

0.92 0

0.92 0

0.92 363

0.92 0

0.92 0

0.92

0 Stop 0 0

Stop 0 0% 0.92

131 131 131 131 0% 0.92 142

392 392

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334 334

00

00 EBR

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312

468

468

142

649

470

142

493

None

None

Lane Configurations Traffic Solume (vehr) Sign Control Grade Peak Hour Factor Hourly flow rate (vph) Pedestrians Lane Width (m) Walking Soed (ms) Pedestrians Making Soed (ms) Percent Blockage Right (m) Walking Soed (ms) Percent Blockage Right (m) Distream signal (m) Upstream signal (m) Upstream signal (m) Distream signal (m) C. conficting volume wCu. unblocked vol C. single (s) C. stage 1 conf vol vC. stage 2 conf vol vC. stage 2 conf vol vC. stage 2 conf vol vC. stage 1 conf vol vC. stage 1 conf vol vC. stage 2 conf vol vC. stage 1 conf vol vC. stage 2 conf vol vC. stage 1 conf vol vC. stage 1 conf vol vC. stage 1 conf vol vC. stage 2 conf vol vC. sta

312 6.2

468 6.5

468 7.1

142 6.2

649 6.5

470 7.1

142 4.1

493 4.1

3.3 100 733

4.0 490

3.5 15 502

3.3 100 906

4.0 386 386

3.5 100 499

2.2 100 1441

2.2 99 1081

NB 1

SB 1 429 426 3 503 503 0.85 71.1 41.1 41.1 E E

WB 1 493 363 1441 0.00 0.00 0.0

EB 1 149 7 0 0 0.01 0.2 0.4 0.4

Direction, Lane # Volume Total Volume Left Volume Right cSH Volume to Capacity Cureue Length 95th (m) Control Delay (s) Approach Delay (s) Approach LOS

0.00 0.00 0.00 0.00 0.0 0.0 A

0.0

Movement												
Aovement	1	Ť	1	4	ł	~	•	+	٩	٨	-	7
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
-ane Configurations		4			¢			4			4	
Fraffic Volume (veh/h)	e	123	0	0	122	14	0	0	0	8	0	ę
⁻ uture Volume (Veh/h)	e	123	0	0	122	14	0	0	0	8	0	ę
Sign Control		Free			Free			Stop			Stop	
Grade		%0			%0			%0			%0	
Deak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	m	134	0	0	133	15	0	0	0	6	0	ę
Dedestrians												
ane Width (m)												
Valking Speed (m/s)												
^D ercent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Jostream signal (m)												
oX, platoon unblocked												
vC. conflicting volume	148			134			284	288	134	280	280	140
vC1. stage 1 conf vol												
vC2 stare 2 conf vol												
Cu unblocked vol	148			134			284	288	134	280	280	140
tC. single (s)	5.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
C. 2 stage (s)												
HF (s)	31			66			35	4 0	33	35	4 0	3.3
p0 queue free %	100			100			100	100	100	66	100	100
cM capacity (veh/h)	1003			1451			665	620	915	674	626	913
Jirection, Lane #	EB 1	WB 1	NB 1	SB 1								
/olume Total	137	148	0	12								
/olume Left	e	0	0	ი								
/olume Right	0	15	0	e								
SH	1003	1451	1700	721								
Volume to Capacity	0.00	00.00	00.00	0.02								
Queue Length 95th (m)	0.1	0.0	0.0	0.4								
Control Delay (s)	0.2	0.0	0.0	10.1								
Lane LOS	۷		4	в								
Approach Delav (s)	0.2	0.0	0 <u>.</u> 0	10.1								
Approach LOS			4	в								
ntersection Summary												
Averane Delav			0.5									
sterrection Canacity Hilization			19 0%	<u></u>	CIII and of Canica	Contine			<			
Machain Dariad (min)	-		45	5					5			

HCM Unsignalized Intersection Capacity Analysis 5: Killaly Street West & Main Street

<2036 Background> PM Peak Hour

5: Killaly Street West & Main Street	& Mai	n Stre	et -				03-27-2024
	Ť	1	*	ţ	*	•	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	4			ţ	F	ĸ	
Traffic Volume (veh/h)	296	123	e	349	95	13	
Future Volume (Veh/h)	296	123	e	349	95	13	
Sign Control	Free			Free	Stop		
Grade	%0			%0	%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	322	134	ę	379	103	14	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume			322		774	389	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			322		774	389	
tC, single (s)			4.1		6.4	6.2	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			100		72	<u> 8</u> 6	
cM capacity (veh/h)			1238		366	659	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2			
Volume Total	456	382	103	14			
Volume Left	0	e C	103	0			
Volume Right	134	0	0	4			
cSH	1700	1238	366	659			
Volume to Capacity	0.27	0.00	0.28	0.02			
Queue Length 95th (m)	0.0	0.1	9.1	0.5			
Control Delay (s)	0.0	0.1	18.6	10.6			
Lane LUS	0	۲,	י כ ו	ю			
Approach Delay (s)	0.0	1.0	/'/L				
Approach LOS			ပ				
Intersection Summary							
Average Delay			2.2				
Intersection Capacity Utilization	_		35.0%	<u>0</u>	CU Level of Service	Service	A
Analysis Period (min)			15				

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HCM Unsignalized Intersection Capacity Analysis 1: Steele Street & Elgin Street	tersec in Str	tion C eet	apacit	/ Anal)	'sis			<203	6 Tota	<2036 Total> AM Peak Hour 03-27-2024	Peak I 03-23	ak Hour 03-27-2024
	1	Ť	1	4	ł	~	1	←	•	٨	-	\mathbf{r}
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F		K.	F	\$			ŧ			\$	
Traffic Volume (veh/h)	74	0	140	22	9	51	54	172	0	0	332	68
Future Volume (Veh/h)	74	0	140	22	9	51	5	172	0	0	332	68
Sign Control		Stop			Stop			Free			Free	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	80	0	152	24	7	55	59	187	0	0	361	74
Pedestrians		2						2			2	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type								None			None	ľ
Median storage veh)												
Upstream signal (m)											370	ľ
nX nation unblocked												
vC. conflicting volume	766	705	402	857	742	189	437			187		ľ
vC1 stare 1 ronf vol	8	2	12	8	4	2	2			2		
vrC3 stars 2 conf vo												
VCZ, stage z cutti vu	222	705	400	057	647	100	704			107		
	8	50	407	100	747	103	104			0		
tu, single (s)		C. 0	7 .0	1.2	0.5	0.4	4.1			4.1		Ì
tC, 2 stage (s)			4	•	•	1	4			4		
tF (s)	3.5	4.0	3.3	3.6	4.0	3.5	2.2			2.2		1
p0 queue free %	72	<u>1</u> 0	11	88	86	63	95			100		
cM capacity (veh/h)	282	344	650	199	328	808	1132			1399		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	80	152	24	62	246	435						
Volume Left	80	0	24	0	59	0						
Volume Right	0	152	0	55	0	74						
cSH	282	650	199	693	1132	1700						
Volume to Capacity	0.28	0.23	0.12	0.09	0.05	0.26						
Queue Length 95th (m)	<u>9.1</u>	7.2	3.2	2.3	1.3	0.0						
Control Delay (s)	22.7	12.2	25.6	10.7	2.4	0.0						
Lane LOS	ပ	в		в	۷							
Approach Delay (s)	15.8		14.9		2.4	0.0						
Approach LOS	ပ		ю									
Intersection Summary												
Average Delav			5.5									
Intersection Capacity Utilization			54.6%	<u>0</u>	ICU Level of Service	Service			A			
Analysis Period (min)			15									

Timings 2: Steele Street & Killaly Street West	ilaly St	rreet V	Vest					<203	<2036 Total> AM Peak Hour 03-27-2024
	1	Ť	1	1	ŧ	•	•	٨	1
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	F	*	×	F	£,	F	\$	F	¢Ť
Traffic Volume (vph)	ŝ	387	214	41	157	180	205	39	152
Future Volume (vph)	ъ	387	214	41	157	180	205	39	152
Turn Type	Perm	NA	Perm	Perm	AN	Perm	NA	Perm	NA
Protected Phases		4			80		2		6
Permitted Phases	4		4	8		2		9	
Detector Phase	4	4	4	∞	∞	2	2	9	9
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0
Minimum Split (s)	38.4	38.4	38.4	38.4	38.4	34.0	34.0	34.0	34.0
Total Split (s)	42.4	42.4	42.4	42.4	42.4	37.0	37.0	37.0	37.0
Total Split (%)	53.4%	53.4%	53.4%	53.4%	53.4%	46.6%	46.6%	46.6%	46.6%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	3.3	3.3	<u>3.</u> 3	3.3	<u>3.</u> 3	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	7.4	7.4	7.4	7.4	7.0	7.0	7.0	7.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	Max	Max
Act Effct Green (s)	21.1	21.1	21.1	21.1	21.1	30.3	30.3	30.3	30.3
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32	0.46	0.46	0.46	0.46
v/c Ratio	0.01	0.76	0.37	0.22	0.33	0.38	0.35	0.10	0.21
Control Delay	13.8	29.5	5.1	18.1	17.5	16.4	13.8	13.5	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.8	29.5	5.1	18.1	17.5	16.4	13.8	13.5	13.0
ros	8	ပ	A	В	в	8	8	8	в
Approach Delay		20.7			17.6		14.9		13.1
Approach LOS		ပ			ш		ш		в
Intersection Summary									
Cycle Length: 79.4									
Actuated Cycle Length: 65.9									
Natural Cycle: 75									
Control Type: Actuated-Uncoordinated	ordinated								
Maximum v/c Ratio: 0.76									
Intersection Signal Delay: 17.4	4			<u> </u>	Intersection LOS: B	LOS: B			
Intersection Capacity Utilization 84.4%	on 84.4%			<u>ر</u>	ICU Level of Service E	1 Service	ш		

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HCM Signalized Intersection Capacity Analysis 2: Steele Street & Killaly Street West	rsectio Ilaly St	n Cap reet M	acity A /est	nalysi	ß			<203	6 Tota	<2036 Total> AM Peak Hour 03-27-2024	Peak I 03-27	ak Hour 03-27-2024
	1	Ť	1	1	ł	4	•	+	•	٠	†	$\mathbf{\hat{z}}$
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	*	K.	F	\$		F	4		F	ţ	
Traffic Volume (vph)	ŝ	387	214	41	157	= ;	180	205	56	g 8	152	= :
Future volume (vpn)	0001	38/	1000	41000	10001		1000	CU2	0001	1000	100	1000
Total Low (vpr.pr) Total Loct time (c)	1300	1900	1900	1300	1900	1300	1900	1900	1900	1900	1900	1300
l ane I Hil Factor	101	1 00	t 0	100	100		0.1	0.1		1 00	0.1	
Frob. ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	ľ
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1801	1727	1550	1702	1710		1662	1736		1463	1829	1
Fit Petimited Satd Flow (norm)	10.04 1017	17.07	1550	0.30 651	1710		0.00	1736		600	1820	
Deak-hour factor PHF	0.07	0 02	0 00	0.02	0.07	0 02	0 0 0	000	0 07	0 0 0	0 020	0 02
Adi Flow (vph)	5.0	421	233	45	171	12	196	223	61	42	165	12
RTOR Reduction (vph)	0	0	142	0	4	0	0	1	0	0	m	0
Lane Group Flow (vph)	2	421	91	45	179	0	196	273	0	42	174	0
Confl. Peds. (#/hr)	ę		-	-		ę	9		4	4		9
Heavy Vehicles (%)	%0	10%	2%	6%	9%	22%	8%	3%	14%	23%	2%	11%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			œ			2			9	
Permitted Phases	4		4	8			2			9		
Actuated Green, G (s)	21.1	21.1	21.1	21.1	21.1		30.3	30.3		30.3	30.3	1
Effective Green, g (s)	21.1	21.1	21.1	21.1	21.1		30.3	30.3		30.3	30.3	
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32		0.40	0.40		7.0	0.40	Ì
Ulearance Time (s) Vehicle Evtension (s)	7 8 C	4. / 8 C	4. / 8 C	7 8 0 8	4. / 8 C		0.7 8 C	0.7 8 C		0./ 8.C	0.7	
	000	5-0 EE3	407	000	540		£10	2002		A15	012	
u/c Ratin Prot	080	2002	431	200	010		518	7 39 0 16		4 13	042	
v/s Ratio Perm	0.00	17.00	0.06	0.07	2.0		c0 17	2		0.05	2	
v/c Ratio	0.01	0.76	0.18	0.22	0.33		0.38	0.34		0.10	0.21	
Uniform Delay, d1	15.2	20.1	16.1	16.3	17.0		11.6	11.4		10.0	10.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	6.0	0.2	0.5	0.3		2.1	1.2		0.5	0.6	
Delay (s)	15.3	26.1	16.3	16.8	17.3		13.7	12.5		10.5	11.1	
Level of Service	в	ပ	ю	в	ш		в	ш		в	в	
Approach Delay (s)		22.6			17.2			13.0			11.0	
Approach LOS		ပ			в			ш			в	
Intersection Summary												
HCM 2000 Control Delay			17.3	Ĕ	HCM 2000 Level of Service	evel of S	ervice		в			
HCM 2000 Volume to Capacity ratio	/ ratio		0.53									
Actuated Cycle Length (s)			65.8	Su	Sum of lost time (s)	time (s)			14.4			
Intersection Capacity Utilization	c		84.4%	<u>0</u>	CU Level of Service	f Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

Residential Development Rosemount Gardens	s-Plan
Resident	Trans-Plan

Synchro 11 Report Page 3

HCM Unsignalized Intersection Capacity Analysis 3: Killaly Street West & West Side Road

<2036 Total> AM Peak Hour 03-27-2024

Momentations EBI EBI <t< th=""><th></th><th></th><th></th><th>1</th><th>1</th><th>ļ</th><th>P</th><th>1</th><th>4</th><th>4</th><th>1</th><th></th><th></th></t<>				1	1	ļ	P	1	4	4	1		
metric EBI MBI MBI MBI MBI MBI MBI SID SID<		1	t	-	٠		1	r	1	L	۲	•	¥.
Onliguiations Image	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vehu) 1 247 12 37 129 137 104 254 49 Volume (vehu) 1 741 12 37 129 137 104 254 49 Ontrol 0% 0% 0% 0% 0% 0% 0% Ontrol 0% 13 40 140 209 032 <td>Lane Configurations</td> <td></td> <td>4</td> <td></td> <td></td> <td>4</td> <td></td> <td></td> <td>ţ</td> <td></td> <td></td> <td>4</td> <td></td>	Lane Configurations		4			4			ţ			4	
Volume (vehu) 1 247 12 37 129 101 254 49 Sound Free 0.92 0.93 0.93<	Traffic Volume (veh/h)	-	247	12	37	129	192	69	137	104	254	49	
Ontrol Free Stop <	Future Volume (Veh/h)	-	247	12	37	129	192	69	137	104	254	49	0
Image: biology of the sector 0% <	Sign Control		Free			Free			Stop			Stop	
Hour Factor 0.92 0.93 0.94 0.11 0.93 0.93 0.94 0.93 0.93 0.93 0.93 0.94 0.93 0.93 0.93 0.93 0.94 0.93 0.93 0.93 0.93 0.94 0.93 0.93	Grade		%0			%0			%0			%0	
Mow rate (vph) 1 268 13 40 140 209 75 149 113 276 53 trans valit (m) mass valit (m) mass valit (m) mass valit (m) valit (m) </td <td>Peak Hour Factor</td> <td>0.92</td>	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
trians With (in) With (in) With (in) With (in) Helocage fun flae (ebi) In flae (ebi) an signal (in) an signal (Hourly flow rate (vph)	-	268	13	40	140	209	75	149	113	276	53	0
With (m) 19 Speed (ms) 19 Special 19 Special In flare (wh) None In flare (wh) None In flare (wh) 10 In flare (wh) 10 In flare (wh) 10 In flare (wh) 10 In flare (wh) 21 In flare (wh) 21 In flare (wh) 23 In flare (wh)	Pedestrians												
og Speed (m(s) None	Lane Width (m)												
It Blockage unit fan fin fan fan fan fan fan fan fan fan fan fa	Walking Speed (m/s)												
turn flate (reh) None None n type None None an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m) an signal (m	Percent Blockage												
n type None None an signal (m) an sone (m) 281 628 706 274 788 608 ation signal (m) 349 281 628 706 274 788 608 ation signal (m) 349 281 628 706 274 788 608 ation solutione 349 281 828 706 274 788 608 ation solutione 349 21 41 71 65 71 65 ation solutione 349 21 41 71 65 71 65 ation solutione 349 21 41 71 65 71 65 ation solutione 22 231 232 35 40 37 40 ation solutione 223 233 239 764 171 397 40 ation solutione 228 343 333 329 764 171 39	Right turn flare (veh)												
na storage veh) am signal (n) and storage veh) and storage veh) and storage veh) and storage veh and storage v	Median type		None			None							
am signal (m) and (m) 281 281 705 274 788 608 and volute 349 281 716 274 788 608 at age 1 cont vol tage 1 cont vol tage 2 cont vol tage 2 cont vol tage 2 cont vol tage 2 cont vol 349 281 628 706 274 788 608 tage 2 cont vol	Median storage veh)												
ation unbiocked at a 281 for 214 788 608 and environment at a 281 for 214 788 608 and environment at a 281 for 214 788 608 and environment at 281 for 281 for 274 788 608 and environment at 281 for 282 for 274 788 608 and environment at 281 for 274 788 788 788 797 788 797 788 798 798 798	Upstream signal (m)												
Indicting onlune 349 281 628 706 274 788 608 ratge tont vol 349 281 628 706 274 788 608 ratge tont vol 349 211 51 62 71 65 62 71 65 ratge tont vol 349 22 23 35 40 33 35 40 ratge tont vol 349 22 35 40 33 35 40 ratge tont vol 349 121 1282 347 349 764 171 397 pactly (vehth) 1221 1282 337 329 57 8 0 87 end there 1 33 329 57 40 37 34 764 171 397 end there 1 3 209 13 209 175 57 6 5 5 5 5 5 6 5 </td <td>pX, platoon unblocked</td> <td></td>	pX, platoon unblocked												
tage 1 cont vol tage 2 cont vol tableset on 349 281 766 274 788 608 9 (s) 4.1 7.1 6.5 6.2 7.1 6.5 ate (s) 2.2 2.2 3.5 4.0 3.3 5.4 0.87 ate (s) 2.2 2.2 3.5 4.0 3.3 5.4 0.87 pacity (veh/h) 1221 1282 3.4 3.7 3.4 0.87 pacity (veh/h) 1221 1282 3.4 3.7 3.4 0.87 pacity (veh/h) 1221 2.8 3.3 3.5 4.0 3.3 5.4 0.87 pacity (veh/h) 1221 2.8 3.3 3.5 4.0 3.3 3.5 4.0 3.7 3.4 0.87 pacity (veh/h) 1221 2.8 3.3 3.7 3.2 9 pacity (veh/h) 1221 2.8 3.3 3.7 3.2 9 te Left 1 3 2.0 17 3.2 9 te Left 1 3 2.0 17 3.0 17 3.4 17 3.4 17 3.9 17 te Left 1 3 2.0 17 3.0 17 3.4 17 3.4 17 3.4 17 3.4 17 3.4 10 te Left 1 3 2.0 17 3.0 17 3.4 16 te Left 1 3 2.0 17 3.0 18 te Left 1 3 2.0 18 te Left 1 4 2.0 18 18 te Left 1 4 2.0 18 18 te Left 1 4 18 18 te Left 1 4 18 18 18 18 18 18 18 18 18 18 18 18 18	vC, conflicting volume	349			281			628	706	274	788	608	244
itage 2 control 349 281 628 706 274 788 608 gel (s) 4.1 7.1 6.5 6.2 7.1 6.5 gel (s) 1 2 2 7.1 6.5 7.1 6.5 gel (s) 1 1 4.1 7.1 6.5 6.2 7.1 6.5 gel (s) 1 122 22 35 37 347 349 764 171 397 pacity (reh/h) 1221 1282 389 337 329 6 6 74 78 608 pacity (reh/h) 1221 1282 389 337 329 6 74 71 397 e Total 282 389 337 329 6 764 171 397 e Total 282 389 1.75 76 7 7 7 7 7 7 7 7 7 7 7	vC1, stage 1 conf vol												
Indecked vol 349 281 058 7/6 2/4 7/88 668 gle (s) 4.1 7.1 6.5 6.2 7.1 6.5 atge (s) 2.2 2.2 2.2 3.5 4.0 3.3 3.5 4.0 atge (s) 2.2 2.2 3.5 4.0 3.3 3.5 4.0 aue free % 100 1.21 1.222 3.47 3.49 7.64 1/1 3.7 aue free % 101 1221 2.02 1.18 S1 3.7 3.29 8.1 1/1 3.7 3.7 et lot at 12 1 40 7.5 2.6 8.7 6.7 8.7 6.7 8.7 6.7 8.7	vC2, stage 2 conf vo								:		:		
gge (s) 4.1 4.1 7.1 6.5 6.2 7.1 6.5 stage (s) 2.2 2.2 3.5 4.0 3.3 3.5 4.0 pacity (vehth) 1221 2.2 3.5 4.0 3.3 3.5 4.0 pacity (vehth) 1221 1282 347 349 764 171 397 pacity (vehth) 1221 1282 337 329 4.0 37 347 349 764 171 397 end table 282 383 337 329 4.0 37 347 <td>vCu, unblocked vo</td> <td>349</td> <td></td> <td></td> <td>281</td> <td></td> <td></td> <td>628</td> <td>706</td> <td>274</td> <td>788</td> <td>608</td> <td>247</td>	vCu, unblocked vo	349			281			628	706	274	788	608	247
tage (s) tage (s) and free % 100 and free % 10 and free	tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	9.7
22 22 23 4,0 33 5 4,0 pacify (vel/h) 120 72 35 4,0 33 35 4,0 pacify (vel/h) 121 128 78 57 85 7 84 10 87 86 70 87 97 et lotal 282 389 337 329 329 337 329 86 70 87 88 10 87 87 84 17 32 16 17 32 16 17 32 16 </td <td>tC, 2 stage (s)</td> <td></td>	tC, 2 stage (s)												
100 97 67 85 0 87 121 122 1282 347 349 764 171 397 EB1 WB1 NB1 581 329 764 171 397 283 337 329 764 171 397 13 209 173 209 175 9 175 0.0 0.3 5.79 175 9 175 9 175 0.0 1.1 386 4018 8 4018 8 4 8 4 8 4 8 4 8 4 8 4 8 4 8 4 8 8 4 8 8 4 8 8 4 8 8 4 8 8 8 4 8 8 8 4 8 8 4 8 8 4 8 8 4 8 8 <t< td=""><td>tF (s)</td><td>2.2</td><td></td><td></td><td>2.2</td><td></td><td></td><td>3.5</td><td>4.0</td><td>3.3</td><td>3.5</td><td>4.0</td><td>č</td></t<>	tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	č
1221 1282 347 349 764 171 397 EB1 WB1 NB1 SB1 S61 764 171 397 282 389 337 329 329 764 171 397 282 389 337 329 175 10 121 1221 1221 1223 46 1221 1282 426 188 175 0 0 13 175 0.00 0.3 0.3 175 0 0 1 136 0 1.1 365 4018 1 1 1 0.0 1.1 365 401.8 1 1 0.0 1.1 366 401.8 1 1 0.1 1.1 366 401.8 1 1 1.1 366 401.8 1 1 1 1.1 366 401.8 1 1 1 1.1 366 401.8 1 1 1 1.1 366 401.8 1 1 1 1.1 366 401.8 1 1 1 1.1 1.1 1.1 <td>p0 queue free %</td> <td>100</td> <td></td> <td></td> <td>67</td> <td></td> <td></td> <td>78</td> <td>57</td> <td>85</td> <td>0</td> <td>87</td> <td><u>10</u></td>	p0 queue free %	100			67			78	57	85	0	87	<u>10</u>
EB1 WB1 NB1 SB1 282 389 337 329 282 389 337 329 13 209 173 20 1221 1282 426 188 0.00 0.03 0.79 1.75 0.00 1.1 36.6 401.8 A A E F 0.0 1.1 38.6 401.8 0.0 1.1 38.6 401.8 0.0 1.1 38.6 401.8 A A E F 0.0 1.1 38.6 401.8 1.1 38.6 401.8 1.3 1.1 38.6 401.8 1.3 1.1 38.6 401.8 1.3 1.1 38.6 401.8 1.3 1.1 38.6 1.0 1.3 1.1 38.7 4.0 1.3 1.1 38.7 1.3 </td <td>cM capacity (veh/h)</td> <td>1221</td> <td></td> <td></td> <td>1282</td> <td></td> <td></td> <td>347</td> <td>349</td> <td>764</td> <td>171</td> <td>397</td> <td>62</td>	cM capacity (veh/h)	1221			1282			347	349	764	171	397	62
282 389 337 329 1 40 75 276 13 209 113 0 1221 1282 426 188 0.00 0.03 0.79 175 0.0 0.8 55.8 184.0 0.0 1:1 38.6 401.8 A A E F 0.0 1:1 38.6 401.8 A A E F 0.0 1:1 38.6 401.8 A 1.1 38.6 401.8 A A E F 10.8 1.1 38.6 401.8 A A B C H C C C C C C C C C C C C C C C C C	Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
1 40 75 276 13 209 113 0 121 128 188 0.00 0.3 0.79 1.75 0.0 0.8 55.8 184.0 0.0 1.1 38.6 401.8 A A E F 0.0 1.1 38.6 401.8 E F 108.9 108.9 113% ICU Level of Service	Volume Total	282	389	337	329								
13 209 113 0 121 122 426 188 0.00 0.03 75 175 0.0 0.8 55.8 184,0 0.0 1.1 38.6 401.8 A A E F 0.0 1.1 38.6 401.8 E F 1.1 38.6 401.8 C 108.9 C 108.9 C 108.9 C 108.9 C 108.9 C 108.0 C 1.0 C	Volume Left	-	40	75	276								
1221 1282 426 188 0.00 0.03 0.79 1.75 0.0 1.1 38.6 401.8 A A E F 0.0 1.1 38.6 401.8 A 1 38.6 401.8 E F 1 18.9 CU Level of Service	Volume Right	13	209	113	0								
0.00 0.03 0.79 1.75 0.0 0.8 55.8 184.0 0.0 1.1 35.6 401.8 A A E F 0.0 1.1 33.6 401.8 E F 108.9 CU Level of Service	cSH	1221	1282	426	188								
0.0 0.8 55.8 184.0 0.0 1.1 38.6 401.8 A A E F 0.0 1.1 38.6 401.8 E F 108.9 108.9 108.9 CU Level of Service	Volume to Capacity	0.00	0.03	0.79	1.75								
0.0 1.1 38.5 401.8 A A E F 0.0 1.1 38.6 401.8 E F V 108.9 Utilization 81.7% ICU Level of Service	Queue Length 95th (m)	0.0	0.8	55.8	184.0								
A A E F 0.0 1.1 38.6 401.8 E F Utilization 81.7% ICU Level of Service	Control Delay (s)	0.0	:	38.6	401.8								
0.0 1.1 38.6 401.8 / 18.9 Utilization 81.7% ICU Level of Service	Lane LOS	A	A	ш	ш								
E F V Utilization 81.7% ICU Level of Service	Approach Delay (s)	0.0	1.1	38.6	401.8								
v 108.9 Utilization 81.7% ICU Level of Service	Approach LOS			ш	ш								
108.9 Utilization 81.7% ICU Level of Service	Intersection Summary												
Utilization 81.7% ICU Level of Service	Average Delay			108.9	<u>c</u>					d			
	Intersection Capacity Utilization	c		81./%	<u>د</u>	U Level o	of Service			C			

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	1	t	1	4	ţ	4	•	+	٩	٨	-	Y
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		¢			4			¢			4	
Traffic Volume (veh/h)	-	136	49	36	141	20	102	35	104	22	12	-
Future Volume (Veh/h)	-	136	49	36	141	20	102	35	104	22	12	-
Sign Control		Free			Free			Stop			Stop	
Grade	000	%0	000	000	%0	000	000	%0	000	000	%0	000
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	-	148	53	39	153	52	111	æ	113	24	13	-
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX. platoon unblocked												
vC. conflicting volume	175			201			426	430	174	550	445	164
vC1 stare 1 conf vol												
vC1, stage 1 cont vol												
vCti unhlocked vol	175			201			426	430	174	550	445	164
+Cu; and (c)	. r			41			7 1	929	6.9	7 1	9.5	6.9
tu, siriyte (s)	- -			- t				0.0	7.0		0.0	0.2
tC, 2 stage (s)	•			4			•	•	4	4		•
tF (s)	3.1			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	10			67			78	92	87	93	67	100
cM capacity (veh/h)	976			1371			515	503	869	359	493	886
Direction. Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	202	214	262	89								
Volume Left	<u>-</u>	39	111	24								
Volume Right	53	22	113	-								
cSH	926	1371	622	403								
Volume to Capacity	0.00	0.03	0.42	0.09								
Queue Lenath 95th (m)	0.0	0.7	16.7	2.5								
Control Delay (s)	0.1	1.6	14.9	14.9								
Lane LOS	4	4	B	œ								
Approach Delav (s)	0.1	1.6	14.9	14.9								
Approach LOS			ш	ш								
Intercention Summany												
Averane Delav			67									
Intersection Canacity I Itilization	uci		45.6%	<u> </u>	CLLI evel of Service	Service			٩			
Analysis Dariad (min)				2		200						

HCM Unsignalized Intersection Capacity Analysis 5: Killaly Street West & Main Street	nterseo t & Ma	tion C in Stre	apacit <u>;</u> et	/ Anal)	/sis		<2036 Total> AM Peak Hour 03-27-2024
	Ť	1	*	ţ	•	•	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	£,			4	F	ĸ	
Traffic Volume (veh/h)	271	183	16	213	204	45	
Future Volume (Veh/h)	271	183	16	213	204	45	
Sign Control	Free			Free	Stop		
Grade	%0			%0	%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	295	199	17	232	222	49	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume			295		660	394	
vC1, stage 1 conf vol							
vC2, stage 2 conf vo							
vCu, unblocked vol			295		660	394	
tC, single (s)			4.1		6.4	6.2	
tC, 2 stage (s)							
tF (s)			2.2		3.5	<u>3.</u> 3	
p0 queue free %			66		47	93	
cM capacity (veh/h)			1266		422	655	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2			
Volume Total	494	249	222	49			
Volume Left	0	17	222	0			
Volume Right	199	0	0	49			
cSH	1700	1266	422	655			
Volume to Capacity	0.29	0.01	0.53	0.07			
Queue Length 95th (m)	0.0	0.3	23.8	1.9			
Control Delay (s)	0.0	0.7	22.6	10.9			
Lane LOS		A	ပ	ш			
Approach Delay (s)	0.0	0.7	20.5				
Approach LOS			ပ				

•				
Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	494	249	222	49
Volume Left	0	17	222	0
Volume Right	199	0	0	49
cSH	1700	1266	422	655
Volume to Capacity	0.29	0.01	0.53	0.07
Queue Length 95th (m)	0.0	0.3	23.8	1.9
Control Delay (s)	0.0	0.7	22.6	10.9
Lane LOS		∢	ပ	ш
Approach Delay (s)	0.0	0.7	20.5	
Approach LOS			ပ	
Intersection Summary				
Average Delay			5.6	
Intersection Capacity Utilization			43.4%	ICU Level o
Analysis Period (min)			15	

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f Service

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HCM Unsignalized Intersection Capacity Analysis 6: Proposed Site Access/Elgin Street	ersec	tion C. gin Sti	apacit) reet	/ Analy	sis		<2036 Total> AM Peak Hour 03-27-2024
	1	Ť	ŧ	1	٨	1	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		ŧ	2		2		
Sign Control		Stop	Stop		Stop		
Traffic Volume (vph)	0	69	24	24	68	0	
Future Volume (vph)	0	69	24	24	68	0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	75	26	26	74	0	
Direction, Lane #	EB 1	WB 1	SB 1				
Volume Total (vph)	75	52	74				
Volume Left (vph)	0	0	74				
Volume Right (vph)	0	26	0				
Hadj (s)	0.03	-0.27	0.23				
Departure Headway (s)	4.2	3.9	4.4				
Degree Utilization, x	0.09	0.06	0.09				
Capacity (veh/h)	844	902	788				
Control Delay (s)	7.6	7.1	7.8				
Approach Delay (s)	7.6	7.1	7.8				
Approach LOS	×	A	A				
Intersection Summary							
Delay			7.5				
Level of Service			A				
Intersection Capacity Utilization			14.1%	<u>ठ</u>	ICU Level of Service	Service	A
Analysis Period (min)			15				

	1	Ť	1	\$	ŧ	4	•	•	4	٩	-	7
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	¥		k	F	*			ţ			\$	
Traffic Volume (veh/h)	54	0	94	14	4	42	0 6	405	0	0	507	102
Future Volume (Veh/h)	23	0	94	14	4	42	06	405	0	0	507	104
Sign Control		Stop			Stop			Free			Free	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	59	0	102	15	4	46	98	440	0	0	551	113
Pedestrians		2						2			2	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											370	
pX, platoon unblocked												
vC, conflicting volume	1296	1246	612	1348	1302	442	666			440		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1296	1246	612	1348	1302	442	666			440		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.5	2.2			2.2		
p0 queue free %	49	100	62	83	67	92	89			100		
cM capacity (veh/h)	116	157	495	91	145	578	931			1131		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	59	102	15	50	538	664						
Volume Left	59	0	15	0	98	0						
Volume Right	0	102	0	46	0	113						
SH	116	495	91	467	931	1700						
Volume to Capacity	0.51	0.21	0.17	0.11	0.11	0.39						
Queue Length 95th (m)	18.7	6.1	4.5	2.9	2.8	0.0						
control Delay (s)	04.0	- '	c.7c	13.0	Q-7	0.0						
Lane LUS	т .	n	т ;	n	٩ġ	4						
Approach Uelay (s)	97.0		977		2.8	0.0						
Approacn LUS	с		د									
Intersection Summary												
Average Delay			5.8									
Intersection Capacity Utilization	u		70 20/	<u> </u>		CULL over of Convice			c			
			0/ 7.0	د	ה בכים ר	I Del VICe			C			

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Movement Lane Configurations Traffic Volume (vph) Hoture Volume (vph) deal Flow (vphp) Total Lost Ine (s) Lane II fi Earten												
Movement Lane Configurations Traffic Volume (vph) Future Volume (vph) Ideal Faw (vphp) Total Lost time (s) Lane I fit Eachor	١	t	1	4	ţ	4	1	+	•	۶	-	7
Lane Configurations Traffic Volume (vph) Future Volume (vph) Ideal Fbw (vphpi) Ideal Lost time (s) Tane Itil Eactor	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph) Future Volume (vph) Ideal Flow (vphpl) Total Lost time (s)	F	*	×.	F	\$		F	\$		F	\$	
Future Volume (vph) Ideal Flow (vphpl) Total Lost time (s)	÷	321	302	43	385	22	245	127	48	18	182	9
Ideal Flow (vphpl) Total Lost time (s) Lane Litil Factor	11	321	302	43	385	22	245	127	48	18	182	9
Total Lost time (s) Lane Litil Factor	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
I ane I Itil Factor	7.4	7.4	7.4	7.4	7.4		7.0	7.0		7.0	7.0	
	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.96		1.00	0.99	
FIt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1802	1727	1550	1702	1716		1662	1707		1462	1846	
Fit Permitted	0.34	1.00	1.00	0.47	1.00		0.63	1.00		0.64	1.00	
Satd. Flow (perm)	644	1727	1550	836	1716		1101	1707		982	1846	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	349	328	47	418	24	266	138	52	20	198	7
RTOR Reduction (vph)	0	0	221	0	ო	0	0	15	0	0	2	0
Lane Group Flow (vph)	12	349	107	47	439	0	266	175	0	20	203	0
Confl. Peds. (#/hr)	e		-	-		ς.	9		4	4		9
Heavy Vehicles (%)	%0	10%	2%	6%	6%	22%	8%	3%	14%	23%	2%	11%
Turn Type	Perm	AN	Perm	Perm	٩N		Perm	Ν		Perm	AN	
Protected Phases		4			œ			2			9	
Permitted Phases	4		4	∞			2			9		
Actuated Green, G (s)	21.7	21.7	21.7	21.7	21.7		30.3	30.3		30.3	30.3	
Effective Green, g (s)	21.7	21.7	21.7	21.7	21.7		30.3	30.3		30.3	30.3	
Actuated g/C Katio	0.33	0.33	0.33	0.33	0.33		0.46	0.46		0.46	0.46	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	2.8	2.8	2.8	2.8	5.8		5.8	2.8		5.8	5.8	
Lane Grp Cap (vph)	210	564	506	273	560		502	778		448	842	
v/s Ratio Prot	000	0.20	10 0	000	c0.26		.00	0.10		000	0.11	
V/S Katio Perm	20.0	000	10.0	0U			CU.24	000		0.02		
V/C Kauo	0.00	70.0	12.0	1.1	0.18		0.03	0.23		0.04	0.24	
Unirorn velay, d'i Procression Ecotor	10.5	10.9	10.7	10.9	20.2 1 00		671	10.9		0.01	0.11	
Progression Factor	01	0.1	00.1	00.5	00-1		00	201		00.0	2 0	
nicieniena veiay, uz Dalay (e)	15.4	20 B	16.4	16.0 16.0	0.1		16.0	116		10.2	11.7	
Loud of Service	2	2. 2.	2	1 a	1 C		2	2 0		2 0	- -	
Annmach Delav (s)	נ	18.6	2	c	26.1		ב	14.7		נ	1 1 1 1	
Approach LOS		8			Ö			B			m	
Intersection Summany												
			0.01		0000	-			4			
HCM 2000 Control Delay HCM 2000 Volume to Canacity ratio	v ratio		18.8	Ĩ	HUM ZUUU LEVEL OF SERVICE	evel or 2	ervice		מ			
Actuated Ovela Landth (c)	y rand		66.4	Ū	Sum of loct time (c)	ima (c)			14.4			
Intersection Capacity Utilization	Ę		89.6%	3 <u>0</u>	CU Level of Service	Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

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Timings 2: Steele Street & Killaly Street West	illaly S	treet V	Vest					<203	<2036 Total> PM Peak Hour 03-27-2024
	1	Ť	1	4	ţ	•	•	۶	+
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	F	+	R	F	4	F	4	F	4
Traffic Volume (vph)	7	321	302	43	385	245	127	18	182
Future Volume (vph)	11	321	302	43	385	245	127	18	182
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			œ		2		6
Permitted Phases	4		4	80		2		9	
Detector Phase	4	4	4	8	80	2	2	9	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0
Minimum Split (s)	38.4	38.4	38.4	38.4	38.4	34.0	34.0	34.0	34.0
Total Split (s)	42.4	42.4	42.4	42.4	42.4	37.0	37.0	37.0	37.0
Total Split (%)	53.4%	53.4%	53.4%	53.4%	53.4%	46.6%	46.6%	46.6%	46.6%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	3.3	3.3	3.3	3.3	3.3	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	7.4	7.4	7.4	7.4	7.0	7.0	7.0	7.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Мах	Max	Max	Max
Act Effct Green (s)	21.7	21.7	21.7	21.7	21.7	30.3	30.3	30.3	30.3
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.46	0.46	0.46	0.46
v/c Ratio	0.06	0.62	0.45	0.17	0.79	0.53	0.24	0.04	0.24
Control Delay	14.7	23.6	4.1	16.6	30.4	20.0	12.1	13.3	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	23.6	4.1	16.6	30.4	20.0	12.1	13.3	13.6
ros	В	ပ	A	8	ပ	ပ	в	в	в
Approach Delay		14.2			29.1		16.7		13.6
Approach LOS		ш			ပ		в		В
Intersection Summary									
Cycle Length: 79.4									
Actuated Cycle Length: 66.5									
Natural Cycle: 75									
Control Type: Actuated-Uncoordinated	ordinated								
Maximum v/c Ratio: 0.79									
Intersection Signal Delay: 18.6	6			<u>II</u>	Intersection LOS: B	LOS: B			
Intersection Capacity Utilization 89.6%	on 89.6%			<u></u>	ICU Level of Service E	f Service	ш		
Analysis Period (min) 15									
Solits and Phases: 2: Steel	2: Steele Street & Killalv Street West	k Killalv S	treet Wes						
02					+Ø4				
37 s				di.	2.4s				

	42.4 s	80 	42.4.8	
▲ 02	37 s	↓ Ø6	37 s	

	5		o. Milaly Olicel Meal & Meal Olice Man								4 00	1707-17-00
	1	Ť	1	4	ł	4	1	+	٩.	٨	-	7
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (veh/h)	9	198	67	100	220	334	45	6	68	392	134	e
⁻ uture Volume (Veh/h)	9	198	67	100	220	334	45	06	68	392	134	ŝ
Sign Control		Free			Free			Stop			Stop	
Grade		%0			%0			%0			%0	
Deak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	215	73	109	239	363	49	98	74	426	146	ę
Pedestrians												
Lane Width (m)												
Nalking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Jpstream signal (m)												
oX, platoon unblocked												
vC, conflicting volume	602			288			980	1086	252	1027	940	420
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	602			288			980	1086	252	1027	940	420
C, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
C, 2 stage (s)												
F (s)	2.2			2.2			3.5	4.0	<u>3.3</u>	3.5	4.0	3.3
p0 queue free %	66			91			55	50	91	0	39	10
cM capacity (veh/h)	985			1274			110	197	787	109	239	637
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	295	711	221	575								
Volume Left	7	109	49	426								
/olume Right	73	363	74	ო								
cSH	985	1274	213	127								
Volume to Capacity	0.01	0.09	1.04	4.52								
Queue Length 95th (m)	0.2	2.2	77.1	ᆸ								
Control Delay (s)	0.3	2.1	120.2	Ъ								
Lane LOS	۷	4	ш	ш								
Approach Delay (s)	0.3	2.1	120.2	Ъ								
Approach LOS			ш	ш								
ntersection Summary												
Average Delay			3206.2									
ntersection Capacity Utilization			106.0%		U Level o	ICU Level of Service			G			
									,			

												ICU Level of Service		
20	6	ŝ	316	0.16	4.4	18.5	C	18.5	с О					
-	73	74	417	0.41	15.7	19.5	ပ	19.5	ပ		6.3	57.2%	15	
000	109	15	1243	0.09	2.3	3.4	4	3.4						
020	m	110	955	00.00	0.1	0.1	۷	0.1				L		
												ation		

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Residential Development Rosemount Gardens Trans-Plan

	HCM Unsignalized Intersection Capacity Analysis 4: Proposed Site Access/3rd Avenue & Killaly Street West	ntersed cess/3	ction C rd Ave	apacit nue &	y Analy Killaly	/sis Street	West		<203	<2036 Total> PM Peak Hour 03-27-2024	► PM	Peak I ⁰³⁻²	ak Hour 03-27-2024
ent EB WB1 WB1 MB1 NB1 NB1 SB1 SB1 <th></th> <th>1</th> <th>Ť</th> <th>1</th> <th>4</th> <th>ţ</th> <th>4</th> <th>•</th> <th>•</th> <th>•</th> <th>٩</th> <th>-</th> <th>7</th>		1	Ť	1	4	ţ	4	•	•	•	٩	-	7
Onligurations Image	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Outmate (verh) 3 100 167 14 67 22 68 35 Outmate (verh) 7 90 101 100 167 14 67 22 68 800 Outmate (verh) 3 207 110 109 182 15 73 24 74 9 38 Outmate (verh) 3 207 110 109 182 15 73 24 74 9 38 Outmate (verh) 3 207 110 109 182 15 73 24 74 9 38 Stepation None None None None None 73 24 71 25 73 24 70 73 56 73 26 73 26 73 26 73 26 73 26 73 26 73 26 73 26 73 26 76 73 26 7	Lane Configurations		¢			¢			ţ			4	
volume (vehu) 3 190 101 100 167 14 67 22 68 8 35 metol 0%	Traffic Volume (veh/h)	e	190	101	100	167	14	67	22	68	80	35	ŝ
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Future Volume (Veh/h)	e C	190	101	100	167	14	67	22	68	œ	35	ę
Off-action Off-act	Sign Control		Free			Free			Stop			Stop	
Hour Feder 0.22 0.22 0.32	Grade		%0			%0			%0			%0	
Mow rate (wpi) 3 207 110 109 182 15 73 24 74 9 38 retrains methininy	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
trians With (11) With (11) With (11) With (11) Hillockage fun flace (e) an signal (n1) an signal	Hourly flow rate (vph)	m	207	110	109	182	15	73	24	74	6	38	ę
with (m) is Speed (ms) in Blockage fun flast (wh) in Plockage in flast (wh) in Ppe None State State State in Blockage in flast (wh) atom unblockad mitchig volume 197 None None 752 752 750 atom unblockad mitchig volume 197 317 698 683 262 762 730 atom unblockad mitchig volume 197 317 698 683 262 762 730 atom unblockad mitchig volume 197 317 698 683 262 71 65 atom unblockad volumbockad vol 197 317 618 33 35 40 33 35 40 33 40 atom unblockad vol 197 21 41 71 65 71 65 731 65 71 65 730 67 63 71 65 71 65 71 65 71 65 71 65 71 65 71 65 71 65 71 65	Pedestrians												
y Speei (ms) It Blockage It Blockage It Blockage It None It Ye an storage veh) an storage veh stora	Lane Width (m)												
if Blockage turn flare (vel) in storage vel) an storag	Walking Speed (m/s)												
turn flare (ieh) None None n type n type n type n type n type n storage (eb) an storage (eb) storage (eb) storage (eb) atter (ieh) atter (ieb) 317 698 683 262 750 atter (ieb) 51 11 65 62 71 65 atter (ieb) 51 41 71 65 730 730 atter (ieb) 51 41 71 65 730 730 atter (ieb) 51 41 71 65 730 730 atter (ieb) 51 41 71 65 71 65 atter (ieb) 51 41 71 65 71 65 atter (ieb) 51 41 71 65 71 65 atter (ieb) 51 1243 30 33 777 258 317 atter (ieb) 51 74 31 80 71 56 71 65 atter (ieb) 10	Percent Blockage												
n type None None an type an storage veh) an storage veh) an storage veh) an storage veh) an storage veh) an storage veh) an storage veh) an storage veh) an storage veh) and stora undocked 197	Right turn flare (veh)												
n storage veh) an sonage (in) an sonage (in) and findin whocked and findin whocked at 197 - 317 698 683 262 762 730 at 200 vol at 20	Median type		None			None							
am signal (m) atoro unblocked microri volume (ator so f volume) (ator	Median storage veh)												
attent 51 51 752 752 750 attent 197 317 698 683 262 762 730 attent 197 317 698 683 262 762 730 attent 197 317 698 683 262 762 730 attent 51 4.1 7.1 65 71 65 71 65 attent 31 22 4.1 71 63 33 35 40 attent 31 22 41 76 93 90 97 88 attent 31 22 31 71 59 71 53 317 aut free % 100 71 50 74 33 30 97 40 att free % 101 17 50 74 36 40 att free % 300 31 71 56 74 <td>I Instream signal (m)</td> <td></td>	I Instream signal (m)												
Aliating volume 197 317 698 683 262 762 730 tage 1 cont vol 197 11 6.5 6.2 7.1 6.5 730 tage 2 cont vol 197 317 698 683 262 762 730 tage (s) 5.1 1 6.5 6.2 7.1 6.5 730 tage (s) 31 22 317 76 313 35 40 tage (s) 31 22 320 326 771 258 317 tage (s) 31 22 320 338 777 258 317 tage (s) 31 22 300 318 777 258 317 tage (s) 320 306 171 50 338 777 258 317 tage (s) 320 306 171 50 338 777 258 317 tage (bit) 10 15	oporcani orginal (III) nY natoon unhocked												
Instant Instant <t< td=""><td>W conflicting volume</td><td>107</td><td></td><td></td><td>247</td><td></td><td></td><td>600</td><td>603</td><td>76.7</td><td>76.7</td><td>730</td><td>100</td></t<>	W conflicting volume	107			247			600	603	76.7	76.7	730	100
algo Control 137 698 683 262 730 right (s) 5.1 4.1 7.1 6.5 7.1 6.5 right (s) 3.1 2.2 3.5 4.0 3.3 3.5 4.0 right (s) 3.1 2.2 3.5 4.0 3.3 3.5 4.0 pacity (veh/h) 955 .1 2.2 3.5 4.0 3.3 3.5 4.0 pacity (veh/h) 955 .1 2.1 5.0 3.3 7.17 2.88 3.17 on Lame # EB1 MB1 NB1 SB1 SB1 7.1 5.0 3.3 7.17 2.88 3.17 on Lame # EB1 MB1 NB1 SB1 SB1 SB1 SB1 SB1 SB1 SB1 et Cola 3.00 7.1 5.0 3.00 3.1 7.1 5.8 3.17 3.00 7.1 </td <td></td> <td>121</td> <td></td> <td></td> <td>20</td> <td></td> <td></td> <td>020</td> <td>200</td> <td>707</td> <td>707</td> <td>001</td> <td>021</td>		121			20			020	200	707	707	001	021
andre zum 317 698 683 262 750 730 rando z com with ope (s) 5.1 4.1 7.1 6.5 6.2 7.1 6.5 atop z com with ope (s) 3.1 2.2 3.5 4.0 3.3 5.4 atop (s) 3.1 2.2 3.5 4.0 3.3 3.5 4.0 atop (s) 3.1 2.2 3.5 4.0 3.3 3.5 4.0 atop (sehth) 955 1.243 300 3.8 7.77 2.58 317 atop (sehth) 955 1.243 300 3.38 7.77 2.58 317 atop (sehth) 306 1.71 50 3.77 2.58 317 end of atop (sehth) 30 1.71 50 3.77 2.58 317 end of atop (sehth) 1.6 7.1 5.0 3.8 7.77 2.58 317 end of atop (sehth) 1.6 7.4 3.0 3.41 <td>VCI, stage I colli Vol</td> <td></td>	VCI, stage I colli Vol												
Indicated vol 1/1 3/1 4/1 7/1 6.5 6.2 7/1 6.5 gle (s) 3.1 2.2 3.5 4.0 3.3 3.5 4.0 atcity (verh) 955 2.2 3.5 4.0 3.3 3.5 4.0 atcity (verh) 955 1243 300 3.8 7.77 2.58 3.17 atcity (verh) 955 1243 300 3.8 7.77 2.58 3.17 atcity (verh) 955 1241 50 3.0 3.8 7.77 2.58 3.17 atcity (verh) 955 1243 300 3.17 5.0 3.8 7.77 2.58 3.17 atcity (verh) 3 0.9 7.3 9<		201						000		000	001	001	001
gle (s) 5.1 4.1 (.1 6.5 (.1 6.5 atge (s) 3.1 2.2 3.5 4.0 3.3 3.5 4.0 pacity (vehth) 955 1243 300 31 7.1 6.5 7.1 6.5 pacity (vehth) 955 1243 300 33 777 2.8 317 on Lame # EB1 MB1 NB1 SB1 30 33 777 2.8 317 on Lame # EB1 MB1 NB1 SB1 2.1 5.0 33 777 2.8 317 et leaft 320 171 5.0 2.4 3 317 2.4 et leaft 310 7.7 5.0 3.6 7.4 3 317 et leaft 10.1 5 7.4 3 4.0 5.6 6.0 5.6 5.6 5.6 5.6 5.6 5.6 6.0 5.6 5.6 5.6	VCu, unblocked vol	19/			317			098	083	707	70/	/30	061.
atole (s) 31 22 35 40 33 35 40 aue free % 100 91 76 93 90 97 86 pacity (veh/h) 955 1243 300 338 777 258 317 pacity (veh/h) 955 1243 300 338 777 258 317 end that EB1 WB1 NB1 SB1 77 258 317 end that 30 67 71 50 338 777 258 317 end that 30 67 71 50 338 777 258 317 end that 30 67 71 50 318 777 258 317 end that 31 15 74 316 74 316 74 316 74 316 74 316 74 316 74 316 74 316 74 316 74 316 74 316 74 316 74 316 74	tC, single (s)	5.1			4.1			1.	C .9	6.2	1.1	6.9	6.2
31 22 35 4.0 33 35 4.0 aue free % 100 91 76 93 90 97 88 aue free % 100 55 123 306 171 50 93 90 97 88 on-Lat (we/h) 55 20 306 171 50 33 717 258 317 e Total # EB1 WB1 NB1 SB1 50 73 30 77 258 317 e Total # 200 306 171 50 33 777 258 317 e Edt 3 109 73 9 51 74 316 5	tC, 2 stage (s)												
neur free % 100 91 76 93 90 97 88 apacity (wh/h) 955 1243 300 338 777 258 317 ator, Lame # EB1 WB1 NB1 S0 338 777 258 317 ator, Lame # EB1 WB1 NB1 S0 711 50 74 38 777 258 317 me Total 320 306 171 50 74 3 76 74 36 77 258 77 256 217 74 316 74 316 74 316 74 316 74 316 74 316 74 316 74 44 75 16 17 260 260 17 316 74 44 17 16 17 16 17 16 17 16 17 17 17 17 17 16 16 17 16	tF (s)	3.1			2.2			3.5	4.0	3.3	3.5	4.0	3.3
apacity (verh) 955 1243 300 338 777 258 317 ation Lane # EB1 WB1 NB1 SB1 S00 338 777 258 317 ation Lane # EB1 WB1 NB1 SB1 S00 338 777 258 317 me Left 320 306 171 50 me Left 310 73 9 me Left 310 73 9	p0 queue free %	100			91			26	93	6	67	88	100
aton Lane# EB 1 NB 1 NB 1 SB 1 me Total 320 306 171 50 me Left 3 106 171 50 me Right 110 15 74 3 me Right 110 15 74 3 me Right 101 5 14 316 me to Capacity 0.00 0.03 0.41 0.16 me to Capacity 0.10 0.03 0.41 0.16 me to Capacity 0.11 3.4 19.5 4.4 colDelay (s) 0.11 3.4 19.5 18.5 oach Delay (s) 0.11 3.4 19.5 18.5 oach Delay (s) 0.11 3.4 19.5 18.5 asetion Summary C C C C section Summary 57.2% ICU Level of Service	cM capacity (veh/h)	955			1243			300	338	777	258	317	857
me Total 320 306 171 50 me Left 3 109 73 9 me Right 110 15 74 3 me Right 955 173 16 3 me Right 955 173 16 3 me to Capacity 0.00 0.09 0.41 0.16 Le langth 95th (m) 0.1 2.3 15.7 4.4 LOElay (s) 0.1 3.4 19.5 18.5 LOBelay (s) 0.1 3.4 19.5 18.5 Loss oach Delay (s) 0.1 3.4 19.5 18.5 Loss oach Delay (s) 0.1 3.4 19.5 18.5 Loss oach Lolay (s) 0.1 3.4 19.5 18.5 Loss oach Delay (s) 0.1 3.4 19.5 18.5 Loss oach Lolay (s) 0.1 3.4 19.5 18.5 Loss oach Lolay (s) 0.1 3.4 19.5 18.5 <	Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
me Left 3 109 73 9 me Right 110 15 74 3 me to Capacity 0.00 0.09 0.41 7.316 me to Capacity 0.00 0.09 0.41 0.16 e Length 95th (m) 0.1 2.3 15.7 4.4 olDelay (s) 0.1 3.4 19.5 18.5 oldelay (s) 0.1 3.4 19.5 18.5 oach Delay (s) 0.1 3.4 19.5 18.5 oach LOS A A C C C actor Summary C C C C C C C C C C C C C C C C C C C	Volume Total	320	306	171	50								
me Right 110 15 74 3 me to Capacity 0.00 0.03 417 316 me to Capacity 0.00 0.03 0.041 0.16 Le Length 95th (m) 0.1 2.3 15.7 4.4 cl Delay (s) 0.1 3.4 19.5 18.5 color Delay (s) 0.1 3.4 19.5 18.5 coach Delay (s) 0.1 3.4 19.5 18.5 coach LOS 0.1 3.4 19.5 18.5 18.5 18.5 18.5 18.5 18.5 18.5 18	Volume Left	e C	109	73	6								
955 1243 417 316 me to Capacity 0.00 0.09 0.41 0.16 le Length 95th (m) 0.11 3.4 1.4 0.16 le Length 95th (m) 0.11 3.4 1.5 4.4 nol Delay (s) 0.11 3.4 1.9.5 1.8.5 LOS 0.1 3.4 1.9.5 1.8.5 ach Delay (s) 0.1 3.4 1.9.5 1.8.5 ach Delay 0.1 3.4 1.5.5 1.5.5 ach De	Volume Right	110	15	74	e.								
0.00 0.09 0.41 0.16 0.1 2.3 15.7 4.4 0.1 3.4 19.5 18.5 0.1 3.4 19.5 18.5 18.5 18.5 18.5 18.5 18.5 18.5 18	cSH	955	1243	417	316								
0.1 2.3 15.7 4.4 0.1 3.4 19.5 18.5 0.1 3.4 19.5 18.5 0.1 3.4 19.5 18.5 0.1 3.4 19.5 18.5 0.1 3.4 19.5 18.5 6.3 6.3 1.2 CU Level of Service 1.5 ICU Level of Service	Volume to Capacity	00.00	0.09	0.41	0.16								
0.1 3.4 19.5 18.5 A A C C 0.1 3.4 19.5 18.5 C C 6 6.3 filtration 57.2% ICU Level of Service	Queue Length 95th (m)	0.1	2.3	15.7	4.4								
A C C (s) 0.1 3.4 19.5 18.5 (a) 0.1 3.4 10.1 10.5 (a) 0.1 5.3 ICU Level of Service (a) 57.2% ICU Level of Service 10.5 (a) 57.2% ICU Level of Service 10.5	Control Delay (s)	0.1	3.4	19.5	18.5								
v (s) 0.1 3.4 19.5 18.5 mary C C C mmary 6.3 pciry Utilization 57.2% ICU Level of Service formin 57.2%	Lane LOS	4	4	ပ	ပ								
C C mmary 6.3 pacity Utilization 57.2% ICU Level of Service (min) 57.2%	Approach Delay (s)	0.1	3.4	19.5	18.5								
mmary 6.3 Bacity Utilization 57.2% ICU Level of Service (min) 57.2%	Approach LOS			ပ	ပ								
6.3 pacity Utilization 57.2% ICU Level of Service (min) 15	Intersection Summary												
pacity Utilization 57.2% ICU Level of Service	Average Delav			6.3									
15	Intersection Capacity Utilization	uo		57.2%	0	U Level o	f Service			8			
	Analysis Pariod (min)			÷									

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HCM Unsignalized Intersection Capacity Analysis 5: Killaly Street West & Main Street	ersec & Mai	tion Ca n Stre	apacit) et	, Analy	sis		<2036 Total> PM Peak Hour 0327-2024
	Ť	1	*	ł	•	•	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	<u>*</u>			ţ	F	¥.	
Traffic Volume (veh/h)	296	257	37	349	185	35	
Future Volume (Veh/h)	296	257	37	349	185	35	
Sign Control	Free			Free	Stop		
Grade	%0			%0	%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	322	279	40	379	201	38	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
	None			None			
ne veh)							
Inctroom cianol (m)							
pX, platoon unblocked							
vC, conflicting volume			322		920	462	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			322		920	462	
tC, single (s)			4.1		6.4	6.2	
tC, 2 stage (s)							
tF (s)			2.2		3.5	<u>3.</u> 3	
p0 queue free %			26		31	94	
cM capacity (veh/h)			1238		291	600	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2			
Volume Total	601	419	201	38			
Volume Left	0	40	201	0			
Volume Right	279	0	0	38			
	1700	1238	291	600			
Volume to Capacity	0.35	0.03	0.69	0.06			
öth (m)	0.0	0.8	37.8	1.6			
	0.0	1.1	41.1	11.4			
Lane LOS		۷	ш	в			
Approach Delay (s)	0.0	1.1	36.3				
Approach LOS			ш				
Intersection Summary							
Averade Delav			73				
Intersection Canacity Utilization			66.1%	<u>10</u>	CULLevel of Service	Service	c
Analysis Period (min)			15	2			•
			2				

HCM Unsignalized Intersection Capacity Analysis 6: Proposed Site Access/Elgin Street	iterseo sess/E	tion C Igin Sti	apacit <mark>.</mark> reet	/ Analy	ysis	•	<2036 Total> PM Peak Hour 03-27-2024
	1	Ť	ţ	~	۶	/	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		ţ	\$		¥		
Sign Control		Stop	Stop		Stop		
Traffic Volume (vph)	0	45	67	67	44	0	
Future Volume (vph)	0	45	67	67	44	0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	49	73	73	48	0	
Direction, Lane #	EB 1	WB 1	SB 1				
Volume Total (vph)	49	146	48				
Volume Left (vph)	0	0	48				
Volume Right (vph)	0	73	0				
Hadj (s)	0.03	-0.27	0.23				
Departure Headway (s)	4.2	3.8	4.5				
Degree Utilization, x	0.06	0.15	0.06				
Capacity (veh/h)	840	931	755				
Control Delay (s)	7.4	7.5	7.8				
Approach Delay (s)	7.4	7.5	7.8				
Approach LOS	A	۷	A				
Intersection Summary							
Delay			7.5				
Level of Service			۷				
Intersection Capacity Utilization	c		17.6%	<u>ں</u>	ICU Level of Service	Service	А

Movement E	EBL	EBT	WBT
-ane Configurations		ţ	\$
Sign Control		Stop	Stop
Fraffic Volume (vph)	0	45	67
⁻ uture Volume (vph)	0	45	67
Peak Hour Factor (0.92	0.92	0.92
Hourly flow rate (vph)	0	49	73
Direction, Lane # E	EB 1	WB 1	SB 1
/olume Total (vph)	49	146	48
/olume Left (vph)	0	0	48
Volume Right (vph)	0	73	0
	0.03	-0.27	0.23
(s)	4.2	3.8	4.5
Degree Utilization, x (0.06	0.15	0.06
Capacity (veh/h)	840	931	755
Control Delay (s)	7.4	7.5	7.8
Approach Delay (s)	7.4	7.5	7.8
Approach LOS	A	A	A
ntersection Summary			
Delay			7.5
-evel of Service			4
ntersection Capacity Utilization			17.6%
Analysis Period (min)			15

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Residential Development Rosemount Gardens Trans-Plan



LEVEL OF SERVICE ANALYSIS AT SIGNALIZED INTERSECTIONS

To assist in clarifying the arithmetic analysis associated with traffic engineering, it is often useful to refer to "Level of Service". The term Level of Service implies a qualitative measure of traffic flow at an intersection. It is dependent upon vehicle delay and vehicle queue lengths at the approaches. Specifically, Level of Service criteria are stated in terms of the average stopped delay per vehicle for a 15-minute analysis period. The following table describes the characteristics of each level:

<u>Level of</u> <u>Service</u>	Features	Stopped Delay per Vehicle (sec)
Α	At this level of service, almost no signal phase is fully utilized by traffic. Very seldom does a vehicle wait longer than one red indication. The approach appears open, turning movements are easily made and drivers have freedom of operation.	≤ 5.0
В	At this level, an occasional signal phase is fully utilized and many phases approach full use. Many drivers begin to feel somewhat restricted within platoons of vehicles approaching the intersection.	$> 5.0 \text{ and } \le 15.0$
С	At this level, the operation is stable though with more frequent fully utilized signal phases. Drivers feel more restricted and occasionally may have to wait more than one red signal indication, and queues may develop behind turning vehicles. This level is normally employed in urban intersection design.	> 15.0 and ≤ 25.0
D	At this level, the motorist experiences increasing restriction and instability of flow. There are substantial delays to approaching vehicles during short peaks within the peak period, but there are enough cycles with lower demand to permit occasional clearance of developing queues and prevent excessive backups.	> 25.0 and ≤ 40.0
Е	At this level, capacity is reached. There are long queues of vehicles waiting upstream of the intersection and delays to vehicles may extend to several signal cycles.	$> 40.0 \text{ and} \le 60.0$
F	At this level, saturation occurs, with vehicle demand exceeding the available capacity.	> 60.0

LEVEL OF SERVICE ANALYSIS AT UNSIGNALIZED INTERSECTIONS⁽¹⁾

The term "level of service" implies a qualitative measure of traffic flow at an intersection. It is dependent upon the vehicle delay and vehicle queue lengths at approaches. The level of service at unsignalized intersections is often related to the delay accumulated by flows on the minor streets, caused by all other conflicting movements. The following table describes the characteristics of each level.

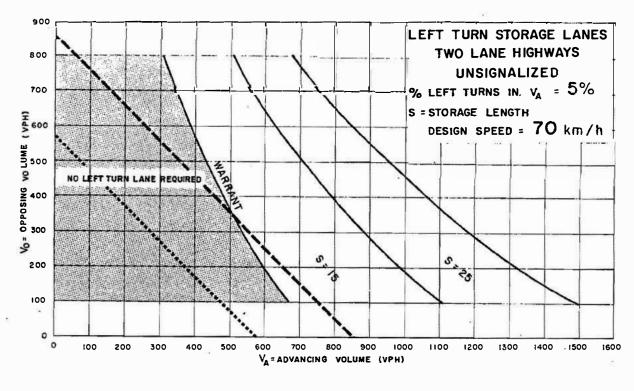
Level of Service	Features
А	Little or no traffic delay occurs. Approaches appear open, turning movements are easily made, and drivers have freedom of operation.
В	Short traffic delays occur. Many drivers begin to feel somewhat restricted in terms of freedom of operation.
С	Average traffic delays occur. Operations are generally stable, but drivers emerging from the minor street may experience difficulty in completing their movement. This may occasionally impact on the stability of flow on the major street.
D	Long traffic delays occur. Motorists emerging from the minor street experience significant restriction and frustration. Drivers on the major street will experience congestion and delay as drivers emerging from the minor street interfere with the major through movements.
E	Very long traffic delays occur. Operations approach the capacity of the intersection.
F	Saturation occurs, with vehicle demand exceeding the available capacity. Very long traffic delays occur.

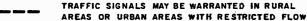
Highway Capacity Manual - Special Report No. 209, Transportation Research Board, 1985.

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AT-GRADE INTERSECTIONS







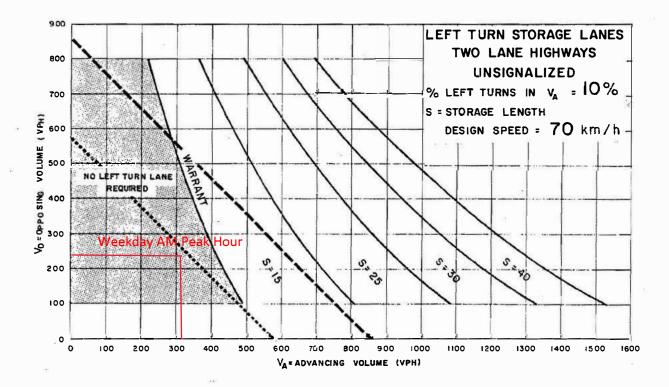


Figure EA-10

94-06

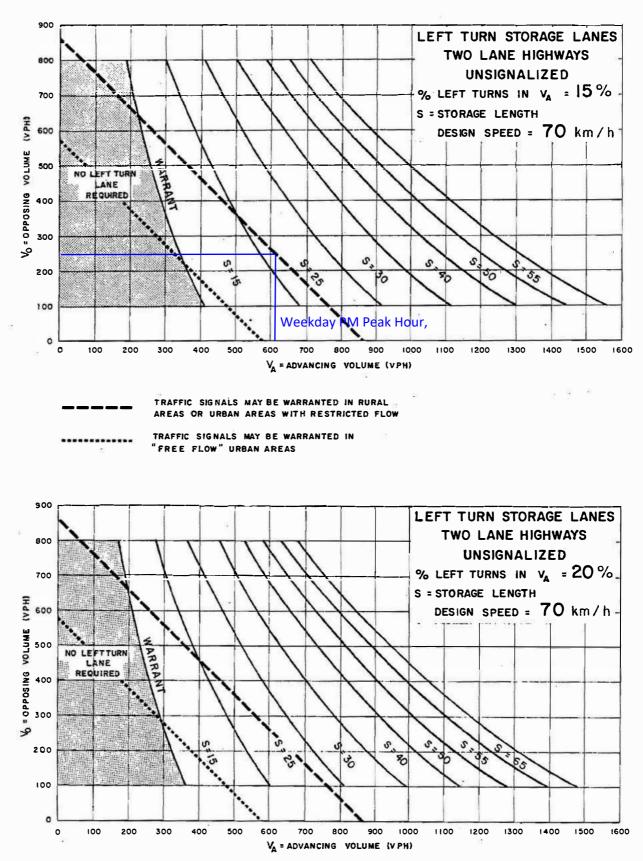
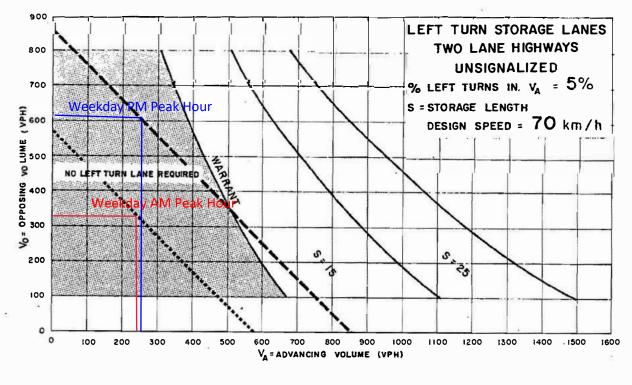


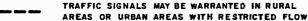
Figure EA-11

Horizon Year 2031, Killaly Street West & West Side Road, West Leg

AT-GRADE INTERSECTIONS







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

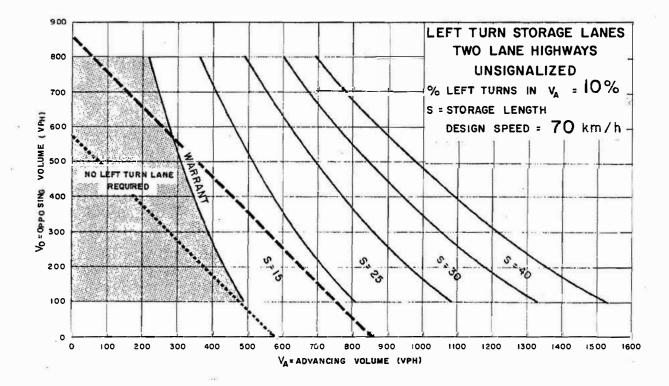
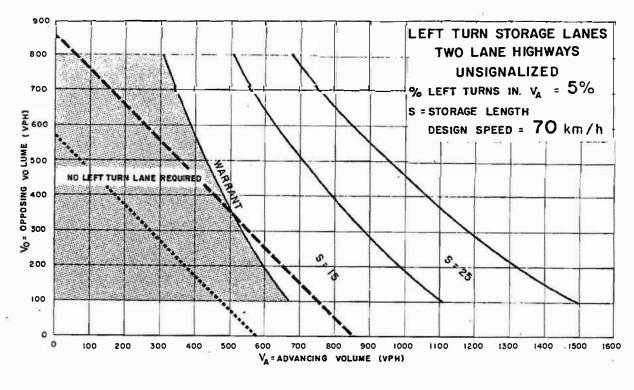
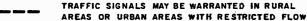


Figure EA-10

AT-GRADE INTERSECTIONS







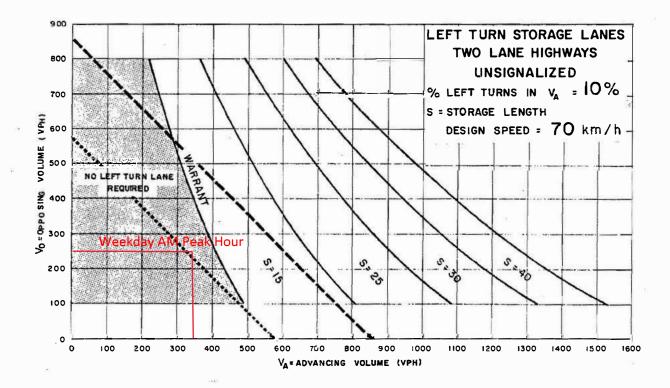


Figure EA-10

94-06

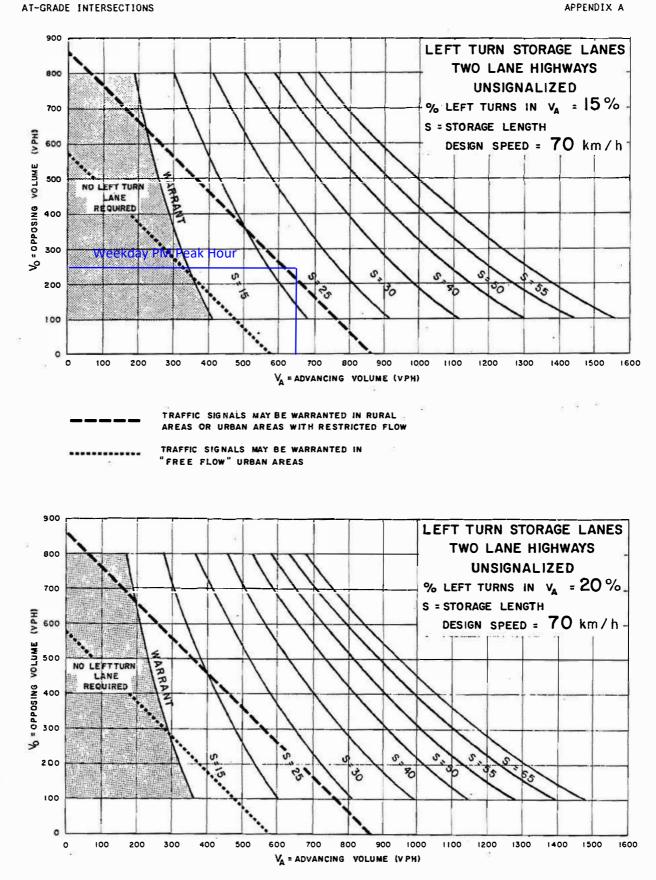
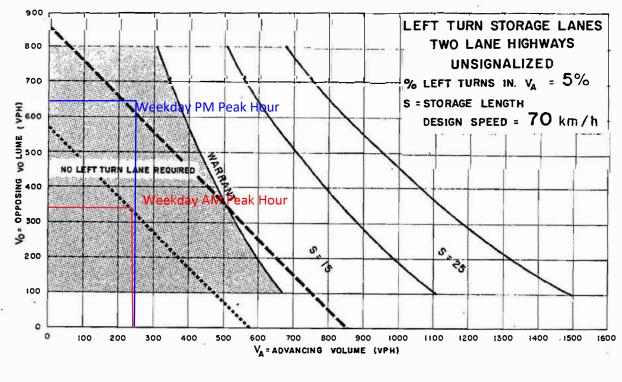


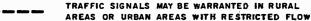
Figure EA-11

94-06

Horizon Year 2036, Killaly Street West & West Side Road, West Leg

APPENDIX A







AT-GRADE INTERSECTIONS

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

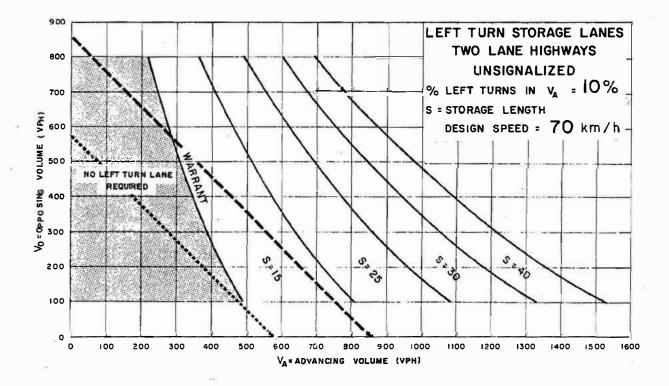


Figure EA-10

94-06

Horizon Year 2031, Killaly Street West & Third Avenue East Leg

AT-GRADE INTERSECTIONS

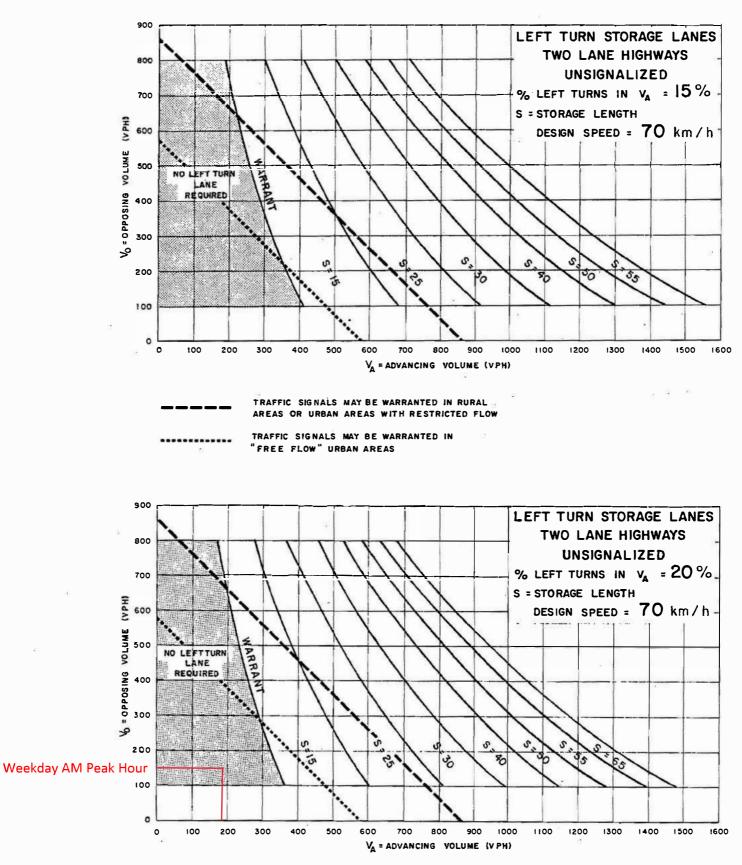


Figure EA-11





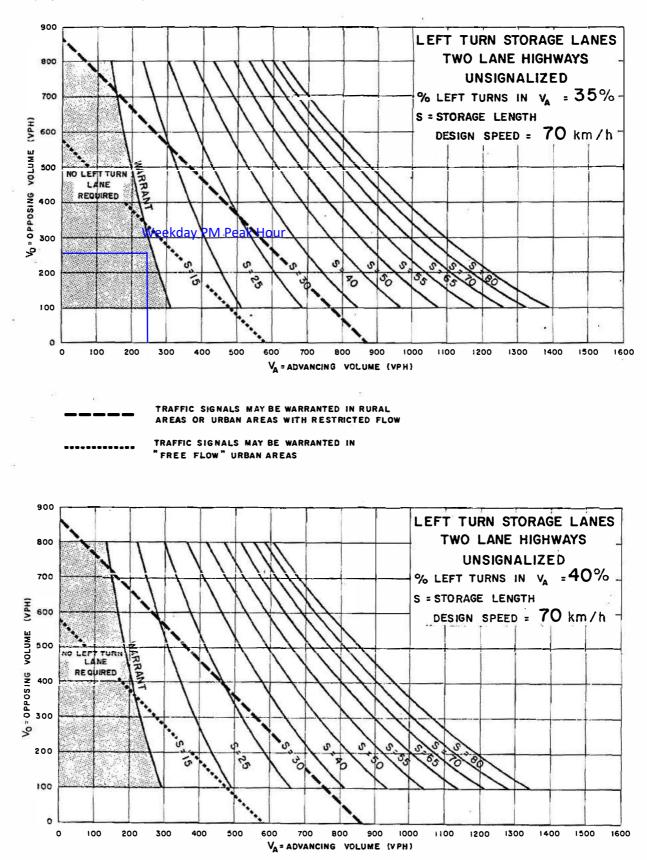


Figure EA-13

94-06

Horizon Year 2031, Killaly Street West & Third Avenue, West Leg



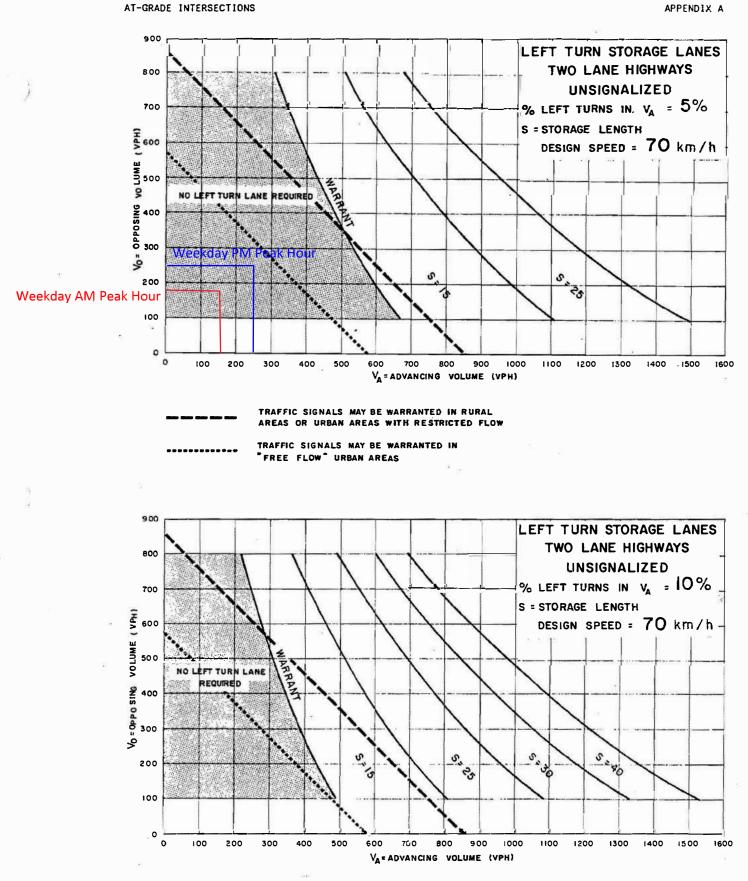


Figure EA-10

94-06

Horizon Year 2036, Killaly Street West & Third Avenue East Leg

AT-GRADE INTERSECTIONS

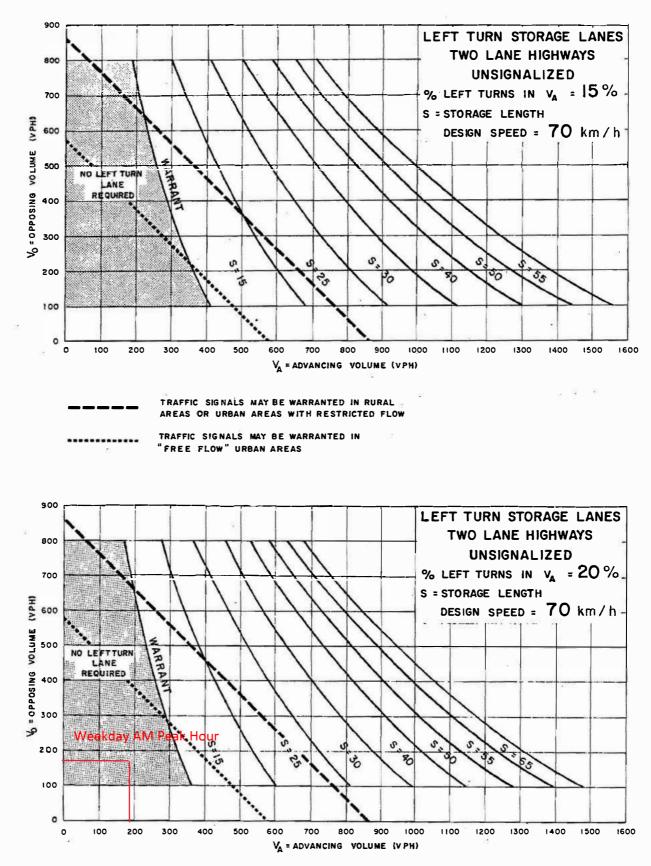


Figure EA-11





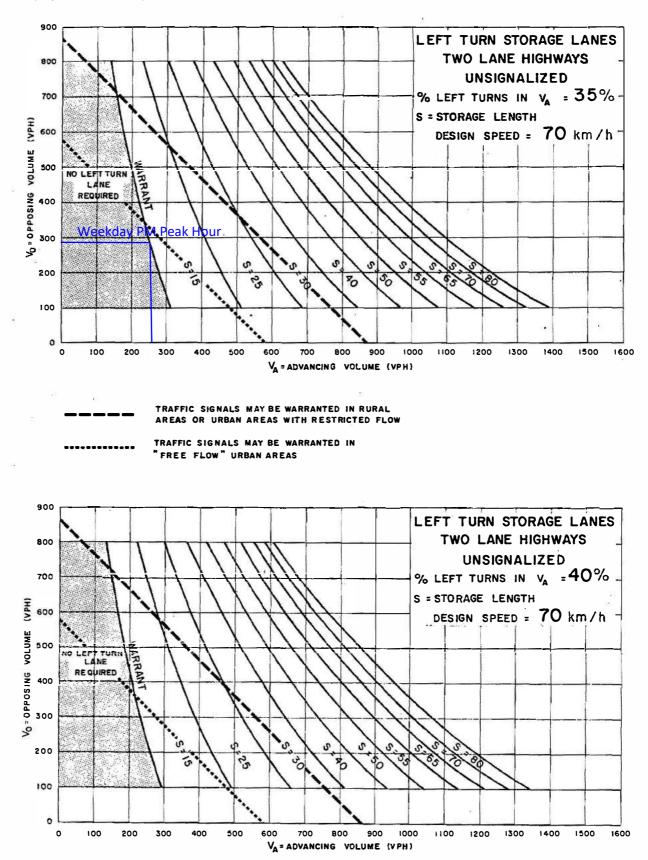


Figure EA-13

Horizon Year 2036, Killaly Street West & Third Avenue, West Leg



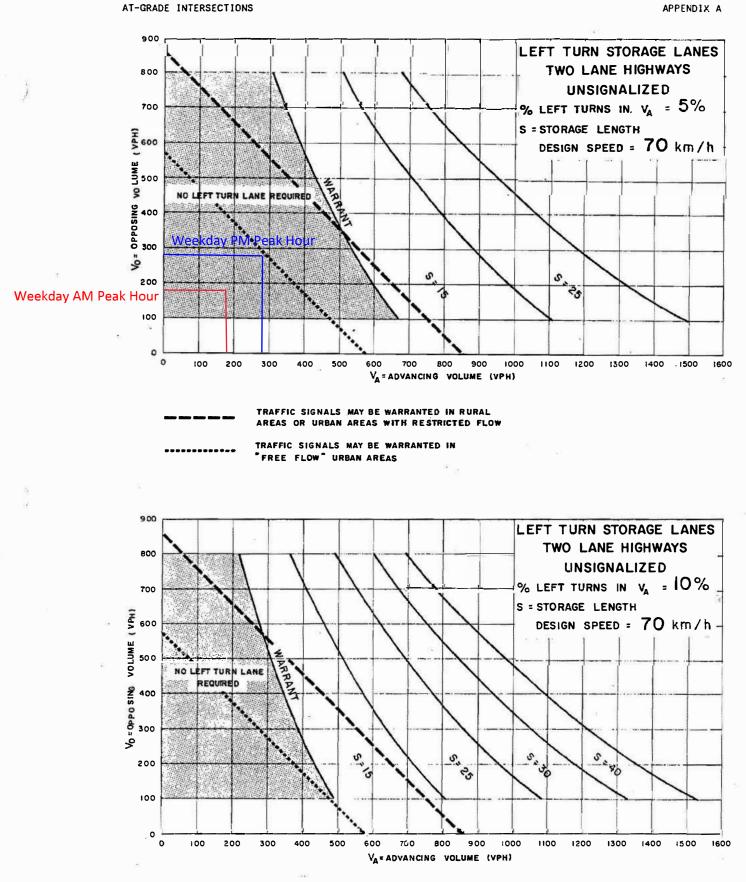


Figure EA-10

94-06



Section 3: Parking Provisions

3.1 Parking Space Requirements

a) Except as otherwise provided in Section 3, the owner or occupant of any lot, building or structure used or erected for any of the purposes set forth in this By-law, shall provide and maintain for the sole use of the owner, occupant or other persons entering upon or making use of the said lot, building or structure from time to time, one or more parking spaces in accordance with the requirements of Section 3.1.1 and 3.1.2.

3.1.1 Parking Space Requirements for Residential Uses

Permitted Use	No. of Spaces Required per Unit	
Apartment Building	1.25	
Apartment Building, Public	1 space per 3 units	
Bed and Breakfast	1 space per guest room	
Dwelling, Accessory	1	
Dwelling, Detached	1	
Dwelling, Duplex	1	
Dwelling, Fourplex	1	
Dwelling, Semi-Detached	1	
Dwelling, Townhouse Block	1	
Dwelling, Townhouse Street	1	
Dwelling, Triplex	1	
Dwelling Unit, Accessory	1 (can be tandem)	
Long Term Care Facility	0.4 per dwelling unit and per care bed	
Supportive Living Facility	0.5	

3.1.2 Parking Space Requirements for Non-Residential Uses

Permitted Use	
Adult Oriented Entertainment Establishment	Min 1 space per 20 square metres gfa
Animal Care Establishment	Min 1 space per 20 square metres gfa
Brew Pub	Min 1 space per 20 square metres gfa
Cannabis Production Facility	1 space for every employee on the
	largest shift
Cultural Facility	Min 1 space per 65 square metres gfa
Contractor's Yard	Min 1 space per 100 square metres gfa
Day Care	Min 1 space per 25 square metres gfa
Golf Course and Driving Range	18 per 9 holes of golf plus 1 per 27
	square metres of club house
Heavy Equipment Sales and Service	Min 1 space per 35 square metres gfa

Hospital	Min 1 space per 50 square metres gfa	
Hotel	1 per guest room	
Industry, Heavy	Min 1 space per 100 square metres gfa	
Commercial Plaza	Min 1 space per 25 square metres gfa	
Elementary School	Min 1.25 spaces per classroom	
Secondary School	Min 2 spaces per classroom	
Public Use	Min 1 space per 30 square metres gfa	
Industry, Light	Min 1 space per 100 square metres gfa	
Marina	0.6 per boat slip	
Medical Clinic	Min 1 space per 28 square metres gfa	
Motor Vehicle Gas Station	Min 1 space per 20 square metres	
	gfa	
Motor Vehicle Repair Garage	Min 1 space per 20 square metres gfa	
Motor Vehicle Sales/Rental and Service	Min 1 space per 30 square metres gfa	
Office	Min 1 space per 28 square metres gfa	
Place of Assembly/Banquet Hall *	Min 1 space per 20 square metres gfa	
Place of Worship *	Min 1 space per 20 square metres gfa	
Recreation Facility *	Min 1 space per 20 square metres gfa	
Restaurant, Fast Food	Min 1 space per 20 square metres gfa	
Restaurant, Full-Service*	Min 1 space per 20 square metres gfa	
Restaurant, Take-Out	Min 1 space per 20 square metres gfa	
Retail Store	Min 1 space per 20 square metres gfa	
Service Commercial	Min 1 space per 20 square metres gfa	
Transportation Depot	Min 1 space per 100 square metres gfa	
All other non-residential uses listed in the	Min 1 space per 20 square metres gfa	

* Applies only to portion of building dedicated to the assembly of persons

3.1.3 Calculation of Parking Requirement

a) The calculation of the minimum number of required parking spaces shall be rounded up to the nearest whole number.

3.2 Parking Space Dimensions

	Min. Width (m)	Min. Depth (m)	Conditions
Standard Parking Space	2.6	5.2	-
Standard Parking Space Obstructed on Two Sides	3.5	5.2	Abutting any wall, column or structure on both sides

Land Use: 221 Multifamily Housing (Mid-Rise)

Description

Mid-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and with between three and 10 levels (floors) of residence. Multifamily housing (low-rise) (Land Use 220), multifamily housing (high-rise) (Land Use 222), and affordable housing (Land Use 223) are related land uses.

Time of Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand on a weekday (one general urban/suburban study site), a Saturday (two general urban/suburban study sites), and a Sunday (one dense multi-use urban study site).

	Percent of Peak Parking Demand		
Hour Beginning	Weekday	Saturday	Sunday
12:00-4:00 a.m.	100	100	100
5:00 a.m.	94	99	-
6:00 a.m.	83	97	-
7:00 a.m.	71	95	-
8:00 a.m.	61	88	-
9:00 a.m.	55	83	-
10:00 a.m.	54	75	-
11:00 a.m.	53	71	-
12:00 p.m.	50	68	-
1:00 p.m.	49	66	33
2:00 p.m.	49	70	40
3:00 p.m.	50	69	27
4:00 p.m.	58	72	13
5:00 p.m.	64	74	33
6:00 p.m.	67	74	60
7:00 p.m.	70	73	67
8:00 p.m.	76	75	47
9:00 p.m.	83	78	53
10:00 p.m.	90	82	73
11:00 p.m.	93	88	93

Land Use: 820 Shopping Center

Description

A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands.

Time of Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand **during the month of December** on a weekday (seven study sites), a Friday (eight study sites), and a Saturday (19 study sites).

	Percent of Peak Parking Demand during December		
Hour Beginning	Weekday	Friday	Saturday
12:00-4:00 a.m.	-	-	-
5:00 a.m.	_	-	-
6:00 a.m.	_	-	-
7:00 a.m.	_	-	-
8:00 a.m.	_	-	-
9:00 a.m.	_	-	-
10:00 a.m.	_	74	-
11:00 a.m.	-	87	85
12:00 p.m.	77	97	97
1:00 p.m.	100	100	98
2:00 p.m.	98	92	100
3:00 p.m.	90	85	97
4:00 p.m.	76	84	88
5:00 p.m.	82	78	77
6:00 p.m.	89	75	64
7:00 p.m.	90	63	-
8:00 p.m.	84		_
9:00 p.m.	_	_	_
10:00 p.m.	_	_	-
11:00 p.m.	_	-	-