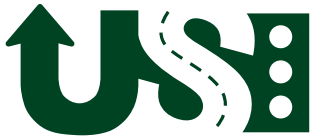


Sucette Harbor

Traffic Impact Analysis
Mandeville, Louisiana

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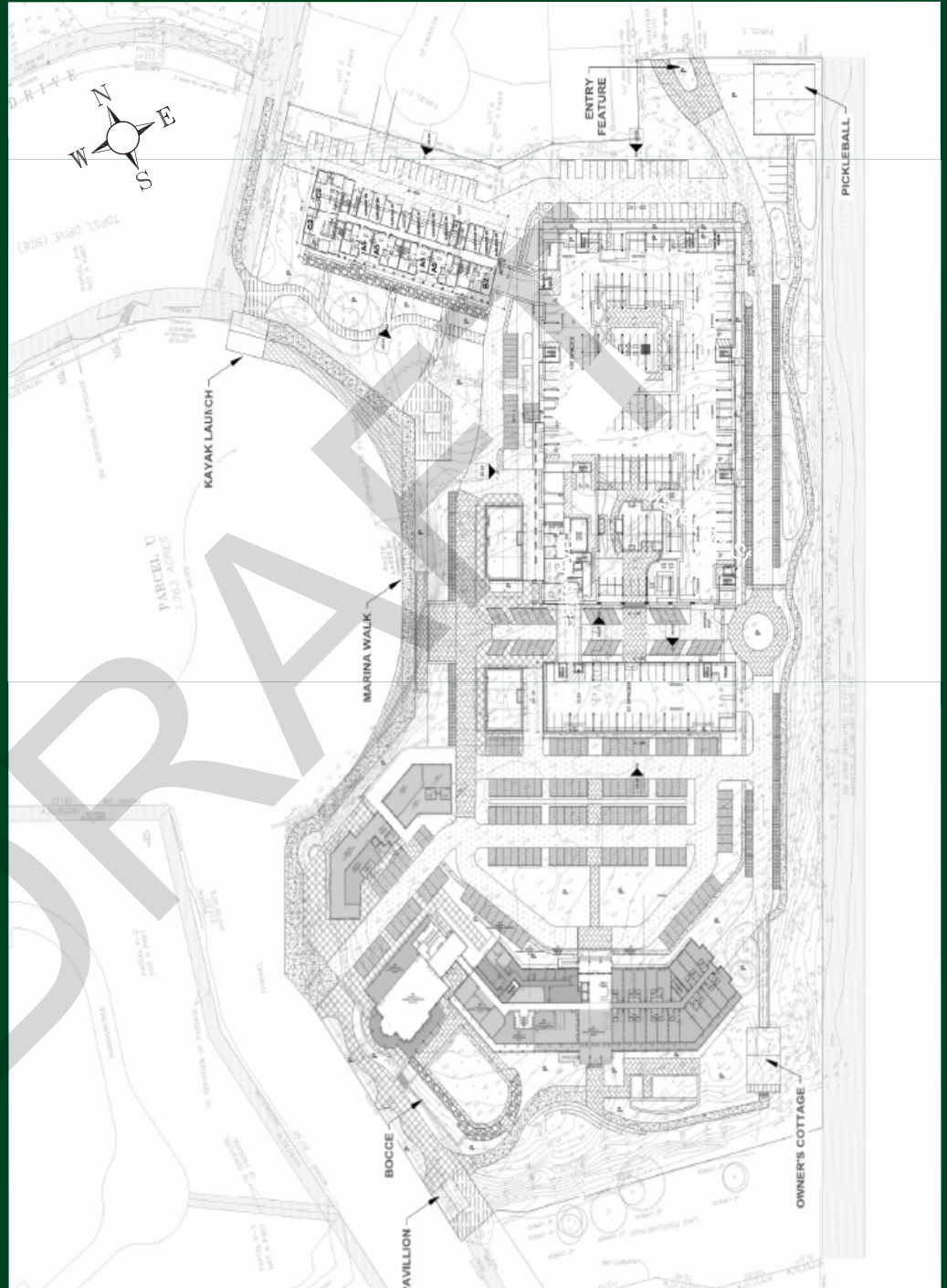
In Association with:

WOODWARD INTERESTS

1000 S. Norman C.
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New Orleans, LA 70125

Prepared for:

The City of Mandeville
3101 East Causeway Approach
Mandeville, LA 70448



Site Plan Source: DesignWorkshop



USI Project #: 22-068
February 2023

Sucette Harbor Mandeville, Louisiana Traffic Impact Analysis

Introduction

This report summarizes a traffic impact analysis (TIA) for the proposed Sucette Harbor multi-use development located on Mariners Blvd in Mandeville, Louisiana. The proposed development includes housing, a hotel, restaurants, and a marina. The objective of this study was to estimate the impact on the existing roadway network. Sucette Harbor is proposed to be located between the end of Mariners Blvd and Lake Pontchartrain. **Figure 1** presents a vicinity map displaying the site location.

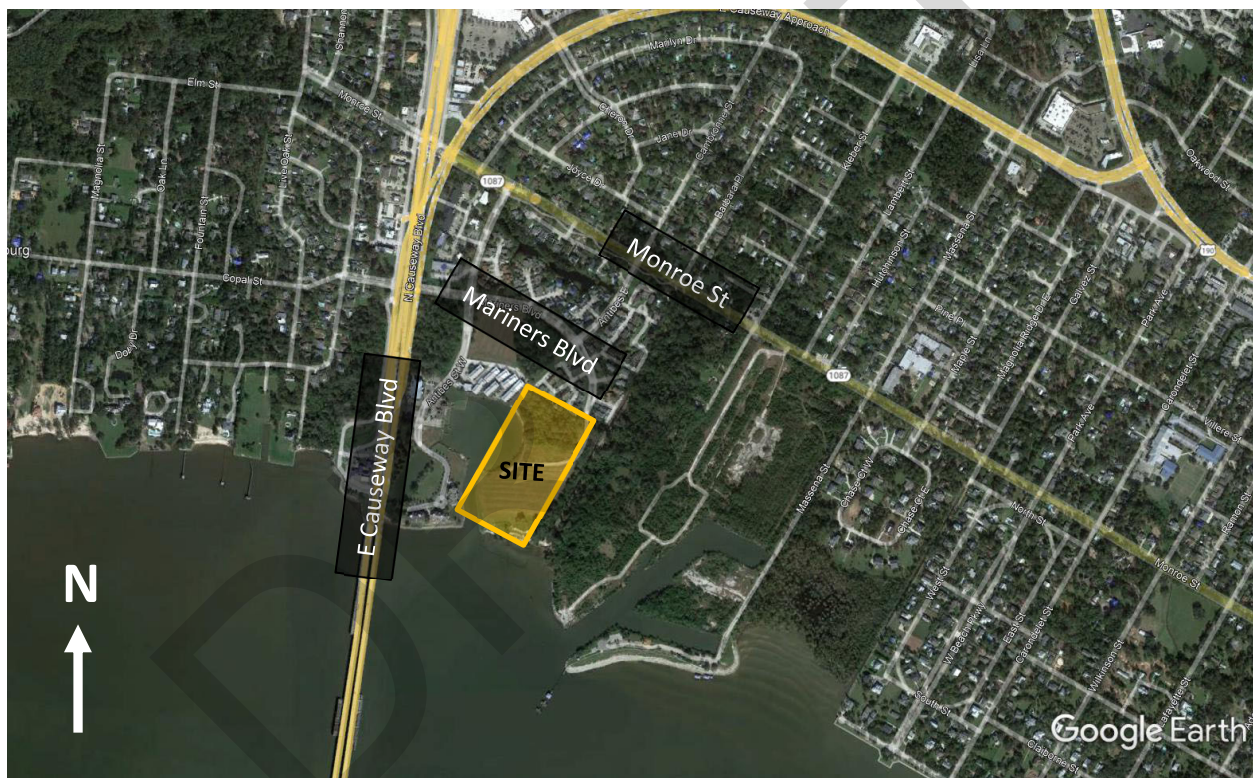


Figure 1. Vicinity Map
Source: © 2022 Google

Existing Conditions and Study Area Observations

Intersections expected to be impacted by the proposed development were reviewed using Google Earth imagery, and field observations were conducted to verify existing conditions. City of Mandeville Comprehensive Plan maps were used to classify the study area roadways. Significant characteristics of the intersections along with summaries of the observations are presented below:

- ***E Causeway Blvd at Monroe St*** – At this signalized intersection, E Causeway Blvd is classified as a 4-lane Primary Road oriented north and south. Monroe St is a 4-lane Secondary Road oriented east and west. Each leg of the intersection is divided by a median. Crosswalks are located on the south and east legs of the intersection, however, only the south leg crosswalk is equipped with pedestrian signal heads. The crosswalk across the east leg of the intersection did not have signal indications to direct pedestrians heading southbound from the median. All queues in the AM and PM appeared to clear the intersection during each observed cycle aside from the westbound approach in the AM and the eastbound approach in the PM. In the AM, the westbound queues were observed extending into the upstream intersection at Antibes E St / Cambronne St for approximately ten minutes, but it dissipated shortly after. In the PM, the eastbound queues extended into the upstream intersection at the Service Rd however this was only observed twice. **Photo 1** presents an aerial of the intersection with roadway widths.
- ***Mariners Blvd at E Causeway Blvd*** – At this unsignalized T-intersection, Mariners Blvd is a 2-lane Local Road oriented east and west separated by a raised median. E Causeway Blvd is a one-way exit ramp from the Causeway bridge with two lanes in the northbound direction. No striping on Mariners Blvd was observed and striping on E Causeway Blvd was in fair condition. Signage at the intersection was observed to be in fair condition. **Photo 2** presents an aerial of the intersection with roadway widths.
- ***Antibes St W at Monroe St*** – At this unsignalized T-intersection, Antibes St W is a 2-lane Local Road oriented north and south and includes a 2-foot median with rollover curbs on the northbound approach. Monroe St is a 4-lane Secondary Road oriented east and west with a raised median with barrier curbs on west leg and a striped median on the east leg. Street signs and ADA ramps were observed to be in poor condition. Striping in the roadway was observed to be in fair condition. Vehicles were observed driving over the striped median while turning left from the westbound approach onto Antibes St W. **Photo 3** presents an aerial of the intersection with roadway widths.
- ***Antibes St E/Cambronne St at Monroe St*** – At this unsignalized intersection, Antibes St E is a 2-lane Local Road oriented north and south including a 2-foot median on the northbound approach with rollover curbs and an undivided southbound approach. Monroe St at this location is an undivided 2-lane Secondary Road oriented east and west. ADA ramps were observed to be in poor condition and street signs and striping were observed to be in fair condition. Cambronne St connects to and forms a signalized intersection at E Causeway approach to the north. Drivers could use Cambronne St from Monroe St to access E Causeway Approach and vice versa. **Photo 4** presents an aerial of the intersection with roadway widths.
- ***Massena St at Monroe St*** – At this unsignalized intersection, Massena St is an undivided 2-lane Local Road oriented north and south. Monroe St is a 2-lane undivided Secondary Road oriented east and west. A push button activated hybrid beacon with pedestrian heads were located on Monroe St for a crosswalk on the east leg. Pressing the push buttons did not appear to engage the hybrid beacon and pedestrian heads during

observations. Striping on minor streets was observed to be in poor condition or nonexistent. Signs were observed to be in fair condition. **Photo 5** presents an aerial of the intersection with roadway widths.

A pedestrian path was observed on the south side of Monroe St starting at Barbara Pl and terminating outside of the study area to the west of E Causeway Blvd. Pedestrian and non-motorized scooter/bicycle users were observed utilizing the path. Aerials of each intersection with roadway widths are presented in the **Appendix**.

Site Access

Access to the site is proposed via two (2) driveways. One driveway, which will be the primary public access, will be located at the terminus of Mariners Blvd and the other, which will be for emergency vehicles, will be located at the terminus of the St. Croix Dr cul-de-sac. **Figure 2** presents the proposed access for the development. The proposed site plan is presented in the **Appendix**.

Data Collection and Base Conditions Volumes

24-hour bi-directional counts and turning movement counts (TMCs) were collected on October 4, 2022. The 24-hour bi-directional counts were collected on Monroe St between E Causeway Blvd and Antibes St W and on E Causeway Blvd between Mariners Blvd and Monroe St and were reviewed to select peak periods. The review concluded that the peak periods were **6:30 – 8:30 AM** and **4:00 – 6:00 PM**. Turning movement counts were collected at the following locations:

- E Causeway Blvd at Monroe St
- Mariners Blvd at E Causeway Blvd
- Antibes St W at Monroe St
- Antibes St E / Cambronne St at Monroe St
- Massena St at Monroe St

The turning movement counts were reviewed to determine peak hours that would represent times of critical traffic operations for the study area. The peak hours selected were **7:00 – 8:00 AM** and **4:45 – 5:45 PM**.

Historic traffic data from LADOTD count stations from various locations surrounding the study area and output from the New Orleans Regional Planning Commission (NORPC) regional transportation models (Transcad) were used to calculate growth rates. The results ranged from -0.26 to +2.82. An annual growth rate of 1.5% was selected. The area is built out with little room for substantial growth therefore the selected growth rate of 1.5% is considered conservative. This growth rate was applied to the peak hour TMCs to develop 2025 Base Conditions volumes. **Figure 3** presents the Base Conditions volumes graphically.

The raw traffic data with maps and growth rate calculation documentation are included in the **Appendix**.

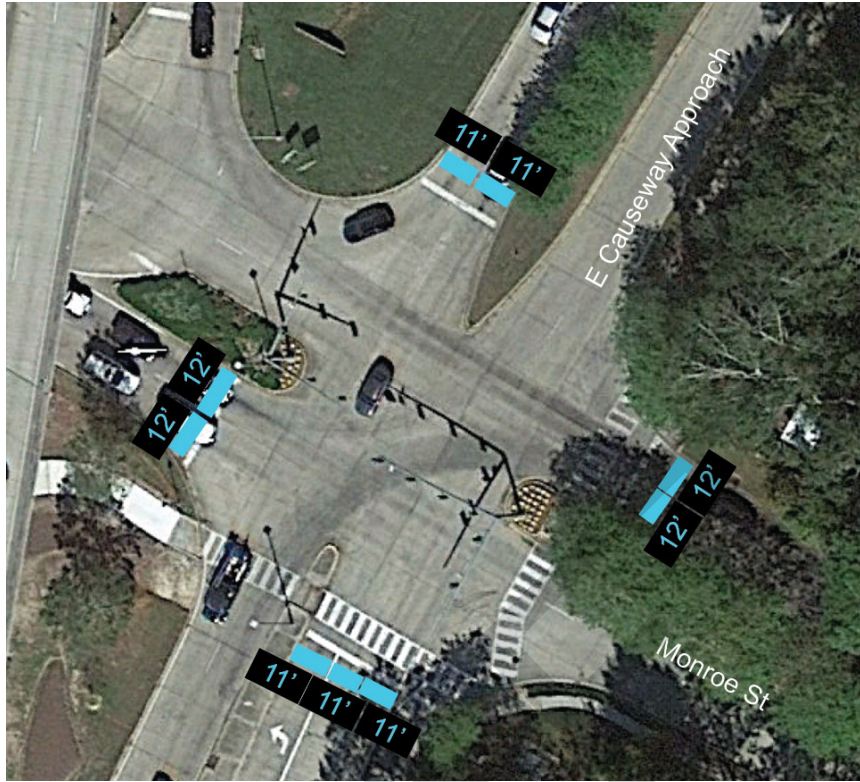


Photo 1 – E Causeway Approach at Monroe St



Photo 2 – E Causeway Approach at Mariners Blvd

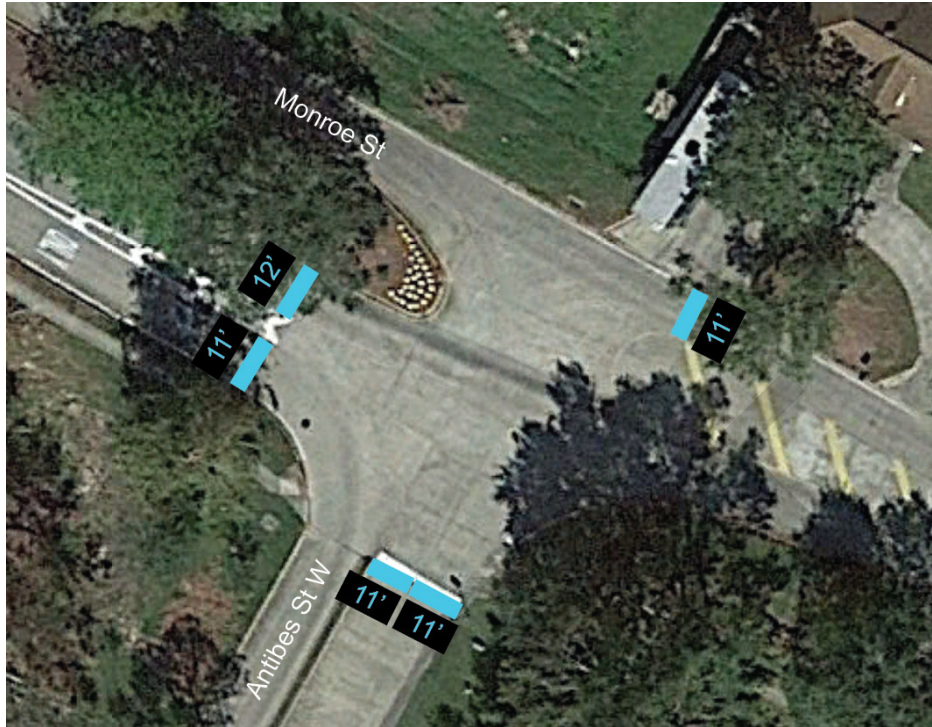


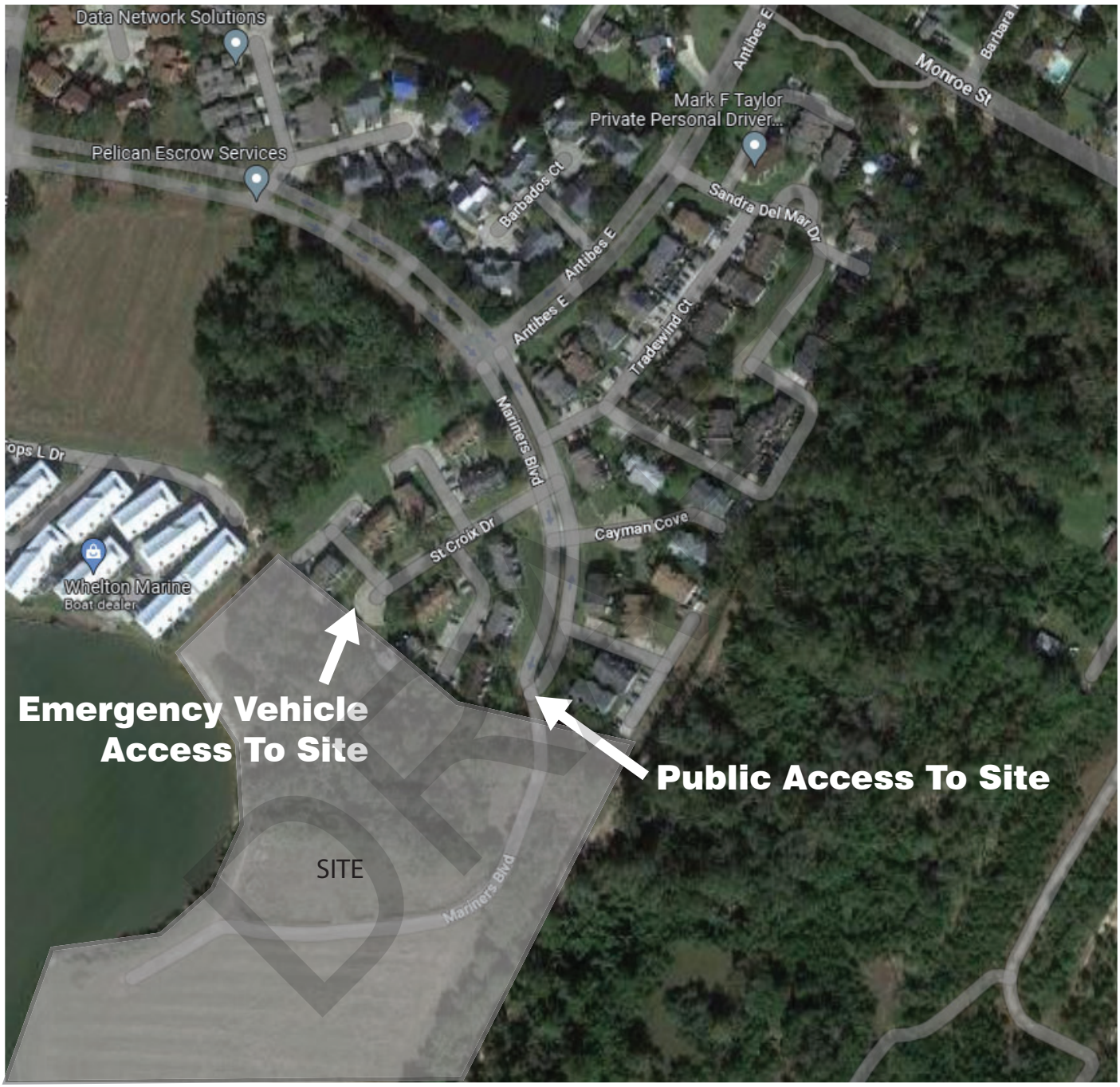
Photo 3 – Antibes W at Monroe St



Photo 4 – Antibes E/Cambonne St at Monroe St



Photo 5 – Massena St at Monroe St



Source: Google Earth

Figure 2
Site access

Sucette Harbor TIA
Mandeville, LA

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LEGEND:

- X AM Peak Hour (7:00-8:00 AM)
- (X) PM Peak Hour (4:45-5:45 PM)
- Unsignalized Intersection
- Signalized Intersection

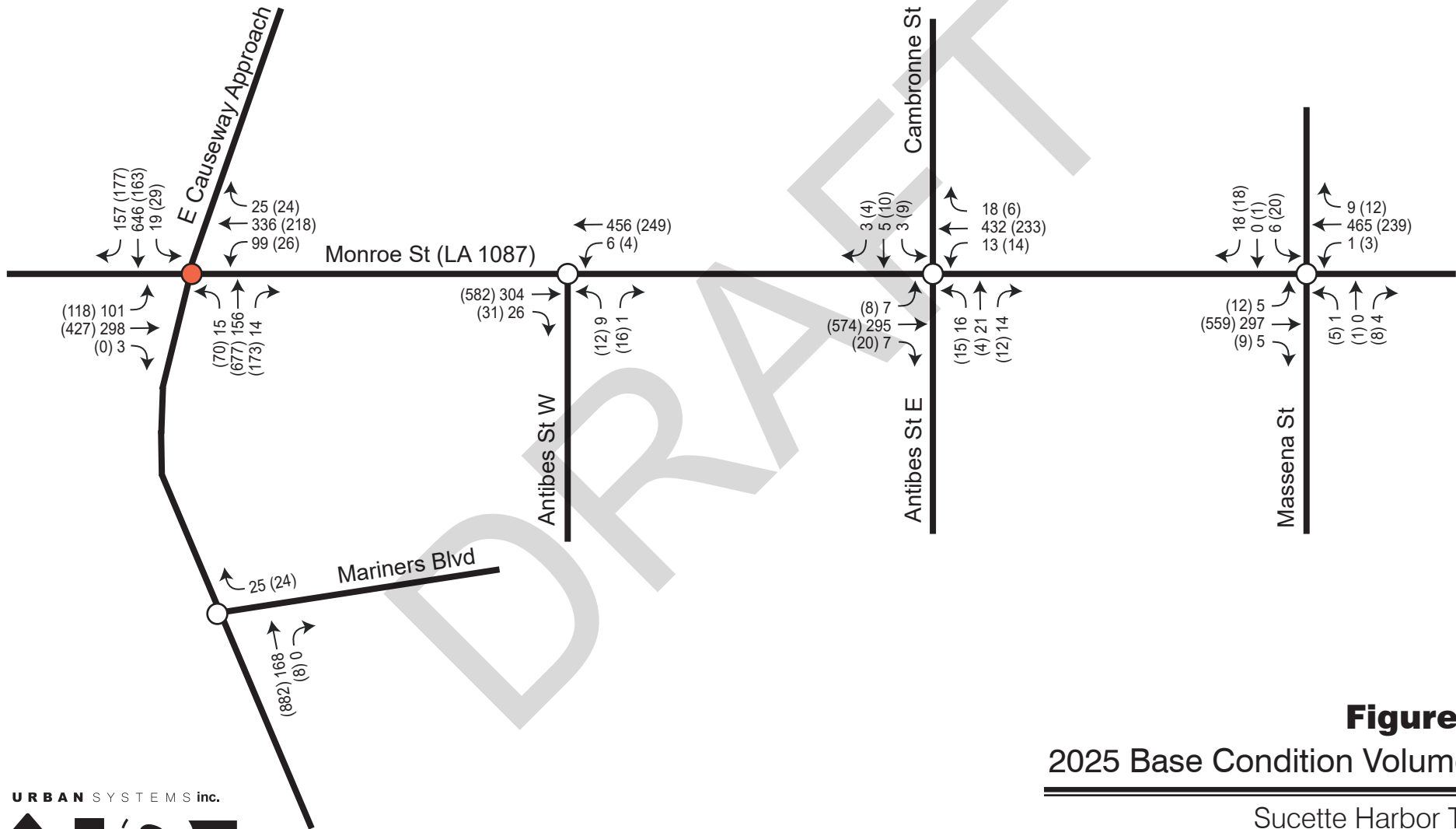


Figure 3
2025 Base Condition Volumes

Sucette Harbor TIA
Mandeville, LA
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NOTE: Turning movement volumes between intersections may not balance due to other local roads and driveways between the counted intersections. This is considered a normal and expected occurrence during a Traffic Impact Analysis.



Safety Review

A spot safety review of collisions in the study area on E Causeway Approach, Monroe St, Mariners Blvd, and Antibes St W was conducted to see if further safety analysis is warranted. LADOTD Crash history was reviewed for a three-year period from January 1, 2019, to December 31, 2021.

No serious or fatal crashes were reported during the three-year period. Other relevant crash criteria such as lighting condition and surface condition were evaluated, but no significant trends were identified. Based on the cursory review, no further safety analysis is justified.

Capacity Analysis

Capacity analysis was performed to estimate operational conditions in the AM and PM peaks. This type of analysis is the industry standard for traffic impact studies and the methods are the widely accepted practice of evaluating impacts on traffic operations. Levels of Service (LOS) represent a qualitative and quantitative evaluation of the traffic operation of a given intersection using procedures developed by the Transportation Research Board and contained in the Hwy Capacity Manual Special Report 209. The Hwy Capacity Manual (HCM) procedures have been adapted to computer-based analysis packages, which include signalized and unsignalized intersection modules.

Levels of Service range from LOS A, a condition of little or no delay, to LOS F, a condition of capacity breakdown represented by heavy delay and congestion. LOS B is characterized as stable flow. LOS C is considered to have a stable traffic flow but is becoming susceptible to congestion with general levels of comfort and convenience declining noticeably. LOS D approaches unstable flow as speed and freedom to maneuver are severely restricted and LOS E represents unstable flow at or near capacity levels with poor levels of comfort and convenience. **Tables 1** and **2** present the Level of Service delay criteria for unsignalized and signalized intersections, respectively.

Table 1
Level of Service Criteria
Unsignalized Intersections

Level of Service	Average Total Delay (Sec/Veh)
A	< 10
B	> 10 and < 15
C	> 15 and < 25
D	> 25 and < 35
E	> 35 and < 50
F	> 50

Table 2
Level of Service Criteria:
Signalized Intersections

Level of Service	Average Total Delay (Sec/Veh)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

The Mandeville, LA Code of Ordinances known as the Comprehensive Land Use Regulating Ordinance (CLURO) Section 8.4 defines standards for traffic service as follows:

“Capacity. A volume to capacity (V/C) ratio of 0.90 shall not be consistently exceeded on any arterial or collector street as designated on the Master Streets Plan. Consistently means that the V/C ratios are exceeded based on average daily peak hour traffic counts, projections, or estimates.

Level of Service. For local streets, a Level of Service C or better shall be maintained. On any arterial or collector street a Level of Service D or better shall be maintained. Where the existing Level of Service is below these standards, the traffic impact analysis shall identify those improvements needed to maintain the existing level of service, and additional improvements that would be needed to raise the level of service to the standards indicated. The subject development will not be required to bear the costs of improving the existing level of service.”

For this study, these standards served as targets for capacity analysis results where possible and improvements were analyzed to reach this criterion, however, LOS results falling short of unsignalized intersection targets may have low v/c ratios that were considered appropriate. In these cases improvements were not justified.

The measures of effectiveness (MOEs) reported include LOS, approach delay (sec), and volume-to-capacity ratio (v/c). As v/c ratios approach 1.0, traffic operations tend to deteriorate to a failing condition when exceeding 1.0. The signal phasing and timing were based on the Traffic Signal Inventory (TSI) provided by the Causeway Commission and is included in the **Appendix**.

2025 Base Conditions and 2045 No Build Analysis

2025 Base Conditions Capacity Analysis

Lane configurations, 2025 Base Conditions traffic volumes, and intersection control were input into Highway Capacity Software 7.9.6 (HCS) for unsignalized intersections and Synchro 11 (Synchro) for the signalized intersection to produce MOEs for the 2025 Base Conditions. These traffic analysis applications are commonly used and widely accepted in transportation engineering and consulting. The applications use user-input data to automate equations of the HCM.

Table 3 presents the results of the 2025 Base Conditions analysis. **Figure 3** presents the 2025 Base Conditions volumes. The 2025 Base Conditions analysis reports are included in the **Appendix**.

A review of **Table 3** indicated LOS C or better, and v/c ratios below 0.83 indicating adequate traffic operations.

2045 No Build Capacity Analysis

The CLURO states that the impact of the development shall be analyzed for 20 years after the initial 2025 Base Condition. Using the calculated growth rate, volumes were estimated for a 2045 No Build condition. **Figure 4** presents the 2045 No Build volumes.

The 2045 No Build volumes were input into HCS and Synchro and analyzed with existing geometry and intersection control.

Tables 4 and **5** present the results of the 2025 Base and 2045 No Build analysis for the AM and PM peaks, respectively. The 2045 No Build analysis reports are included in the **Appendix**.

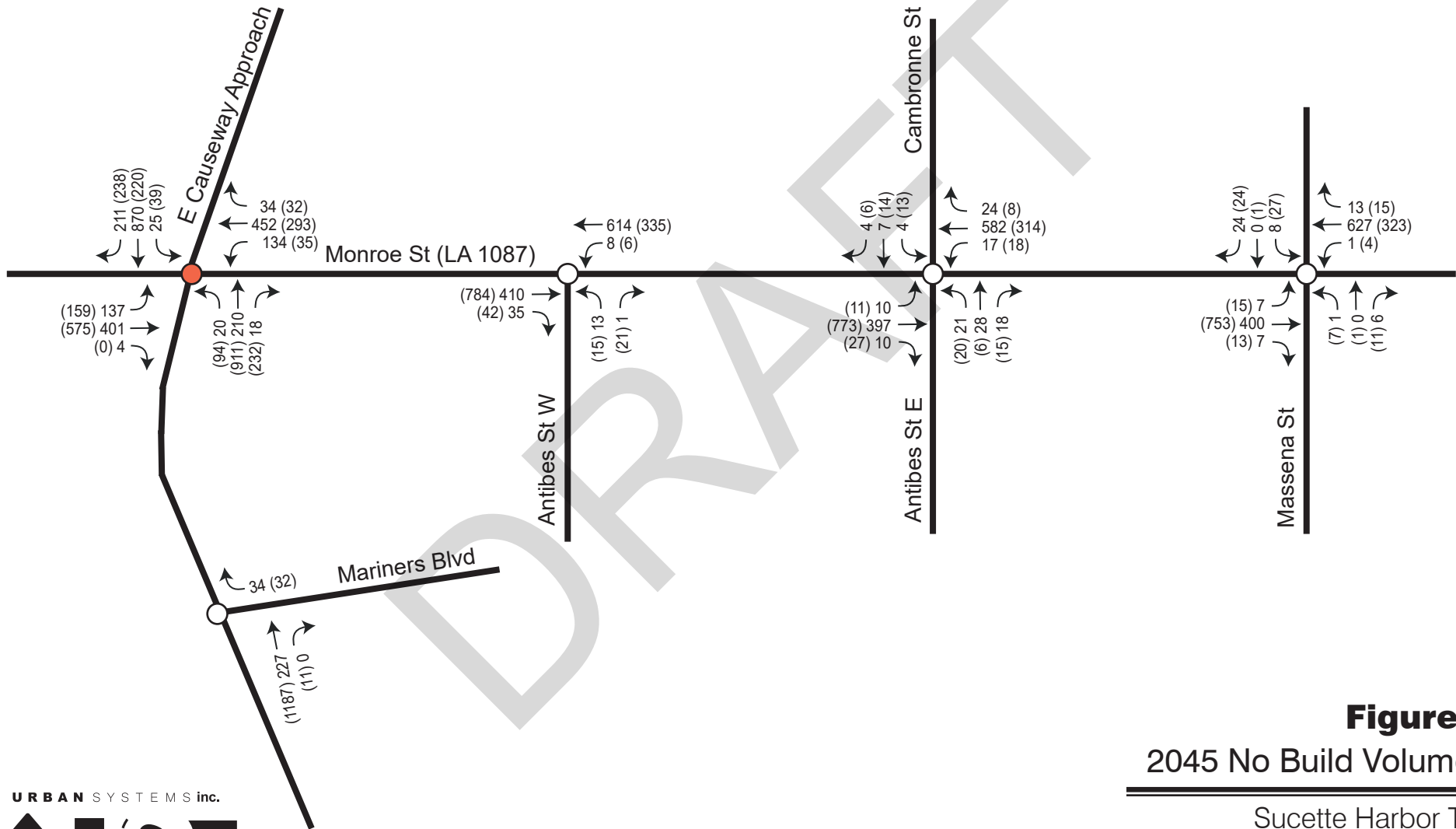
Tables 4 and **5** indicated the minor street approaches at the unsignalized intersection of Monroe St at Antibes E / Cambronne St may experience LOS E in the AM peak, however, the v/c ratios at these approaches remain less than 0.55 indicating excess capacity.

Table 3 - 2025 Base Conditions Analysis Results

Intersection	Approach	AM			PM		
		LOS	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio
E Causeway Approach at Mariners	E Causeway NB	A	9.1	0.04	B	12.1	0.05
E Causeway Approach at Monroe	Overall	C	28.2	--	C	25.3	--
	Monroe EB	C	33.4	0.81	C	29.4	0.83
	Monroe WB	C	32.4	0.82	C	32.9	0.71
	E Causeway NB	C	33.9	0.49	C	21.3	0.60
	E Causeway SB	C	22.1	0.66	C	23.8	0.54
Monroe at Antibes W	Monroe WB	A	0.2	0.01	A	0.2	0.00
	Antibes W NB	B	13.7	0.03	B	13.6	0.04
Monroe at Antibes E/Cambronne	Monroe EB	A	0.3	0.01	A	0.2	0.01
	Monroe WB	A	0.4	0.01	A	0.7	0.02
	Antibes E NB	C	22.1	0.22	C	19.0	0.09
	Cambronne SB	C	20.4	0.06	C	20.2	0.10
Monroe at Massena	Monroe EB	A	0.2	0.01	A	0.3	0.01
	Monroe WB	A	0.0	0.00	A	0.1	0.00
	Massena NB	B	14.0	0.02	C	15.9	0.04
	Massena SB	C	17.2	0.10	C	16.3	0.12

LEGEND:

- X AM Peak Hour (7:00-8:00 AM)
- (X) PM Peak Hour (4:45-5:45 PM)
- Unsignalized Intersection
- Signalized Intersection



NOTE: Turning movement volumes between intersections may not balance due to other local roads and driveways between the counted intersections. This is considered a normal and expected occurrence during a Traffic Impact Analysis.

Figure 4
2045 No Build Volumes

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**Table 4 - AM 2025 Base and 2045 No Build Conditions
Analysis Results Comparison**

Intersection	Approach	2025 Base Conditions			2045 No Build Conditions		
		LOS	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio
E Causeway Approach at Mariners	E Causeway NB	A	9.1	0.04	A	9.4	0.05
E Causeway Approach at Monroe	Overall	C	28.2	--	D	46.8	--
	Monroe EB	C	33.4	0.81	E	55.6	0.90
	Monroe WB	C	32.4	0.82	D	51.3	0.90
	E Causeway NB	C	33.9	0.49	D	47.9	0.60
	E Causeway SB	C	22.1	0.66	D	39.7	0.91
Monroe at Antibes W	Monroe WB	A	0.2	0.01	A	0.3	0.01
	Antibes W NB	B	13.7	0.03	C	16.8	0.05
Monroe at Antibes E/Cambronne	Monroe EB	A	0.3	0.01	A	0.4	0.02
	Monroe WB	A	0.4	0.01	A	0.6	0.02
	Antibes E NB	C	22.1	0.22	E	48.5	0.52
	Cambronne SB	C	20.4	0.06	E	35.0	0.14
Monroe at Massena	Monroe EB	A	0.2	0.01	A	0.4	0.01
	Monroe WB	A	0.0	0.00	A	0.0	0.00
	Massena NB	B	14.0	0.02	C	17.5	0.03
	Massena SB	C	17.2	0.10	D	27.5	0.22

**Table 5 - PM 2025 Base and 2045 No Build Conditions
Analysis Results Comparison**

Intersection	Approach	2025 Base Conditions			2045 No Build Conditions		
		LOS	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio
E Causeway Approach at Mariners	E Causeway NB	B	12.1	0.05	B	14.4	0.08
E Causeway Approach at Monroe	Overall	C	25.3	--	D	37.3	--
	Monroe EB	C	29.4	0.83	D	51.5	0.92
	Monroe WB	C	32.9	0.71	D	41.7	0.80
	E Causeway NB	C	21.3	0.60	C	31.1	0.79
	E Causeway SB	C	23.8	0.54	C	28.8	0.66
Monroe at Antibes W	Monroe WB	A	0.2	0.00	A	0.3	0.01
	Antibes W NB	B	13.6	0.04	C	16.7	0.07
Monroe at Antibes E/Cambronne	Monroe EB	A	0.2	0.01	A	0.3	0.01
	Monroe WB	A	0.7	0.02	A	0.8	0.03
	Antibes E NB	C	19.0	0.09	D	32.3	0.23
	Cambronne SB	C	20.2	0.10	D	34.6	0.23
Monroe at Massena	Monroe EB	A	0.3	0.01	A	0.4	0.01
	Monroe WB	A	0.1	0.00	A	0.2	0.01
	Massena NB	C	15.9	0.04	C	22.4	0.09
	Massena SB	C	16.3	0.12	D	25.4	0.24

Tables 4 and 5 indicated the Monroe St eastbound approach at the signalized intersection may experience LOS E in the AM. The v/c ratios are over the target 0.90 identified in the CLURO for the southbound in the AM and the eastbound in the PM. These results indicate that the AM is the critical peak.

2045 No Build Turn Lane Warrant Analysis

Utilizing the guidance of NCHRP Report 457, turn lane warrant analyses were performed at the unsignalized study intersections on Monroe St. Meeting warrants alone does not require the need for turn lanes but, indicates that turn lanes should be considered. Turn lane warrants use traffic volumes and the 85th percentile speed/the speed limit. The left turn, advancing and opposing volumes were used as inputs for the left turn warrants and the right turn and advancing volumes were used as inputs for the right turn lane warrants.

The 2045 No Build turn lane warrant analysis results indicated that turn lanes would not warranted at the intersections in the AM or PM peaks. The turn lane warrant documentation is included in the **Appendix**.

2045 No Build with Improvements Analysis

Minor timing changes were evaluated in the signalized 2045 No Build Synchro analysis in the critical AM peak to improve the LOS and v/c ratios to meet CLURO criteria. Maximum green times were adjusted as follows:

Phase	Phase 1 (SBL)	Phase 6 (SBT)	Phase 5 (NBL)	Phase 2 (NBT)	Phase 4 (EBTL)
Max Green Change	-1 Second	+0.5 Second	-1 Second	+0.5 Second	+1 Second

Table 6 presents the results of the 2045 No Build and 2045 No Build with Improvements analysis for the AM peak. The analysis reports are included in the **Appendix**.

Table 6
AM 2045 No Build and 2045 No Build with Improvements
Analysis Results Comparison

Intersection	Approach	2045 No Build Conditions			2045 No Build with Improvements		
		LOS	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio
E Causeway Approach at Monroe	Overall	D	46.8	--	D	46.5	--
	Monroe EB	E	55.6	0.90	D	54.6	0.90
	Monroe WB	D	51.3	0.90	D	51.9	0.90
	E Causeway NB	D	47.9	0.60	D	46.9	0.60
	E Causeway SB	D	39.7	0.91	D	42.5	0.90

The results of **Table 6** indicate the overall intersection delay improves slightly, the Monroe St eastbound approach improved to an LOS D, and v/c ratios are at, or below, the CLURO target of 0.90.

Trip Generation

The trips generated by the development were estimated using the 11th Edition of the *ITE Trip Generation Manual (ITE)*. This manual represents the summary of vehicle trip generation studies conducted by public and private sector entities for a wide variety of land uses. Data reported in Trip Generation is appropriate for use in the estimation of traffic impacts resulting from land development and, as such, is accepted in the preparation of traffic impact analyses. Fitted curve equations are used to estimate trips based on inputs such as units, square footage, berths, etc. When fitted curve equations are not available, using the average rate is common practice for estimating trips for analysis purposes given that the range of rates may include large deviations.

While the fast-casual restaurant had only one (1) study in ITE, the proposed restaurant is intended to provide amenities to the residents. It is not intended to attract patrons from the surrounding area. The marina is not planned to include a boat launch and therefore will not be utilized by the general public. Trips for both of these land uses, although small, were included to be conservative.

Table 7 presents the land uses, the trip generation criteria, and the calculated project trips. The final footprint/details of the proposed development may be reduced from what was used to estimate the trips, the values used were the maximum proposed at the time of this study. The trip generation documentation is included in the **Appendix**.

**Table 7
Trip Generation Estimates**

Land Use Code (LUC) – 252 Senior Adult Housing - Multifamily							
Quantity	Units	AM Peak Trips			PM Peak Trips		
		Enter	Exit	Total	Enter	Exit	Total
201	Dwelling Units	13	26	39	28	22	50
Land Use Code (LUC) – 310 Hotel							
Quantity	Units	AM Peak Trips			PM Peak Trips		
		Enter	Exit	Total	Enter	Exit	Total
84	Rooms	20	15	35	18	17	35
Land Use Code (LUC) – 932 High-Turnover (Sit-Down) Restaurant							
Quantity	Units	Not Open for this Peak			PM Peak Trips		
					Enter	Exit	Total
9,231	SQFT				51	33	84
Land Use Code (LUC) – 930 Fast Casual Restaurant							
Quantity	Units	AM Peak Trips			Not Open for this Peak		
		Enter	Exit	Total			
5,005	SQFT	4	4	8			
Land Use Code (LUC) – 712 Small Office Building							
Quantity	Units	AM Peak Trips			PM Peak Trips		
		Enter	Exit	Total	Enter	Exit	Total
1,239	SQFT	3	0	3	1	2	3
Land Use Code (LUC) – 420 Marina							
Quantity	Units	AM Peak Trips			PM Peak Trips		
		Enter	Exit	Total	Enter	Exit	Total
103	Berths	3	5	8	13	9	22
Totals		43	50	93	111	83	194

Trip Distribution

The origin and destination of the new trips were based on existing and historic traffic patterns, surrounding land uses, and RPC Transcad data. These were compared to develop the distribution percentages. The distribution percentages were tested against another more localized distribution alternative later on in the 2045 Build projected analysis section of the report. For reference purposes, the selected distribution percentages will be referred to as *Trip Distribution based on Existing Traffic Patterns Distribution* and the more localized distributions will be referred to as *Localized Distribution*.

The selected trip distribution percentages and resulting project trips for the AM and PM peaks are presented graphically in **Figure 5**.

2025 and 2045 Build Analysis

2025 Build Capacity Analysis

The estimated project trips were added to the 2025 Base Conditions traffic volumes to produce 2025 Build traffic volumes. These volumes and existing intersection data were input into HCS and Synchro to produce MOEs for the study intersections. **Figure 6** presents the 2025 Build conditions volumes.

Tables 8 and **9** present the comparison of the 2025 Base Conditions and 2025 Build conditions capacity analysis results for the AM and PM peaks, respectively. The analysis reports are included in the **Appendix**.

Table 9 indicated that the addition of project trips to the unsignalized intersections is expected to change the Cambronne St southbound approach from LOS C to LOS D in the PM. The v/c ratio for this approach remains less than 0.20, signifying excess capacity at the intersection.

Table 8 indicated the signalized northbound approach of E Causeway Blvd at Monroe St would change from LOS C to LOS D in the AM, however, overall delays increased by less than 2 seconds and the v/c ratio remained under 0.85.

2025 Build Turn Lane Warrants

Turn lane warrants were conducted for the 2025 Build condition on the Monroe St eastbound and westbound approaches at the unsignalized intersections. Left turn warrants were met for the westbound approach of Monroe St at Antibes St E / Cambronne St. The capacity analysis resulted in LOS A and a v/c ratio of 0.02 for this approach which indicates a westbound left turn lane may not be justified. The turn lane warrant analyses documentation is included in the **Appendix**.

*The 25% includes trips from the Covington area and trips from the Lewisburg/Madisonville area.

LEGEND:

- X (X) Entering Project Trips
- X (X) Exiting Project Trips
- Unsignalized Intersection
- Signalized Intersection
- #% Distribution Percentage

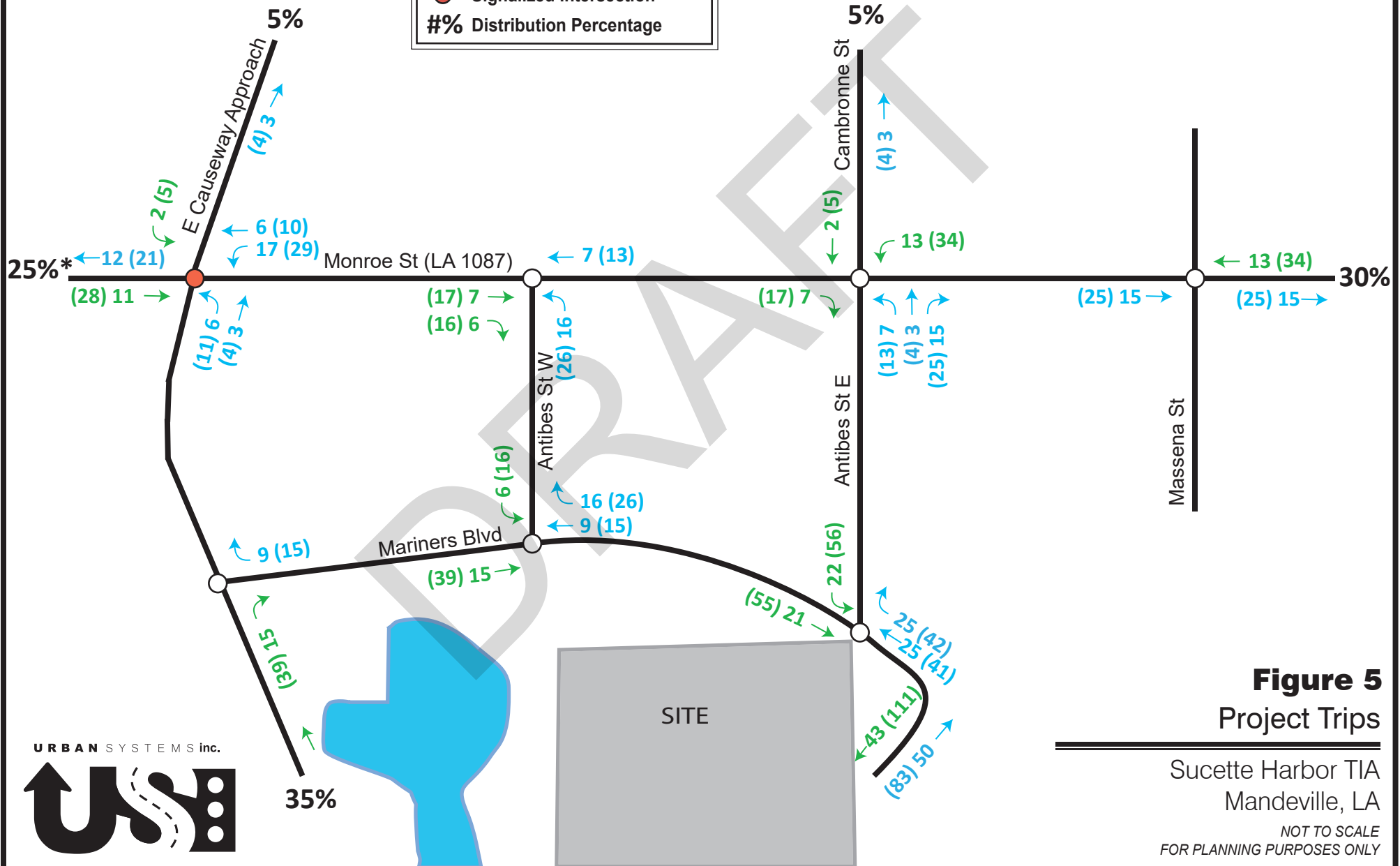


Figure 5
Project Trips

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LEGEND:

- X AM Peak Hour (7:00-8:00 AM)
- (X) PM Peak Hour (4:45-5:45 PM)
- Unsignalized Intersection
- Signalized Intersection

NOTE: Turning movement volumes between intersections may not balance due to other local roads and driveways between the counted intersections. This is considered a normal and expected occurrence during a Traffic Impact Analysis.

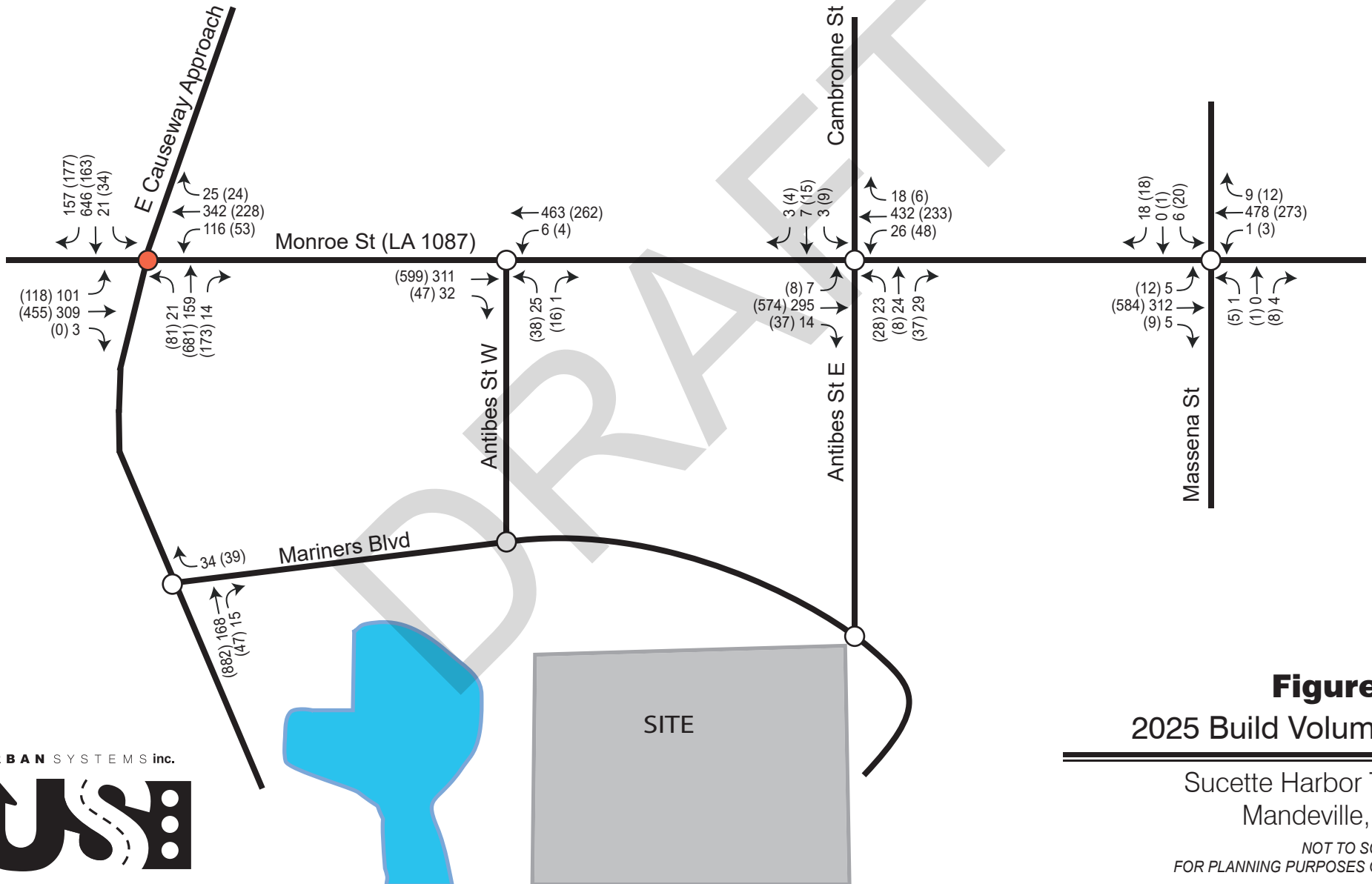


Figure 6
2025 Build Volumes

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Mandeville, LA

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Table 8 - AM 2025 Base vs 2025 Build Conditions Analysis Results Comparison

Intersection	Approach	2025 Base Conditions			2025 Build Conditions		
		LOS	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio
E Causeway Approach at Mariners	E Causeway NB	A	9.1	0.04	A	9.2	0.05
E Causeway Approach at Monroe	Overall	C	28.2	--	C	29.4	--
	Monroe EB	C	33.4	0.81	C	34.4	0.82
	Monroe WB	C	32.4	0.82	C	33.2	0.83
	E Causeway NB	C	33.9	0.49	D	35.6	0.53
	E Causeway SB	C	22.1	0.66	C	23.3	0.67
Monroe at Antibes W	Monroe WB	A	0.2	0.01	A	0.2	0.01
	Antibes W NB	B	13.7	0.03	B	14.5	0.08
Monroe at Antibes E/Cambronne	Monroe EB	A	0.3	0.01	A	0.3	0.01
	Monroe WB	A	0.4	0.01	A	0.8	0.03
	Antibes E NB	C	22.1	0.22	C	23.4	0.31
	Cambronne SB	C	20.4	0.06	C	22.5	0.08
Monroe at Massena	Monroe EB	A	0.2	0.01	A	0.2	0.01
	Monroe WB	A	0.0	0.00	A	0.0	0.00
	Massena NB	B	14.0	0.02	B	14.5	0.02
	Massena SB	C	17.2	0.10	C	17.8	0.11

Table 9 - PM 2025 Base vs 2025 Build Conditions Analysis Results Comparison

Intersection	Approach	2025 Base Conditions			2025 Build Conditions		
		LOS	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio
E Causeway Approach at Mariners	E Causeway NB	B	12.1	0.05	B	12.6	0.08
E Causeway Approach at Monroe	Overall	C	25.3	--	C	27.1	--
	Monroe EB	C	29.4	0.83	C	31.7	0.84
	Monroe WB	C	32.9	0.71	C	33.9	0.74
	E Causeway NB	C	21.3	0.60	C	22.8	0.62
	E Causeway SB	C	23.8	0.54	C	25.1	0.57
Monroe at Antibes W	Monroe WB	A	0.2	0.00	A	0.2	0.01
	Antibes W NB	B	13.6	0.04	B	14.7	0.11
Monroe at Antibes E/Cambronne	Monroe EB	A	0.2	0.01	A	0.2	0.01
	Monroe WB	A	0.7	0.02	A	2.1	0.06
	Antibes E NB	C	19.0	0.09	C	21.7	0.22
	Cambronne SB	C	20.2	0.10	D	25.2	0.15
Monroe at Massena	Monroe EB	A	0.3	0.01	A	0.3	0.01
	Monroe WB	A	0.1	0.00	A	0.1	0.00
	Massena NB	C	15.9	0.04	C	16.8	0.05
	Massena SB	C	16.3	0.12	C	17.5	0.13

2045 Build Capacity Analysis

The estimated project trips were added to the 2045 No Build traffic volumes to estimate 2045 Build traffic volumes. These volumes and intersection data were input into HCS and Synchro to generate MOEs for the study intersections. **Figure 7** presents the 2045 Build conditions volumes.

Tables 10 and **11** present the comparison of the 2045 No Build Conditions and the 2045 Build Conditions capacity analysis results for the AM and PM peaks, respectively. 2045 Build analysis reports are included in the **Appendix**.

Tables 10 and **11** indicated the following on the minor street approaches of the unsignalized intersections for the 2045 Build Condition:

- Antibes St E northbound changed from LOS E to LOS F in the AM and LOS D to LOS E in the PM. Cambronne St southbound changed from LOS D to LOS F in the PM. This indicates a need for mitigation.
- Massena St southbound results were LOS D in the AM and PM, however, the v/c was less than 0.28 signifying excess capacity.

Tables 10 and **11** for the signalized intersection indicated the following for the 2045 Build Condition:

- Monroe St eastbound results were LOS E in the AM and PM with v/c ratios of 0.91 and 0.94, respectively, indicating the approach is nearing capacity
- Monroe St westbound resulted in a v/c ratio of 0.91 in the AM, indicating the approach is nearing capacity.
- E Causeway southbound resulted in a v/c of 0.93 in the AM, indicating the approach is nearing capacity.

The *Localized Distribution* alternative was analyzed which involved more traffic originating and destined to the Covington/Lewisburg area and the E Causeway Southbound approach/departure than the *Existing Traffic Patterns Distribution*. This distribution was tested to analyze the proposed development if trips were more localized. Less trips would originate or be destined to the south shore in this scenario. The results of the *Localized Distribution* analysis were similar to the *Existing Traffic Patterns Distribution* analysis results.

2045 Build Turn Lane Warrants

Turn lane warrants were conducted for the 2045 Build condition on the Monroe St eastbound and westbound approaches at the unsignalized intersections. Left turn warrants were met for the westbound approach of Monroe St at Antibes St E / Cambronne St, however, the capacity analysis resulted in an approach LOS A in both the AM and PM and the largest v/c ratio was 0.08 in the PM. This indicates a left turn lane may not be justified. The turn lane warrant analyses documentation is included in the **Appendix**.

LEGEND:

- X AM Peak Hour (7:00-8:00 AM)
- (X) PM Peak Hour (4:45-5:45 PM)
- Unsignalized Intersection
- Signalized Intersection

NOTE: Turning movement volumes between intersections may not balance due to other local roads and driveways between the counted intersections. This is considered a normal and expected occurrence during a Traffic Impact Analysis.

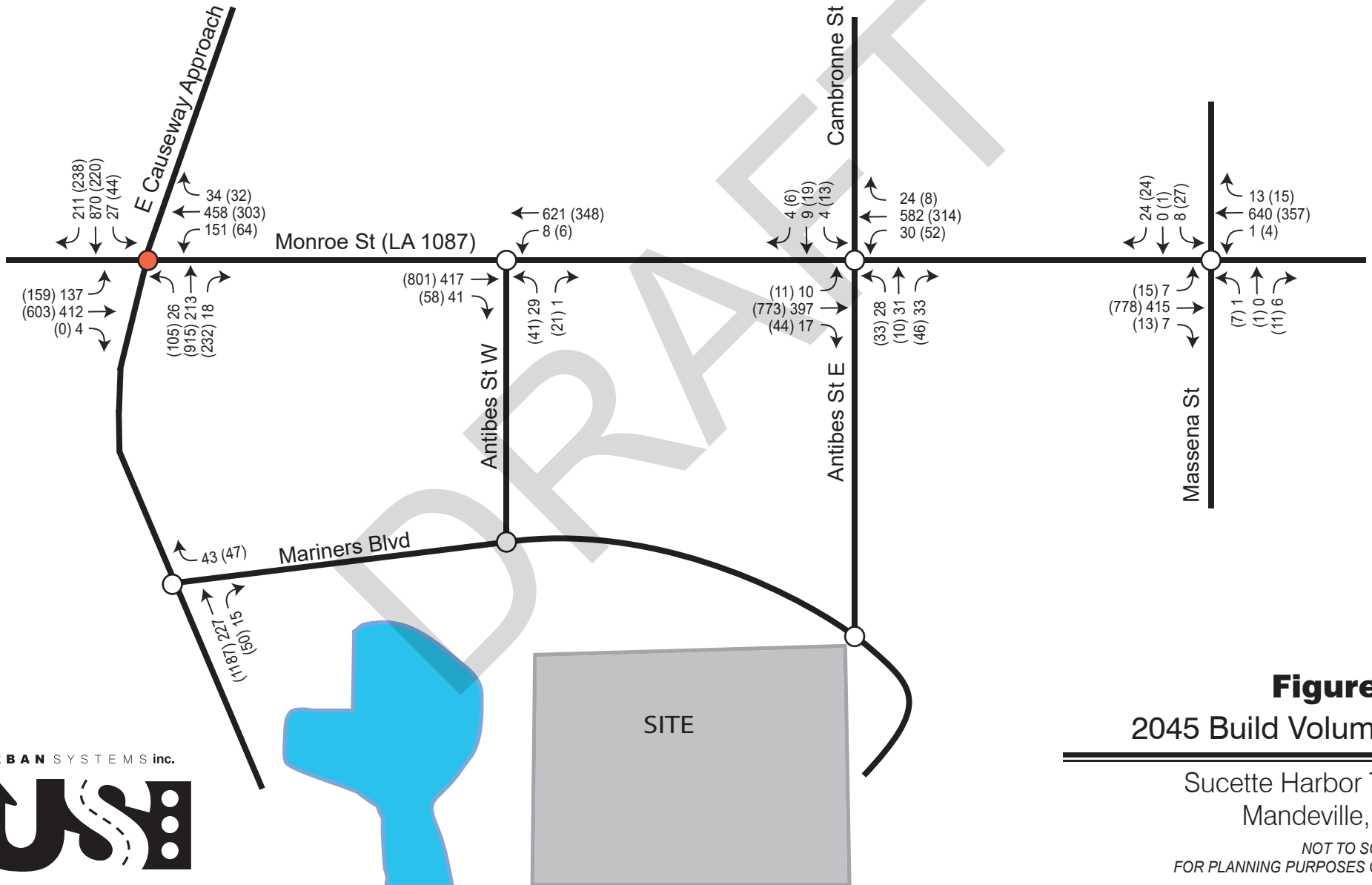


Figure 7
2045 Build Volumes

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Table 10 - AM 2045 No Build vs 2045 Build Conditions Analysis Results Comparison

Intersection	Approach	2045 No Build Conditions			2045 Build Conditions		
		LOS	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio
E Causeway Approach at Mariners	E Causeway NB	A	9.4	0.05	A	9.5	0.07
E Causeway Approach at Monroe	Overall	D	46.8	--	D	49.8	--
	Monroe EB	E	55.6	0.90	E	58.6	0.91
	Monroe WB	D	51.3	0.90	D	54.3	0.91
	E Causeway NB	D	47.9	0.60	D	49.3	0.62
	E Causeway SB	D	39.7	0.91	D	42.9	0.93
Monroe at Antibes W	Monroe WB	A	0.3	0.01	A	0.3	0.01
	Antibes W NB	C	16.8	0.05	C	18.0	0.12
Monroe at Antibes E/Cambronne	Monroe EB	A	0.4	0.02	A	0.4	0.02
	Monroe WB	A	0.6	0.02	A	1.0	0.04
	Antibes E NB	E	48.5	0.52	F	62.5	0.69
	Cambronne SB	E	35.0	0.14	E	40.7	0.18
Monroe at Massena	Monroe EB	A	0.4	0.01	A	0.4	0.01
	Monroe WB	A	0.0	0.00	A	0.0	0.00
	Massena NB	C	17.5	0.03	C	18.1	0.04
	Massena SB	D	27.5	0.22	D	28.9	0.23

Table 11 - PM 2045 No Build vs 2045 Build Conditions Analysis Results Comparison

Intersection	Approach	2045 No Build Conditions			2045 Build Conditions		
		LOS	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio
E Causeway Approach at Mariners	E Causeway NB	B	14.4	0.08	C	15.2	0.12
E Causeway Approach at Monroe	Overall	D	37.3	--	D	40.4	--
	Monroe EB	D	51.5	0.92	E	57.2	0.94
	Monroe WB	D	41.7	0.80	D	42.6	0.82
	E Causeway NB	C	31.1	0.79	C	33.5	0.81
	E Causeway SB	C	28.8	0.66	C	30.2	0.71
Monroe at Antibes W	Monroe WB	A	0.3	0.01	A	0.3	0.01
	Antibes W NB	C	16.7	0.07	C	18.4	0.15
Monroe at Antibes E/Cambronne	Monroe EB	A	0.3	0.01	A	0.3	0.01
	Monroe WB	A	0.8	0.03	A	2.3	0.08
	Antibes E NB	D	32.3	0.23	E	43.1	0.48
	Cambronne SB	D	34.6	0.23	F	50.7	0.35
Monroe at Massena	Monroe EB	A	0.4	0.01	A	0.4	0.01
	Monroe WB	A	0.2	0.01	A	0.2	0.01
	Massena NB	C	22.4	0.09	C	24.0	0.10
	Massena SB	D	25.4	0.24	D	28.1	0.27

2045 Build Capacity Analysis with Improvements

Timing changes were evaluated in the signalized 2045 No Build Synchro analysis to improve the LOS to meet CLURO criteria. Maximum green time adjustments were included in the PM peak analysis, and a dedicated westbound left turn lane was included in the AM and PM peak analyses. This left turn lane could be in place of the existing median on the east leg of the intersection which at the time of this report included trees and landscaping.

The unsignalized intersection of Antibes St E / Cambronne St at Monroe St was analyzed with the following potential improvements:

- A dedicated right turn on the southbound approach.
- A dedicated left turn on the southbound approach.
- A dedicated left turn on the northbound approach.
- A median on Monroe St to allow a two-stage left and thru from the minor streets.

Tables 12 and 13 present the results of 2045 Build and 2045 Build with Improvements analysis for the AM and PM peaks. Additional turn lanes on the northbound and southbound approaches did not improve the results by a reasonable amount and are excluded. The 2045 Build with Improvements analysis reports are included in the **Appendix**.

Table 12 – AM 2045 Build vs 2045 Build with Improvements

Intersection	Approach	2045 Build Conditions			2045 Build with Improvements		
		LOS	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio
E Causeway Approach at Monroe	Overall	D	49.8	--	D	40.3	--
	Monroe EB	E	58.6	0.91	D	50.3	0.89
	Monroe WB	D	54.3	0.91	D	42.0	0.85
	E Causeway NB	D	49.3	0.62	D	44.6	0.60
	E Causeway SB	D	42.9	0.93	C	33.3	0.87
Monroe at Antibes E / Cambronne	Monroe EB	A	0.4	0.02	A	0.4	0.02
	Monroe WB	A	1.0	0.04	A	1.0	0.04
	Antibes E NB	F	62.5	0.69	C	23.0	0.34
	Cambronne SB	E	40.7	0.18	C	20.9	0.09

Table 13 – PM 2045 Build vs 2045 Build with Improvements

Intersection	Approach	2045 Build Conditions			2045 Build with Improvements		
		LOS	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio
E Causeway Approach at Monroe	Overall	D	40.4	--	D	36.5	--
	Monroe EB	E	57.2	0.94	D	45.4	0.90
	Monroe WB	D	42.6	0.82	D	42.4	0.79
	E Causeway NB	C	33.5	0.81	C	32.1	0.80
	E Causeway SB	C	30.2	0.71	C	29.3	0.70
Monroe at Antibes E / Cambronne	Monroe EB	A	0.3	0.01	A	0.3	0.01
	Monroe WB	A	2.3	0.08	A	2.3	0.08
	Antibes E NB	E	43.1	0.48	C	21.3	0.21
	Cambronne SB	F	50.7	0.35	D	26.2	0.20

The results of **Tables 12** and **13** indicate that when widening Monroe St, the minor street approaches of Antibes E northbound and Cambronne St southbound improve to LOS D or better. The v/c ratios improve to less than 0.35, signifying excess capacity. The opportunity to cross one direction of traffic and wait in the median to cross the other direction increases the capacity of the minor approaches.

The results of **Tables 12** and **13** indicate the 2045 Build conditions with improvements were LOS D or better at the signalized intersection and the v/c ratios improved to the CLURO target of 0.90 or better.

The *Localized Distribution* alternative was again analyzed with these improvements. The results of these analysis were similar to the *Existing Traffic Patterns Distribution* results. A justification table comparing the two distributions' results are included in the **Appendix**.

Summary

This report presented the results of analyses for the 2025 Base conditions and 2045 No Build Conditions traffic operations compared to 2025 and 2045 Build Conditions with trips estimated for the proposed Sucette Harbor multi-use development located on Mariners Blvd in Mandeville, Louisiana.

Growth rates calculated using LADOTD historical and RPC data were used to project 2025 and 2045 traffic volumes. Project trips were estimated using the ITE Trip Generation Manual.

Based on consideration of LOS, delays, v/c, turning lane warrants, and the CLURO, the following intersection improvements may be justified to mitigate the impact of the proposed development.

- *E Causeway Blvd at Monroe St* – Adding a westbound left turn lane before 2045.
- *Antibes E St / Cambronne St at Monroe St* – Widening Monroe St to include a median before 2045.

Based on field observations, the following improvements should be considered with or without the proposed development:

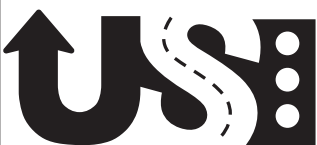
- Fix or remove the pedestrian hybrid beacon across the east leg of Monroe St at Massena St.
- Add indications for a pedestrian on the east leg crosswalk to cross from the median to the southeast corner.

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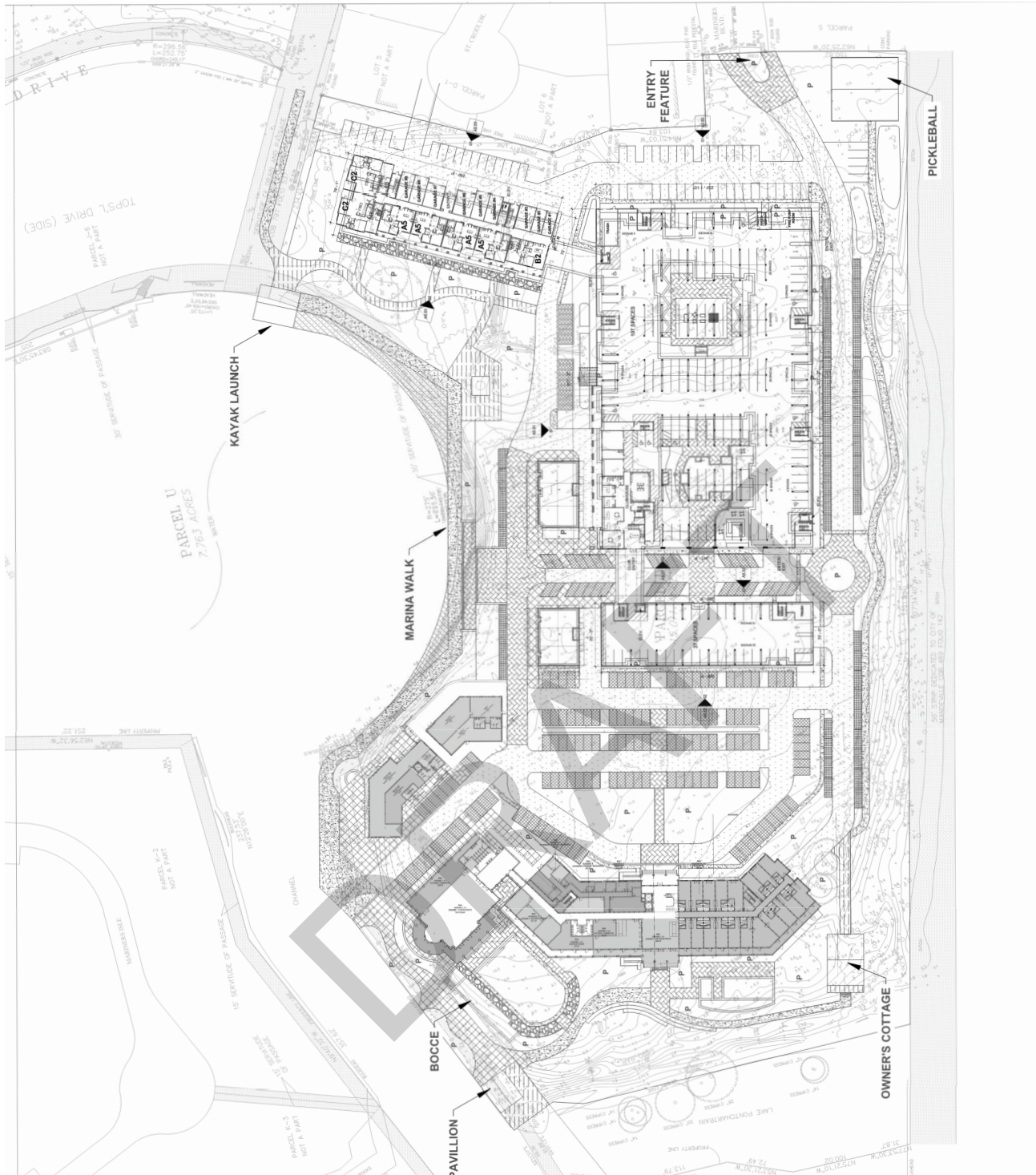
Sucette Harbor TIA Appendix

Site Plan

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Source: Sucette Harbor Schematic Design
by DesignWorkshop

Site Plan

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Mandeville, LA

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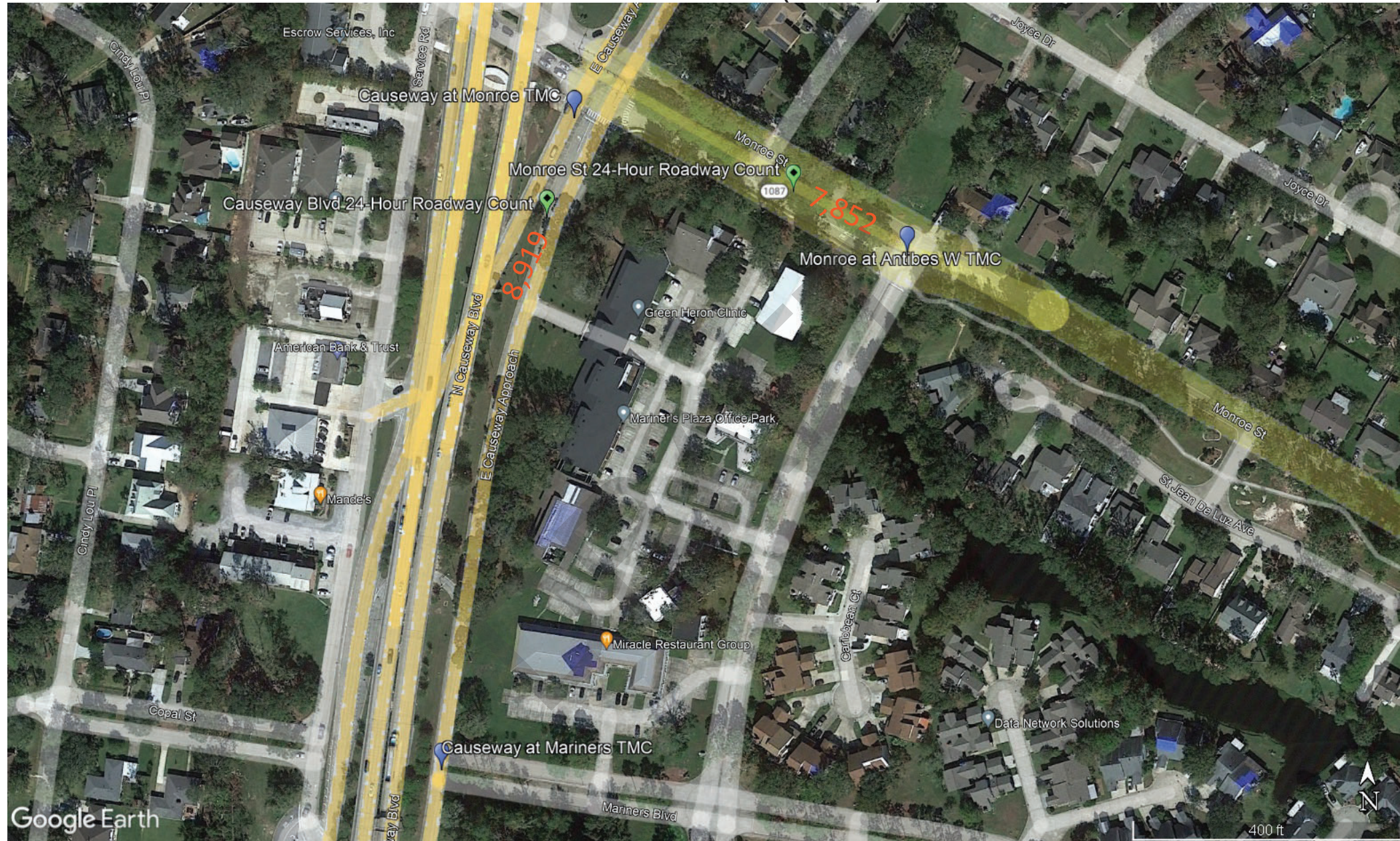
Raw Count Data

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Count Locations (1 of 2)



LEGEND:



24-Hour Roadway Count Location

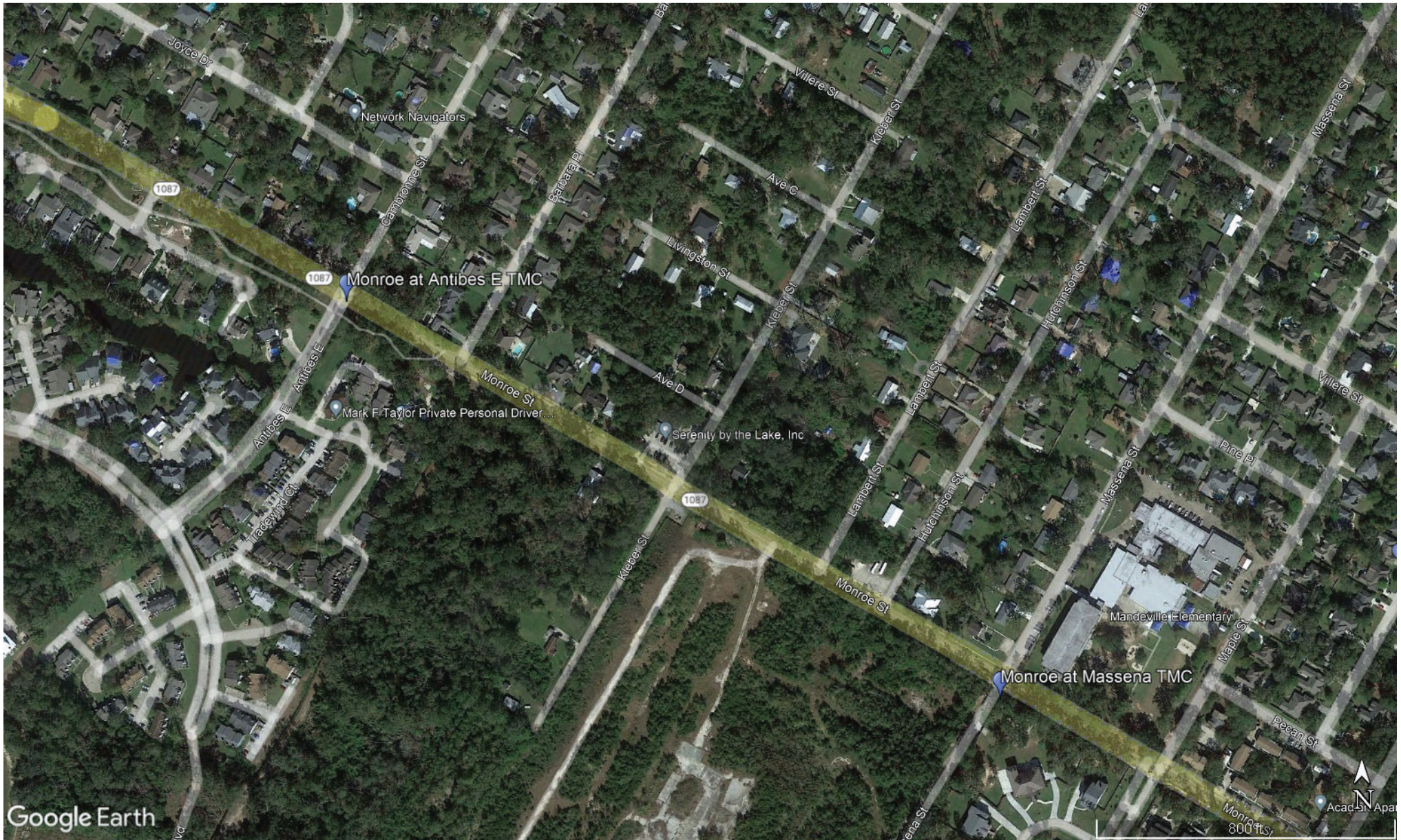


Peak Period Turning Movement Count (TMC) Location



24-Hour Roadway Count Volume in Vehicles Per Day (vpd)

Count Locations (2 of 2)



LEGEND:



Peak Period Turning Movement Count (TMC) Location

Study Name 22-068-1 E Causeway Approach South of Monroe St
Start Date 10/04/2022
Start Time 12:00 AM
Site Code 22-068-1

Channel Direction	Miovision	
	Direction	Direction
	Southbound	Northbound
12:00 AM	1	6
12:15 AM	1	3
12:30 AM	0	3
12:45 AM	0	4
1:00 AM	1	1
1:15 AM	4	5
1:30 AM	1	3
1:45 AM	2	5
2:00 AM	1	3
2:15 AM	1	2
2:30 AM	4	1
2:45 AM	7	4
3:00 AM	3	3
3:15 AM	6	1
3:30 AM	7	2
3:45 AM	8	1
4:00 AM	11	2
4:15 AM	27	3
4:30 AM	21	5
4:45 AM	29	4
5:00 AM	55	6
5:15 AM	64	3
5:30 AM	71	7
5:45 AM	106	13
6:00 AM	137	13
6:15 AM	149	15
6:30 AM	180	31
6:45 AM	172	38
7:00 AM	202	34
7:15 AM	221	41
7:30 AM	159	59
7:45 AM	140	43
8:00 AM	124	29
8:15 AM	143	42
8:30 AM	127	45
8:45 AM	89	43
9:00 AM	76	58
9:15 AM	92	37
9:30 AM	47	48
9:45 AM	68	41
10:00 AM	50	21
10:15 AM	37	56
10:30 AM	45	14
10:45 AM	51	57
11:00 AM	52	19
11:15 AM	37	67
11:30 AM	36	44
11:45 AM	42	88
12:00 PM	42	42
12:15 PM	34	65
12:30 PM	24	59
12:45 PM	26	75
1:00 PM	44	41
1:15 PM	41	66
1:30 PM	30	61
1:45 PM	22	66
2:00 PM	35	72
2:15 PM	27	75
2:30 PM	27	80
2:45 PM	35	87
3:00 PM	36	74
3:15 PM	35	92
3:30 PM	41	124
3:45 PM	25	126
4:00 PM	36	160
4:15 PM	45	152
4:30 PM	48	178
4:45 PM	47	179
5:00 PM	52	226
5:15 PM	43	230
5:30 PM	36	233
5:45 PM	31	211
6:00 PM	37	142
6:15 PM	35	124
6:30 PM	22	82
6:45 PM	19	73
7:00 PM	22	66
7:15 PM	25	48
7:30 PM	17	56
7:45 PM	16	53
8:00 PM	13	53
8:15 PM	14	37
8:30 PM	9	37
8:45 PM	7	23
9:00 PM	8	27
9:15 PM	12	38
9:30 PM	4	13
9:45 PM	2	20
10:00 PM	4	22
10:15 PM	1	17
10:30 PM	0	25
10:45 PM	1	26
11:00 PM	3	12
11:15 PM	4	15
11:30 PM	4	7
11:45 PM	1	7

4049

4870

Study Name 22-068-1 Monroe St between Causeway and Antibes St W
Start Date 10/04/2022
Start Time 12:00 AM
Site Code 22-068-1

Channel Direction	Direction	Direction
	Westbound	Eastbound
12:00 AM	1	6
12:15 AM	1	1
12:30 AM	1	1
12:45 AM	0	2
1:00 AM	1	0
1:15 AM	0	1
1:30 AM	0	1
1:45 AM	1	0
2:00 AM	0	1
2:15 AM	0	0
2:30 AM	2	1
2:45 AM	1	0
3:00 AM	0	1
3:15 AM	2	1
3:30 AM	1	2
3:45 AM	2	0
4:00 AM	1	0
4:15 AM	2	2
4:30 AM	10	4
4:45 AM	4	3
5:00 AM	13	5
5:15 AM	7	0
5:30 AM	16	4
5:45 AM	17	8
6:00 AM	35	8
6:15 AM	32	16
6:30 AM	48	26
6:45 AM	71	73
7:00 AM	119	114
7:15 AM	126	87
7:30 AM	98	50
7:45 AM	73	65
8:00 AM	57	53
8:15 AM	62	64
8:30 AM	62	48
8:45 AM	61	48
9:00 AM	62	47
9:15 AM	52	42
9:30 AM	44	38
9:45 AM	55	48
10:00 AM	54	37
10:15 AM	47	47
10:30 AM	57	45
10:45 AM	65	42
11:00 AM	48	45
11:15 AM	56	80
11:30 AM	48	65
11:45 AM	46	75
12:00 PM	51	65
12:15 PM	59	68
12:30 PM	63	71
12:45 PM	74	78
1:00 PM	64	65
1:15 PM	68	53
1:30 PM	56	64
1:45 PM	60	71
2:00 PM	52	81
2:15 PM	75	80
2:30 PM	110	53
2:45 PM	59	80
3:00 PM	58	68
3:15 PM	60	70
3:30 PM	65	101
3:45 PM	62	84
4:00 PM	63	96
4:15 PM	55	103
4:30 PM	59	110
4:45 PM	47	161
5:00 PM	78	140
5:15 PM	74	154
5:30 PM	47	139
5:45 PM	60	115
6:00 PM	66	76
6:15 PM	49	84
6:30 PM	38	61
6:45 PM	57	65
7:00 PM	55	52
7:15 PM	57	40
7:30 PM	38	34
7:45 PM	33	37
8:00 PM	45	32
8:15 PM	27	27
8:30 PM	19	23
8:45 PM	22	17
9:00 PM	19	17
9:15 PM	11	20
9:30 PM	12	9
9:45 PM	13	15
10:00 PM	3	7
10:15 PM	8	9
10:30 PM	5	12
10:45 PM	13	10
11:00 PM	4	6
11:15 PM	7	5
11:30 PM	7	7
11:45 PM	2	0
	3710	4142

Intersection E Causeway Approach at Mariners Blvd
Date 10/4/2022
Site Code 22-068

Start Time	Northbound				Southbound				Eastbound				Westbound				Intersection Total	Peak Hour Factor
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
6:30 AM	0	21	0	0	0	0	0	0	0	0	0	0	0	0	4	0	25	
6:45 AM	0	36	1	0	0	0	0	0	0	0	0	0	0	0	6	0	43	
7:00 AM	0	29	0	0	0	0	0	0	0	0	0	0	0	0	7	0	36	0.77
7:15 AM	0	34	0	0	0	0	0	0	0	0	0	0	0	8	0	42		
7:30 AM	0	53	0	0	0	0	0	0	0	0	0	0	0	7	0	60		
7:45 AM	0	45	0	0	0	0	0	0	0	0	0	0	0	2	0	47		
8:00 AM	0	24	2	0	0	0	0	0	0	0	0	0	0	5	0	31		
8:15 AM	0	42	0	0	0	0	0	0	0	0	0	0	0	4	0	46		
4:00 PM	0	143	1	0	0	0	0	0	0	0	0	0	0	8	0	152		
4:15 PM	0	138	2	0	0	0	0	0	0	0	0	0	0	3	0	143		
4:30 PM	0	176	1	0	0	0	0	0	0	0	0	0	0	6	0	183		
4:45 PM	0	182	2	0	0	0	0	0	0	0	0	0	0	6	0	190	0.94	
5:00 PM	0	208	3	0	0	0	0	0	0	0	0	0	0	11	0	222		
5:15 PM	0	226	2	0	0	0	0	0	0	0	0	0	0	2	0	230		
5:30 PM	0	227	1	0	0	0	0	0	0	0	0	0	0	4	0	232		
5:45 PM	0	217	0	0	0	0	0	0	0	0	0	0	0	6	0	223		

Study Name E Causeway Approach at Monroe St
Start Date 10/04.2022
Site Code 22-068

Start Time	Northbound				Southbound				Eastbound				Westbound				Intersection Total	Peak Hour Factor
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
6:30 AM	2	19	1	1	2	174	36	0	8	22	0	0	8	19	11	0	303	
6:45 AM	3	33	4	0	3	161	46	0	10	53	0	0	17	49	5	0	384	
7:00 AM	3	30	1	0	1	147	40	0	18	95	1	0	22	88	2	0	448	0.85
7:15 AM	5	31	5	0	4	192	39	0	25	99	0	0	31	89	4	0	524	
7:30 AM	4	41	4	0	3	149	30	0	25	46	1	0	26	94	8	0	431	
7:45 AM	2	47	3	0	10	130	41	0	29	45	1	0	16	50	10	0	384	
8:00 AM	6	22	1	0	7	115	41	0	27	51	0	0	13	49	3	0	335	
8:15 AM	6	35	4	0	5	110	32	0	18	55	1	0	17	30	3	0	316	
4:00 PM	16	126	20	0	11	27	51	0	30	67	0	0	6	66	6	0	426	
4:15 PM	13	119	12	0	6	37	51	0	33	74	1	0	2	58	5	0	411	
4:30 PM	14	140	30	0	5	40	32	0	37	78	0	0	8	40	7	0	431	
4:45 PM	13	138	34	0	4	44	53	0	26	119	0	0	7	40	6	0	484	0.96
5:00 PM	13	178	36	0	7	41	50	0	37	102	0	0	7	48	6	0	525	
5:15 PM	21	154	43	0	14	37	32	0	27	101	0	0	8	67	7	0	511	
5:30 PM	20	177	52	0	3	34	34	0	23	86	0	0	3	53	4	0	489	
5:45 PM	16	164	29	0	6	25	33	0	22	87	1	0	3	60	1	0	447	

Study Name Monroe St at Antibes St E-Cambronne St
Start Date 10/4/2022
Site Code 22-068

Start Time	Northbound				Southbound				Eastbound				Westbound				Intersection Total	Peak Hour Factor
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
6:30 AM	3	0	1	0	1	1	1	0	0	19	1	0	1	37	0	0	65	
6:45 AM	5	4	1	0	3	0	0	0	0	50	0	0	2	60	1	0	126	
7:00 AM	5	6	2	0	0	0	1	0	0	95	2	0	2	133	4	0	250	0.77
7:15 AM	2	8	4	0	2	2	1	0	5	101	1	0	4	121	8	0	259	
7:30 AM	3	4	3	0	1	0	0	0	1	43	1	0	4	92	4	0	156	
7:45 AM	5	2	4	0	0	3	1	0	1	43	3	0	2	67	1	0	132	
8:00 AM	5	1	3	0	1	1	4	0	0	46	1	0	6	48	1	0	117	
8:15 AM	5	0	2	0	1	1	0	0	0	51	4	0	5	51	1	0	121	
4:00 PM	1	2	5	0	1	2	2	0	2	90	3	0	8	76	2	0	194	
4:15 PM	2	2	2	0	3	0	4	0	1	83	4	0	3	51	3	0	158	
4:30 PM	4	0	5	0	3	2	1	0	2	100	2	0	4	50	1	0	174	
4:45 PM	3	0	0	0	3	0	0	0	1	145	4	0	7	48	1	0	212	0.90
5:00 PM	4	1	4	0	2	4	3	0	1	127	6	0	2	59	2	0	215	
5:15 PM	5	2	4	0	3	4	1	0	5	148	2	0	1	66	0	0	241	
5:30 PM	2	1	3	0	1	2	0	0	1	129	7	0	3	50	3	0	202	
5:45 PM	1	2	1	0	1	2	1	0	0	106	8	0	2	59	1	0	184	

Study Name Monroe St at Antibes St W
Start Date 10/4/2022
Site Code 22-068

Start Time	Northbound				Southbound				Eastbound				Westbound				Intersection Total	Peak Hour Factor
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
6:30 AM	3	0	0	0	0	0	0	0	0	22	4	0	1	43	0	0	73	
6:45 AM	1	0	2	0	0	0	0	0	0	55	12	0	1	64	0	0	135	
7:00 AM	2	0	0	0	0	0	0	0	0	99	1	0	1	133	0	0	236	0.81
7:15 AM	2	0	1	0	0	0	0	0	0	92	5	0	1	130	0	0	231	
7:30 AM	1	0	0	1	0	0	0	0	0	45	10	0	3	97	0	0	157	
7:45 AM	3	0	0	0	0	0	0	0	0	55	9	0	1	76	0	0	144	
8:00 AM	6	0	2	0	0	0	0	0	0	39	13	0	1	56	0	0	117	
8:15 AM	3	0	1	0	0	0	0	0	0	52	9	0	4	54	0	0	123	
4:00 PM	5	0	2	0	0	0	0	0	0	98	8	0	1	76	0	0	190	
4:15 PM	6	0	3	0	0	0	0	0	0	88	7	0	2	56	0	0	162	
4:30 PM	0	0	3	0	0	0	0	0	0	101	9	0	2	53	0	0	168	
4:45 PM	3	0	3	0	0	0	0	0	0	149	10	0	1	49	0	0	215	0.89
5:00 PM	5	0	5	0	0	0	0	0	0	129	9	0	1	64	0	0	213	
5:15 PM	3	0	6	0	0	0	0	0	0	151	7	0	1	71	0	0	239	
5:30 PM	0	0	1	0	0	0	0	0	0	128	4	0	1	54	0	0	188	
5:45 PM	1	0	1	0	0	0	0	0	0	114	6	0	1	57	0	0	180	

Study Name Monroe St at Massena St
Start Date 10/4/2022
Site Code 22-068

Start Time	Northbound				Southbound				Eastbound				Westbound				Intersection Total	Peak Hour Factor
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
6:30 AM	1	0	0	0	0	0	4	0	2	17	0	0	0	32	1	0	57	
6:45 AM	0	1	0	0	0	1	6	0	1	58	0	0	0	53	1	0	121	
7:00 AM	0	0	1	0	1	0	4	0	0	98	1	0	0	143	5	0	253	0.70
7:15 AM	0	0	0	0	1	0	4	0	1	104	0	0	0	167	2	0	279	
7:30 AM	0	0	1	0	2	0	6	0	3	37	2	0	0	75	0	0	126	
7:45 AM	1	0	2	0	2	0	3	0	1	45	2	0	1	60	2	0	119	
8:00 AM	0	0	1	0	3	0	1	0	5	46	0	0	1	55	2	0	114	
8:15 AM	1	0	1	0	4	1	7	0	5	51	0	0	1	49	3	0	123	
4:00 PM	3	0	2	0	5	1	12	0	4	96	2	0	1	65	0	0	191	
4:15 PM	2	0	3	0	4	0	3	0	1	79	2	0	0	48	0	0	142	
4:30 PM	1	0	1	0	2	0	3	0	5	102	2	0	1	56	6	0	179	
4:45 PM	1	1	2	0	1	1	5	0	1	140	3	0	0	48	5	0	208	0.93
5:00 PM	0	0	3	0	8	0	5	0	1	135	2	0	1	60	2	0	217	
5:15 PM	0	0	1	0	4	0	4	0	5	141	0	0	1	70	3	0	229	
5:30 PM	4	0	2	0	6	0	3	0	4	119	4	0	1	51	1	0	195	
5:45 PM	0	2	0	0	2	0	3	0	0	102	0	0	3	61	5	0	178	

Sucette Harbor TIA Appendix

Growth Rate Methodology

DRAFT

URBAN SYSTEMS inc.



Existing Count	Projected Count	Number of Years	Annual Growth Rate
927	1311	24	1.45

DOT LOUISIANA DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE

MS2 Transportation Data Management System

Home TMC TCLS RSMS NMDS WOTS TFMS

Login + Locate + Locate All Email This Auto-Locate OFF

List View All DIRs

Record 144 1 of 1 Goto Record 144

Location ID	521001062	MPO ID	
Type	SPOT	HPMS ID	
On NHS		On HPMS	
LRS ID	103_MONROE_ST_1_1_020	LRS Loc PL	0.1537631
SF Group	SFS-7	Route Type	
AF Group	FC7UR	Route	
GF Group	GFC 5-7	Active	Yes
Class Dist Grp	CDF7	Category	Local
Seas Class Grp	SCF-State		
WIM Group	WIM 3-7		
QC Group	Default		
Fncf1 Class	Local	Milepost	
Located On	MONROE STREET		
Loc On Alias	AT		

More Detail

STATION DATA

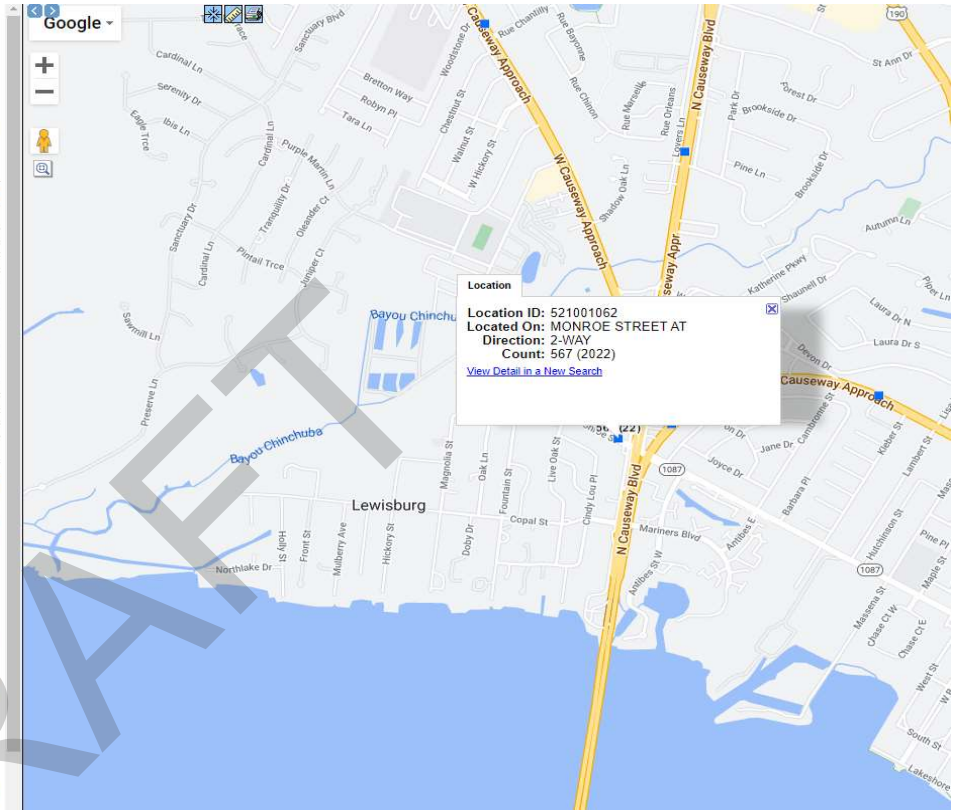
Directions: 2-WAY

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2022	567						
2005	1,311						Legacy
1986	1,289						Legacy
1981	927						Legacy

Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT			VOLUME TREND	
Date	Int	Total	Year	Annual Growth
Thu 3/31/2022	15	705	2022	-5%
Wed 3/30/2022	15	641	2005	0%
			1986	7%

SPEED					CLASSIFICATION		
Date	Int	Pace	85th	Total	Date	Int	Total





Transportation Data Management System

Existing Count	Projected Count	Number of Years	Annual Growth Rate
4225	4066	15	-0.26

Home Login + Locate + Locate All Email This Auto-Locate OFF

Record 1 of 1 Goto Record 103

Location ID	218700	MPO ID	
Type	SPOT	HPMS ID	
On NHS		On HPMS	
LRS ID	103_GERARD_ST_1_010	LRS Loc Pt	0.4761919
SF Group	SF4	Route Type	Not Signed
AF Group	FC4UR	Route	
GF Group	GFC 4	Active	Yes
Class Dist Grp	CDF4	Category	Routine
Seas Class Grp	SCF-State		
WIM Group	WIM 3-7		
QC Group	Default		
Fncrt Class	Minor Arterial	Milepost	
Located On	GERARD STREET		
Loc On Alias			
More Detail	AT		

STATION DATA

Directions: 2WAY

Year	AACT	DHV-30	K %	D %	PA	BC	Src
2021	4,066	389	10		3,720 (91%)	346 (9%)	
2015	3,981						Legacy
2012	4,178						Legacy
2009	4,581						Legacy
2006	4,225						Legacy

STATION DATA

Directions: 2WAY

Year	AACT	DHV-30	K %	D %	PA	BC	Src
2003	4,249						Legacy
2000	3,905						Legacy
1997	3,891						Legacy
1994	4,696						Legacy
1991	4,101						Legacy

Travel Demand Model

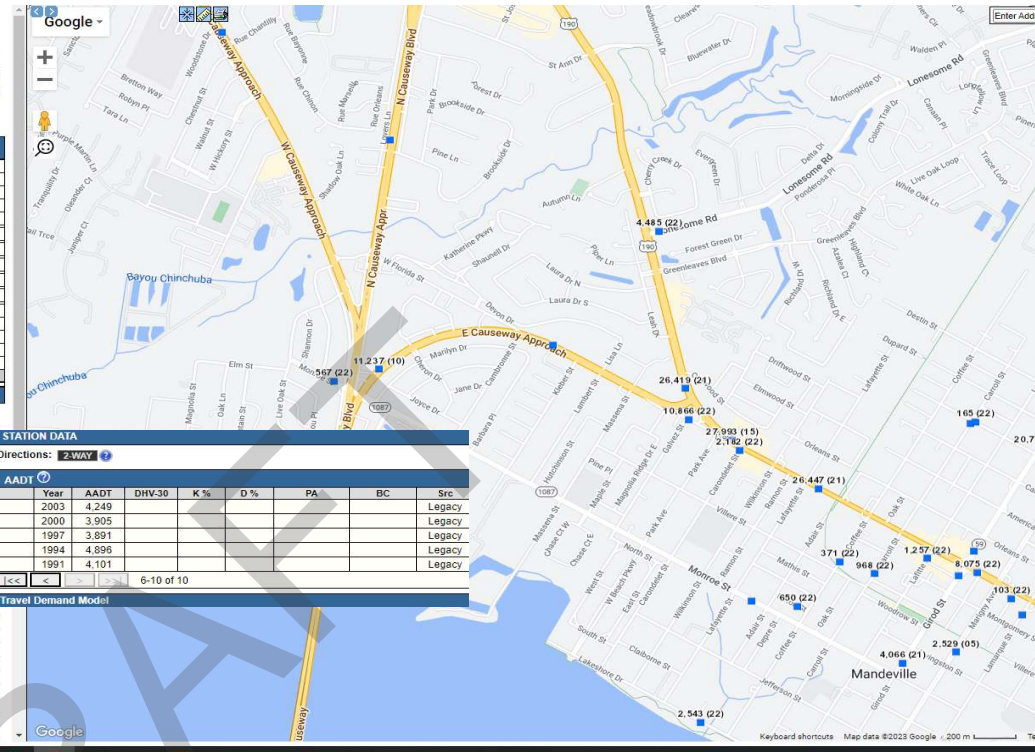
Model Year	Model AACT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV
Wed 8/18/2021	15								4,424
Tue 2/27/2018	15								4,742

VOLUME TREND

Year	Annual Growth
2021	0%
2015	-2%
2012	-3%
2009	3%
2006	0%
2003	3%
2000	0%
1997	-7%
1994	6%

Travel Demand Model

Year	AACT	DHV-30	K %	D %	PA	BC	Src
2021	4,066	389	10		3,720 (91%)	346 (9%)	



2006-2021

Existing Count	Projected Count	Number of Years	Annual Growth Rate
25276	26447	15	0.30

1991-2021

Existing Count	Projected Count	Number of Years	Annual Growth Rate
18415	26447	30	1.21

Record 1 of 1 Goto Record 1 of 1

Location ID: 218510	MPO ID:
Type: SPOT	HPMS ID:
On NHS:	On HPMS:
LRS ID: 999_US_190_1_1_011	LRS Loc PL: 70_95362
SF Group: SF4	Route Type: U.S.
AF Group: FC4UR	Route: 0190
GF Group: GFC 4	Active: Yes
Class Dist Grp: CDF4	Category: Routine
Seas Class Grp: SCF-State	
WIM Group: WIM 3-7	
QC Group: Default	
Frictl Class: Other Principal Arterial	Milepost:
Located On: US 190	
Loc On Alias:	
AT: 252.37	

More Detail

STATION DATA

Directions: 2-WAY

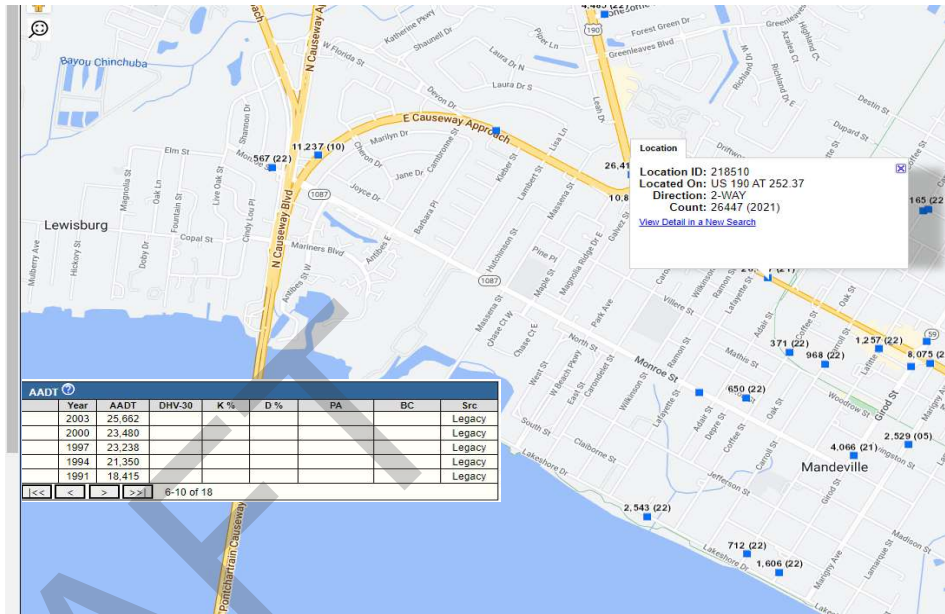
Year	AACT	DHV-30	K %	D %	PA	BC	Src
2021	26,447	2,405	9		24,199 (91%)	2,248 (9%)	
2015	25,785						Legacy
2012	26,978						Legacy
2009	25,145						Legacy
2006	25,276						Legacy

1-5 of 18

Travel Demand Model

Model Year	Model AACT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT			VOLUME TREND	
Date	Int	Total	Year	Annual Growth
Tue 8/3/2021	15	29,885	2021	0%
Wed 4/7/2021	15	28,489	2012	2%
Tue 2/27/2018	15	30,301	2009	0%
			2006	-1%
			2003	3%
			2000	0%
			1997	9%



1991-2021

Existing Count	Projected Count	Number of Years	Annual Growth Rate
17411	28698	30	1.68



List View All DIRs

Record 1 of 1 Goto Record go

Location ID	218480	MPO ID	
Type	SPOT	HPMS ID	
On NHS		On HPMS	
LRS ID	999_LA_22_1_1_010	LRS Loc Pt.	89.76246
SF Group	SF4	Route Type	State
AF Group	FC4UR	Route	0022
GF Group	GFC 4	Active	Yes
Class Dist Grp	CDF4	Category	Routine
Seas Class Grp	SCF-State		
WIM Group	WIM 3-7		
QC Group	Default		
Fnc'l Class	Other Principal Arterial	Milepost	
Located On	LA 22		
Loc On Alias	AT 70.16		

STATION DATA

Directions: 2-WAY

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2021	28,698	2,063	7		26,260 (92%)	2,438 (8%)	
2015	26,658						Legacy
2009	25,456						Legacy
2006	24,878						Legacy
2003	27,022						Legacy

1-5 of 17

Travel Demand Model

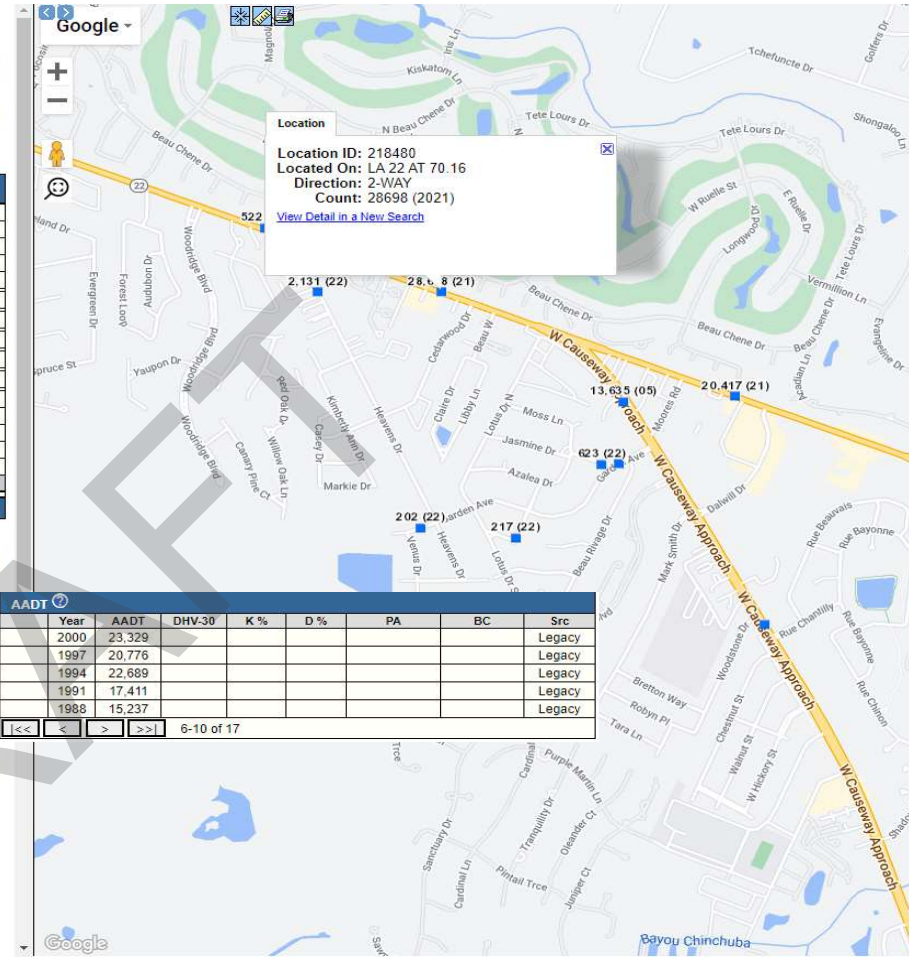
Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT

Date	Int	Total
Tue 2/23/2021	15	26,033
Wed 1/31/2018	15	28,642

VOLUME TREND

Year	Annual Growth
2021	1%
2015	1%
2009	1%
2006	-3%
2003	5%
2000	4%
1997	-3%
1994	9%
1991	5%



1996-2021

Existing Count	Projected Count	Number of Years	Annual Growth Rate
60928	66360	25	0.34



Home Login + Locate + Locate All Email This Auto-Locate OFF

List View All DIRs

Record		of 1 Goto Record	
Location ID	218500	MPO ID	
Type	SPOT	HPMS ID	
On NHS		On HPMS	
LRS ID	999_US 190_1_1_011	LRS Loc Pt.	67,92675
SF Group	SF3	Route Type	U.S.
AF Group	FC3UR	Route	0190
GF Group	GFC 3	Active	Yes
Class Dist Grp	CDF3	Category	Routine
Seas Class Grp	SCF-State		
WIM Group	WIM 3-7		
QC Group	Default		
Functl Class	Freeway & Expressway	Milepost	
Located On	US 190		
Loc On Alias			
AT	249.82		

More Detail

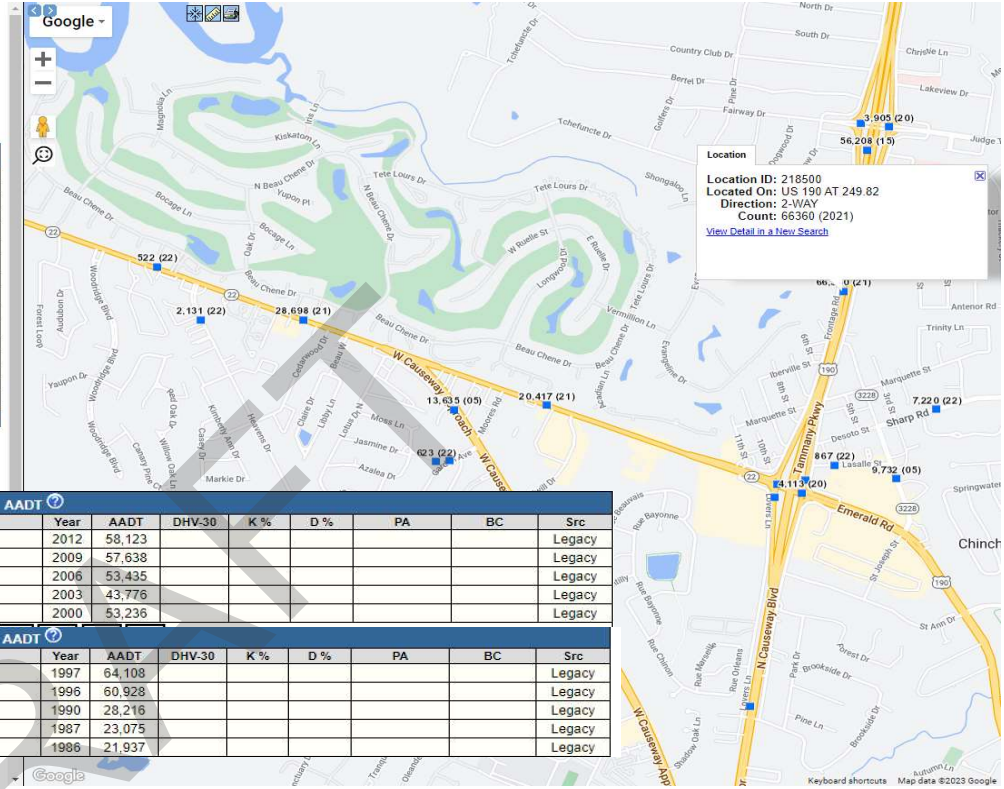
STATION DATA

Directions: 2-WAY EB WB

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2021	66,360 ³				55,810 (84%)	10,550 (16%)	Grown from 2020
2020	61,274 ³				50,489 (82%)	10,785 (18%)	Grown from 2019
2019	66,028 ³				56,851 (86%)	9,177 (14%)	Grown from 2018
2018	63,306 ²						
2015	54,571						Legacy

Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT			VOLUME TREND	
Date	Int	Total	Year	Annual Growth
No Data			2021	8%
			2020	-7%
			2019	4%
			2018	5%
			2015	-2%
			2012	0%
			2009	3%



Year	AADT	DHV-30	K %	D %	PA	BC	Src
2012	58,123						Legacy
2009	57,638						Legacy
2006	53,435						Legacy
2003	43,776						Legacy
2000	53,236						Legacy

Year	AADT	DHV-30	K %	D %	PA	BC	Src
1997	64,108						Legacy
1996	60,928						Legacy
1990	28,216						Legacy
1987	23,075						Legacy
1986	21,937						Legacy





Transcad Year 2022

Existing Count	Projected Count	Number of Years	Annual Growth Rate
9420	15437	30	1.66

Existing Count	Projected Count	Number of Years	Annual Growth Rate
4689	10811	30	2.82



Transcad Year 2022

Existing Count	Projected Count	Number of Years	Annual Growth Rate
9420	15437	30	1.66

Existing Count	Projected Count	Number of Years	Annual Growth Rate
4689	10811	30	2.82



Transcad Year 2052

Existing Count	Projected Count	Number of Years	Annual Growth Rate
9420	15437	30	1.66

Existing Count	Projected Count	Number of Years	Annual Growth Rate
4689	10811	30	2.82



Transcad Year 2052

Existing Count	Projected Count	Number of Years	Annual Growth Rate
9420	15437	30	1.66

Existing Count	Projected Count	Number of Years	Annual Growth Rate
4689	10811	30	2.82

2022 Volumes Grown to 2025 Base Volumes

7:00 - 8:00 AM				
Intersection	Approach	Direction	2022 Volume	2025 Base Volume
E Causeway Approach at Mariners	WB	RIGHT	24	25
		RIGHT	0	0
	NB	THRU	161	168
E Causeway Approach at Monroe	EB	RIGHT	3	3
		THRU	285	298
		LEFT	97	101
	WB	RIGHT	24	25
		THRU	321	336
		LEFT	95	99
	NB	RIGHT	13	14
		THRU	149	156
		LEFT	14	15
	SB	RIGHT	150	157
		THRU	618	646
		LEFT	18	19
Monroe at Antibes W	EB	RIGHT	25	26
		THRU	291	304
	WB	THRU	436	456
		LEFT	6	6
	NB	RIGHT	1	1
		LEFT	9	9
Monroe at Antibes E/Cambronne	EB	RIGHT	7	7
		THRU	282	295
		LEFT	7	7
	WB	RIGHT	17	18
		THRU	413	432
		LEFT	12	13
	NB	RIGHT	13	14
		THRU	20	21
		LEFT	15	16
	SB	RIGHT	3	3
		THRU	5	5
		LEFT	3	3
Monroe at Massena	EB	RIGHT	5	5
		THRU	284	297
		LEFT	5	5
	WB	RIGHT	9	9
		THRU	445	465
		LEFT	1	1
	NB	RIGHT	4	4
		THRU	0	0
		LEFT	1	1
	SB	RIGHT	17	18
		THRU	0	0
		LEFT	6	6

4:45 - 5:45 PM				
Intersection	Approach	Direction	2022 Volume	2025 Base Volume
E Causeway Approach at Mariners	WB	RIGHT	23	24
		RIGHT	8	8
	NB	THRU	843	882
E Causeway Approach at Monroe	EB	RIGHT	0	0
		THRU	408	427
		LEFT	113	118
	WB	RIGHT	23	24
		THRU	208	218
		LEFT	25	26
	NB	RIGHT	165	173
		THRU	647	677
		LEFT	67	70
	SB	RIGHT	169	177
		THRU	156	163
		LEFT	28	29
Monroe at Antibes W	EB	RIGHT	30	31
		THRU	557	582
	WB	THRU	238	249
		LEFT	4	4
	NB	RIGHT	15	16
		LEFT	11	12
Monroe at Antibes E/Cambronne	EB	RIGHT	19	20
		THRU	549	574
		LEFT	8	8
	WB	RIGHT	6	6
		THRU	223	233
		LEFT	13	14
	NB	RIGHT	11	12
		THRU	4	4
		LEFT	14	15
	SB	RIGHT	4	4
		THRU	10	10
		LEFT	9	9
Monroe at Massena	EB	RIGHT	9	9
		THRU	535	559
		LEFT	11	12
	WB	RIGHT	11	12
		THRU	229	239
		LEFT	3	3
	NB	RIGHT	8	8
		THRU	1	1
		LEFT	5	5
	SB	RIGHT	17	18
		THRU	1	1
		LEFT	19	20

2022 Volumes Grown to 2045 No Build Volumes

7:00 - 8:00 AM				
Intersection	Approach	Direction	2022 Volume	2045 No Build Volume
E Causeway Approach at Mariners	WB	RIGHT	24	34
		RIGHT	0	0
	NB	THRU	161	227
E Causeway Approach at Monroe	EB	RIGHT	3	4
		THRU	285	401
		LEFT	97	137
	WB	RIGHT	24	34
		THRU	321	452
		LEFT	95	134
	NB	RIGHT	13	18
		THRU	149	210
		LEFT	14	20
	SB	RIGHT	150	211
		THRU	618	870
		LEFT	18	25
Monroe at Antibes W	EB	RIGHT	25	35
		THRU	291	410
	WB	THRU	436	614
		LEFT	6	8
	NB	RIGHT	1	1
		LEFT	9	13
Monroe at Antibes E/Cambonne	EB	RIGHT	7	10
		THRU	282	397
		LEFT	7	10
	WB	RIGHT	17	24
		THRU	413	582
		LEFT	12	17
	NB	RIGHT	13	18
		THRU	20	28
		LEFT	15	21
	SB	RIGHT	3	4
		THRU	5	7
		LEFT	3	4
Monroe at Massena	EB	RIGHT	5	7
		THRU	284	400
		LEFT	5	7
	WB	RIGHT	9	13
		THRU	445	627
		LEFT	1	1
	NB	RIGHT	4	6
		THRU	0	0
		LEFT	1	1
	SB	RIGHT	17	24
		THRU	0	0
		LEFT	6	8

4:45 - 5:45 PM				
Intersection	Approach	Direction	2022 Volume	2045 No Build Volume
E Causeway Approach at Mariners	WB	RIGHT	23	32
		RIGHT	8	11
	NB	THRU	843	1187
E Causeway Approach at Monroe	EB	RIGHT	0	0
		THRU	408	575
		LEFT	113	159
	WB	RIGHT	23	32
		THRU	208	293
		LEFT	25	35
	NB	RIGHT	165	232
		THRU	647	911
		LEFT	67	94
	SB	RIGHT	169	238
		THRU	156	220
		LEFT	28	39
Monroe at Antibes W	EB	RIGHT	30	42
		THRU	557	784
	WB	THRU	238	335
		LEFT	4	6
	NB	RIGHT	15	21
		LEFT	11	15
Monroe at Antibes E/Cambonne	EB	RIGHT	19	27
		THRU	549	773
		LEFT	8	11
	WB	RIGHT	6	8
		THRU	223	314
		LEFT	13	18
	NB	RIGHT	11	15
		THRU	4	6
		LEFT	14	20
	SB	RIGHT	4	6
		THRU	10	14
		LEFT	9	13
Monroe at Massena	EB	RIGHT	9	13
		THRU	535	753
		LEFT	11	15
	WB	RIGHT	11	15
		THRU	229	323
		LEFT	3	4
	NB	RIGHT	8	11
		THRU	1	1
		LEFT	5	7
	SB	RIGHT	17	24
		THRU	1	1
		LEFT	19	27

Sucette Harbor TIA Appendix

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TSI

URBAN SYSTEMS inc.



NOTES:

1. SEE STRIPING PLAN FOR PERMANENT ROADWAY MARKINGS.
2. THE 2016 EDITION OF THE LOUISIANA D.O.T.D. STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, AS AMENDED BY THE PROJECT SPECIFICATIONS SHALL GOVERN THIS PROJECT.
3. ALL EXISTING TRAFFIC SIGNAL HEADS AND EQUIPMENT TO REMAIN UNLESS CALLED OUT ON THIS SHEET
4. EXISTING PHASING TO BE MODIFIED AS SHOWN ON THIS PLAN



6/23/2021

LEGEND:

- PROPOSED DESCRIPTION
- ① MAST ARM MOUNTED SIGNAL AND FACE NUMBER
 - S1 MAST ARM MOUNTED SIGN AND NUMBER
 - S2 GROUND MOUNTED SIGN AND NUMBER
 - VIDEO DETECTION DEVICE
 - ▨ VIDEO DETECTION ZONE

HEAD ASSIGNMENT

FACE	HEADS	PHASE
1,2	R Y G	Ø1
3N	R Y G	Ø5
4,5	R Y G	Ø2
6	R Y G	Ø2
7	R Y G	Ø4
8	R Y G G	Ø4
9	R Y G G	Ø8
10	R Y G	Ø8
11,12	W DW	Ø4, Ø8
13	R Y G	Ø1
14	R Y G	Ø6

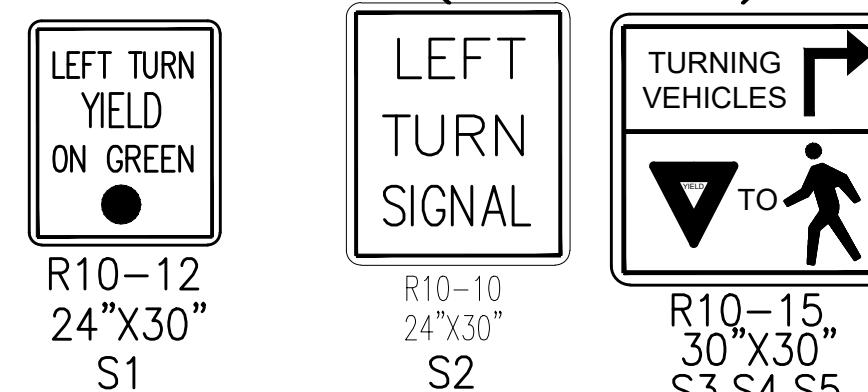
REVISED SIGNAL PRIMARY SEQUENCE CHART

FACE	Ø2+Ø6			Ø1+Ø5			Ø4			Ø8			EMERGENCY FLASH
	R/W	CLEAR TO	Ø1+Ø5	R/W	CLEAR TO	Ø4	R/W	CLEAR TO	Ø8	R/W	CLEAR TO	Ø2+Ø6	
1,2	G	Y	R	R	R	R	R	R	R	R	R	R	Y
3N	R	R	R	G	Y	R	R	R	R	R	R	R	Y
4,5	G	Y	R	R	R	R	R	R	R	R	R	R	Y
6	G	Y	R	R	R	R	R	R	R	R	R	R	Y
7	R	R	R	R	R	R	R	G	Y	R	R	R	R
8	R	R	R	R	R	R	R	G	Y	R	R	R	R
9	R	R	R	R	R	R	R	R	R	G	Y	R	R
10	R	R	R	R	R	R	R	R	R	G	Y	R	R
11,12	DW	DW	DW	DW	DW	DW	W	FDW	FDW	DW	DW	DW	DARK
13	R	R	R	G	Y	R	R	R	R	R	R	R	Y
14	G	G	G	R	R	R	G	Y	R	R	R	R	Y

DETECTOR INSTALLATION CHART

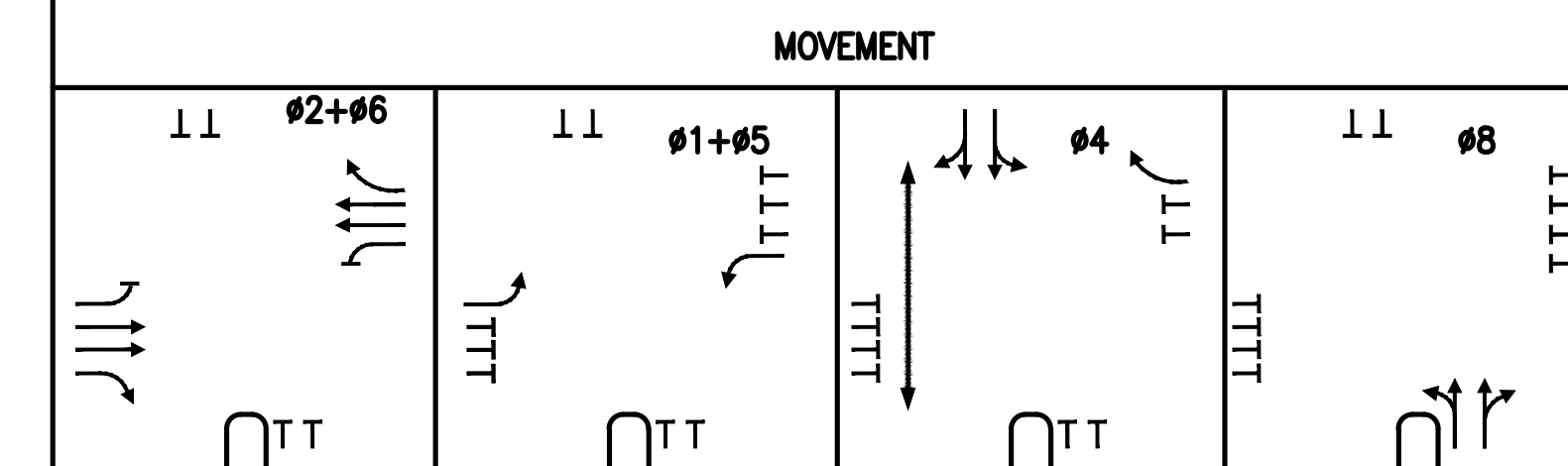
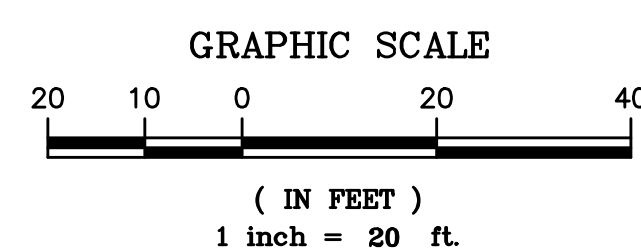
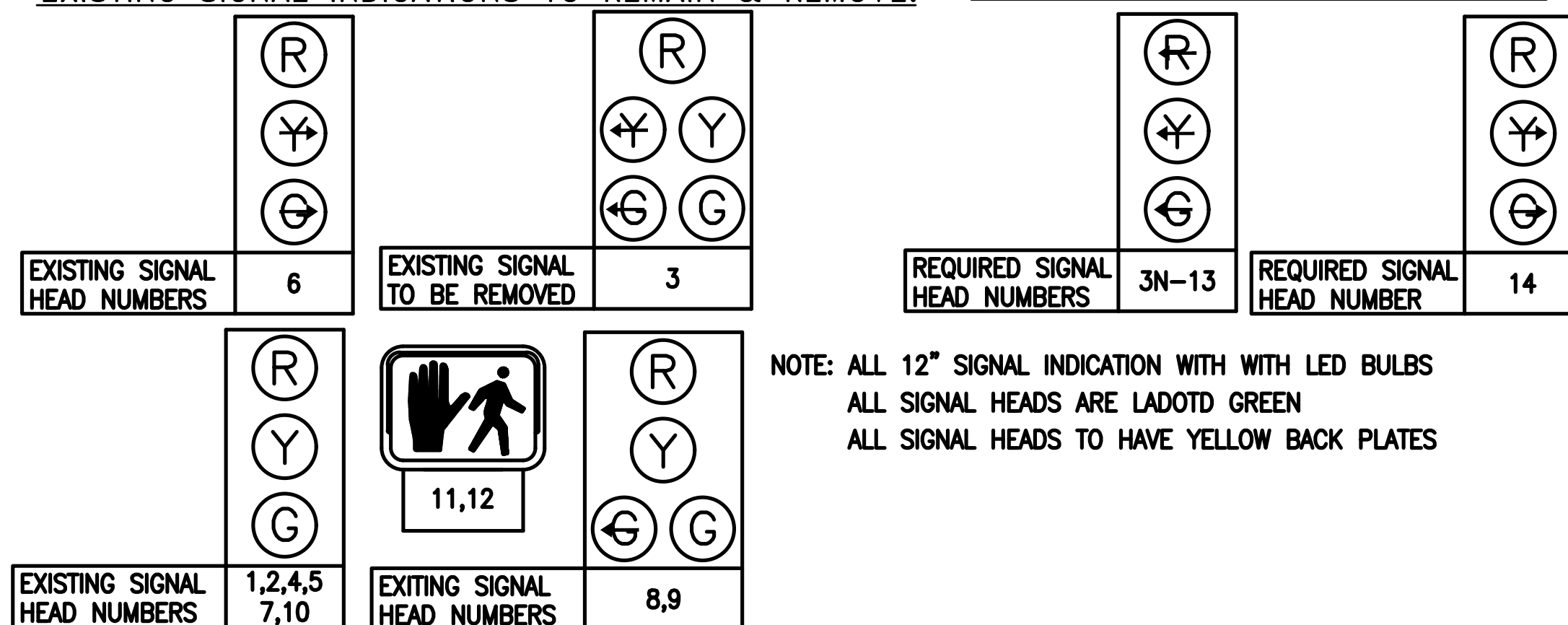
DETECTOR NO.	SIZE	TURNS	DIST. FROM STOP BAR	FUNCTION	MODE	AMPLIFIER CARD/CHANNEL
C1	6'X50'	VIDEO	-5'	Ø1	PRESENCE	3
C5	6'X50'	VIDEO	-5'	Ø5	PRESENCE	3

SIGNS LAYOUT (REQUIRED)



NOTE: EXISTING SIGN S1 TO BE REMOVED AND REPLACE WITH SIGN S2

EXISTING SIGNAL INDICATIONS TO REMAIN & REMOVE: REQUIRED NEW SIGNAL INDICATION:



SHEET NUMBER 5

ST. TAMMANY PARISH ITS PROJECT 029-20-1029

DESIGNED N.D.S. CHECKED P.C.G. DETAILED P.S.B. CHECKED R.H.H. DATE 6/23/2021 SHEET

CITY OF MANDEVILLE MONROE AT E. CAUSEWAY INTERSECTION TRAFFIC SIGNAL IMPROVEMENTS

TRAFFIC SIGNAL PLAN

APPROXIMATE TRAFFIC SIGNAL QUANTITIES
(FOR INFORMATION PURPOSE ONLY.)

ITEM NO.	DESCRIPTION	UNIT	QTY. TOTAL
729-01-00100	SIGN TYPE (A)	SQ. FT.	30
736-01-00100	TRENCHING & BACKFILLING	LN. FT	350
736-05-31000	SIGNAL HEADS (3 SECTION, 12" LED LENS, R. LT. Y. LT. G)	EACH	2
736-05-35001	SIGNAL HEADS (3 SECTION, 12" LED LENS, RT. R. RT. Y. RT. G)	EACH	1
736-09-00100	LOOP DETECTOR	LN. FT	60
736-10-00100	UNDERGROUND JUNCTION BOX (TYPE D)	EACH	2
736-11-00100	CONDUIT (1" HDPE)	LN. FT	280
736-12-00000	CONDUCTOR (2C, Loop Lead In, IMSA 50-2, #14 AWG, Twisted Pair, 19 Strand)	LN. FT	360
736-12-10014	CONDUCTOR (10C, #14 AWG)	LN. FT	250
736-17-00000	VIDEO DETECTION CABINET COMPONENTS	EACH	2
736-18-00000	VIDEO DETECTION CAMERA	EACH	2
736-19-00000	VIDEO CAMERA CABLE	LN. FT	300

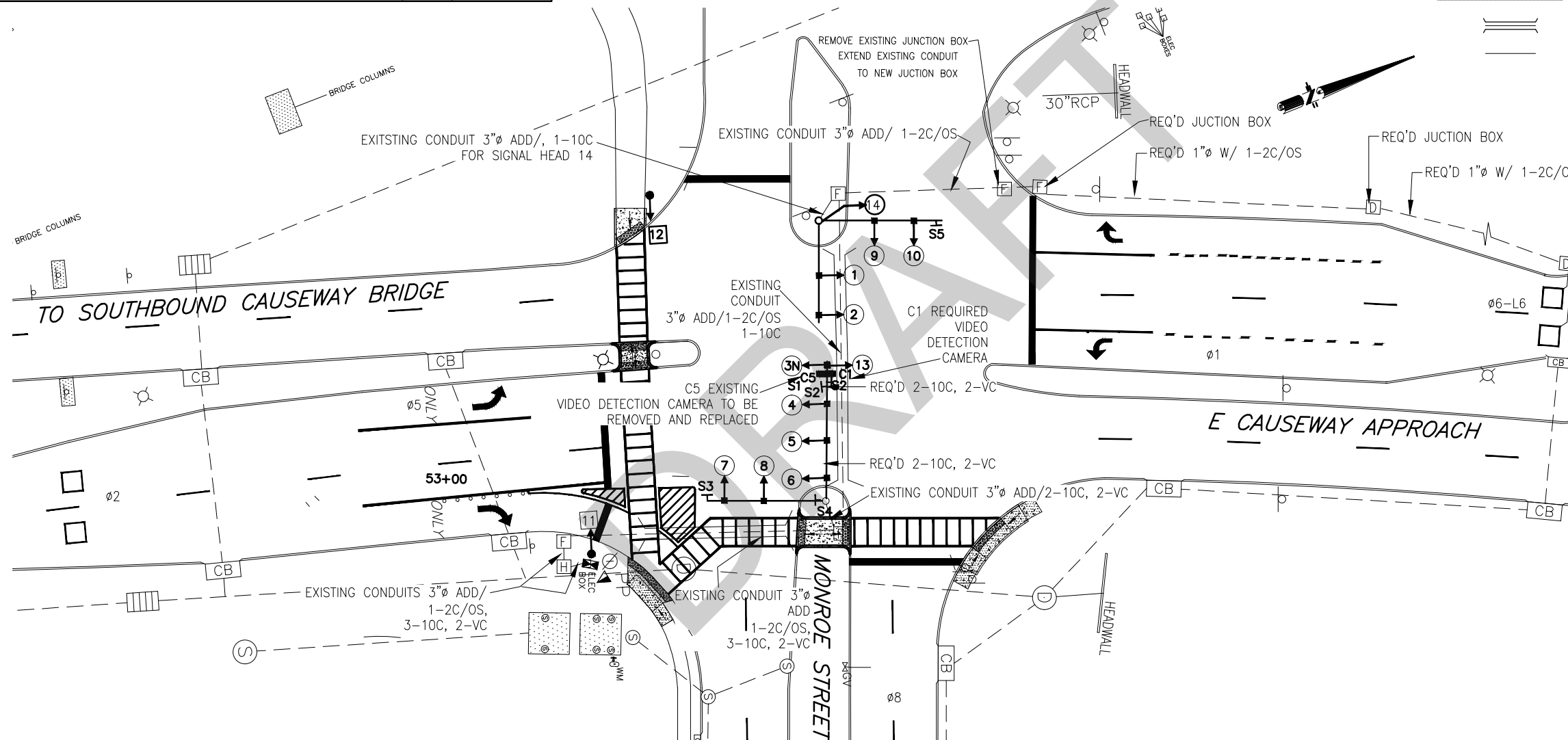
PHASE TIMING PARAMETERS

PHASE DESIGNATION	#1	#2	#4	#5	#6	#8
MOVEMENT DESCRIPTION	SB LT	NB	EB	NB LT	SB	WB
PARAMETER						
MIN INITIAL GREEN (MIN I)	5.0	5.0	5.0	5.0	5.0	5.0
PASSAGE TIME	2.0	5.0	1.0	2.0	5.0	1.0
MINIMUM SPLIT	11.0	26.0	24.0	11.0	26.0	24.0
YELLOW CLEARANCE (YEL)	5.0	5.0	5.0	5.0	5.0	5.0
RED CLEARANCE (RED)	1.0	1.0	1.0	1.0	1.0	1.0
TIME TO REDUCE		35.0			35.0	
TIME BEFORE REDUCTION		15.0			15.0	
MIN GAP		2.0			2.0	
RECALL FUNCTION (RECL)	MOF	MAX	MOF	MOF	MAX	MOF

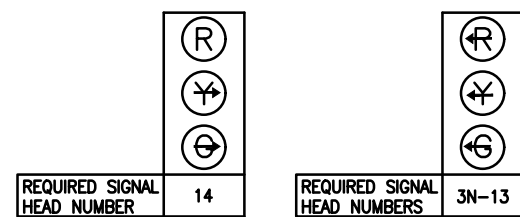
START UP - PHASE 2+6 - GREEN
MONITOR DELAY - 7 SECONDS

LEGEND:

- PROPOSED DESCRIPTION
- MAST ARM MOUNTED SIGNAL AND FACE NUMBER
- REQUIRED LOOP DETECTOR
- JUNCTION BOX
- MAST ARM MOUNTED SIGN AND NUMBER
- GROUND MOUNTED SIGN AND NUMBER
- VIDEO DETECTION DEVICE
- VIDEO DETECTION ZONE
- CABLES IN JACKED OR BORED CONDUIT
- UNDERGROUND CABLES IN CONDUIT

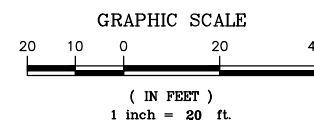
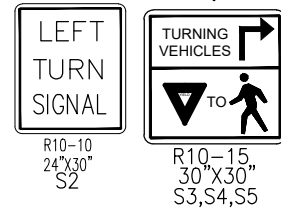


REQUIRED NEW SIGNAL INDICATIONS:



NOTE: ALL 12" SIGNAL INDICATION WITH WITH LED BULBS
ALL SIGNAL HEADS ARE LADOTD GREEN
ALL SIGNAL HEADS TO HAVE YELLOW BACK PLATES

SIGNS LAYOUT (REQUIRED)



NOTES:

- SEE STRIPING PLAN FOR PERMANENT ROADWAY MARKINGS.
- THE 2016 EDITION OF THE LOUISIANA D.O.T.D. STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, AS AMENDED BY THE PROJECT SPECIFICATIONS SHALL GOVERN THIS PROJECT.
- ALL EXISTING TRAFFIC SIGNAL HEADS AND EQUIPMENT TO REMAIN UNLESS CALLED OUT ON THIS SHEET
- EXISTING CONTROLLER TIMINGS TO BE MODIFIED AS SHOWN ON THIS PLAN.

6/23/2021



SHEET NUMBER	6
ST. TAMMANY	029-20-1029
FINISH	029-20-1029
DATE	6/23/2021
DESIGNED	BY
CHECKED	DATE
REVISION DESCRIPTION	
CITY OF MANDEVILLE	TRAFFIC SIGNAL IMPROVEMENTS
MONROE AT E. CAUSEWAY INTERSECTION	TRAFFIC SIGNAL IMPROVEMENTS WIRING PLAN

Sucette Harbor TIA Appendix

2025 Base Conditions Analysis

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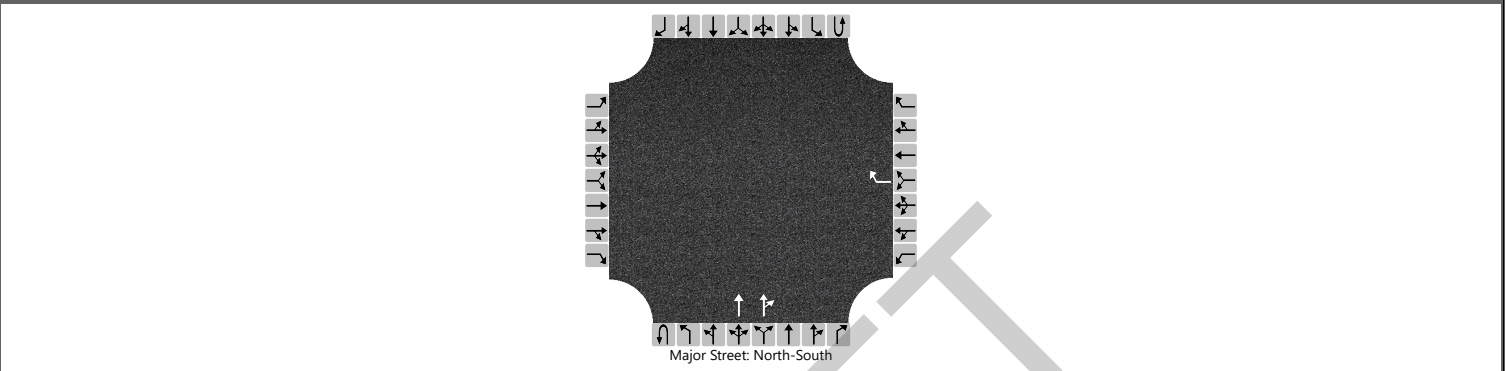


- HV % defaults were used: 2% for Synchro and 3% for HCS
- Intersection PHFs were calculated for the entire intersection and used in the analysis.

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MAC	Intersection	E Causeway at Mariners
Agency/Co.	USI	Jurisdiction	St Tammany
Date Performed	11/8/22	East/West Street	Mariners Blvd
Analysis Year	2022	North/South Street	E Causeway Approach
Time Analyzed	AM Base	Peak Hour Factor	0.77
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	22-068		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1		0	2	0		0	0	0
Configuration								R			T	TR				
Volume (veh/h)								25			168	0				
Percent Heavy Vehicles (%)								3								
Proportion Time Blocked																
Percent Grade (%)								0								
Right Turn Channelized								No								
Median Type Storage								Undivided								

Critical and Follow-up Headways

Base Critical Headway (sec)								6.9								
Critical Headway (sec)								6.96								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.33								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								32								
Capacity, c (veh/h)								920								
v/c Ratio								0.04								
95% Queue Length, Q ₉₅ (veh)								0.1								
Control Delay (s/veh)								9.1								
Level of Service (LOS)								A								
Approach Delay (s/veh)								9.1								
Approach LOS								A								

Queues

3: E Causeway Approach & Monroe St

11/10/2022



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	474	540	18	184	16	22	760	185
v/c Ratio	0.70	0.71	0.15	0.20	0.03	0.09	0.66	0.19
Control Delay	41.2	39.6	50.8	33.9	0.1	36.1	31.0	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.2	39.6	50.8	33.9	0.1	36.1	31.0	1.8
Queue Length 50th (ft)	120	135	9	33	0	11	165	0
Queue Length 95th (ft)	216	237	35	97	0	34	320	19
Internal Link Dist (ft)	220	346		227			155	
Turn Bay Length (ft)			130			130		
Base Capacity (vph)	1005	1209	296	1442	722	369	1442	1114
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.45	0.06	0.13	0.02	0.06	0.53	0.17
Intersection Summary								

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HCM 6th Signalized Intersection Summary
 3: E Causeway Approach & Monroe St

11/10/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↗	↕↕	↗	↗	↗	↕↕
Traffic Volume (veh/h)	101	298	3	99	336	25	15	156	14	19	646	157
Future Volume (veh/h)	101	298	3	99	336	25	15	156	14	19	646	157
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	119	351	4	116	395	29	18	184	16	22	760	185
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	147	461	5	141	507	39	37	447	199	390	1152	777
Arrive On Green	0.17	0.17	0.17	0.19	0.19	0.19	0.02	0.13	0.13	0.22	0.32	0.32
Sat Flow, veh/h	882	2776	33	752	2707	207	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	246	0	228	283	0	257	18	184	16	22	760	185
Grp Sat Flow(s),veh/h/ln	1826	0	1864	1833	0	1833	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	10.3	0.0	9.2	11.8	0.0	10.5	0.8	3.8	0.7	0.8	14.6	5.4
Cycle Q Clear(g_c), s	10.3	0.0	9.2	11.8	0.0	10.5	0.8	3.8	0.7	0.8	14.6	5.4
Prop In Lane	0.48		0.02	0.41		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	303	0	310	343	0	343	37	447	199	390	1152	777
V/C Ratio(X)	0.81	0.00	0.73	0.82	0.00	0.75	0.49	0.41	0.08	0.06	0.66	0.24
Avail Cap(c_a), veh/h	551	0	563	669	0	669	314	1520	678	390	1520	941
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.9	0.0	31.5	31.0	0.0	30.5	38.5	32.0	30.7	24.6	23.1	11.7
Incr Delay (d2), s/veh	2.0	0.0	1.3	1.9	0.0	1.2	3.7	1.3	0.4	0.0	1.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	4.1	5.2	0.0	4.6	0.4	1.6	0.3	0.3	5.9	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.0	0.0	32.8	33.0	0.0	31.8	42.2	33.3	31.0	24.6	24.5	12.0
LnGrp LOS	C	A	C	C	A	C	D	C	C	C	C	B
Approach Vol, veh/h		474			540			218			967	
Approach Delay, s/veh		33.4			32.4			33.9			22.1	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	23.4	16.0		19.2	7.6	31.8		20.9				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	14.0	34.0		24.0	14.0	34.0		29.0				
Max Q Clear Time (g_c+I1), s	2.8	5.8		12.3	2.8	16.6		13.8				
Green Ext Time (p_c), s	0.0	2.4		0.9	0.0	9.1		1.1				

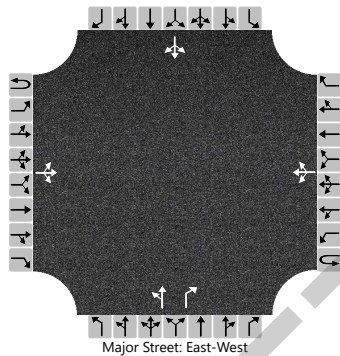
Intersection Summary

HCM 6th Ctrl Delay	28.2
HCM 6th LOS	C

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Antibes St E		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	11/8/22			East/West Street	Monroe St		
Analysis Year	2022			North/South Street	Antibes St E - Cambronne		
Time Analyzed	AM Base			Peak Hour Factor	0.77		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	1	1		0	1	0	
Configuration			LTR				LTR			LT		R			LTR	
Volume (veh/h)		7	295	7		13	432	18		16	21	14		3	5	3
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized										No						
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

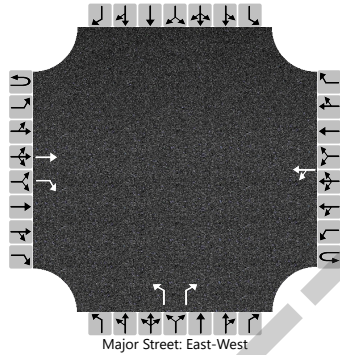
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		9				17				48		18			14	
Capacity, c (veh/h)		985				1161				216		658			248	
v/c Ratio		0.01				0.01				0.22		0.03			0.06	
95% Queue Length, Q ₉₅ (veh)		0.0				0.0				0.8		0.1			0.2	
Control Delay (s/veh)		8.7				8.1				26.4		10.6			20.4	
Level of Service (LOS)		A				A				D		B			C	
Approach Delay (s/veh)		0.3				0.4				22.1				20.4		
Approach LOS										C				C		

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Antibes W		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	11/8/22			East/West Street	Monroe St		
Analysis Year	2022			North/South Street	Antibes St W		
Time Analyzed	AM Base			Peak Hour Factor	0.81		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12		
Priority																	
Number of Lanes	0	0	1	1	0	0	1	0	1	0	1		0	0	0		
Configuration			T	R			LT				L		R				
Volume (veh/h)			304	26			6	456			9		1				
Percent Heavy Vehicles (%)							3				3		3				
Proportion Time Blocked																	
Percent Grade (%)										0							
Right Turn Channelized		No								No							
Median Type Storage					Left Only								1				

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

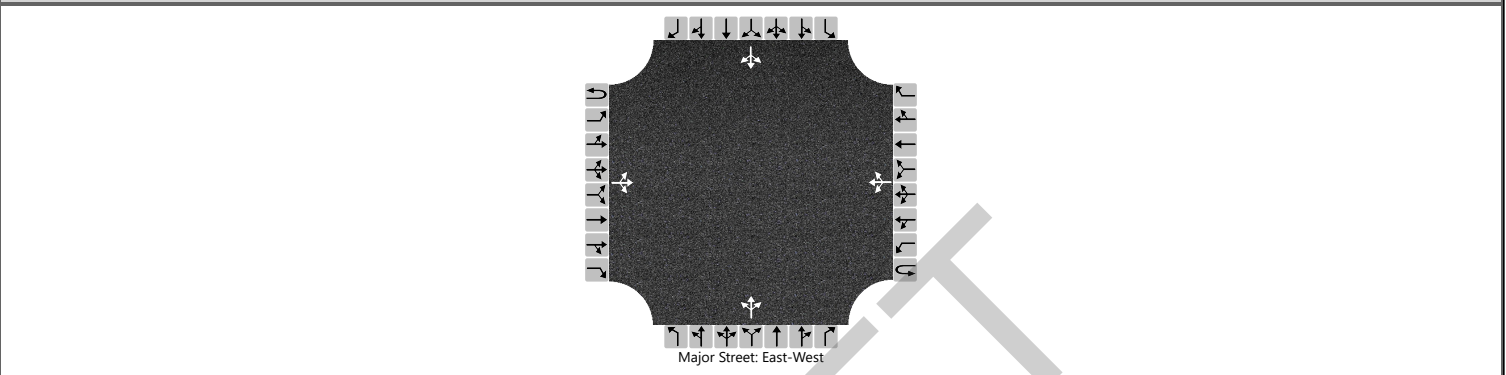
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						7				11		1				
Capacity, c (veh/h)						1146				407		669				
v/c Ratio						0.01				0.03		0.00				
95% Queue Length, Q ₉₅ (veh)						0.0				0.1		0.0				
Control Delay (s/veh)						8.2				14.1		10.4				
Level of Service (LOS)						A				B		B				
Approach Delay (s/veh)						0.2				13.7						
Approach LOS										B						

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Massena St		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	11/8/22			East/West Street	Monroe St		
Analysis Year	2022			North/South Street	Massena St		
Time Analyzed	AM Base			Peak Hour Factor	0.70		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	1	0		0	1	0	
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		5	297	5		1	465	9		1	0	4		6	0	18
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

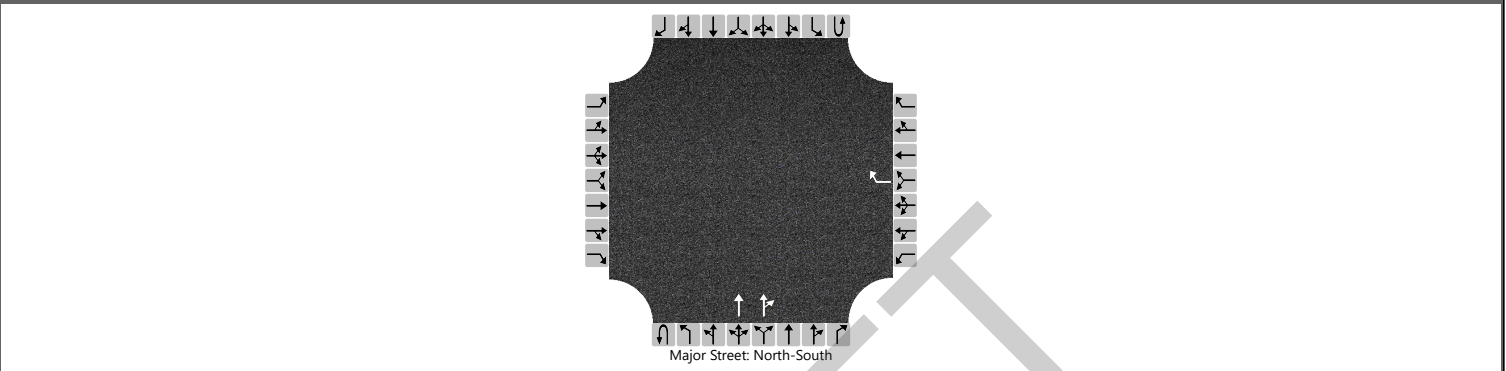
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		7				1				7						34
Capacity, c (veh/h)		910				1123				405						329
v/c Ratio		0.01				0.00				0.02						0.10
95% Queue Length, Q ₉₅ (veh)		0.0				0.0				0.1						0.3
Control Delay (s/veh)		9.0				8.2				14.0						17.2
Level of Service (LOS)		A				A				B						C
Approach Delay (s/veh)		0.2				0.0				14.0				17.2		
Approach LOS										B				C		

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MAC	Intersection	E Causeway at Mariners
Agency/Co.	USI	Jurisdiction	St Tammany
Date Performed	11/8/22	East/West Street	Mariners Blvd
Analysis Year	2022	North/South Street	E Causeway Approach
Time Analyzed	PM Base	Peak Hour Factor	0.94
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	22-068		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1		0	2	0		0	0	0
Configuration								R			T	TR				
Volume (veh/h)								24			882	8				
Percent Heavy Vehicles (%)								3								
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized							No									
Median Type Storage							Undivided									

Critical and Follow-up Headways

Base Critical Headway (sec)								6.9								
Critical Headway (sec)								6.96								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.33								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								26								
Capacity, c (veh/h)								535								
v/c Ratio								0.05								
95% Queue Length, Q ₉₅ (veh)								0.2								
Control Delay (s/veh)								12.1								
Level of Service (LOS)								B								
Approach Delay (s/veh)								12.1								
Approach LOS								B								

Queues

3: E Causeway Approach & Monroe St

11/10/2022



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	568	279	73	705	180	30	170	184
v/c Ratio	0.72	0.58	0.20	0.59	0.28	0.23	0.27	0.24
Control Delay	38.7	41.7	30.5	27.8	5.3	48.8	38.5	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	41.7	30.5	27.8	5.3	48.8	38.5	2.6
Queue Length 50th (ft)	171	83	33	182	0	18	50	0
Queue Length 95th (ft)	252	134	77	278	48	49	90	25
Internal Link Dist (ft)	220	346		227			155	
Turn Bay Length (ft)			130			130		
Base Capacity (vph)	1040	1254	447	1490	771	307	1490	876
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.22	0.16	0.47	0.23	0.10	0.11	0.21
Intersection Summary								

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HCM 6th Signalized Intersection Summary

3: E Causeway Approach & Monroe St

11/10/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↗	↕↕	↗	↗	↕↕	↗
Traffic Volume (veh/h)	118	427	0	26	218	24	70	677	173	29	163	177
Future Volume (veh/h)	118	427	0	26	218	24	70	677	173	29	163	177
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	123	445	0	27	227	25	73	705	180	30	170	184
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	149	571	0	38	331	38	362	1173	523	56	562	567
Arrive On Green	0.20	0.20	0.00	0.11	0.11	0.11	0.20	0.33	0.33	0.03	0.16	0.16
Sat Flow, veh/h	746	2958	0	341	2979	342	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	302	266	0	147	0	132	73	705	180	30	170	184
Grp Sat Flow(s),veh/h/ln	1833	1777	0	1853	0	1809	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	11.6	10.3	0.0	5.6	0.0	5.1	2.5	12.1	6.3	1.2	3.1	6.2
Cycle Q Clear(g_c), s	11.6	10.3	0.0	5.6	0.0	5.1	2.5	12.1	6.3	1.2	3.1	6.2
Prop In Lane	0.41		0.00	0.18		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	366	354	0	206	0	201	362	1173	523	56	562	567
V/C Ratio(X)	0.83	0.75	0.00	0.71	0.00	0.66	0.20	0.60	0.34	0.54	0.30	0.32
Avail Cap(c_a), veh/h	601	583	0	735	0	717	362	1651	736	341	1651	1053
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.1	27.6	0.0	31.4	0.0	31.2	24.2	20.5	18.5	34.9	27.2	17.1
Incr Delay (d2), s/veh	2.0	1.2	0.0	1.7	0.0	1.4	0.1	1.1	0.8	3.0	0.6	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	4.3	0.0	2.5	0.0	2.2	1.0	4.8	2.3	0.6	1.3	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.0	28.8	0.0	33.1	0.0	32.6	24.3	21.5	19.3	37.9	27.9	17.8
LnGrp LOS	C	C	A	C	A	C	C	C	B	D	C	B
Approach Vol, veh/h		568			279			958				384
Approach Delay, s/veh		29.4			32.9			21.3				23.8
Approach LOS		C			C			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	30.2		20.6	20.9	17.6		14.1				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	14.0	34.0		24.0	14.0	34.0		29.0				
Max Q Clear Time (g_c+I1), s	3.2	14.1		13.6	4.5	8.2		7.6				
Green Ext Time (p_c), s	0.0	10.0		1.0	0.1	3.4		0.6				

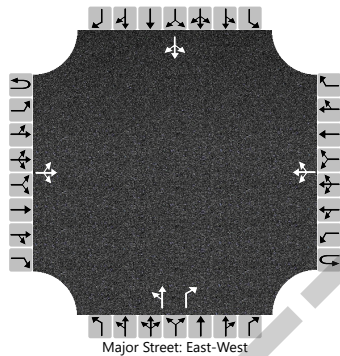
Intersection Summary

HCM 6th Ctrl Delay	25.3
HCM 6th LOS	C

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Antibes St E		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	11/8/22			East/West Street	Monroe St		
Analysis Year	2022			North/South Street	Antibes St E - Cambronne		
Time Analyzed	PM Base			Peak Hour Factor	0.90		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	1	1		0	1	0	
Configuration			LTR				LTR			LT		R			LTR	
Volume (veh/h)		8	574	20		14	233	6		15	4	12		9	10	4
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized										No						
Median Type Storage																Undivided

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

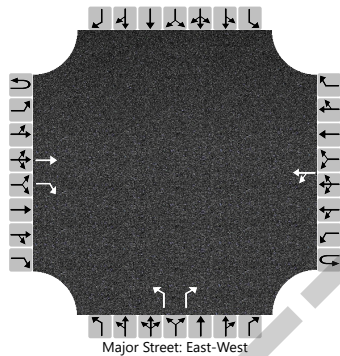
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		9				16				21		13				26	
Capacity, c (veh/h)		1293				923				223		468				263	
v/c Ratio		0.01				0.02				0.09		0.03				0.10	
95% Queue Length, Q ₉₅ (veh)		0.0				0.1				0.3		0.1				0.3	
Control Delay (s/veh)		7.8				9.0				22.8		12.9				20.2	
Level of Service (LOS)		A				A				C		B				C	
Approach Delay (s/veh)		0.2				0.7				19.0				20.2			
Approach LOS										C				C			

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Antibes W		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	11/8/22			East/West Street	Monroe St		
Analysis Year	2022			North/South Street	Antibes St W		
Time Analyzed	PM Base			Peak Hour Factor	0.89		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12		
Priority																	
Number of Lanes	0	0	1	1	0	0	1	0	1	0	1		0	0	0		
Configuration			T	R			LT				L		R				
Volume (veh/h)			582	31			4	249			12		16				
Percent Heavy Vehicles (%)							3				3		3				
Proportion Time Blocked																	
Percent Grade (%)										0							
Right Turn Channelized		No								No							
Median Type Storage					Left Only								1				

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

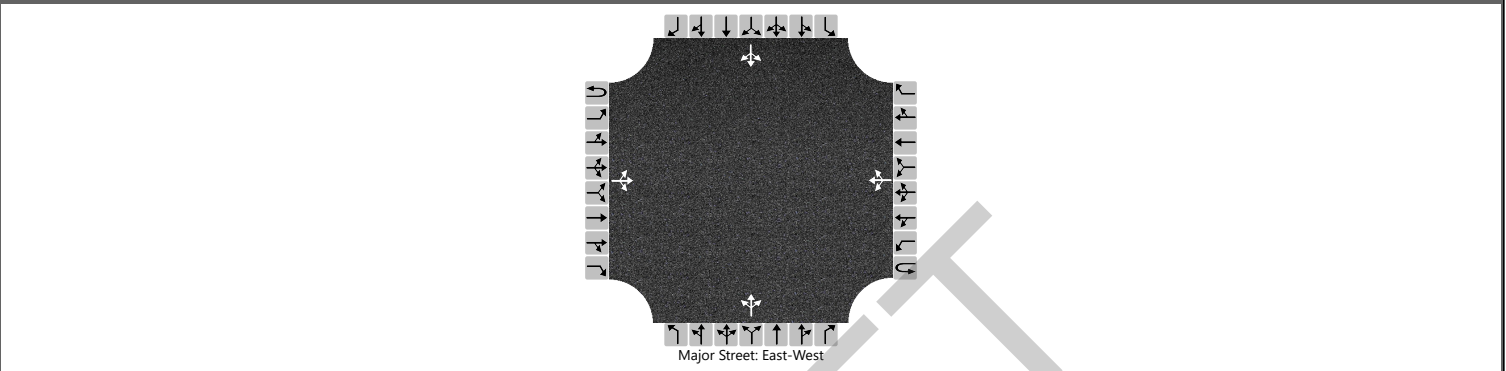
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					4					13		18				
Capacity, c (veh/h)					901					403		465				
v/c Ratio					0.00					0.03		0.04				
95% Queue Length, Q ₉₅ (veh)					0.0					0.1		0.1				
Control Delay (s/veh)					9.0					14.3		13.1				
Level of Service (LOS)					A					B		B				
Approach Delay (s/veh)					0.2						13.6					
Approach LOS											B					

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Massena St		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	11/8/22			East/West Street	Monroe St		
Analysis Year	2022			North/South Street	Massena St		
Time Analyzed	PM Base			Peak Hour Factor	0.93		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	1	0		0	1	0	
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		12	559	9		3	239	12		5	1	8		20	1	18
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2			7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23			7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3			3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33			3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		13				3				15						42
Capacity, c (veh/h)		1288				963				346						361
v/c Ratio		0.01				0.00				0.04						0.12
95% Queue Length, Q ₉₅ (veh)		0.0				0.0				0.1						0.4
Control Delay (s/veh)		7.8				8.7				15.9						16.3
Level of Service (LOS)		A				A				C						C
Approach Delay (s/veh)		0.3				0.1				15.9				16.3		
Approach LOS										C				C		

Sucette Harbor TIA Appendix

2045 No Build Analysis

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URBAN SYSTEMS inc.

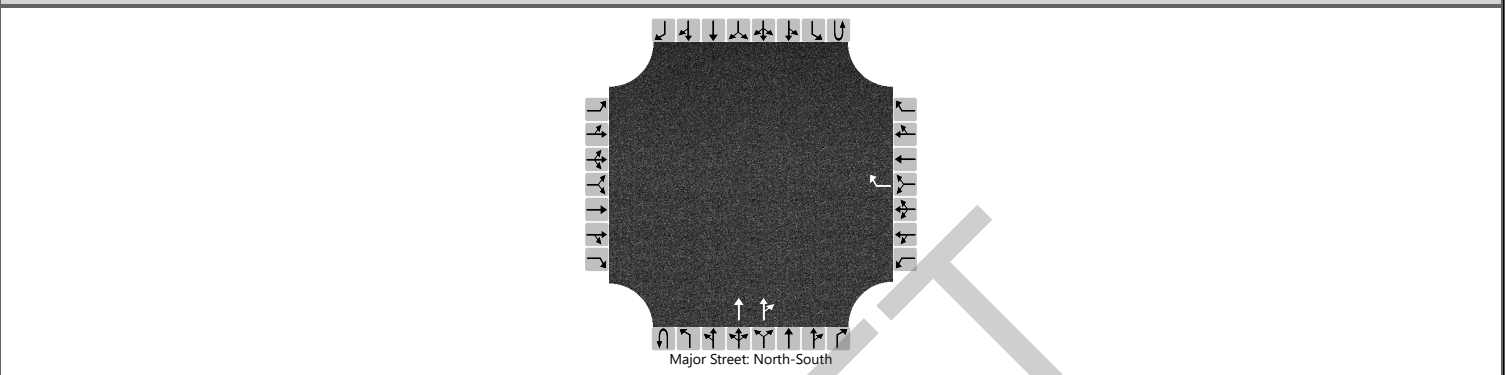


- HV % defaults were used: 2% for Synchro and 3% for HCS
- Intersection PHFs were calculated for the entire intersection and used in the analysis.

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MAC	Intersection	E Causeway at Mariners
Agency/Co.	USI	Jurisdiction	St Tammany
Date Performed	10/20/2022	East/West Street	Mariners Blvd
Analysis Year	2045	North/South Street	E Causeway Approach
Time Analyzed	AM No Build	Peak Hour Factor	0.77
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	22-068		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1		0	2	0		0	0	0
Configuration								R			T	TR				
Volume (veh/h)								34			227	0				
Percent Heavy Vehicles (%)								3								
Proportion Time Blocked																
Percent Grade (%)								0								
Right Turn Channelized								No								
Median Type Storage								Undivided								

Critical and Follow-up Headways

Base Critical Headway (sec)								6.9								
Critical Headway (sec)								6.96								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.33								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								44								
Capacity, c (veh/h)								870								
v/c Ratio								0.05								
95% Queue Length, Q ₉₅ (veh)								0.2								
Control Delay (s/veh)								9.4								
Level of Service (LOS)								A								
Approach Delay (s/veh)								9.4								
Approach LOS								A								

Queues

3: E Causeway Approach & Monroe St

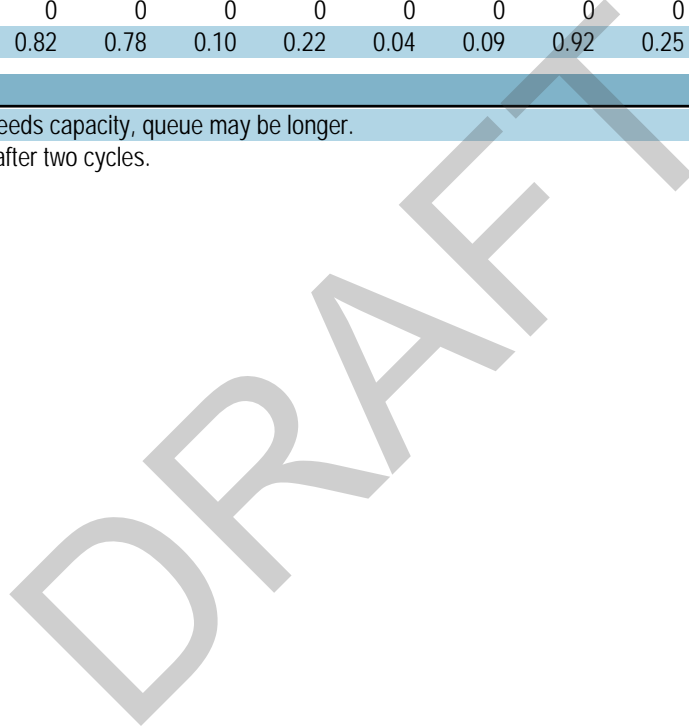
11/10/2022



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	638	730	24	247	21	29	1024	248
v/c Ratio	0.86	0.87	0.24	0.30	0.05	0.12	0.92	0.25
Control Delay	55.5	52.9	58.4	41.1	0.2	40.6	51.4	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.5	52.9	58.4	41.1	0.2	40.6	51.4	1.8
Queue Length 50th (ft)	247	275	18	93	0	18	405	0
Queue Length 95th (ft)	#324	333	44	124	0	43	#515	22
Internal Link Dist (ft)	220	346		227			155	
Turn Bay Length (ft)			130			130		
Base Capacity (vph)	777	935	229	1114	588	317	1114	998
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.78	0.10	0.22	0.04	0.09	0.92	0.25





















Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



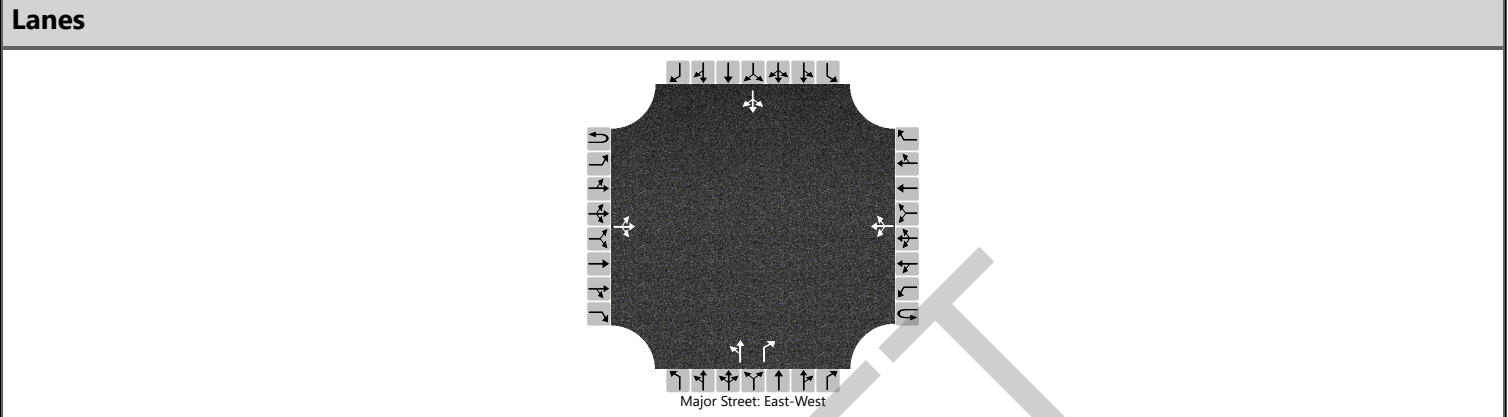
HCM 6th Signalized Intersection Summary 3: E Causeway Approach & Monroe St

11/10/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	401	4	134	452	34	20	210	18	25	870	211
Future Volume (veh/h)	137	401	4	134	452	34	20	210	18	25	870	211
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	161	472	5	158	532	40	24	247	21	29	1024	248
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	179	558	6	175	623	49	43	410	183	402	1126	822
Arrive On Green	0.20	0.20	0.20	0.23	0.23	0.23	0.02	0.12	0.12	0.23	0.32	0.32
Sat Flow, veh/h	888	2772	30	758	2697	211	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	331	0	307	382	0	348	24	247	21	29	1024	248
Grp Sat Flow(s),veh/h/ln	1826	0	1865	1832	0	1832	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	18.7	0.0	16.7	21.5	0.0	19.1	1.4	7.0	1.3	1.4	29.3	9.5
Cycle Q Clear(g_c), s	18.7	0.0	16.7	21.5	0.0	19.1	1.4	7.0	1.3	1.4	29.3	9.5
Prop In Lane	0.49		0.02	0.41		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	368	0	376	424	0	424	43	410	183	402	1126	822
V/C Ratio(X)	0.90	0.00	0.82	0.90	0.00	0.82	0.56	0.60	0.11	0.07	0.91	0.30
Avail Cap(c_a), veh/h	414	0	422	502	0	502	235	1140	509	402	1140	828
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.3	0.0	40.4	39.6	0.0	38.6	51.2	44.6	42.0	32.3	34.7	14.6
Incr Delay (d2), s/veh	19.5	0.0	9.5	16.1	0.0	7.7	4.3	3.0	0.6	0.0	11.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	0.0	8.6	11.4	0.0	9.4	0.7	3.2	0.5	0.6	14.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.7	0.0	50.0	55.7	0.0	46.4	55.4	47.6	42.6	32.3	45.9	15.0
LnGrp LOS	E	A	D	E	A	D	E	D	D	C	D	B
Approach Vol, veh/h		638			730			292			1301	
Approach Delay, s/veh		55.6			51.3			47.9			39.7	
Approach LOS		E			D			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	29.9	18.2		27.3	8.5	39.6		30.5				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	14.0	34.0		24.0	14.0	34.0		29.0				
Max Q Clear Time (g_c+I1), s	3.4	9.0		20.7	3.4	31.3		23.5				
Green Ext Time (p_c), s	0.0	3.2		0.6	0.0	2.3		1.0				
Intersection Summary												
HCM 6th Ctrl Delay				46.8								
HCM 6th LOS				D								

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Antibes St E		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	10/20/2022			East/West Street	Monroe St		
Analysis Year	2045			North/South Street	Antibes St E - Cambronne		
Time Analyzed	AM No Build			Peak Hour Factor	0.77		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12		
Priority																	
Number of Lanes	0	0	1	0	0	0	1	0	0	1	1		0	1	0		
Configuration			LTR				LTR			LT		R			LTR		
Volume (veh/h)		10	397	10		17	582	24		21	28	18		4	7	4	
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3	
Proportion Time Blocked																	
Percent Grade (%)										0				0			
Right Turn Channelized										No							
Median Type Storage					Undivided												

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

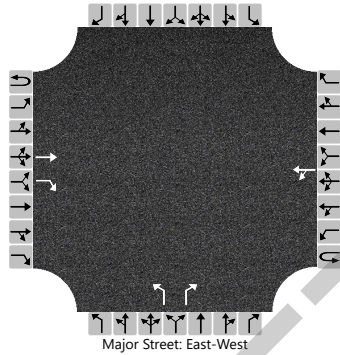
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		13				22				64		23				19	
Capacity, c (veh/h)		828				1033				123		553				139	
v/c Ratio		0.02				0.02				0.52		0.04				0.14	
95% Queue Length, Q ₉₅ (veh)		0.0				0.1				2.4		0.1				0.5	
Control Delay (s/veh)		9.4				8.6				62.0		11.8				35.0	
Level of Service (LOS)		A				A				F		B				E	
Approach Delay (s/veh)		0.4				0.6				48.5				35.0			
Approach LOS		E				E				E				E			

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Antibes W		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	10/20/2022			East/West Street	Monroe St		
Analysis Year	2045			North/South Street	Antibes St W		
Time Analyzed	AM No Build			Peak Hour Factor	0.81		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12		
Priority																	
Number of Lanes	0	0	1	1	0	0	1	0	1	0	1		0	0	0		
Configuration			T	R			LT				L		R				
Volume (veh/h)			410	35			8	614			13		1				
Percent Heavy Vehicles (%)							3				3		3				
Proportion Time Blocked																	
Percent Grade (%)										0							
Right Turn Channelized		No								No							
Median Type Storage					Left Only								1				

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

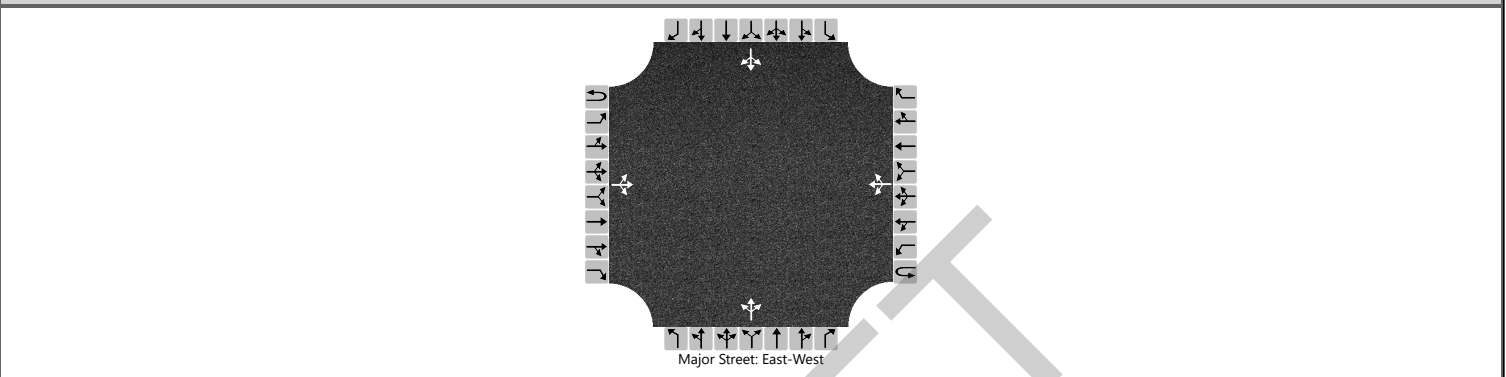
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						10				16		1				
Capacity, c (veh/h)						1015				312		564				
v/c Ratio						0.01				0.05		0.00				
95% Queue Length, Q ₉₅ (veh)						0.0				0.2		0.0				
Control Delay (s/veh)						8.6				17.2		11.4				
Level of Service (LOS)						A				C		B				
Approach Delay (s/veh)						0.3				16.8						
Approach LOS										C						

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Massena St		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	10/20/2022			East/West Street	Monroe St		
Analysis Year	2045			North/South Street	Massena St		
Time Analyzed	AM No Build			Peak Hour Factor	0.70		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	1	0		0	1	0	
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		7	400	7		1	627	13		1	0	6		8	0	24
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

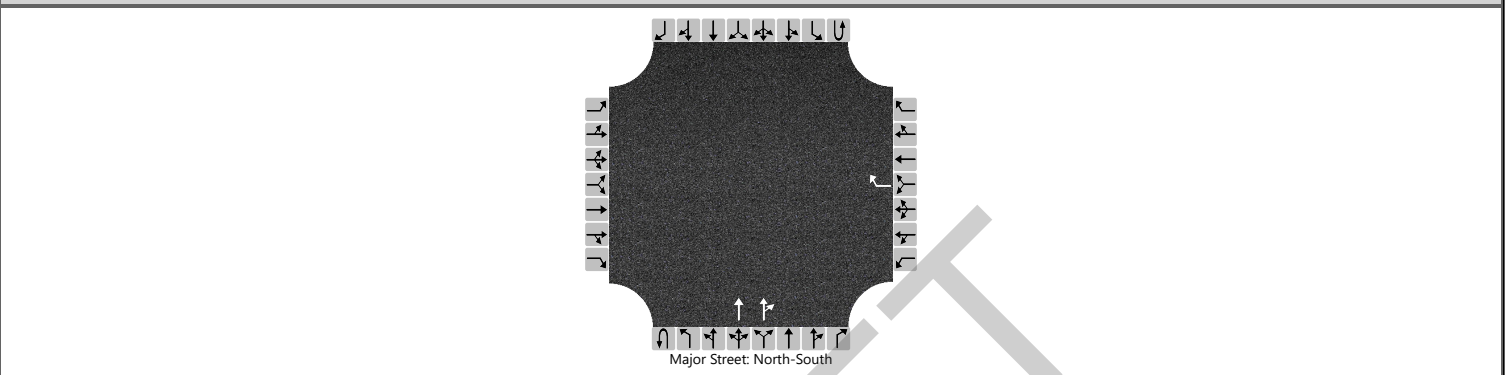
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		10				1				10				46		
Capacity, c (veh/h)		741				988				299				205		
v/c Ratio		0.01				0.00				0.03				0.22		
95% Queue Length, Q ₉₅ (veh)		0.0				0.0				0.1				0.8		
Control Delay (s/veh)		9.9				8.6				17.5				27.5		
Level of Service (LOS)		A				A				C				D		
Approach Delay (s/veh)		0.4				0.0				17.5				27.5		
Approach LOS										C				D		

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MAC	Intersection	E Causeway at Mariners
Agency/Co.	USI	Jurisdiction	St Tammany
Date Performed	10/20/2022	East/West Street	Mariners Blvd
Analysis Year	2045	North/South Street	E Causeway Approach
Time Analyzed	PM No Build	Peak Hour Factor	0.94
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	22-068		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1		0	2	0		0	0	0
Configuration								R			T	TR				
Volume (veh/h)								32			1187	11				
Percent Heavy Vehicles (%)								3								
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized							No									
Median Type Storage							Undivided									

Critical and Follow-up Headways

Base Critical Headway (sec)								6.9								
Critical Headway (sec)								6.96								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.33								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								34								
Capacity, c (veh/h)								417								
v/c Ratio								0.08								
95% Queue Length, Q ₉₅ (veh)								0.3								
Control Delay (s/veh)								14.4								
Level of Service (LOS)								B								
Approach Delay (s/veh)								14.4								
Approach LOS								B								

Queues

3: E Causeway Approach & Monroe St

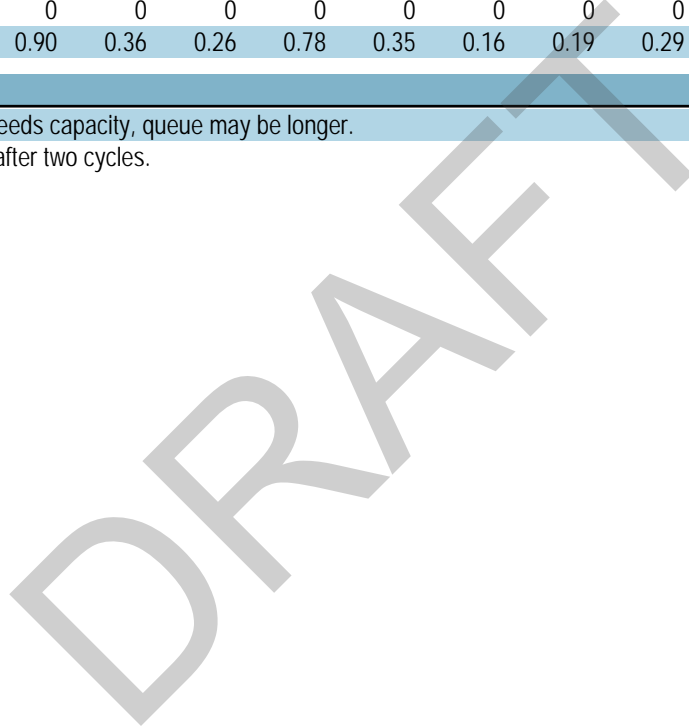
11/10/2022



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	765	374	98	949	242	41	229	248
v/c Ratio	0.90	0.70	0.28	0.78	0.35	0.33	0.33	0.29
Control Delay	53.2	47.7	35.7	36.5	7.5	54.4	40.5	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.2	47.7	35.7	36.5	7.5	54.4	40.5	2.5
Queue Length 50th (ft)	265	123	51	303	14	27	75	1
Queue Length 95th (ft)	#432	179	105	#455	77	64	118	26
Internal Link Dist (ft)	220	346		227			155	
Turn Bay Length (ft)			130			130		
Base Capacity (vph)	850	1026	379	1218	683	250	1218	848
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.36	0.26	0.78	0.35	0.16	0.19	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



HCM 6th Signalized Intersection Summary

3: E Causeway Approach & Monroe St

11/10/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↗	↕↕	↗	↗	↕↕	↗
Traffic Volume (veh/h)	159	575	0	35	293	32	94	911	232	39	220	238
Future Volume (veh/h)	159	575	0	35	293	32	94	911	232	39	220	238
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	166	599	0	36	305	33	98	949	242	41	229	248
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	181	692	0	45	395	45	348	1198	534	62	627	663
Arrive On Green	0.24	0.24	0.00	0.13	0.13	0.13	0.20	0.34	0.34	0.03	0.18	0.18
Sat Flow, veh/h	748	2955	0	338	2987	338	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	407	358	0	197	0	177	98	949	242	41	229	248
Grp Sat Flow(s),veh/h/ln	1833	1777	0	1853	0	1810	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	20.4	18.1	0.0	9.8	0.0	8.9	4.4	22.8	11.3	2.1	5.4	10.2
Cycle Q Clear(g_c), s	20.4	18.1	0.0	9.8	0.0	8.9	4.4	22.8	11.3	2.1	5.4	10.2
Prop In Lane	0.41		0.00	0.18		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	443	429	0	245	0	239	348	1198	534	62	627	663
V/C Ratio(X)	0.92	0.83	0.00	0.80	0.00	0.74	0.28	0.79	0.45	0.66	0.37	0.37
Avail Cap(c_a), veh/h	465	451	0	569	0	555	348	1278	570	264	1278	953
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.9	34.0	0.0	39.8	0.0	39.4	32.4	28.3	24.5	45.1	34.3	19.0
Incr Delay (d2), s/veh	21.9	11.4	0.0	2.4	0.0	1.7	0.2	4.0	1.3	4.4	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.6	9.0	0.0	4.6	0.0	4.0	1.9	9.9	4.3	1.0	2.3	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.8	45.4	0.0	42.2	0.0	41.1	32.5	32.3	25.8	49.4	35.0	19.7
LnGrp LOS	E	D	A	D	A	D	C	C	C	D	D	B
Approach Vol, veh/h		765			374			1289				518
Approach Delay, s/veh		51.5			41.7			31.1				28.8
Approach LOS		D			D			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	37.9		28.8	24.5	22.7		18.5				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	14.0	34.0		24.0	14.0	34.0		29.0				
Max Q Clear Time (g_c+I1), s	4.1	24.8		22.4	6.4	12.2		11.8				
Green Ext Time (p_c), s	0.0	7.0		0.4	0.1	4.5		0.7				

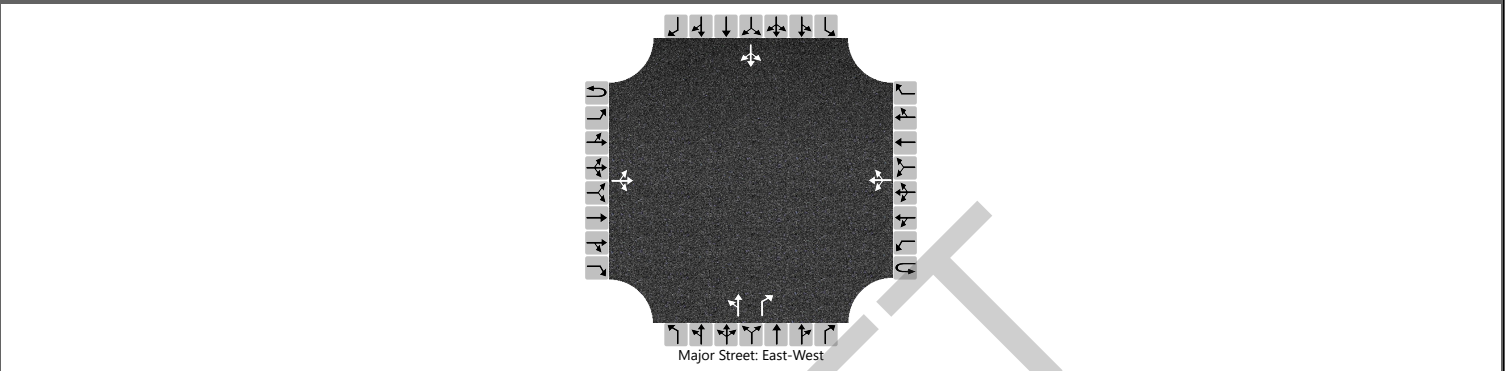
Intersection Summary

HCM 6th Ctrl Delay	37.3
HCM 6th LOS	D

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Antibes St E		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	10/20/2022			East/West Street	Monroe St		
Analysis Year	2045			North/South Street	Antibes St E - Cambronne		
Time Analyzed	PM No Build			Peak Hour Factor	0.90		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	1	1		0	1	0	
Configuration			LTR				LTR			LT		R			LTR	
Volume (veh/h)		11	773	27		18	314	8		20	6	15		13	14	6
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized										No						
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

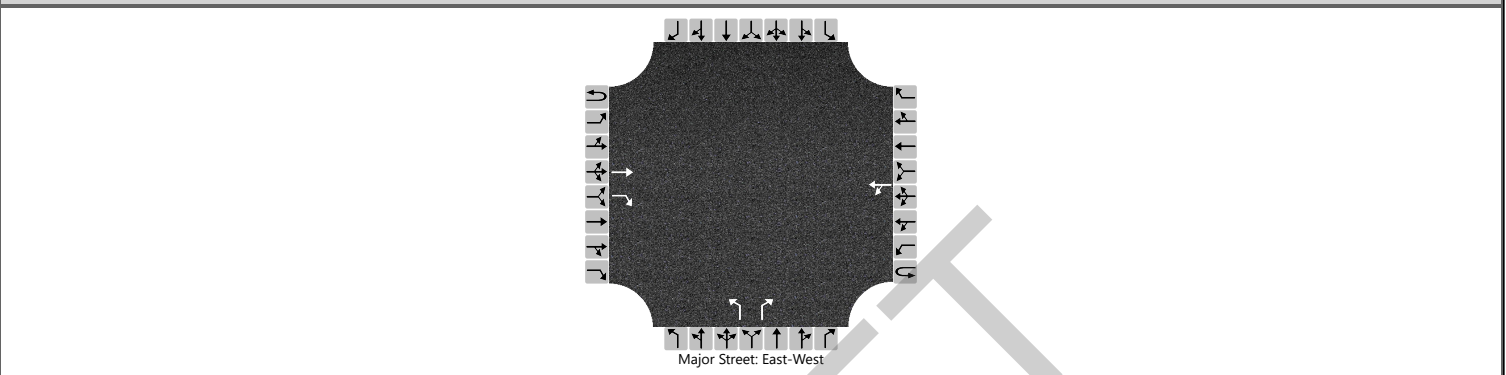
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		12				20				29		17				37	
Capacity, c (veh/h)		1195				758				126		348				158	
v/c Ratio		0.01				0.03				0.23		0.05				0.23	
95% Queue Length, Q ₉₅ (veh)		0.0				0.1				0.8		0.2				0.9	
Control Delay (s/veh)		8.0				9.9				41.8		15.9				34.6	
Level of Service (LOS)		A				A				E		C				D	
Approach Delay (s/veh)		0.3				0.8				32.3				34.6			
Approach LOS										D				D			

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Antibes W		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	10/20/2022			East/West Street	Monroe St		
Analysis Year	2045			North/South Street	Antibes St W		
Time Analyzed	PM No Build			Peak Hour Factor	0.89		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12		
Priority																	
Number of Lanes	0	0	1	1	0	0	1	0	1	0	1		0	0	0		
Configuration			T	R			LT				L		R				
Volume (veh/h)			784	42			6	335			15		21				
Percent Heavy Vehicles (%)							3				3		3				
Proportion Time Blocked																	
Percent Grade (%)										0							
Right Turn Channelized		No								No							
Median Type Storage					Left Only								1				

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

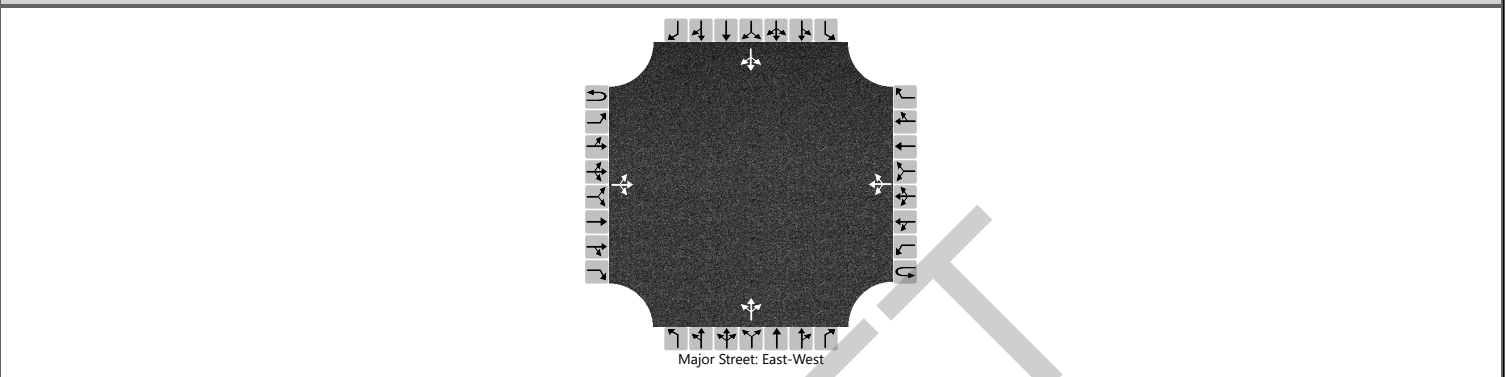
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						7				17		24				
Capacity, c (veh/h)						733				306		344				
v/c Ratio						0.01				0.06		0.07				
95% Queue Length, Q ₉₅ (veh)						0.0				0.2		0.2				
Control Delay (s/veh)						10.0				17.5		16.2				
Level of Service (LOS)						A				C		C				
Approach Delay (s/veh)						0.3				16.7						
Approach LOS										C						

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Massena St		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	10/20/2022			East/West Street	Monroe St		
Analysis Year	2045			North/South Street	Massena St		
Time Analyzed	PM No Build			Peak Hour Factor	0.93		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	1	0		0	1	0	
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		15	753	13		4	323	15		7	1	11		27	1	24
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2			7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23			7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3			3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33			3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		16				4				20						56
Capacity, c (veh/h)		1190				802				227						232
v/c Ratio		0.01				0.01				0.09						0.24
95% Queue Length, Q ₉₅ (veh)		0.0				0.0				0.3						0.9
Control Delay (s/veh)		8.1				9.5				22.4						25.4
Level of Service (LOS)		A				A				C						D
Approach Delay (s/veh)		0.4				0.2				22.4				25.4		
Approach LOS										C				D		

Sucette Harbor TIA Appendix

2045 No Build Turn Lane Warrants

DRAFT

URBAN SYSTEMS inc.



Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

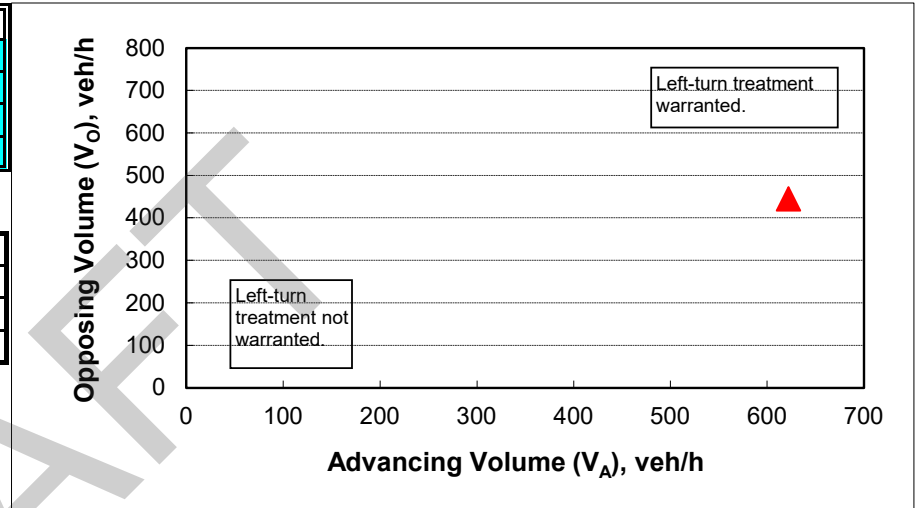
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	622
Opposing volume (V_O), veh/h:	445

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1044
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

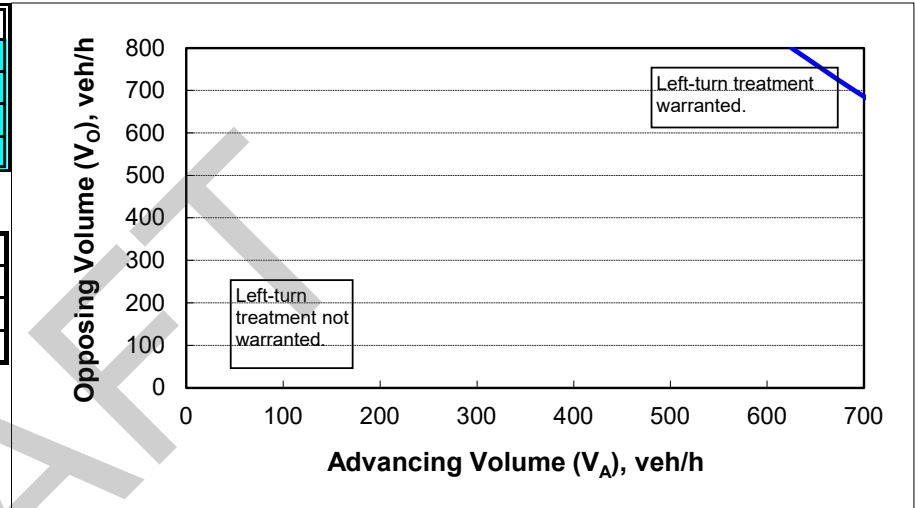
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	341
Opposing volume (V_O), veh/h:	826

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	609
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

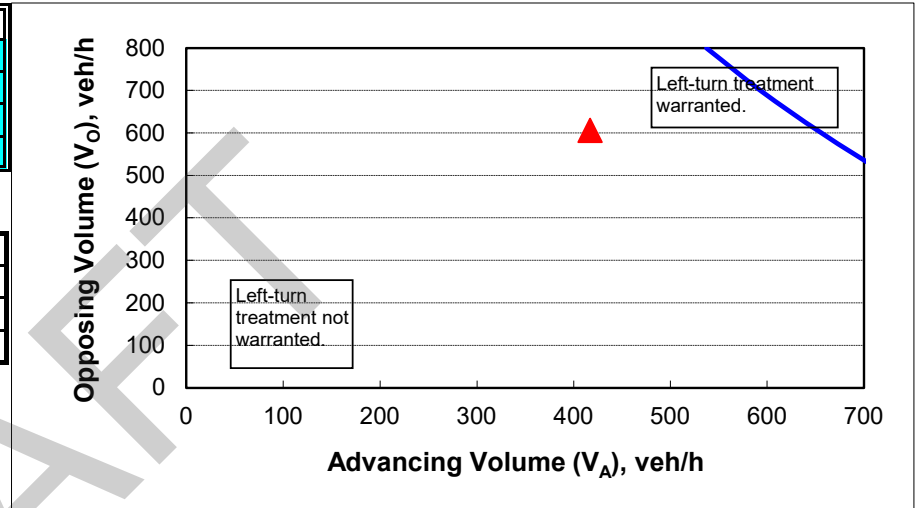
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	417
Opposing volume (V_O), veh/h:	606

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	652
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

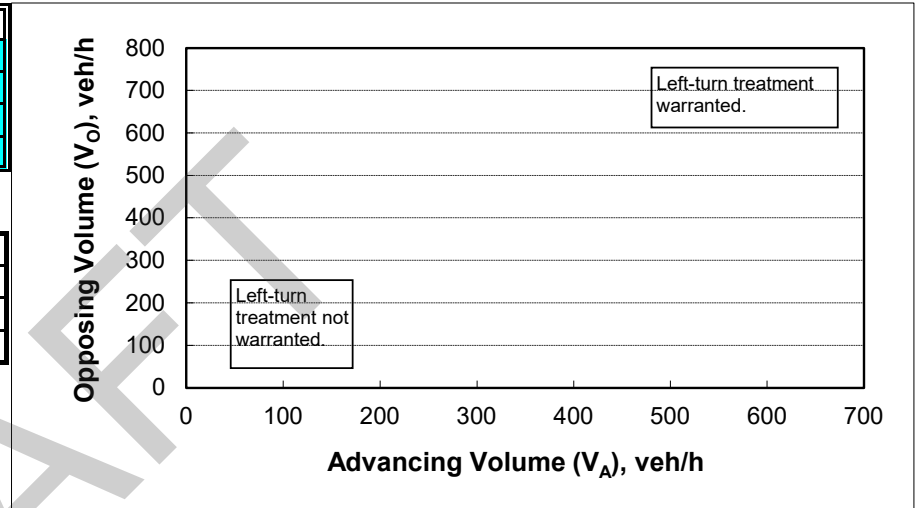
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	811
Opposing volume (V_O), veh/h:	322

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1160
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

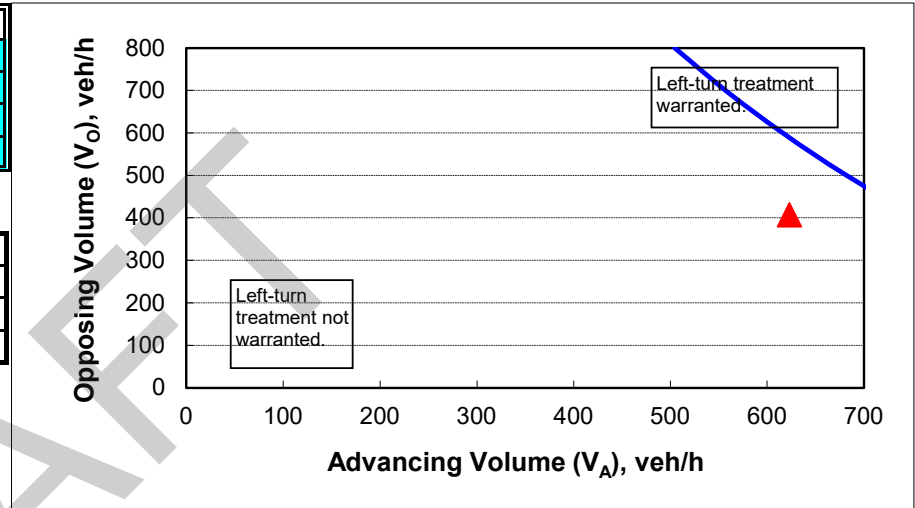
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	3%
Advancing volume (V_A), veh/h:	623
Opposing volume (V_O), veh/h:	407

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	752
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

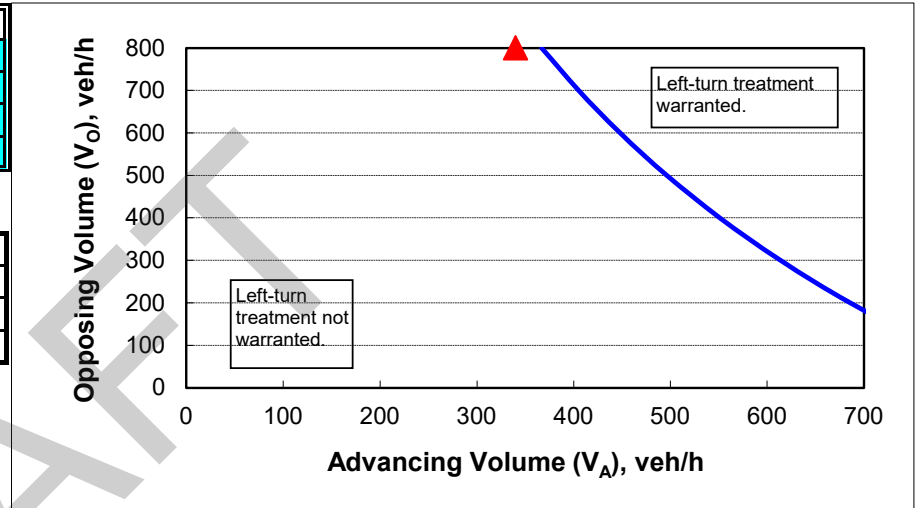
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	5%
Advancing volume (V_A), veh/h:	340
Opposing volume (V_O), veh/h:	800

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	367
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

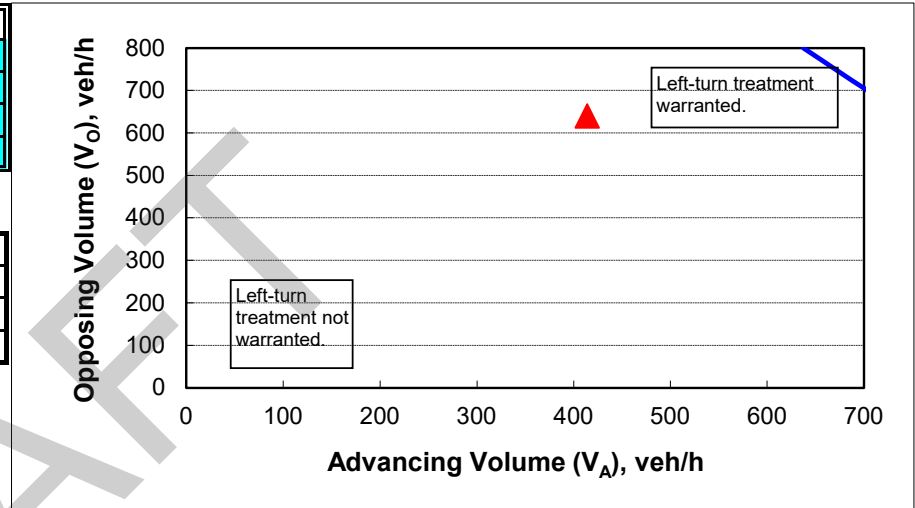
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	414
Opposing volume (V_O), veh/h:	640

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	747
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

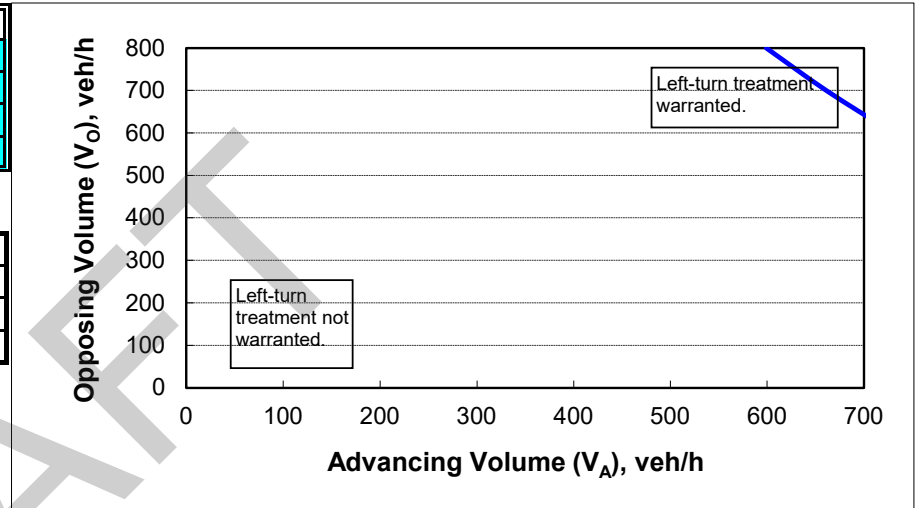
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	781
Opposing volume (V_O), veh/h:	338

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	960
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

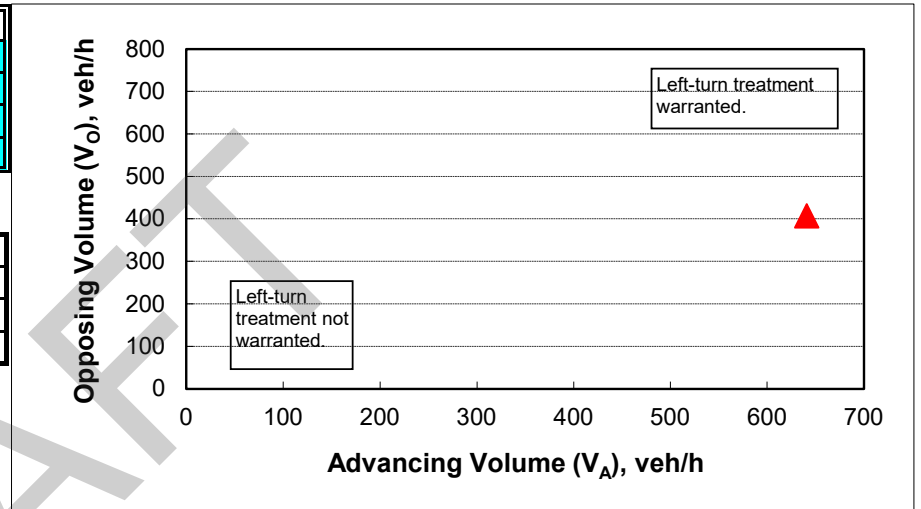
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	641
Opposing volume (V_O), veh/h:	407

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	3103
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

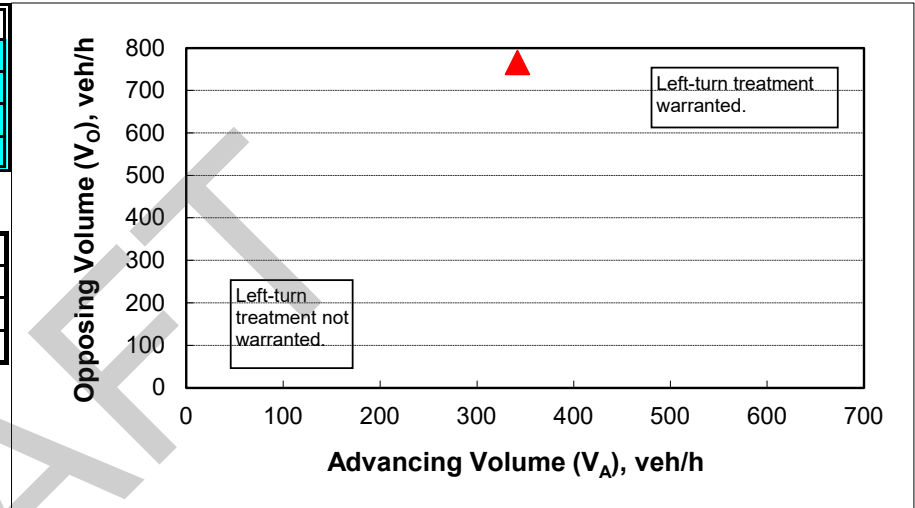
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	342
Opposing volume (V_O), veh/h:	766

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	791
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

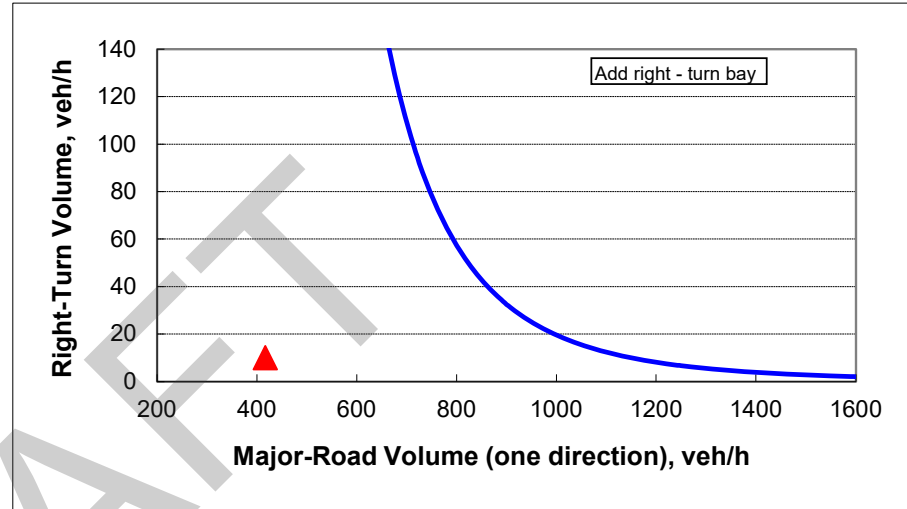
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	417
Right-turn volume, veh/h:	10

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	1323
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



DRAFT

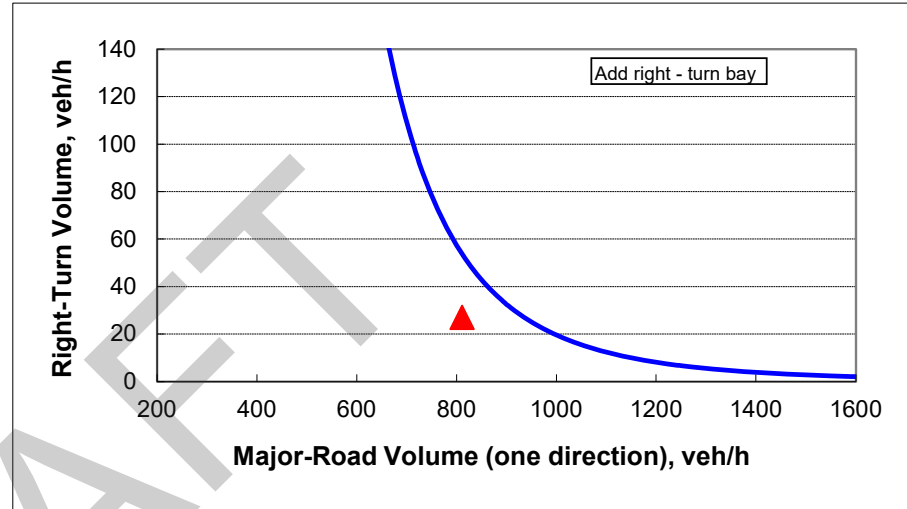
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	811
Right-turn volume, veh/h:	27

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	54
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



DRAFT

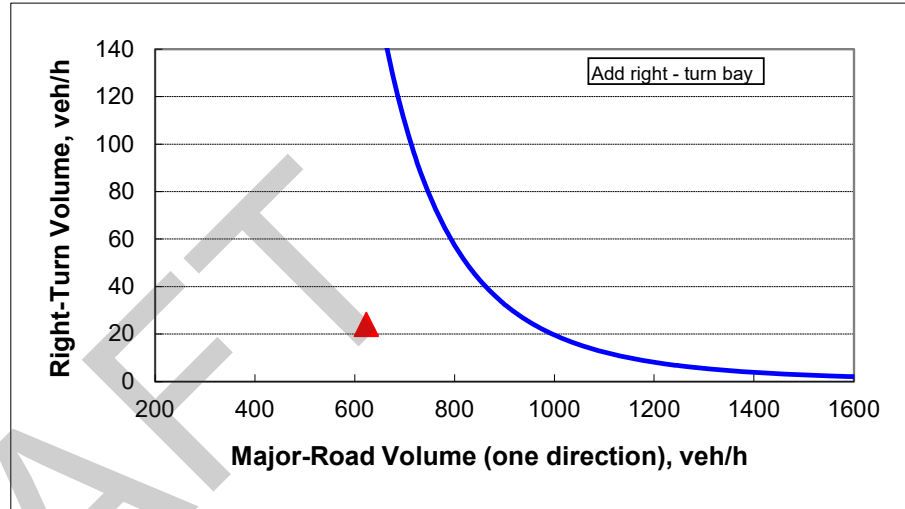
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	623
Right-turn volume, veh/h:	24

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	191
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



DRAFT

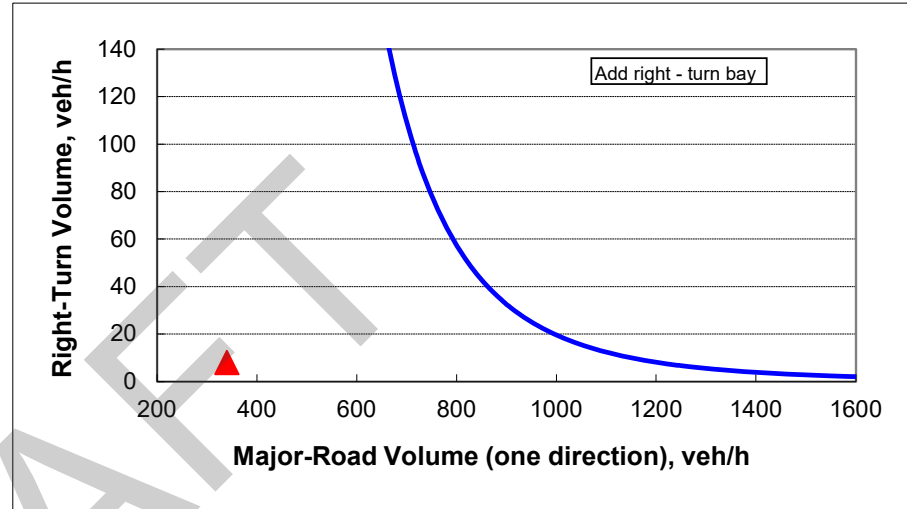
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:		2-lane roadway
Variable	Value	
Major-road speed, mph:	30	
Major-road volume (one direction), veh/h:	340	
Right-turn volume, veh/h:	8	

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	3538
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



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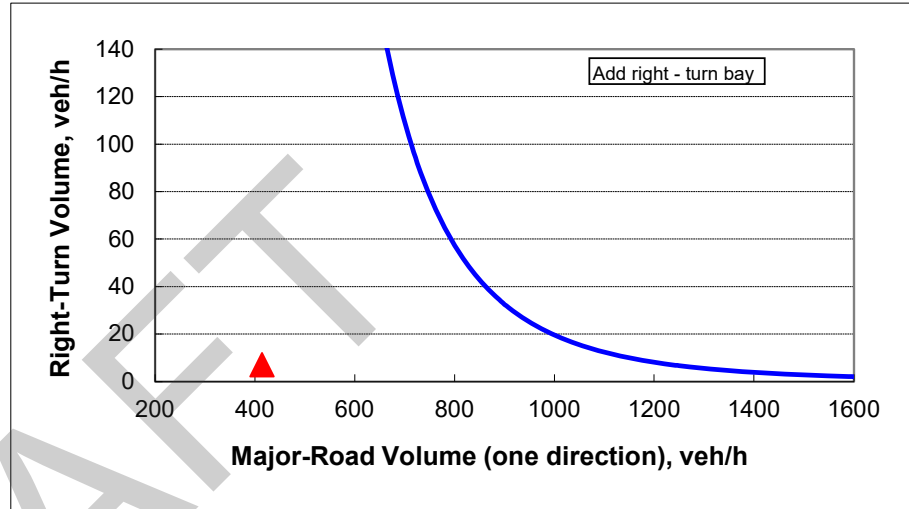
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:		2-lane roadway
Variable	Value	
Major-road speed, mph:	30	
Major-road volume (one direction), veh/h:	414	
Right-turn volume, veh/h:	7	

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	1370
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



DRAFT

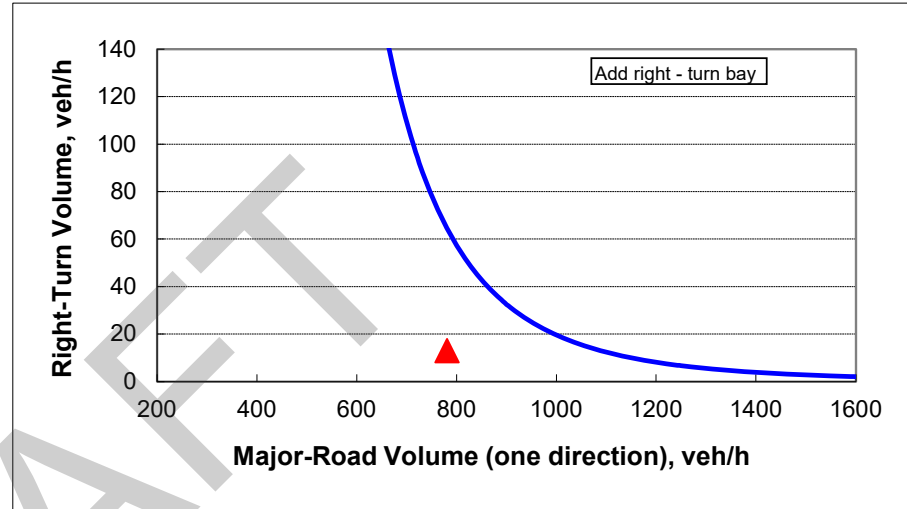
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:		2-lane roadway
Variable	Value	
Major-road speed, mph:	30	
Major-road volume (one direction), veh/h:	781	
Right-turn volume, veh/h:	13	

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	64
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



DRAFT

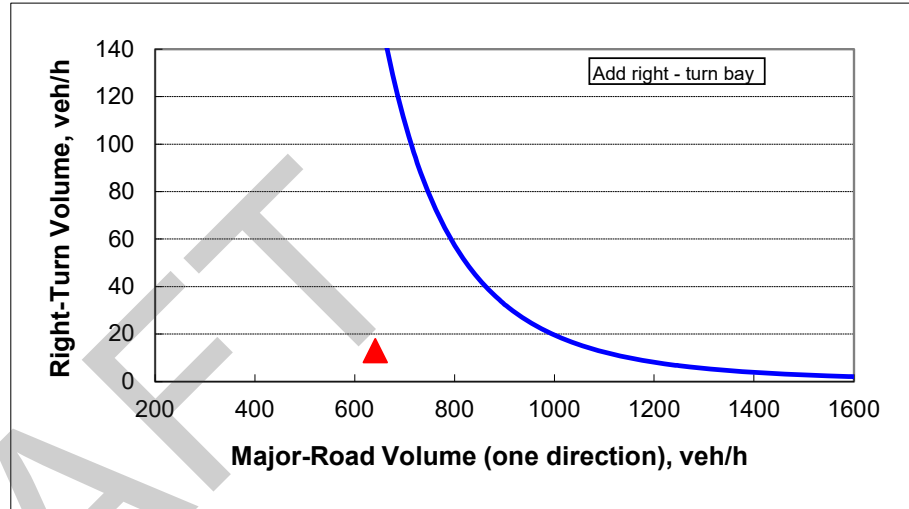
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:		2-lane roadway
Variable	Value	
Major-road speed, mph:	30	
Major-road volume (one direction), veh/h:	641	
Right-turn volume, veh/h:	13	

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	167
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



DRAFT

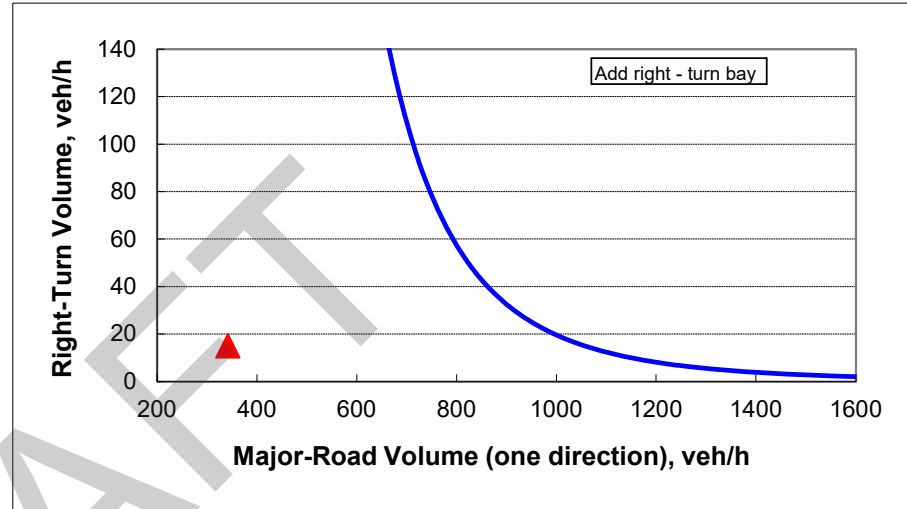
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	342
Right-turn volume, veh/h:	15

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	3439
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



DRAFT

Sucette Harbor TIA Appendix

2045 No Build Analysis with Improvements Analysis

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URBAN SYSTEMS inc.



- HV % defaults were used: 2% for Synchro and 3% for HCS
- Intersection PHFs were calculated for the entire intersection and used in the analysis.

Queues

3: E Causeway Approach & Monroe St

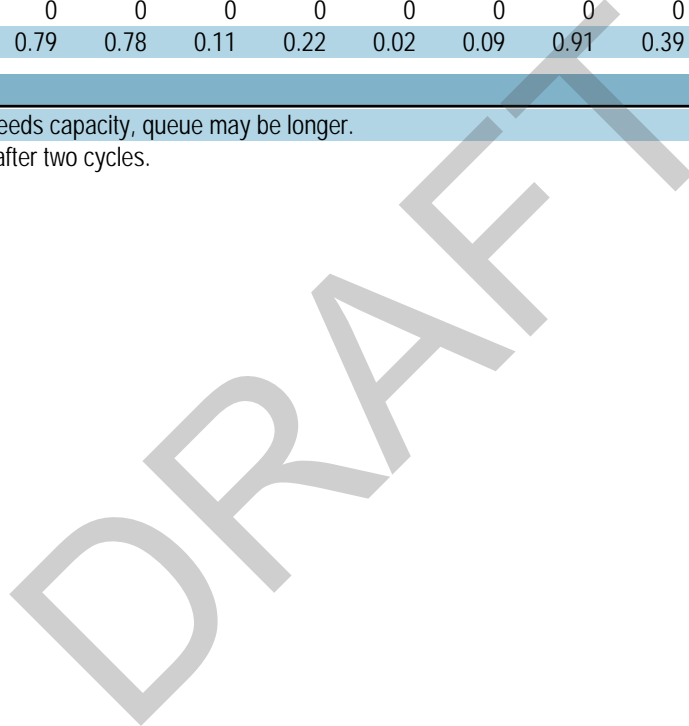
11/10/2022



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	638	730	24	247	21	29	1024	248
v/c Ratio	0.87	0.88	0.24	0.30	0.02	0.12	0.91	0.39
Control Delay	56.1	53.6	59.1	41.5	0.1	41.0	50.5	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.1	53.6	59.1	41.5	0.1	41.0	50.5	10.0
Queue Length 50th (ft)	249	280	18	94	0	18	411	27
Queue Length 95th (ft)	#311	338	44	125	0	43	#520	82
Internal Link Dist (ft)	220	346		227			155	
Turn Bay Length (ft)			130			130		
Base Capacity (vph)	805	930	212	1125	866	310	1125	639
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.78	0.11	0.22	0.02	0.09	0.91	0.39

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



HCM 6th Signalized Intersection Summary
 3: E Causeway Approach & Monroe St

11/10/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↔	↔↔	↔	↔	↔↔	↔
Traffic Volume (veh/h)	137	401	4	134	452	34	20	210	18	25	870	211
Future Volume (veh/h)	137	401	4	134	452	34	20	210	18	25	870	211
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	161	472	5	158	532	40	24	247	21	29	1024	248
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	179	560	6	175	623	49	42	409	548	405	1132	505
Arrive On Green	0.20	0.20	0.20	0.23	0.23	0.23	0.02	0.12	0.12	0.23	0.32	0.32
Sat Flow, veh/h	888	2772	30	758	2697	211	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	331	0	307	382	0	348	24	247	21	29	1024	248
Grp Sat Flow(s),veh/h/ln	1826	0	1865	1832	0	1832	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	18.9	0.0	16.8	21.7	0.0	19.2	1.4	7.1	0.9	1.4	29.5	13.5
Cycle Q Clear(g_c), s	18.9	0.0	16.8	21.7	0.0	19.2	1.4	7.1	0.9	1.4	29.5	13.5
Prop In Lane	0.49		0.02	0.41		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	369	0	377	423	0	423	42	409	548	405	1132	505
V/C Ratio(X)	0.90	0.00	0.81	0.90	0.00	0.82	0.57	0.60	0.04	0.07	0.90	0.49
Avail Cap(c_a), veh/h	427	0	436	498	0	498	217	1148	878	405	1148	512
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.5	0.0	40.7	39.9	0.0	39.0	51.6	44.9	23.1	32.4	34.8	29.4
Incr Delay (d2), s/veh	17.9	0.0	8.6	16.5	0.0	8.0	4.3	3.0	0.1	0.0	10.7	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	0.0	8.5	11.6	0.0	9.5	0.7	3.2	0.5	0.6	14.0	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.5	0.0	49.3	56.5	0.0	47.0	55.9	48.0	23.2	32.5	45.5	31.0
LnGrp LOS	E	A	D	E	A	D	E	D	C	C	D	C
Approach Vol, veh/h		638			730			292			1301	
Approach Delay, s/veh		54.6			51.9			46.9			42.5	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.3	18.3		27.6	8.5	40.0		30.7				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	13.0	34.5		25.0	13.0	34.5		29.0				
Max Q Clear Time (g_c+I1), s	3.4	9.1		20.9	3.4	31.5		23.7				
Green Ext Time (p_c), s	0.0	3.2		0.7	0.0	2.5		1.0				

Intersection Summary

HCM 6th Ctrl Delay	47.8
HCM 6th LOS	D

Queues

3: E Causeway Approach & Monroe St

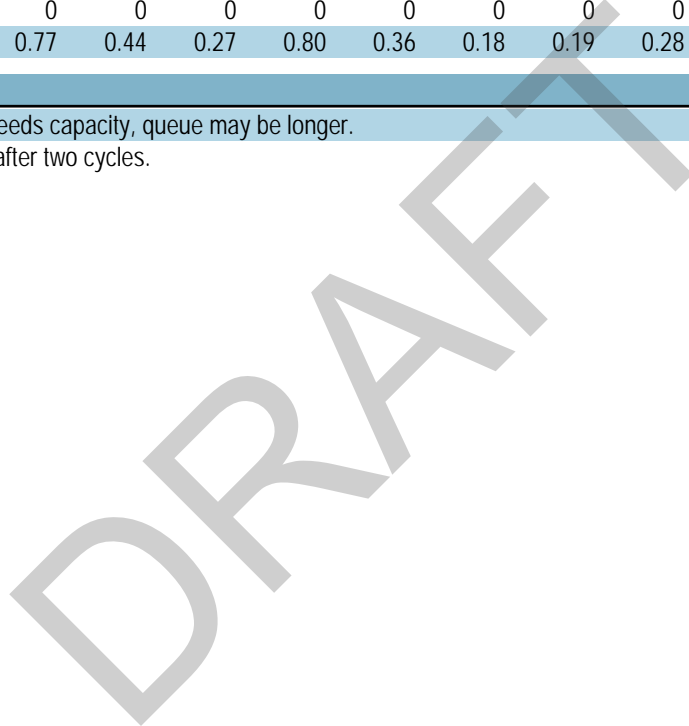
11/10/2022



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	765	374	98	949	242	41	229	248
v/c Ratio	0.84	0.71	0.30	0.80	0.36	0.34	0.33	0.29
Control Delay	46.9	50.2	38.8	39.7	8.1	57.8	43.0	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.9	50.2	38.8	39.7	8.1	57.8	43.0	3.6
Queue Length 50th (ft)	269	132	56	331	15	28	80	10
Queue Length 95th (ft)	#409	190	112	#496	82	67	125	36
Internal Link Dist (ft)	220	346		227			155	
Turn Bay Length (ft)			130			130		
Base Capacity (vph)	989	852	361	1190	672	224	1190	882
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.44	0.27	0.80	0.36	0.18	0.19	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



HCM 6th Signalized Intersection Summary
 3: E Causeway Approach & Monroe St

11/10/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↗	↕↕	↗	↗	↕↕	↗
Traffic Volume (veh/h)	159	575	0	35	293	32	94	911	232	39	220	238
Future Volume (veh/h)	159	575	0	35	293	32	94	911	232	39	220	238
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	166	599	0	36	305	33	98	949	242	41	229	248
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	185	708	0	44	393	44	350	1196	533	62	621	669
Arrive On Green	0.25	0.25	0.00	0.13	0.13	0.13	0.20	0.34	0.34	0.03	0.17	0.17
Sat Flow, veh/h	748	2955	0	338	2987	338	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	407	358	0	197	0	177	98	949	242	41	229	248
Grp Sat Flow(s),veh/h/ln	1833	1777	0	1853	0	1810	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	20.6	18.3	0.0	9.9	0.0	9.0	4.5	23.2	11.5	2.2	5.5	10.3
Cycle Q Clear(g_c), s	20.6	18.3	0.0	9.9	0.0	9.0	4.5	23.2	11.5	2.2	5.5	10.3
Prop In Lane	0.41		0.00	0.18		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	454	440	0	244	0	238	350	1196	533	62	621	669
V/C Ratio(X)	0.90	0.81	0.00	0.81	0.00	0.74	0.28	0.79	0.45	0.66	0.37	0.37
Avail Cap(c_a), veh/h	553	536	0	482	0	471	350	1276	569	241	1276	962
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.9	34.1	0.0	40.5	0.0	40.2	32.8	28.8	24.9	45.8	35.0	19.0
Incr Delay (d2), s/veh	13.6	6.5	0.0	2.5	0.0	1.7	0.2	4.0	1.3	4.5	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	8.5	0.0	4.6	0.0	4.1	1.9	10.1	4.4	1.0	2.4	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.5	40.6	0.0	43.0	0.0	41.9	33.0	32.9	26.2	50.3	35.7	19.7
LnGrp LOS	D	D	A	D	A	D	C	C	C	D	D	B
Approach Vol, veh/h		765			374			1289				518
Approach Delay, s/veh		44.8			42.5			31.6				29.2
Approach LOS		D			D			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	38.3		29.8	24.9	22.8		18.6				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	13.0	34.5		29.0	13.0	34.5		25.0				
Max Q Clear Time (g_c+I1), s	4.2	25.2		22.6	6.5	12.3		11.9				
Green Ext Time (p_c), s	0.0	7.1		1.2	0.1	4.5		0.7				

Intersection Summary

HCM 6th Ctrl Delay	36.0
HCM 6th LOS	D

Sucette Harbor TIA Appendix

Trip Generation

DRAFT

URBAN SYSTEMS inc.



Land Use: 252

Senior Adult Housing—Multifamily

Description

Senior adult housing—multifamily sites are independent living developments that are called various names including retirement communities, age-restricted housing, and active adult communities. The development has a specific age restriction for its residents, typically a minimum of 55 years of age for at least one resident of the household.

Residents in these communities are typically considered active and requiring little to no medical supervision. The percentage of retired residents varies by development. The development may include amenities such as a golf course, swimming pool, 24-hour security, transportation, and common recreational facilities. They generally lack centralized dining and on-site health facilities.

The dwelling units share both floors and walls with other units in the residential building. Senior adult housing—single-family (Land Use 251), congregate care facility (Land Use 253), assisted living (Land Use 254), and continuing care retirement community (Land Use 255) are related land uses.

Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s, the 1990s, and the 2000s in Alberta (CAN), California, Maryland, New Hampshire, New Jersey, Ontario (CAN), and Pennsylvania.

Source Numbers

237, 272, 576, 703, 734, 970, 1060

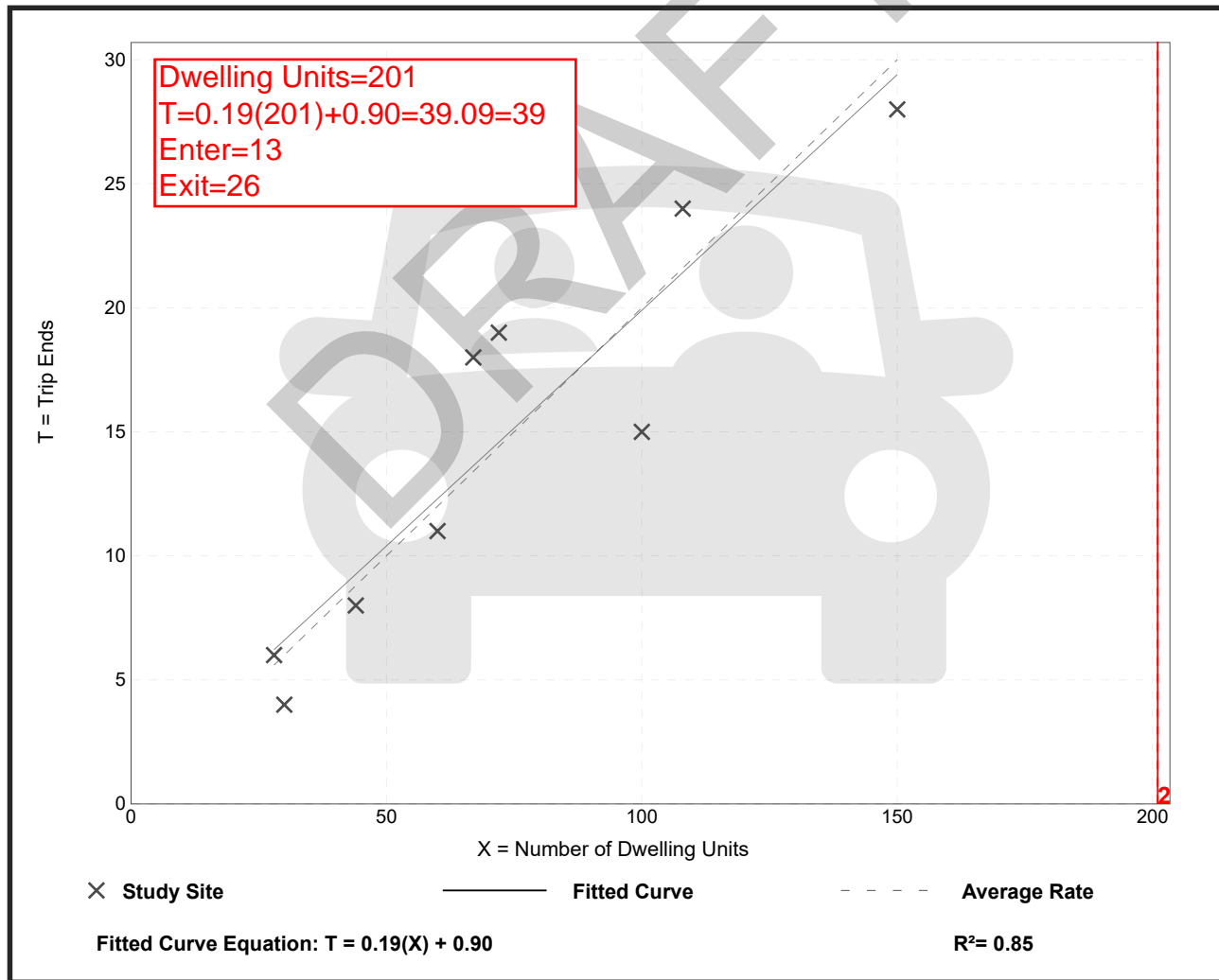
Senior Adult Housing - Multifamily (252)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 9
 Avg. Num. of Dwelling Units: 73
 Directional Distribution: 34% entering, 66% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.20	0.13 - 0.27	0.04

Data Plot and Equation



Senior Adult Housing - Multifamily (252)

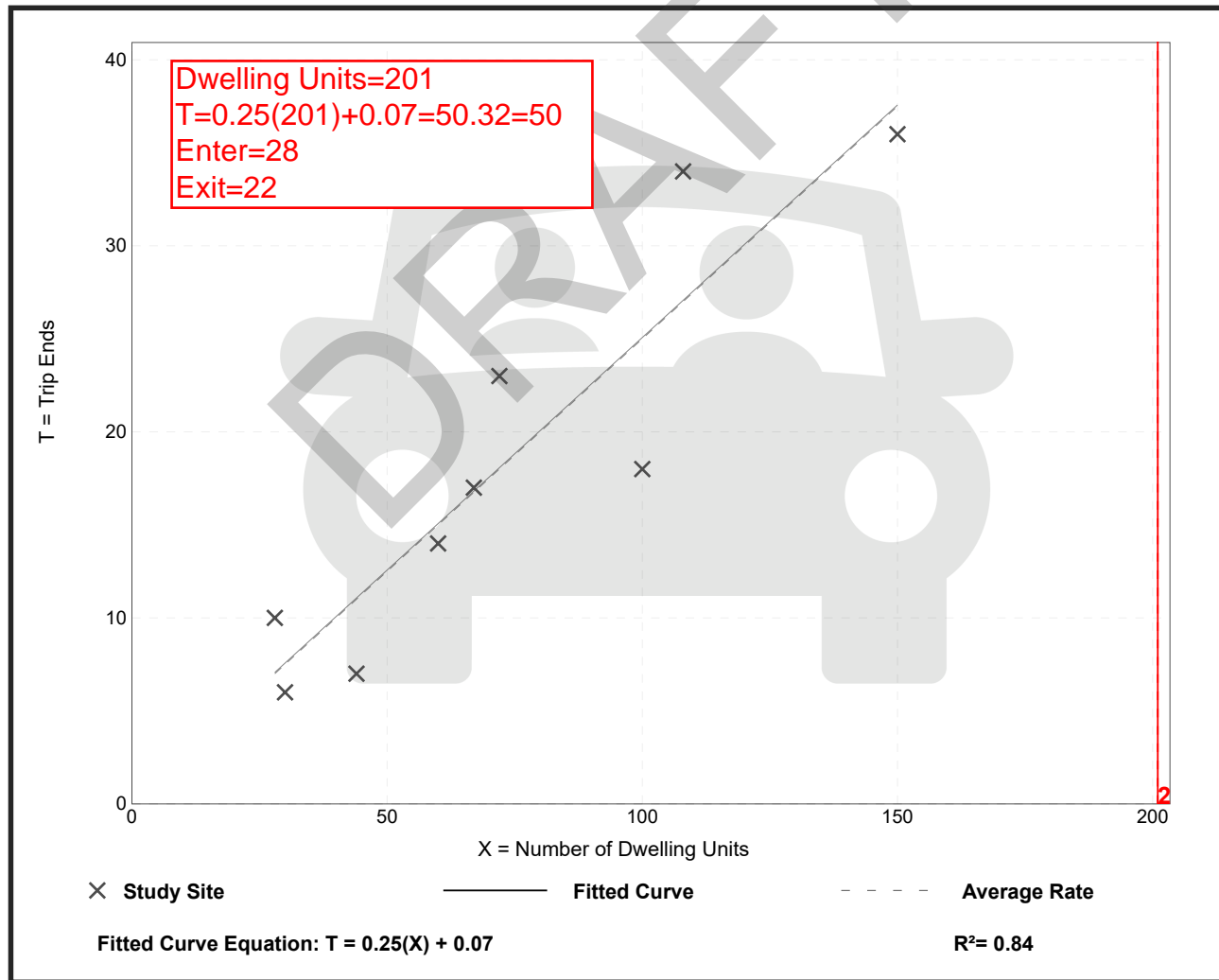
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban
 Number of Studies: 9
 Avg. Num. of Dwelling Units: 73
 Directional Distribution: 56% entering, 44% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.25	0.16 - 0.36	0.06

Data Plot and Equation



Land Use: 310

Hotel

Description

A hotel is a place of lodging that provides sleeping accommodations and supporting facilities such as a full-service restaurant, cocktail lounge, meeting rooms, banquet room, and convention facilities. A hotel typically provides a swimming pool or another recreational facility such as a fitness room. All suites hotel (Land Use 311), business hotel (Land Use 312), motel (Land Use 320), and resort hotel (Land Use 330) are related uses.

Additional Data

Twenty-five studies provided information on occupancy rates at the time the studies were conducted. The average occupancy rate for these studies was approximately 82 percent.

Some properties in this land use provide guest transportation services (e.g., airport shuttle, limousine service, golf course shuttle service) which may have an impact on the overall trip generation rates.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in California, District of Columbia, Florida, Georgia, Indiana, Minnesota, New York, Ontario (CAN), Pennsylvania, South Dakota, Texas, Vermont, Virginia, and Washington.

For all lodging uses, it is important to collect data on occupied rooms as well as total rooms in order to accurately predict trip generation characteristics for the site.

Trip generation at a hotel may be related to the presence of supporting facilities such as convention facilities, restaurants, meeting/banquet space, and retail facilities. Future data submissions should specify the presence of these amenities. Reporting the level of activity at the supporting facilities such as full, empty, partially active, number of people attending a meeting/banquet during observation may also be useful in further analysis of this land use.

Source Numbers

170, 260, 262, 277, 280, 301, 306, 357, 422, 507, 577, 728, 867, 872, 925, 951, 1009, 1021, 1026, 1046

Hotel (310)

Vehicle Trip Ends vs: Rooms

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 28

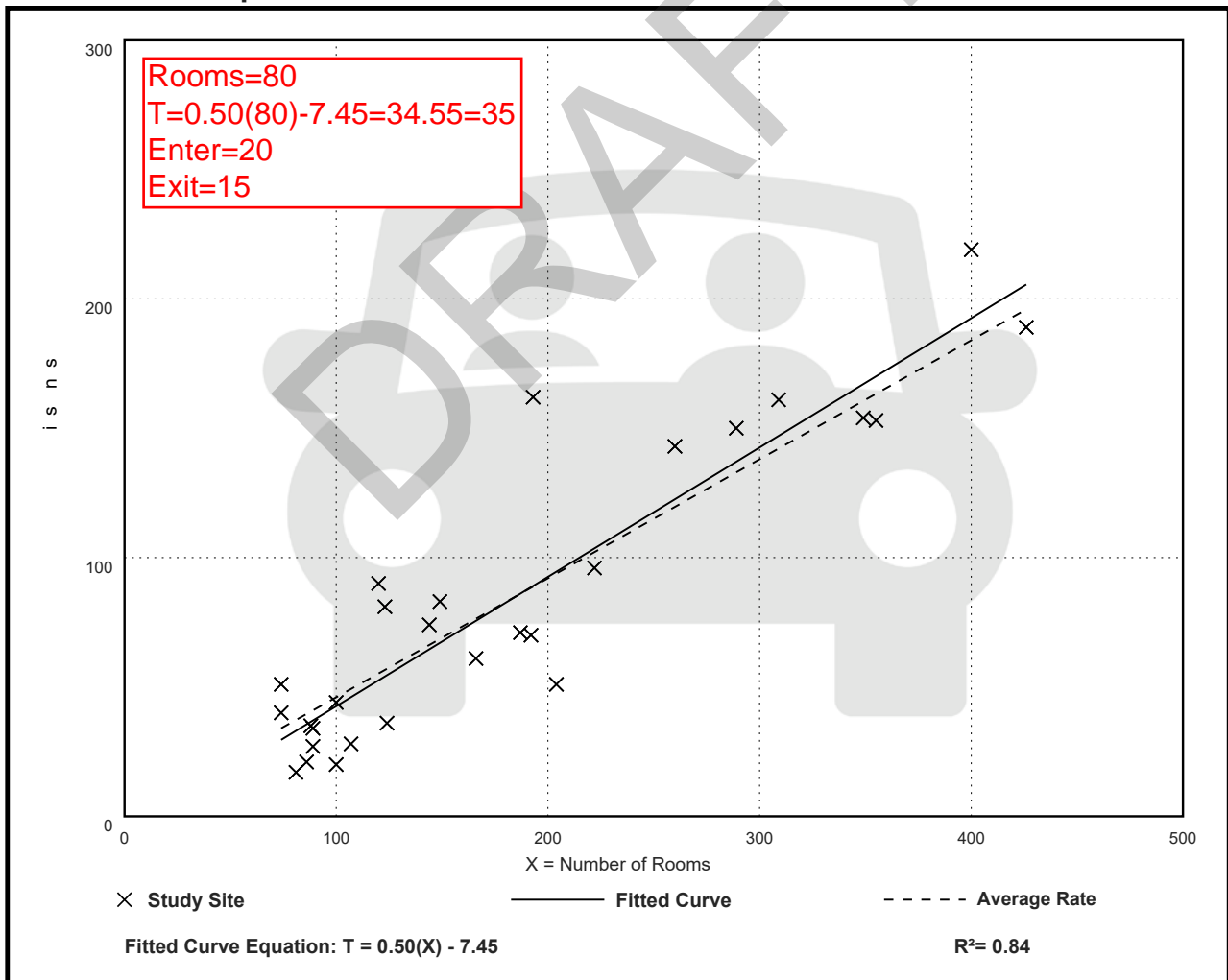
Avg. Num. of Rooms: 182

Directional Distribution: 56% entering, 44% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.46	0.20 - 0.84	0.14

Data Plot and Equation



Hotel (310)

Vehicle Trip Ends vs: Rooms

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 31

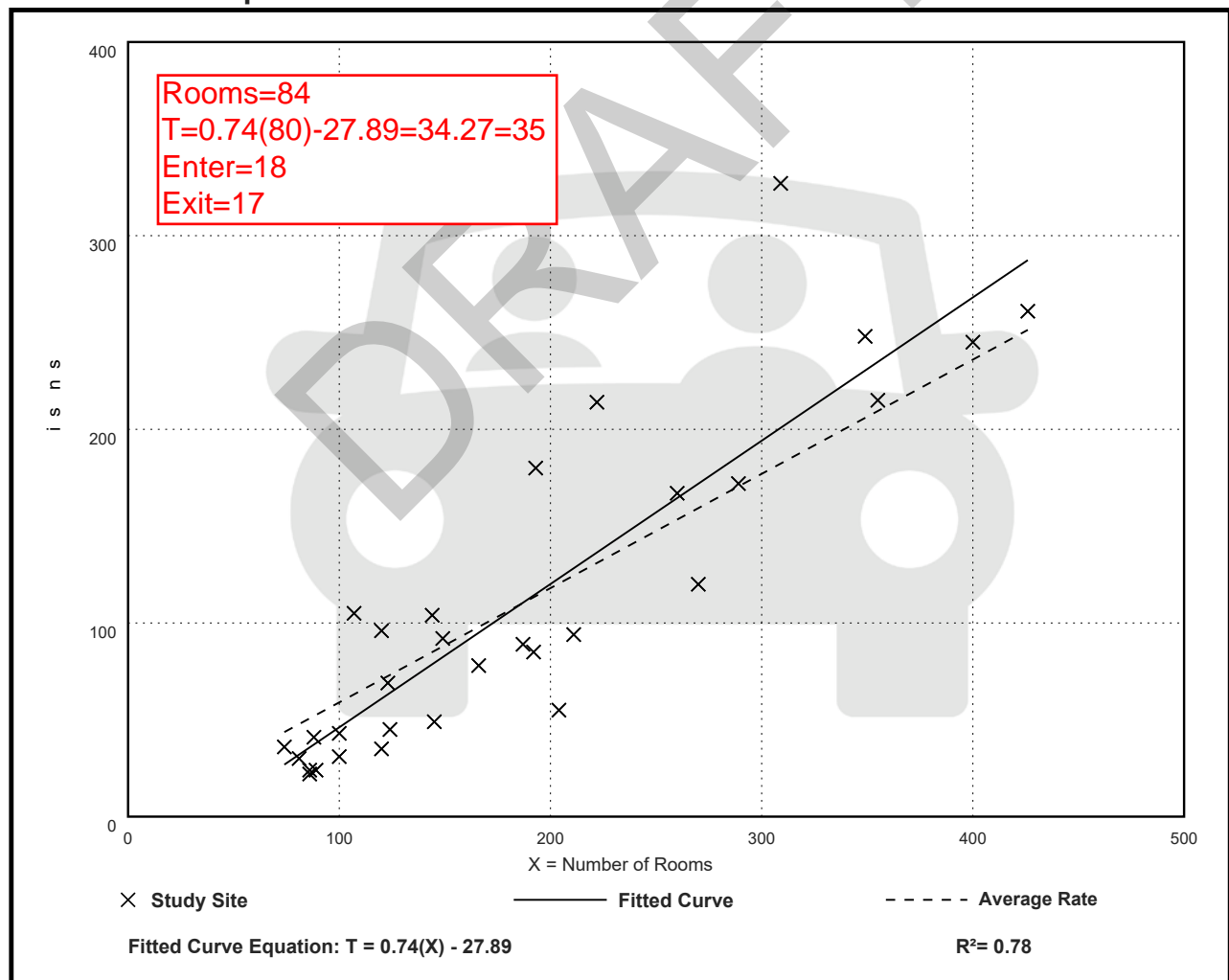
Avg. Num. of Rooms: 186

Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.59	0.26 - 1.06	0.22

Data Plot and Equation



Land Use: 420 Marina

Description

A marina is a public or private facility that provides docks and berths for boats and may include limited retail and restaurant space.

Additional Data

The sites were surveyed in the 1980s in Connecticut and Washington.

Source Numbers

123, 265

DRAFT

Marina (420)

Vehicle Trip Ends vs: Berths

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. Num. of Berths: 300

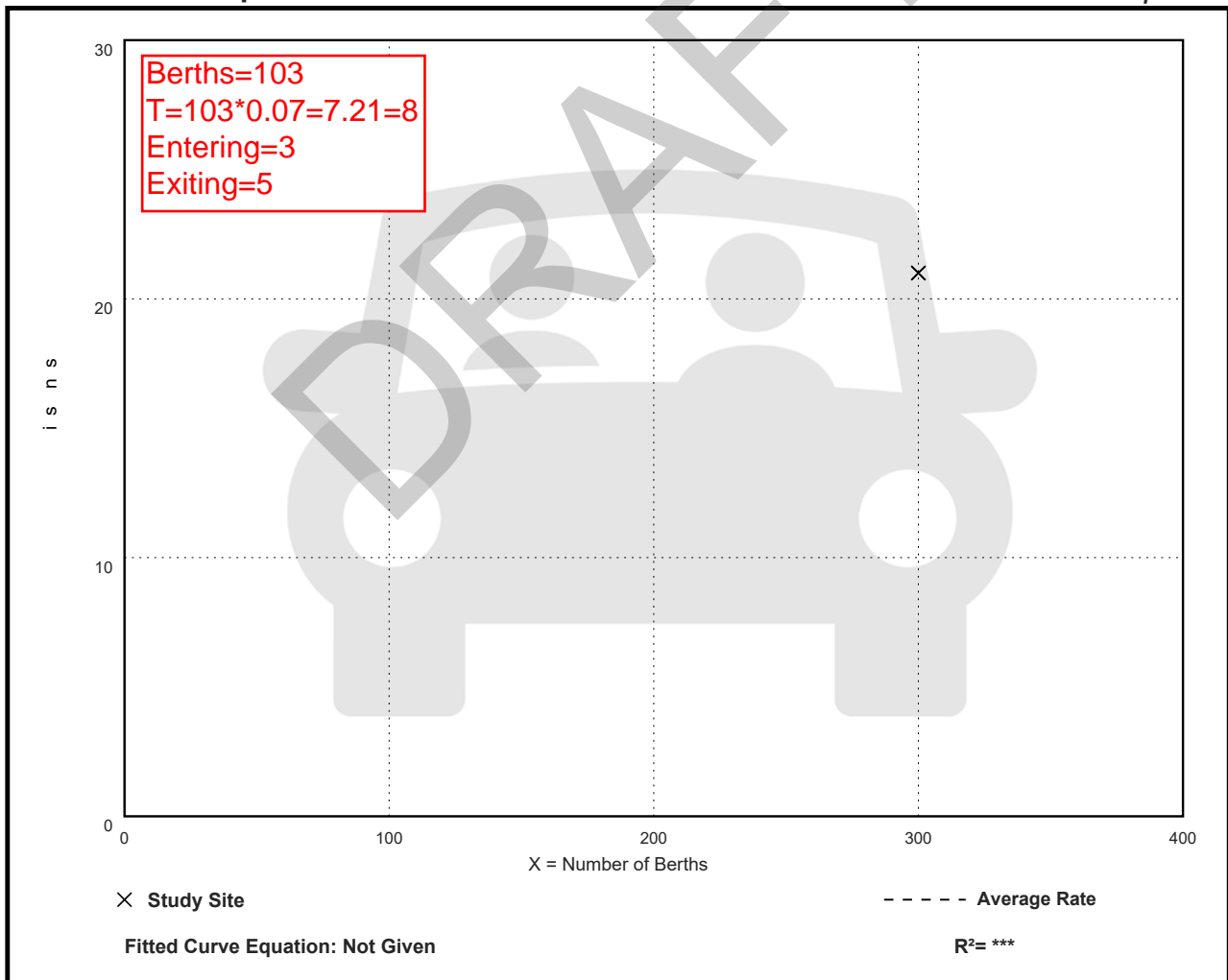
Directional Distribution: 33% entering, 67% exiting

Vehicle Trip Generation per Berth

Average Rate	Range of Rates	Standard Deviation
0.07	0.07 - 0.07	***

Data Plot and Equation

Caution – Small Sample Size



Marina (420)

Vehicle Trip Ends vs: Berths

On a: **Weekday,**

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. Num. of Berths: 300

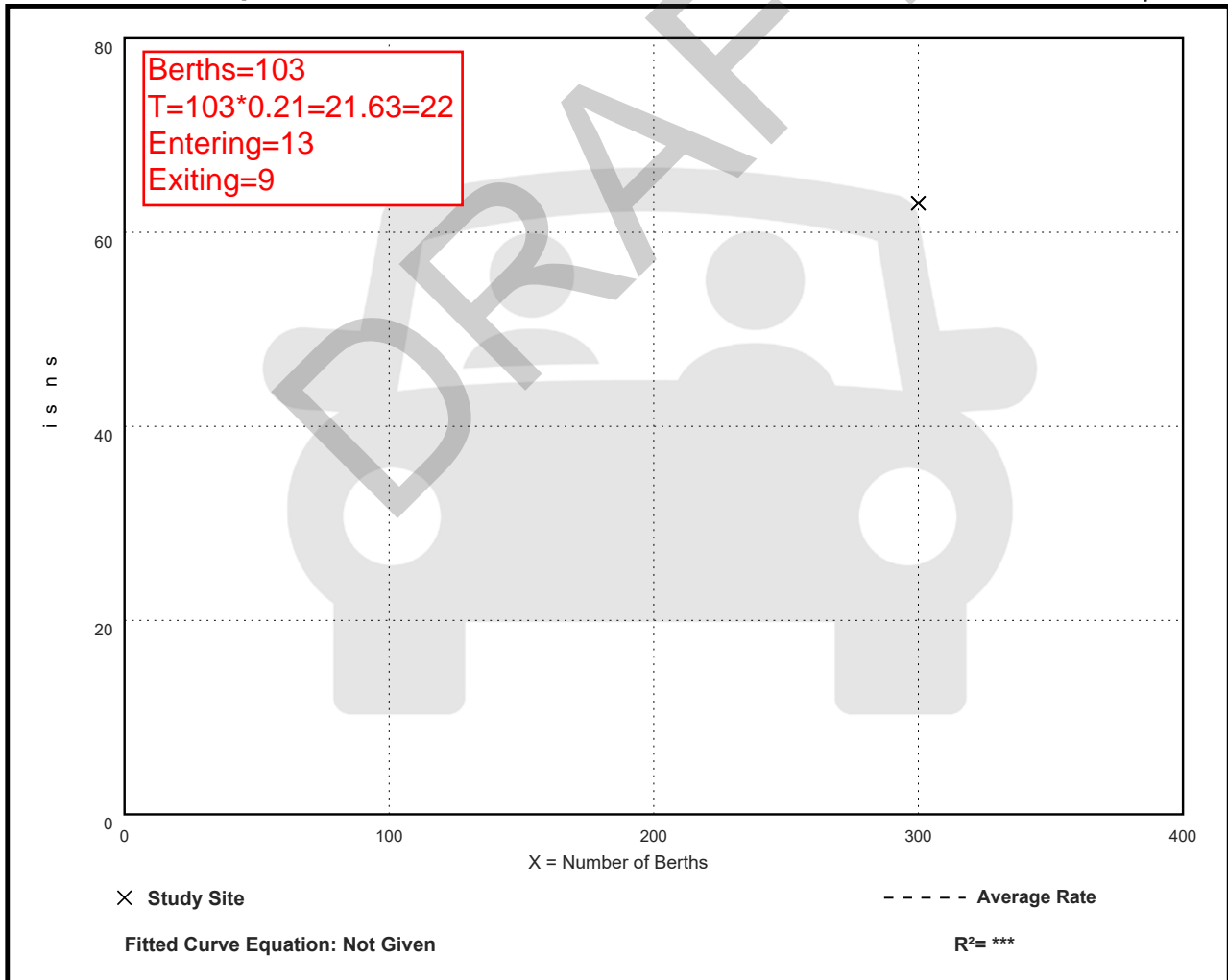
Directional Distribution: 60% entering, 40% exiting

Vehicle Trip Generation per Berth

Average Rate	Range of Rates	Standard Deviation
0.21	0.21 - 0.21	***

Data Plot and Equation

Caution – Small Sample Size



Land Use: 712

Small Office Building

Description

A small office building is the same as a general office building (Land Use 710) but with less than or equal to 10,000 square feet of gross floor area. The building typically houses a single tenant. It is a location where affairs of a business, commercial or industrial organization, or professional person or firm are conducted. General office building (Land Use 710) is a related use.

Additional Data

Attorney office, mortgage company, financial advisor, insurance agency, home health care provider, and real estate company are examples of tenants included in the small office building database. The diversity of employer types results in a wide range in employee density in the database. Densities range from a high of 1,300 to a low of 240 square feet per employee with an overall average of nearly 600 square feet per employee (a value much larger than the average observed in a general office building study sites).

In addition to the significant difference in employee density, small office buildings tend to be dominated by a single tenant (or very few) that are more service-oriented than a typical general office building. The result is more frequent and regular visitors and higher trip generation rates.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s and the 2010s in Alberta (CAN), California, Texas, and Wisconsin.

Source Numbers

418, 890, 891, 959, 976

Small Office Building (712)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 21

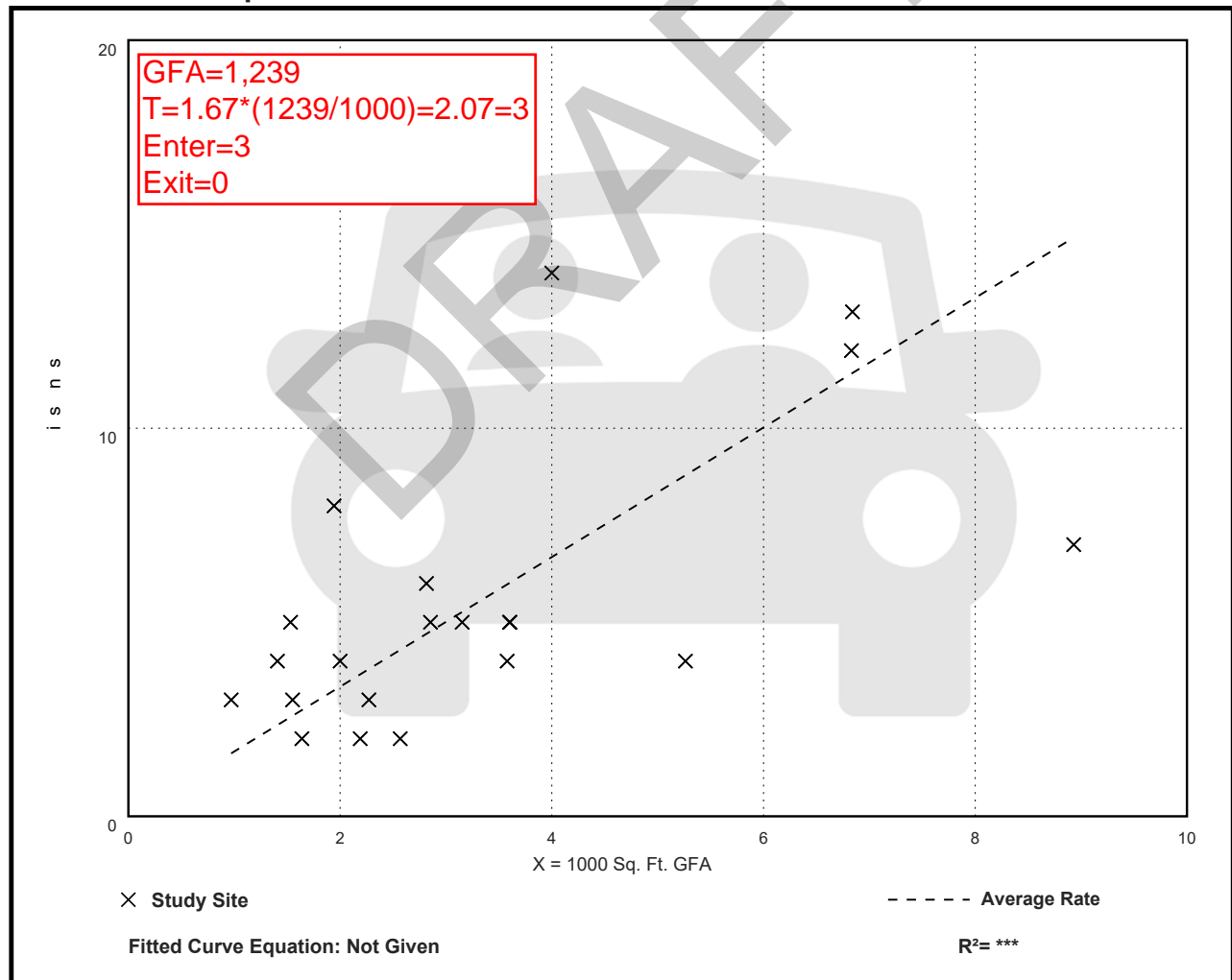
Avg. 1000 Sq. Ft. GFA: 3

Directional Distribution: 82% entering, 18% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.67	0.76 - 4.12	0.88

Data Plot and Equation



Small Office Building (712)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 21

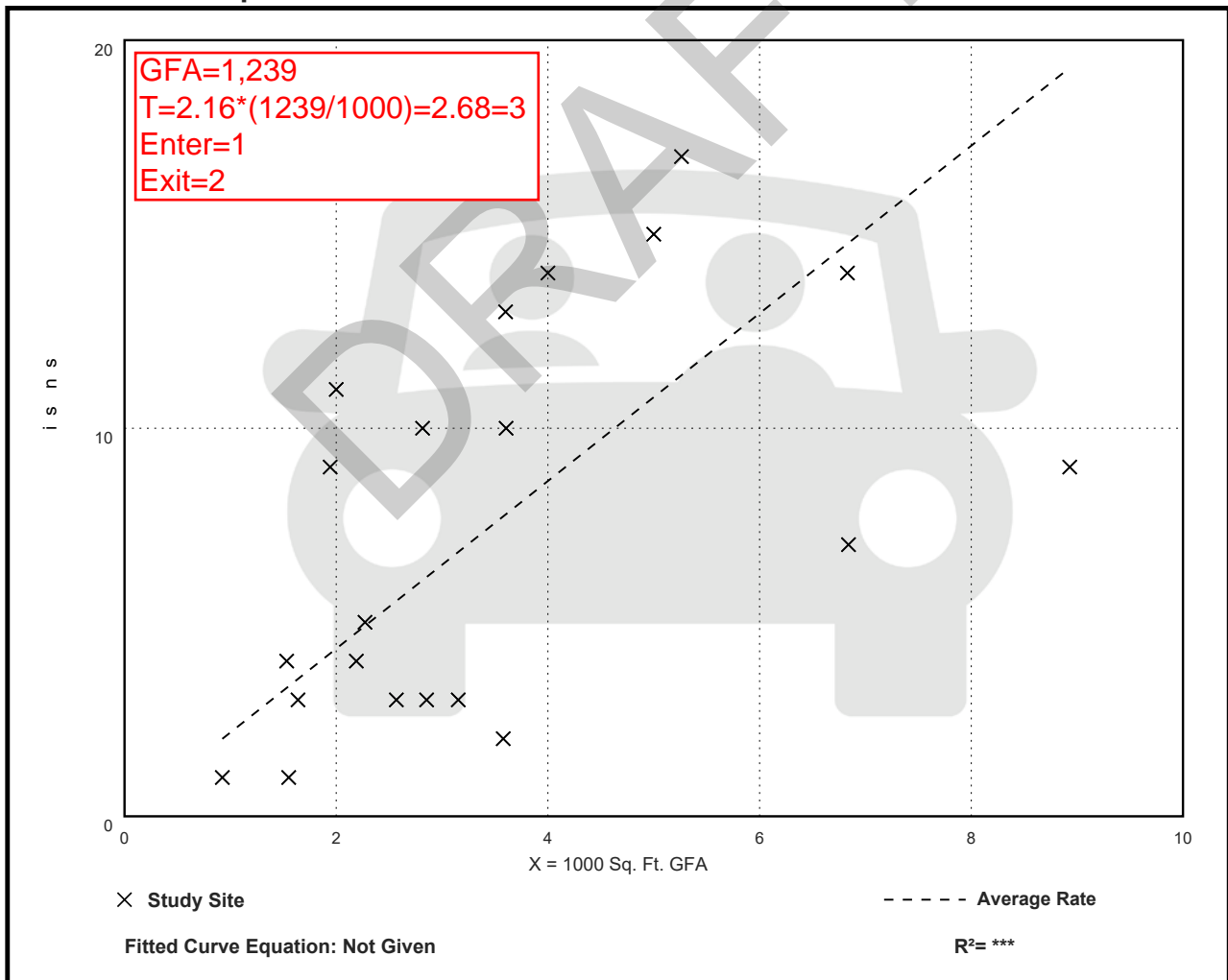
Avg. 1000 Sq. Ft. GFA: 3

Directional Distribution: 34% entering, 66% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.16	0.56 - 5.50	1.26

Data Plot and Equation



Land Use: 930

Fast Casual Restaurant

Description

A fast casual restaurant is a sit-down restaurant with no (or very limited) wait staff or table service. A customer typically orders off a menu board, pays for food before the food is prepared, and seats themselves. The menu generally contains higher-quality, made-to-order food items with fewer frozen or processed ingredients than at a fast-food restaurant. Most patrons eat their meal within the restaurant, but a significant proportion of the restaurant sales can be carry-out orders. A fast casual restaurant typically serves lunch and dinner; some serve breakfast. A typical duration of stay for an eat-in customer is 40 minutes or less. Fine dining restaurant (Land Use 931), high-turnover (sit-down) restaurant (Land Use 932), and fast-food restaurant without drive-through window (Land Use 933) are related uses.

Additional Data

The fast casual restaurant study sites included in this land use did not have a drive-through window.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 2010s in Minnesota, South Carolina, Washington, and Wisconsin.

Source Numbers

861, 869, 939, 959, 962, 1048

Fast Casual Restaurant (930)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: **Weekday,**

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. 1000 Sq. Ft. GFA: 1

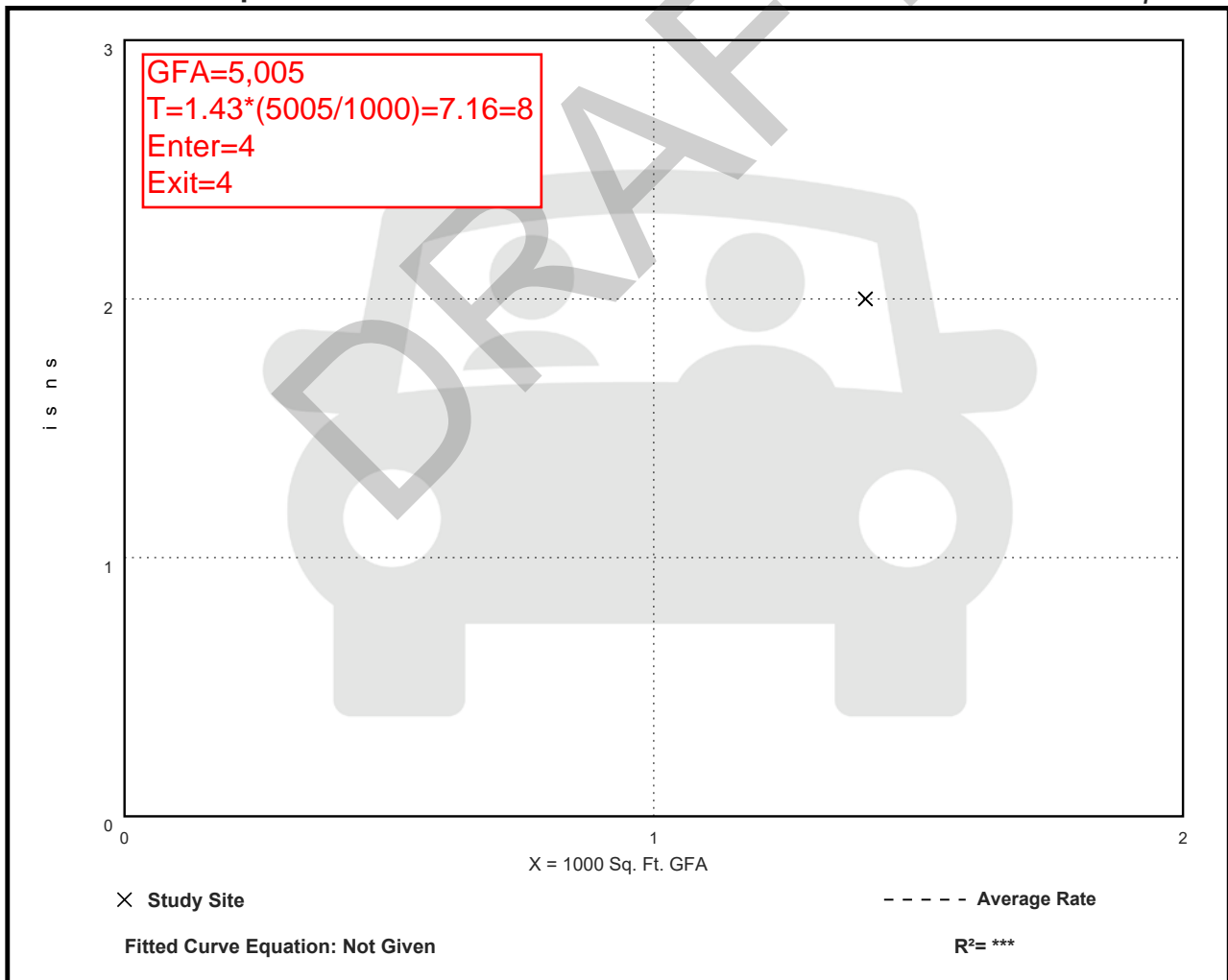
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.43	1.43 - 1.43	***

Data Plot and Equation

Caution – Small Sample Size



Fast Casual Restaurant (930)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: **Weekday,**

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 15

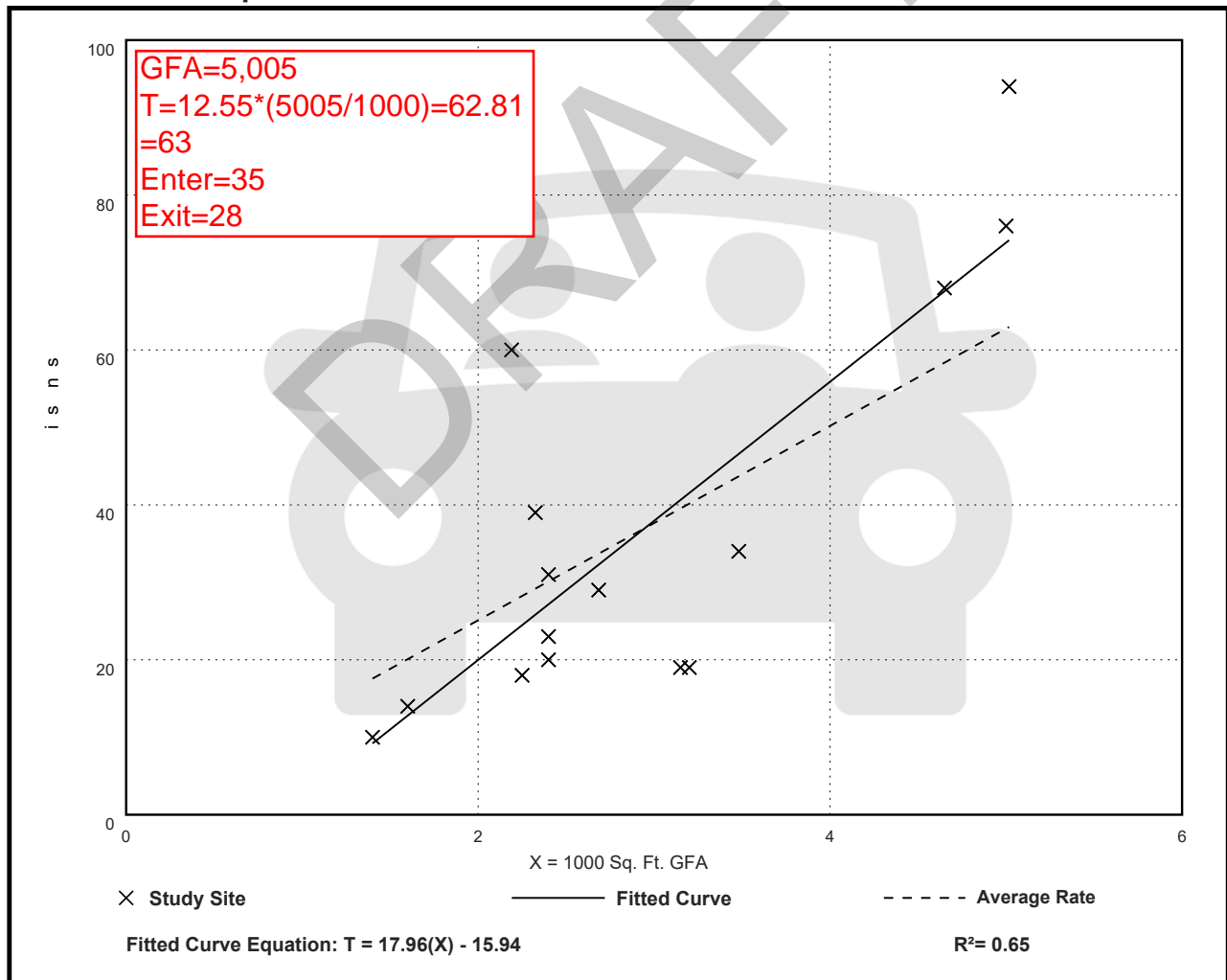
Avg. 1000 Sq. Ft. GFA: 3

Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
12.55	5.94 - 27.40	5.52

Data Plot and Equation



Land Use: 932

High-Turnover (Sit-Down) Restaurant

Description

This land use consists of sit-down, full-service eating establishments with a typical duration of stay of 60 minutes or less. This type of restaurant is usually moderately priced, frequently belongs to a restaurant chain, and is commonly referred to as casual dining. Generally, these restaurants serve lunch and dinner; they may also be open for breakfast and are sometimes open 24 hours a day. These restaurants typically do not accept reservations. A patron commonly waits to be seated, is served by wait staff, orders from a menu, and pays after the meal.

Some facilities offer carry-out for a small proportion of its customers. Some facilities within this land use may also contain a bar area for serving food and alcoholic drinks.

Fast casual restaurant (Land Use 930), fine dining restaurant (Land Use 931), fast-food restaurant without drive-through window (Land Use 933), and fast-food restaurant with drive-through window (Land Use 934) are related uses.

Additional Data

Users should exercise caution when applying statistics during the AM peak periods, as the sites contained in the database for this land use may or may not be open for breakfast. In cases where it was confirmed that the sites were not open for breakfast, data for the AM peak hour of the adjacent street traffic were removed from the database.

If the restaurant has outdoor seating, its area is not included in the overall gross floor area. For a restaurant that has significant outdoor seating, the number of seats may be more reliable than GFA as an independent variable on which to establish a trip generation rate.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Florida, Georgia, Indiana, Kentucky, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Texas, Vermont, and Wisconsin.

Source Numbers

126, 269, 275, 280, 300, 301, 305, 338, 340, 341, 358, 384, 424, 432, 437, 438, 444, 507, 555, 577, 589, 617, 618, 728, 868, 884, 885, 903, 927, 939, 944, 961, 962, 977, 1048

High-Turnover (Sit-Down) Restaurant (932)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 37

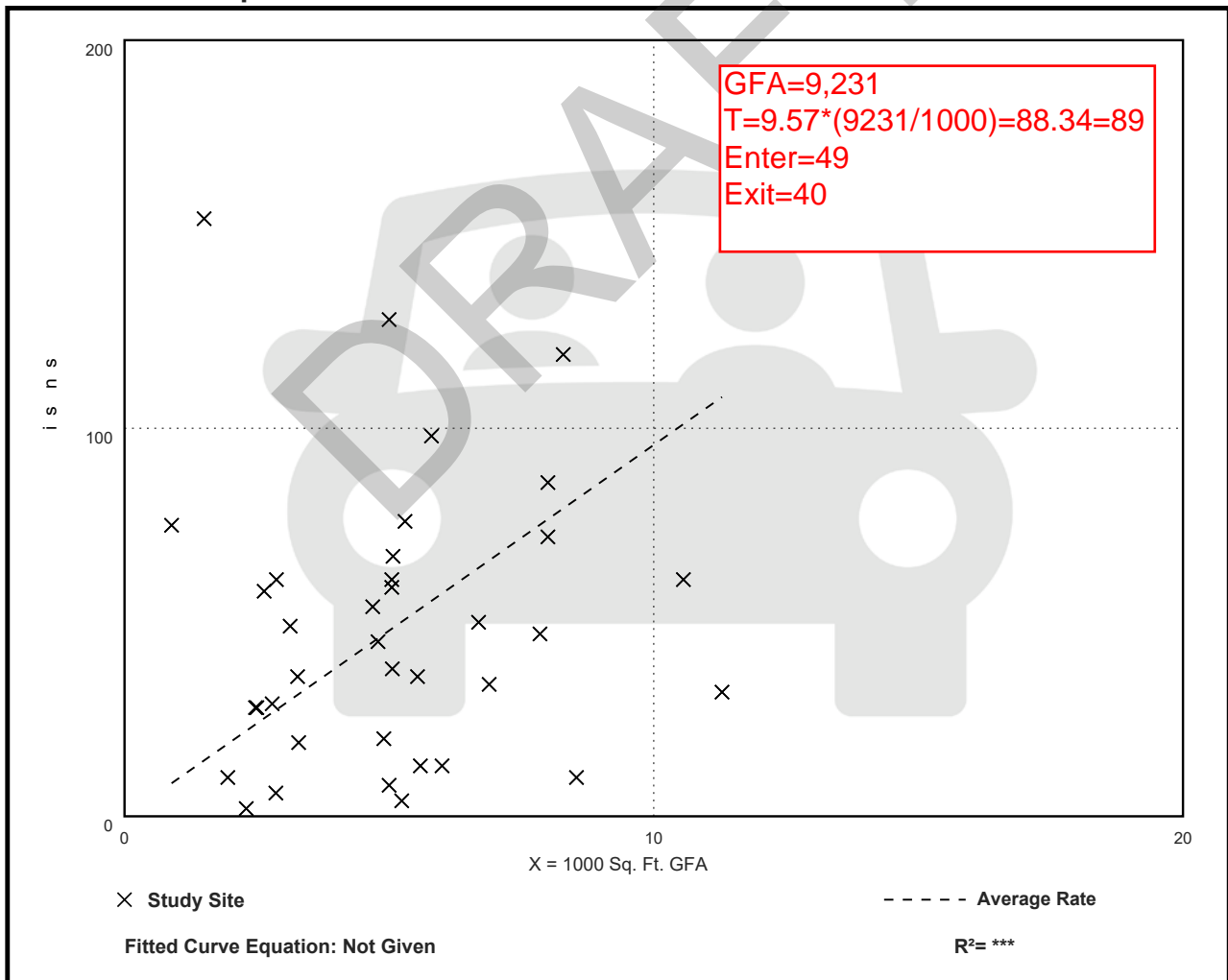
Avg. 1000 Sq. Ft. GFA: 5

Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.57	0.76 - 102.39	11.61

Data Plot and Equation



High-Turnover (Sit-Down) Restaurant (932)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 104

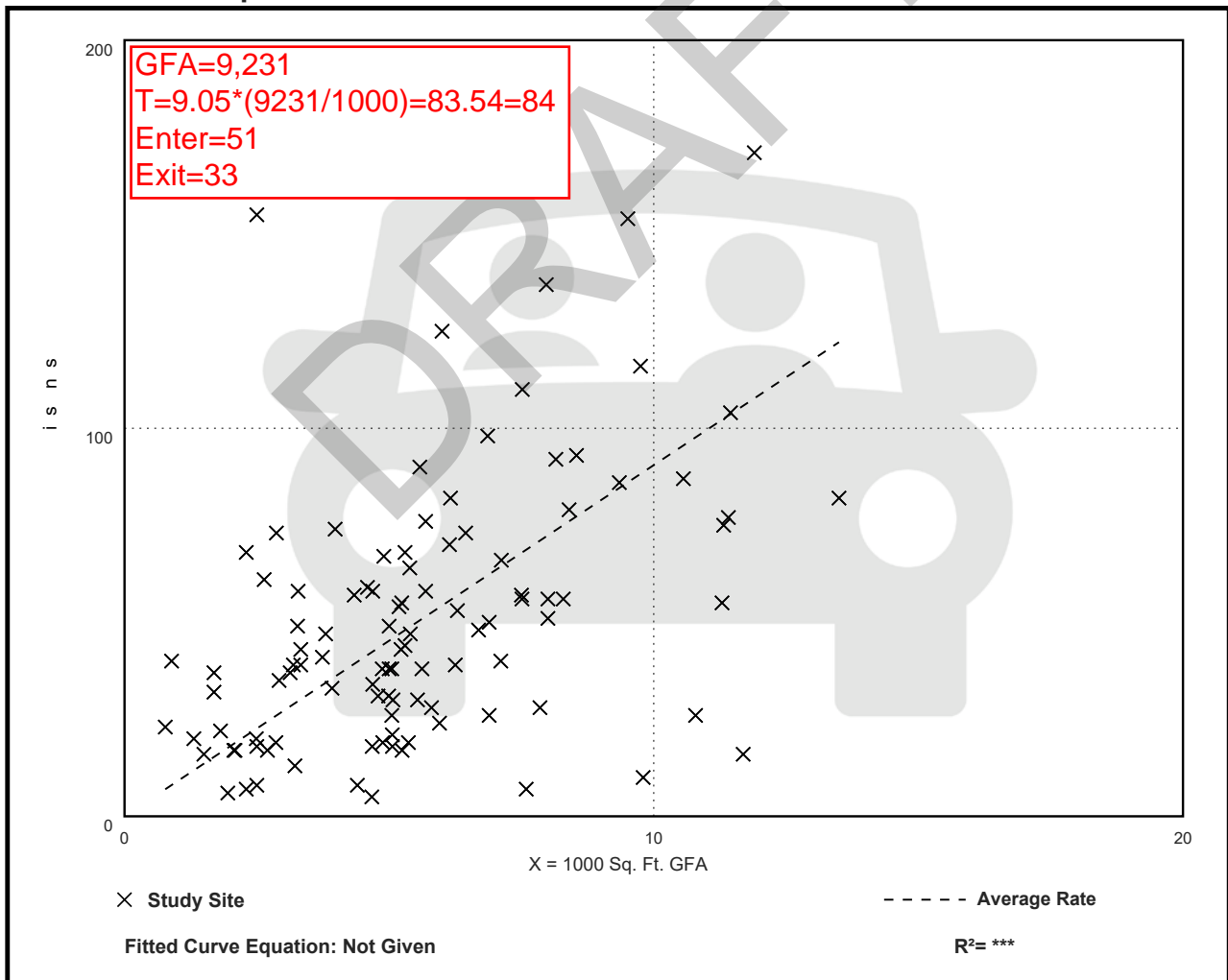
Avg. 1000 Sq. Ft. GFA: 6

Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.05	0.92 - 62.00	6.18

Data Plot and Equation



Sucette Harbor TIA Appendix

2025 Build Analysis

DRAFT

URBAN SYSTEMS inc.



- HV % defaults were used: 2% for Synchro and 3% for HCS
- Intersection PHFs were calculated for the entire intersection and used in the analysis.

Queues

3: E Causeway Approach & Monroe St

11/16/2022























Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	487	567	25	187	16	25	760	185
v/c Ratio	0.73	0.74	0.21	0.19	0.03	0.11	0.68	0.20
Control Delay	45.0	42.5	54.0	34.5	0.1	38.9	34.2	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.0	42.5	54.0	34.5	0.1	38.9	34.2	1.9
Queue Length 50th (ft)	163	188	16	37	0	16	228	0
Queue Length 95th (ft)	228	252	45	101	0	38	328	20
Internal Link Dist (ft)	220	346		227			155	
Turn Bay Length (ft)			130			130		
Base Capacity (vph)	946	1138	279	1437	720	354	1358	1053
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.50	0.09	0.13	0.02	0.07	0.56	0.18
Intersection Summary								

DRAFT

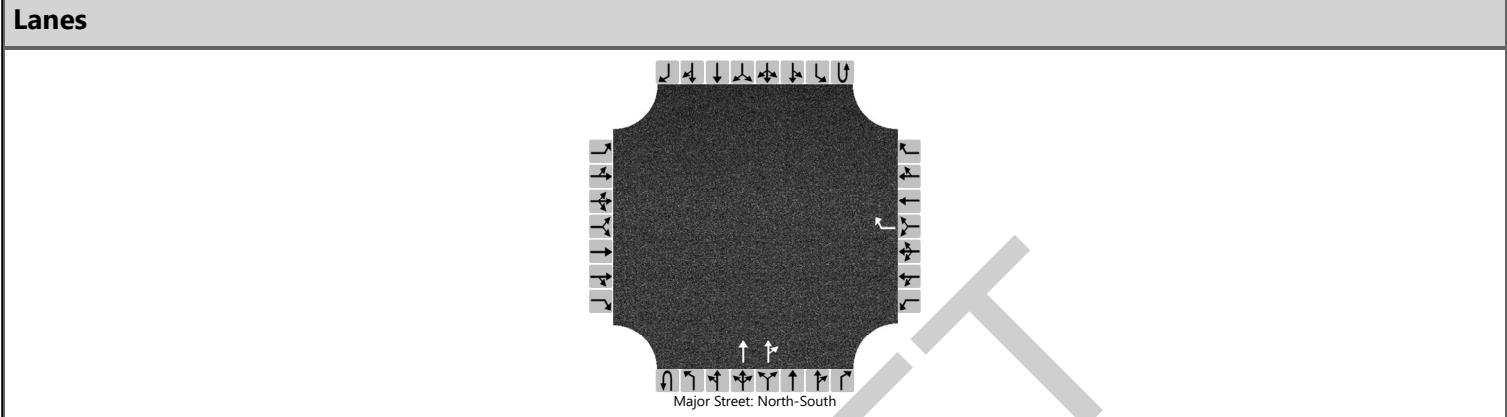
HCM 6th Signalized Intersection Summary 3: E Causeway Approach & Monroe St

11/16/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	309	3	116	342	25	21	159	14	21	646	157
Future Volume (veh/h)	101	309	3	116	342	25	21	159	14	21	646	157
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	119	364	4	136	402	29	25	187	16	25	760	185
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	145	473	5	163	511	38	47	433	193	398	1132	772
Arrive On Green	0.17	0.17	0.17	0.19	0.19	0.19	0.03	0.12	0.12	0.22	0.32	0.32
Sat Flow, veh/h	859	2801	32	839	2628	197	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	253	0	234	296	0	271	25	187	16	25	760	185
Grp Sat Flow(s),veh/h/ln	1827	0	1865	1828	0	1835	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	11.0	0.0	9.8	12.8	0.0	11.4	1.1	4.0	0.7	0.9	15.2	5.6
Cycle Q Clear(g_c), s	11.0	0.0	9.8	12.8	0.0	11.4	1.1	4.0	0.7	0.9	15.2	5.6
Prop In Lane	0.47		0.02	0.46		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	308	0	315	355	0	356	47	433	193	398	1132	772
V/C Ratio(X)	0.82	0.00	0.74	0.83	0.00	0.76	0.53	0.43	0.08	0.06	0.67	0.24
Avail Cap(c_a), veh/h	534	0	545	645	0	648	304	1471	656	398	1471	923
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.0	0.0	32.5	31.8	0.0	31.3	39.5	33.4	32.0	25.1	24.3	12.2
Incr Delay (d2), s/veh	2.1	0.0	1.3	2.0	0.0	1.3	3.4	1.5	0.4	0.0	1.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	0.0	4.4	5.7	0.0	5.0	0.5	1.8	0.3	0.4	6.2	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.0	0.0	33.8	33.8	0.0	32.5	42.9	34.9	32.4	25.2	25.8	12.6
LnGrp LOS	D	A	C	C	A	C	D	C	C	C	C	B
Approach Vol, veh/h		487			567			228			970	
Approach Delay, s/veh		34.4			33.2			35.6			23.3	
Approach LOS		C			C			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	24.3	16.0		19.9	8.2	32.2		22.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	14.0	34.0		24.0	14.0	34.0		29.0				
Max Q Clear Time (g_c+I1), s	2.9	6.0		13.0	3.1	17.2		14.8				
Green Ext Time (p_c), s	0.0	2.4		0.9	0.0	8.9		1.2				
Intersection Summary												
HCM 6th Ctrl Delay				29.4								
HCM 6th LOS				C								

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	E Causeway at Mariners		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	10/20/2022			East/West Street	Mariners Blvd		
Analysis Year	2025			North/South Street	E Causeway Approach		
Time Analyzed	AM Build			Peak Hour Factor	0.77		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	22-068						



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1		0	2	0		0	0	0
Configuration								R			T	TR				
Volume (veh/h)								34			168	15				
Percent Heavy Vehicles (%)								3								
Proportion Time Blocked																
Percent Grade (%)								0								
Right Turn Channelized								No								
Median Type Storage								Undivided								

Critical and Follow-up Headways

Base Critical Headway (sec)								6.9								
Critical Headway (sec)								6.96								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.33								

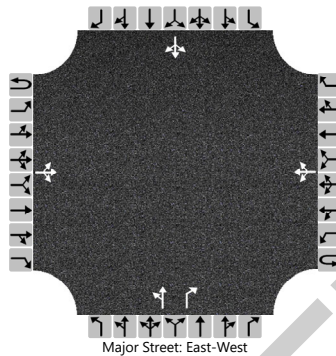
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								44								
Capacity, c (veh/h)								907								
v/c Ratio								0.05								
95% Queue Length, Q ₉₅ (veh)								0.2								
Control Delay (s/veh)								9.2								
Level of Service (LOS)								A								
Approach Delay (s/veh)								9.2								
Approach LOS								A								

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Antibes St E		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	10/20/2022			East/West Street	Monroe St		
Analysis Year	2025			North/South Street	Antibes St E - Cambronne		
Time Analyzed	AM Build			Peak Hour Factor	0.77		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	1	1		0	1	0	
Configuration			LTR				LTR		LT		R			LTR		
Volume (veh/h)		7	295	14		26	432	18		23	24	29		3	7	3
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized									No							
Median Type Storage					Undivided											

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

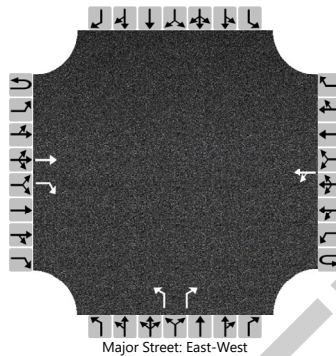
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		9				34				61		38			17	
Capacity, c (veh/h)		985				1152				197		654			223	
v/c Ratio		0.01				0.03				0.31		0.06			0.08	
95% Queue Length, Q ₉₅ (veh)		0.0				0.1				1.3		0.2			0.2	
Control Delay (s/veh)		8.7				8.2				31.2		10.8			22.5	
Level of Service (LOS)		A				A				D		B			C	
Approach Delay (s/veh)		0.3				0.8				23.4				22.5		
Approach LOS		C				C				C				C		

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Antibes W		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	10/20/2022			East/West Street	Monroe St		
Analysis Year	2025			North/South Street	Antibes St W		
Time Analyzed	AM Build			Peak Hour Factor	0.81		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	1	1	0	0	1	0	1	0	1		0	0	0	
Configuration			T	R			LT				L		R			
Volume (veh/h)			311	32			6	463			25		1			
Percent Heavy Vehicles (%)							3				3		3			
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No							No						
Median Type Storage							Left Only						1			

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

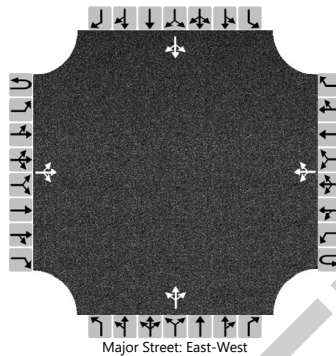
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					7					31		1				
Capacity, c (veh/h)					1130					402		661				
v/c Ratio					0.01					0.08		0.00				
95% Queue Length, Q ₉₅ (veh)					0.0					0.2		0.0				
Control Delay (s/veh)					8.2					14.7		10.5				
Level of Service (LOS)					A					B		B				
Approach Delay (s/veh)							0.2					14.5				
Approach LOS												B				

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Massena St		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	10/20/2022			East/West Street	Monroe St		
Analysis Year	2025			North/South Street	Massena St		
Time Analyzed	AM Build			Peak Hour Factor	0.70		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	1	0		0	1	0	
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		5	312	5		1	478	9		1	0	4		6	0	18
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		7				1					7					34	
Capacity, c (veh/h)		895				1102					387					315	
v/c Ratio		0.01				0.00					0.02					0.11	
95% Queue Length, Q ₉₅ (veh)		0.0				0.0					0.1					0.4	
Control Delay (s/veh)		9.1				8.3					14.5					17.8	
Level of Service (LOS)		A				A					B					C	
Approach Delay (s/veh)		0.2				0.0				14.5				17.8			
Approach LOS		A				A				B				C			

Queues

3: E Causeway Approach & Monroe St

11/16/2022



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	597	318	84	709	180	35	170	184
v/c Ratio	0.74	0.62	0.23	0.61	0.28	0.26	0.28	0.24
Control Delay	40.5	43.0	31.9	29.2	5.5	50.4	39.8	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.5	43.0	31.9	29.2	5.5	50.4	39.8	2.7
Queue Length 50th (ft)	187	100	40	195	0	22	53	0
Queue Length 95th (ft)	273	153	88	288	49	56	91	24
Internal Link Dist (ft)	220	346		227			155	
Turn Bay Length (ft)			130			130		
Base Capacity (vph)	1000	1200	435	1431	747	294	1431	853
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.27	0.19	0.50	0.24	0.12	0.12	0.22
Intersection Summary								

DRAFT

HCM 6th Signalized Intersection Summary

3: E Causeway Approach & Monroe St

11/16/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↔	↕↕	↔	↔	↕↕	↔
Traffic Volume (veh/h)	118	455	0	53	228	24	81	681	173	34	163	177
Future Volume (veh/h)	118	455	0	53	228	24	81	681	173	34	163	177
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	123	474	0	55	238	25	84	709	180	35	170	184
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	146	598	0	74	336	37	362	1149	513	61	549	572
Arrive On Green	0.21	0.21	0.00	0.12	0.12	0.12	0.20	0.32	0.32	0.03	0.15	0.15
Sat Flow, veh/h	710	2995	0	606	2750	301	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	318	279	0	167	0	151	84	709	180	35	170	184
Grp Sat Flow(s),veh/h/ln	1835	1777	0	1840	0	1816	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	12.7	11.3	0.0	6.7	0.0	6.1	3.0	12.9	6.6	1.5	3.2	6.4
Cycle Q Clear(g_c), s	12.7	11.3	0.0	6.7	0.0	6.1	3.0	12.9	6.6	1.5	3.2	6.4
Prop In Lane	0.39		0.00	0.33		0.17	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	378	366	0	225	0	222	362	1149	513	61	549	572
V/C Ratio(X)	0.84	0.76	0.00	0.74	0.00	0.68	0.23	0.62	0.35	0.57	0.31	0.32
Avail Cap(c_a), veh/h	576	558	0	698	0	689	362	1581	705	326	1581	1032
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	28.6	0.0	32.4	0.0	32.1	25.5	21.9	19.7	36.4	28.7	17.7
Incr Delay (d2), s/veh	4.1	1.3	0.0	1.8	0.0	1.4	0.1	1.2	0.9	3.1	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	4.8	0.0	3.0	0.0	2.7	1.2	5.2	2.4	0.7	1.4	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.3	29.8	0.0	34.2	0.0	33.5	25.6	23.0	20.6	39.5	29.4	18.4
LnGrp LOS	C	C	A	C	A	C	C	C	C	D	C	B
Approach Vol, veh/h		597			318			973				389
Approach Delay, s/veh		31.7			33.9			22.8				25.1
Approach LOS		C			C			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.6	30.7		21.8	21.5	17.8		15.3				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	14.0	34.0		24.0	14.0	34.0		29.0				
Max Q Clear Time (g_c+I1), s	3.5	14.9		14.7	5.0	8.4		8.7				
Green Ext Time (p_c), s	0.0	9.8		1.0	0.1	3.4		0.6				

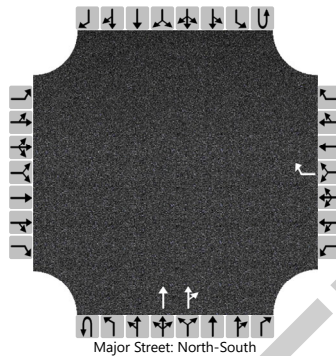
Intersection Summary

HCM 6th Ctrl Delay	27.1
HCM 6th LOS	C

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	E Causeway at Mariners		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	10/20/2022			East/West Street	Mariners Blvd		
Analysis Year	2025			North/South Street	E Causeway Approach		
Time Analyzed	PM Build			Peak Hour Factor	0.94		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1		0	2	0		0	0	0
Configuration								R			T	TR				
Volume (veh/h)								39			882	47				
Percent Heavy Vehicles (%)								3								
Proportion Time Blocked																
Percent Grade (%)								0								
Right Turn Channelized								No								
Median Type Storage								Undivided								

Critical and Follow-up Headways

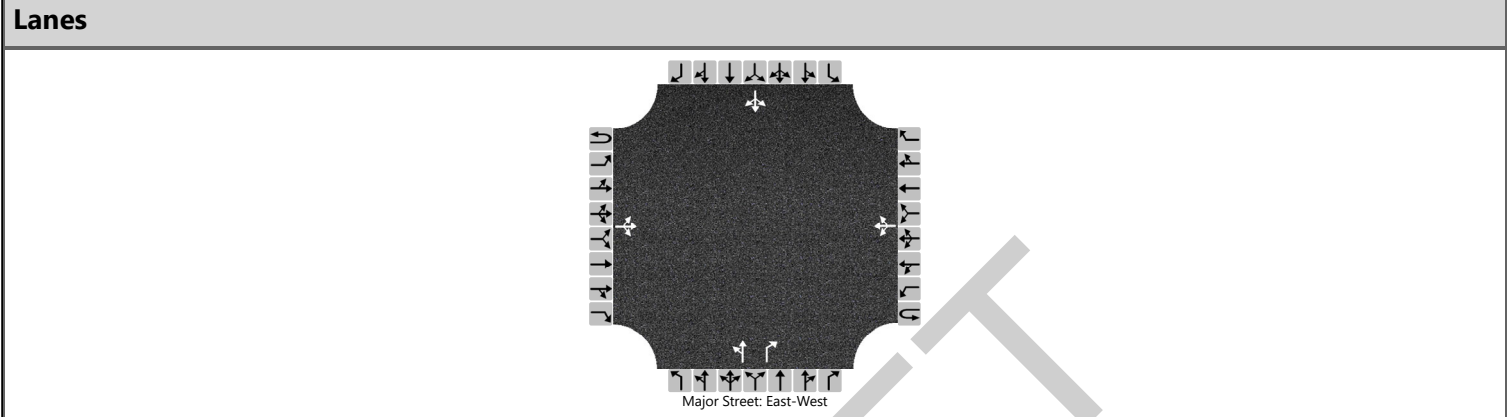
Base Critical Headway (sec)								6.9								
Critical Headway (sec)								6.96								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.33								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								41								
Capacity, c (veh/h)								518								
v/c Ratio								0.08								
95% Queue Length, Q ₉₅ (veh)								0.3								
Control Delay (s/veh)								12.6								
Level of Service (LOS)								B								
Approach Delay (s/veh)								12.6								
Approach LOS								B								

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Antibes St E		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	10/20/2022			East/West Street	Monroe St		
Analysis Year	2025			North/South Street	Antibes St E - Cambronne		
Time Analyzed	PM Build			Peak Hour Factor	0.90		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12		
Priority																	
Number of Lanes	0	0	1	0	0	0	1	0	0	1	1		0	1	0		
Configuration			LTR				LTR			LT		R			LTR		
Volume (veh/h)		8	574	37		48	233	6		28	8	37		9	15	4	
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3	
Proportion Time Blocked																	
Percent Grade (%)										0				0			
Right Turn Channelized										No							
Median Type Storage					Undivided												

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

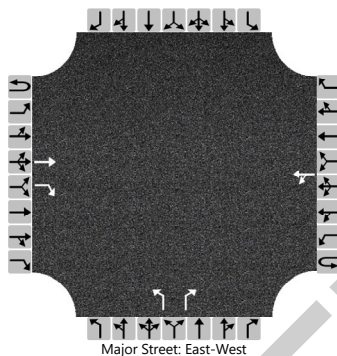
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		9				53				40		41			31	
Capacity, c (veh/h)		1293				909				184		462			210	
v/c Ratio		0.01				0.06				0.22		0.09			0.15	
95% Queue Length, Q ₉₅ (veh)		0.0				0.2				0.8		0.3			0.5	
Control Delay (s/veh)		7.8				9.2				30.0		13.5			25.2	
Level of Service (LOS)		A				A				D		B			D	
Approach Delay (s/veh)		0.2				2.1				21.7				25.2		
Approach LOS		C				D				C				D		

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC	Intersection	Monroe St at Antibes W				
Agency/Co.	USI	Jurisdiction	St Tammany				
Date Performed	10/20/2022	East/West Street	Monroe St				
Analysis Year	2025	North/South Street	Antibes St W				
Time Analyzed	PM Build	Peak Hour Factor	0.89				
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25				
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12		
Priority																	
Number of Lanes	0	0	1	1	0	0	1	0	1	0	1		0	0	0		
Configuration			T	R			LT				L		R				
Volume (veh/h)			599	47			4	262			38		16				
Percent Heavy Vehicles (%)							3				3		3				
Proportion Time Blocked																	
Percent Grade (%)										0							
Right Turn Channelized		No								No							
Median Type Storage					Left Only								1				

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

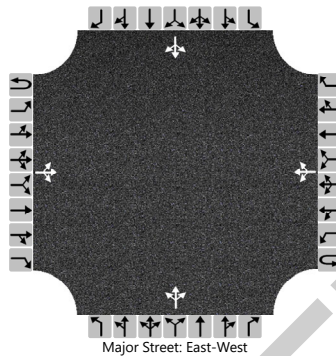
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					4				43		18					
Capacity, c (veh/h)					873				392		453					
v/c Ratio					0.01				0.11		0.04					
95% Queue Length, Q ₉₅ (veh)					0.0				0.4		0.1					
Control Delay (s/veh)					9.1				15.3		13.3					
Level of Service (LOS)					A				C		B					
Approach Delay (s/veh)					0.2				14.7							
Approach LOS									B							

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Massena St		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	10/20/2022			East/West Street	Monroe St		
Analysis Year	2025			North/South Street	Massena St		
Time Analyzed	PM Build			Peak Hour Factor	0.93		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12		
Priority																	
Number of Lanes	0	0	1	0	0	0	1	0	0	1	0		0	1	0		
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		12	584	9		3	273	12		5	1	8		20	1	18	
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3	
Proportion Time Blocked																	
Percent Grade (%)										0				0			
Right Turn Channelized																	
Median Type Storage					Undivided												

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		13				3					15					42	
Capacity, c (veh/h)		1249				941					321					330	
v/c Ratio		0.01				0.00					0.05					0.13	
95% Queue Length, Q ₉₅ (veh)		0.0				0.0					0.1					0.4	
Control Delay (s/veh)		7.9				8.8					16.8					17.5	
Level of Service (LOS)		A				A					C					C	
Approach Delay (s/veh)		0.3				0.1				16.8				17.5			
Approach LOS		C				C				C				C			

Sucette Harbor TIA Appendix

2025 Build Turn Lane Warrants

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URBAN SYSTEMS inc.



Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

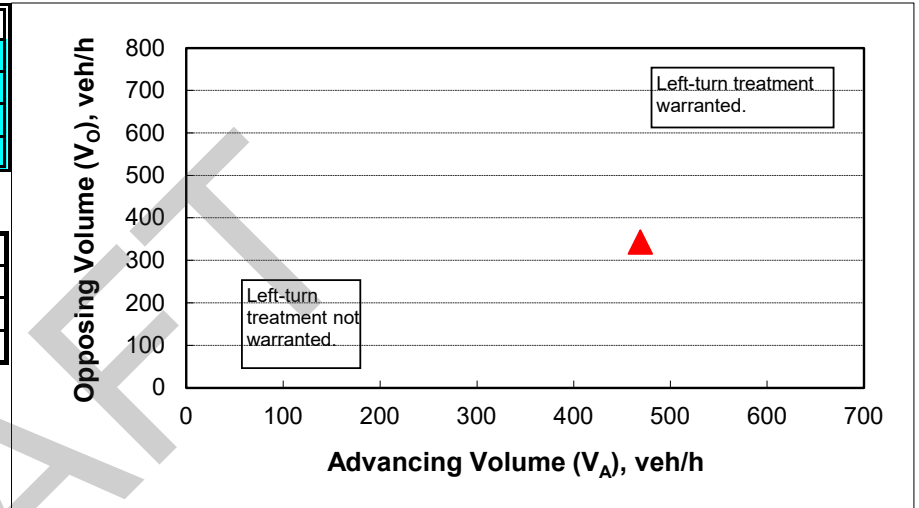
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	469
Opposing volume (V_O), veh/h:	343

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1167
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

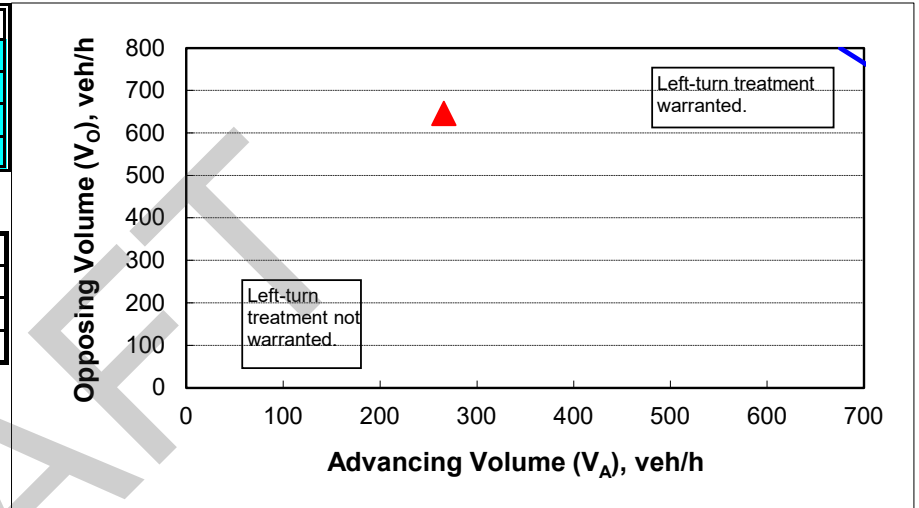
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	266
Opposing volume (V_O), veh/h:	646

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	787
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

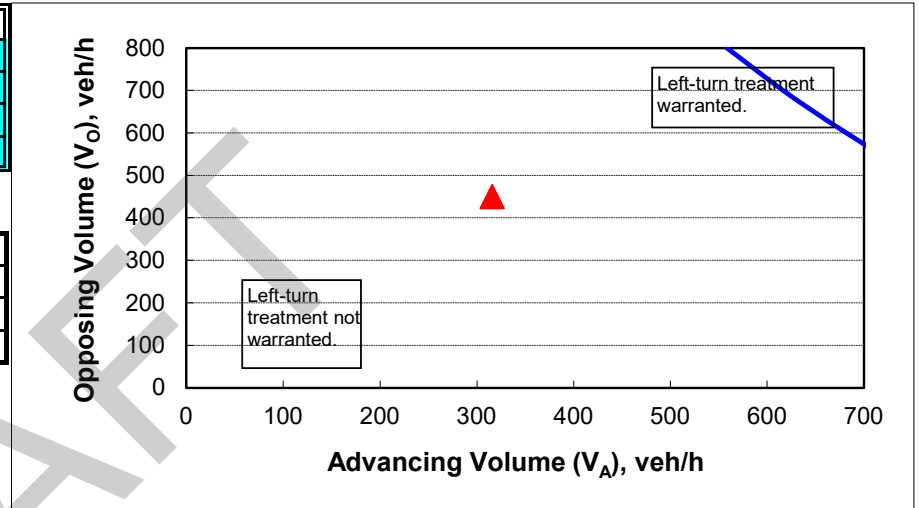
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	316
Opposing volume (V_O), veh/h:	450

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	795
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

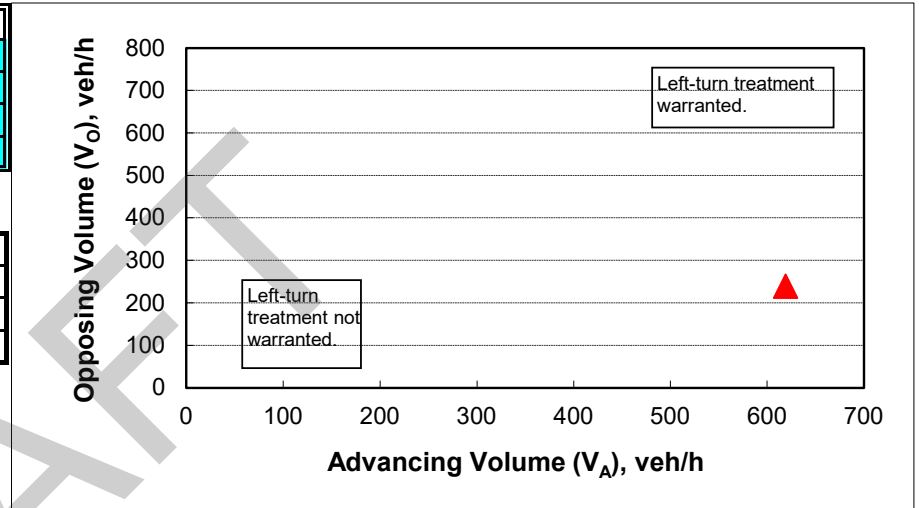
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	619
Opposing volume (V_O), veh/h:	239

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1301
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

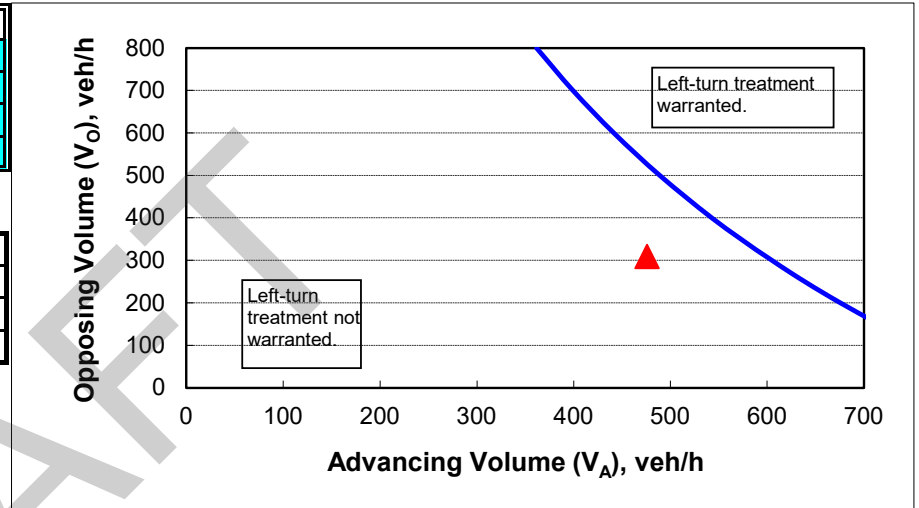
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	5%
Advancing volume (V_A), veh/h:	476
Opposing volume (V_O), veh/h:	309

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	599
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

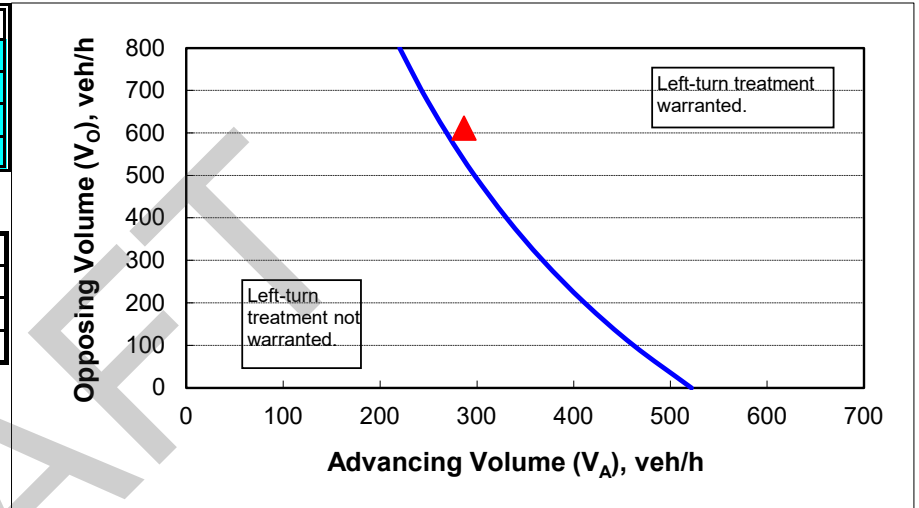
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	17%
Advancing volume (V_A), veh/h:	287
Opposing volume (V_O), veh/h:	611

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	266
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

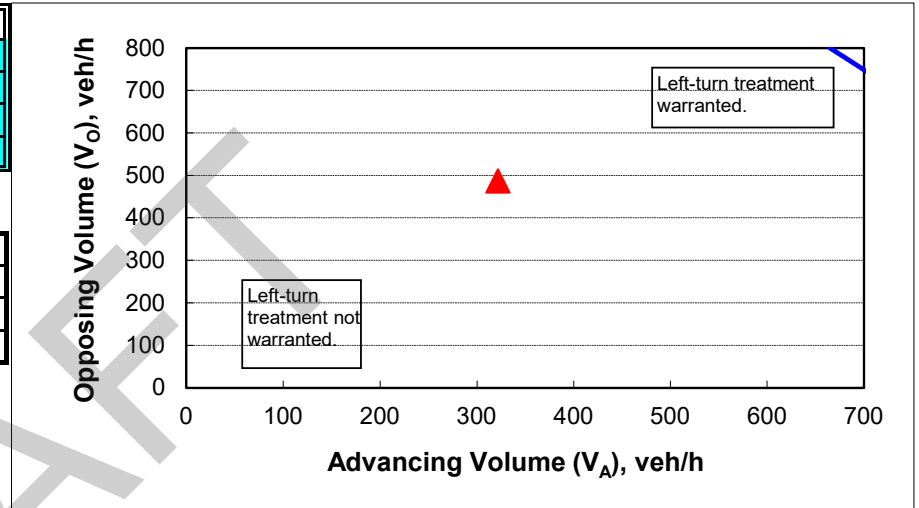
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	322
Opposing volume (V_O), veh/h:	487

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	911
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

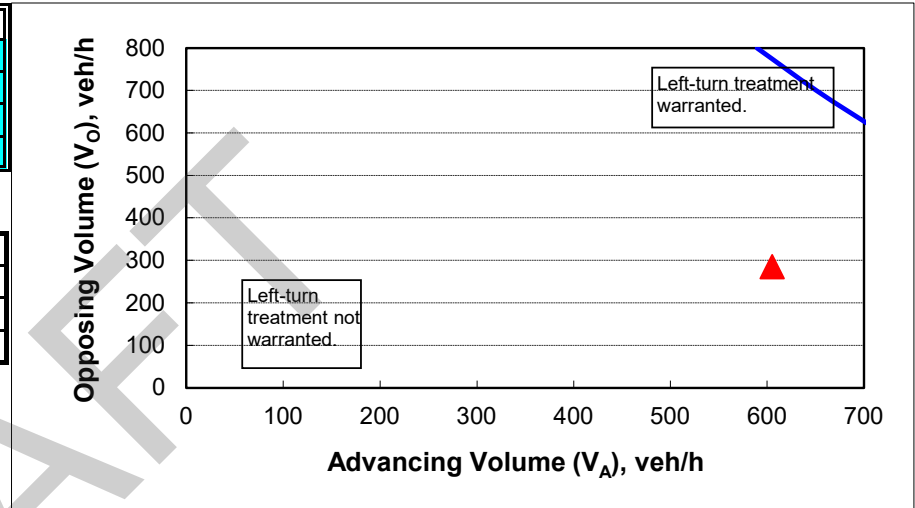
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	605
Opposing volume (V_O), veh/h:	285

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1002
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

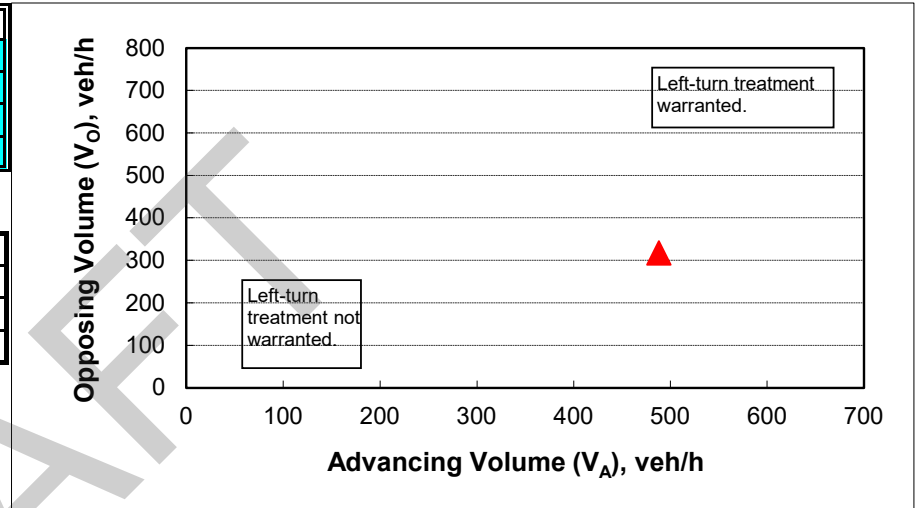
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	488
Opposing volume (V_O), veh/h:	317

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	2982
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

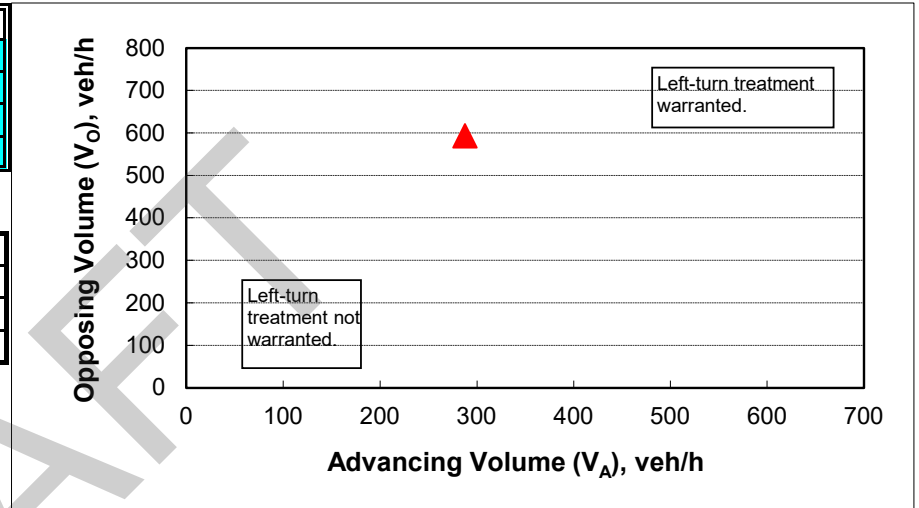
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	288
Opposing volume (V_O), veh/h:	593

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	995
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

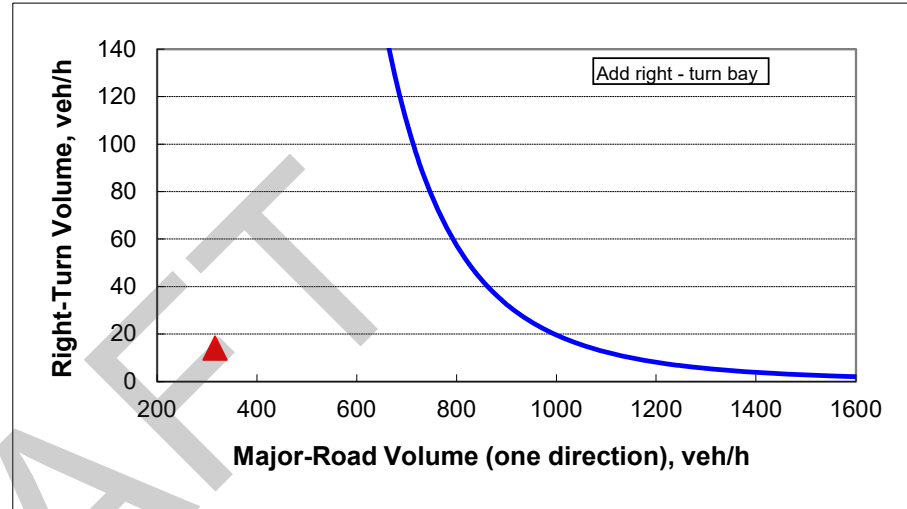
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	316
Right-turn volume, veh/h:	14

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	5034
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



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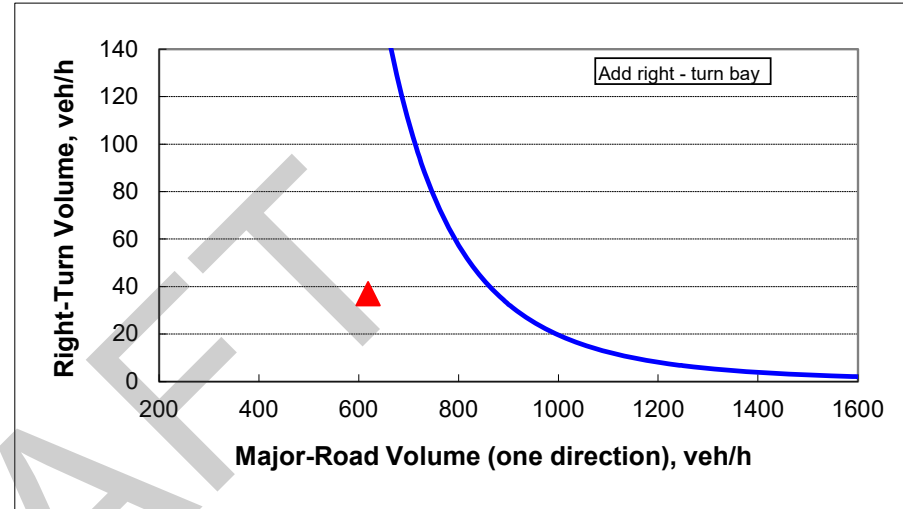
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:		2-lane roadway
Variable	Value	
Major-road speed, mph:	30	
Major-road volume (one direction), veh/h:	619	
Right-turn volume, veh/h:	37	

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	197
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



DRAFT

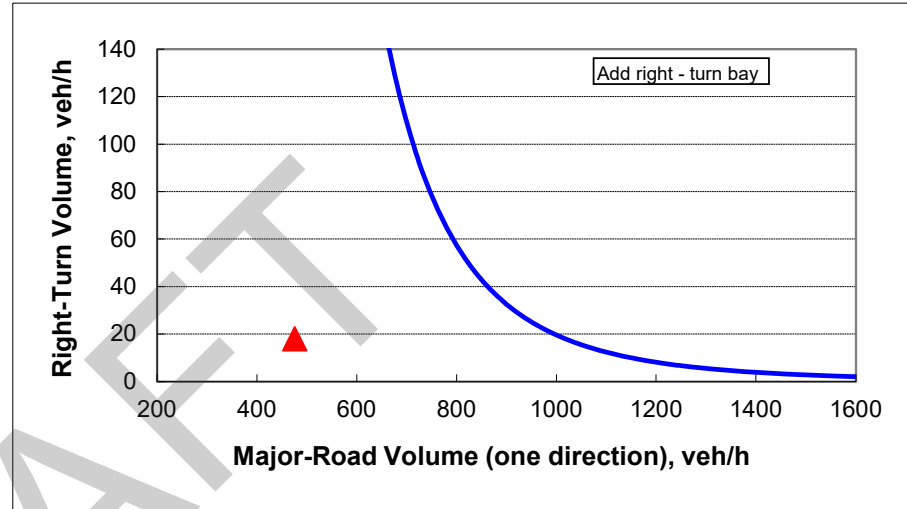
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:		2-lane roadway
Variable	Value	
Major-road speed, mph:	30	
Major-road volume (one direction), veh/h:	476	
Right-turn volume, veh/h:	18	

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	699
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



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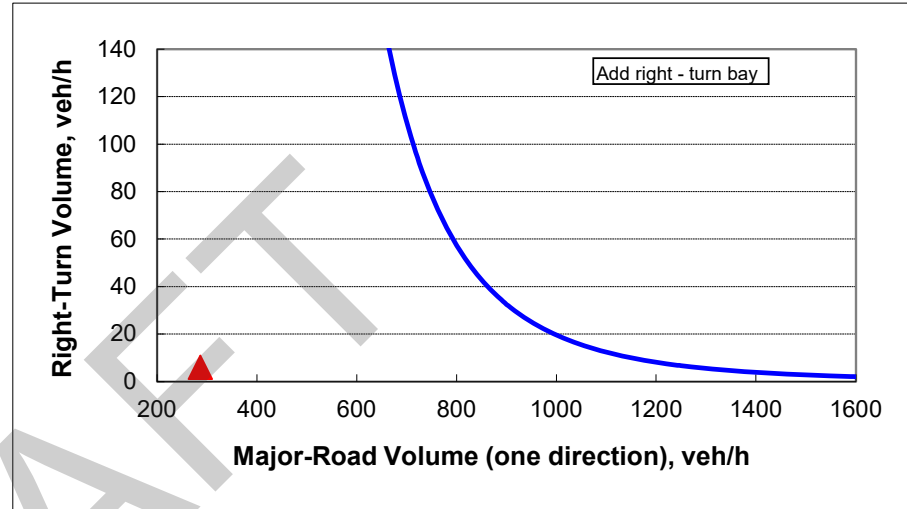
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:		2-lane roadway
Variable	Value	
Major-road speed, mph:	30	
Major-road volume (one direction), veh/h:	287	
Right-turn volume, veh/h:	6	

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	8005
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



DRAFT

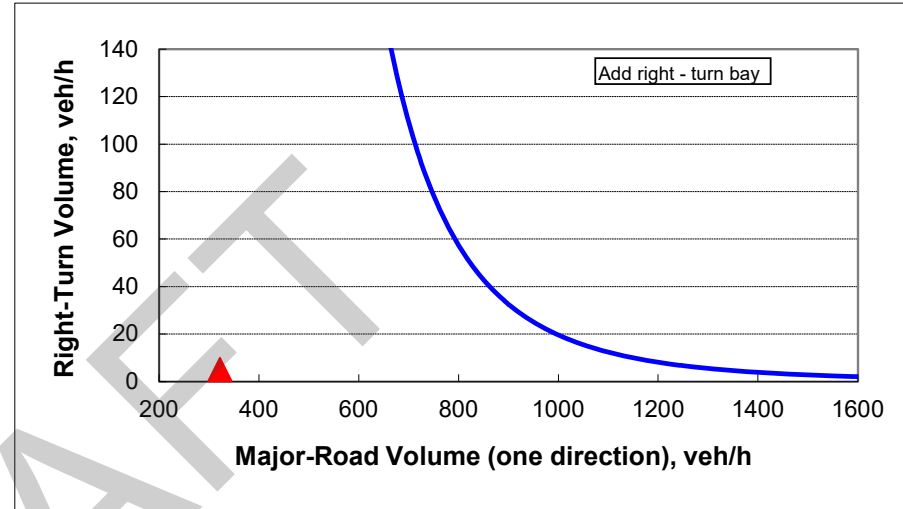
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:		2-lane roadway
Variable	Value	
Major-road speed, mph:	30	
Major-road volume (one direction), veh/h:	322	
Right-turn volume, veh/h:	5	

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	4598
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



DRAFT

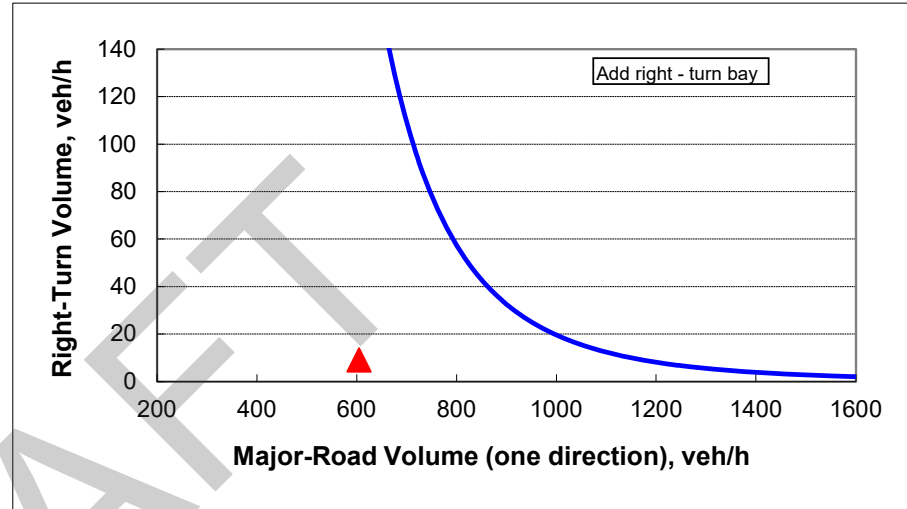
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:		2-lane roadway
Variable	Value	
Major-road speed, mph:	30	
Major-road volume (one direction), veh/h:	605	
Right-turn volume, veh/h:	9	

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	220
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



DRAFT

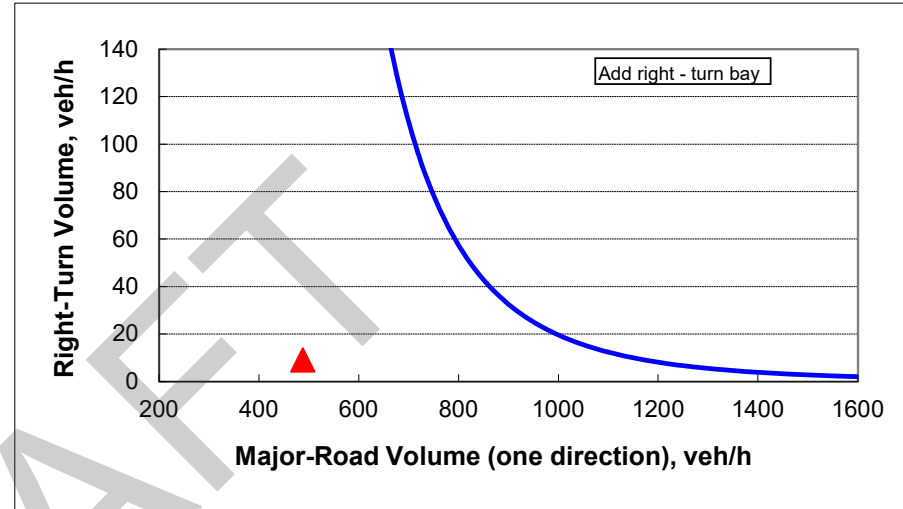
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	488
Right-turn volume, veh/h:	9

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	620
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



DRAFT

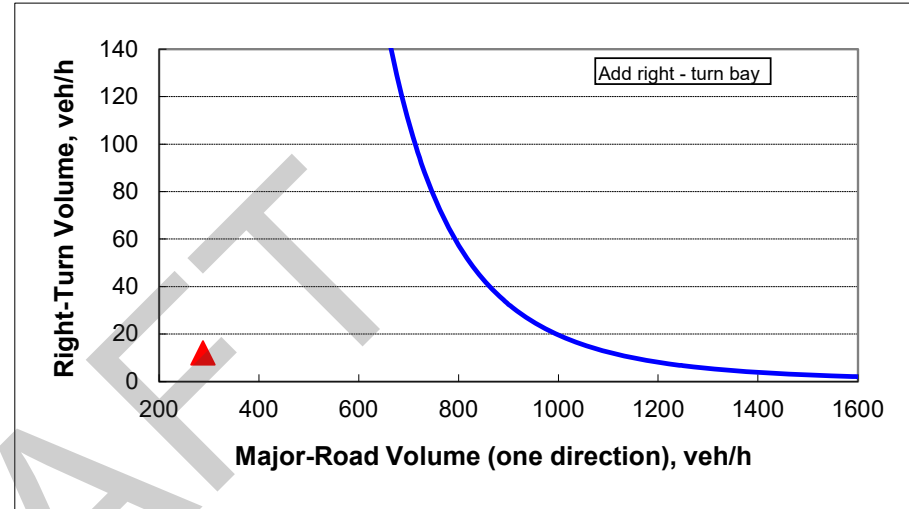
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:		2-lane roadway
Variable	Value	
Major-road speed, mph:	30	
Major-road volume (one direction), veh/h:	288	
Right-turn volume, veh/h:	12	

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	7872
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



DRAFT

Sucette Harbor TIA Appendix

2045 Build Analysis

DRAFT

URBAN SYSTEMS inc.

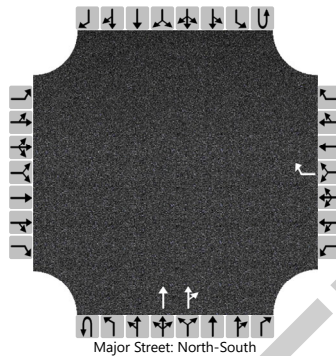


- HV % defaults were used: 2% for Synchro and 3% for HCS
- Intersection PHFs were calculated for the entire intersection and used in the analysis.

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC	Intersection	E Causeway at Mariners				
Agency/Co.	USI	Jurisdiction	St Tammany				
Date Performed	11/7/22	East/West Street	Mariners Blvd				
Analysis Year	2045	North/South Street	E Causeway Approach				
Time Analyzed	AM Build	Peak Hour Factor	0.77				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1		0	2	0		0	0	0
Configuration								R			T	TR				
Volume (veh/h)								43			227	15				
Percent Heavy Vehicles (%)								3								
Proportion Time Blocked																
Percent Grade (%)								0								
Right Turn Channelized								No								
Median Type Storage								Undivided								

Critical and Follow-up Headways

Base Critical Headway (sec)								6.9								
Critical Headway (sec)								6.96								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.33								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								56								
Capacity, c (veh/h)								857								
v/c Ratio								0.07								
95% Queue Length, Q ₉₅ (veh)								0.2								
Control Delay (s/veh)								9.5								
Level of Service (LOS)								A								
Approach Delay (s/veh)								9.5								
Approach LOS								A								

Queues

3: E Causeway Approach & Monroe St

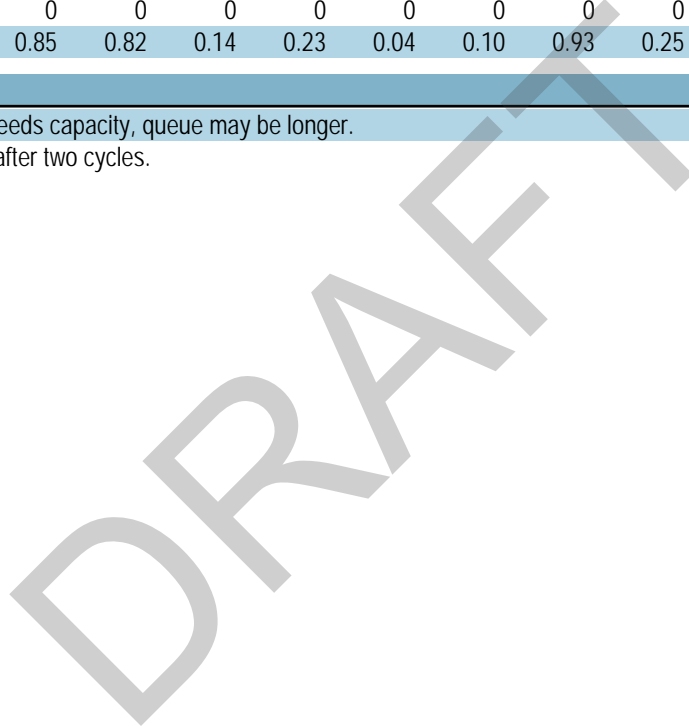
11/16/2022



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	651	757	31	251	21	32	1024	248
v/c Ratio	0.88	0.89	0.30	0.31	0.05	0.13	0.93	0.25
Control Delay	57.3	54.8	59.7	41.6	0.2	40.9	54.2	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.3	54.8	59.7	41.6	0.2	40.9	54.2	1.8
Queue Length 50th (ft)	255	290	23	94	0	20	407	0
Queue Length 95th (ft)	#339	#358	52	126	0	47	#521	22
Internal Link Dist (ft)	220	346		227			155	
Turn Bay Length (ft)			130			130		
Base Capacity (vph)	764	919	225	1096	581	316	1096	985
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.82	0.14	0.23	0.04	0.10	0.93	0.25

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



HCM 6th Signalized Intersection Summary
 3: E Causeway Approach & Monroe St

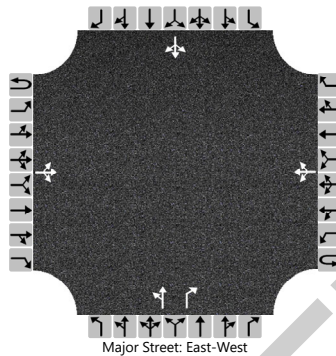
11/16/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↗	↕↕	↗	↗	↕↕	↗
Traffic Volume (veh/h)	137	412	4	151	458	34	26	213	18	27	870	211
Future Volume (veh/h)	137	412	4	151	458	34	26	213	18	27	870	211
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	161	485	5	178	539	40	31	251	21	32	1024	248
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	177	568	6	195	626	48	50	411	183	397	1104	815
Arrive On Green	0.20	0.20	0.20	0.24	0.24	0.24	0.03	0.12	0.12	0.22	0.31	0.31
Sat Flow, veh/h	871	2791	30	822	2637	203	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	338	0	313	396	0	361	31	251	21	32	1024	248
Grp Sat Flow(s),veh/h/ln	1827	0	1865	1829	0	1834	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	19.6	0.0	17.5	22.9	0.0	20.3	1.9	7.3	1.3	1.5	30.3	9.8
Cycle Q Clear(g_c), s	19.6	0.0	17.5	22.9	0.0	20.3	1.9	7.3	1.3	1.5	30.3	9.8
Prop In Lane	0.48		0.02	0.45		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	372	0	380	434	0	435	50	411	183	397	1104	815
V/C Ratio(X)	0.91	0.00	0.83	0.91	0.00	0.83	0.62	0.61	0.11	0.08	0.93	0.30
Avail Cap(c_a), veh/h	403	0	412	488	0	489	229	1111	496	397	1111	818
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.3	0.0	41.4	40.4	0.0	39.4	52.3	45.8	43.1	33.4	36.3	15.2
Incr Delay (d2), s/veh	22.0	0.0	11.0	19.0	0.0	9.3	4.7	3.1	0.6	0.0	13.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.0	0.0	9.1	12.5	0.0	10.2	0.9	3.4	0.5	0.7	14.8	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.3	0.0	52.4	59.4	0.0	48.7	56.9	48.9	43.7	33.5	49.8	15.7
LnGrp LOS	E	A	D	E	A	D	E	D	D	C	D	B
Approach Vol, veh/h		651			757			303			1304	
Approach Delay, s/veh		58.6			54.3			49.3			42.9	
Approach LOS		E			D			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.2	18.6		28.1	9.0	39.8		31.8				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	14.0	34.0		24.0	14.0	34.0		29.0				
Max Q Clear Time (g_c+I1), s	3.5	9.3		21.6	3.9	32.3		24.9				
Green Ext Time (p_c), s	0.0	3.3		0.5	0.0	1.4		0.9				
Intersection Summary												
HCM 6th Ctrl Delay					49.8							
HCM 6th LOS					D							

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Antibes St E		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	11/7/22			East/West Street	Monroe St		
Analysis Year	2045			North/South Street	Antibes St E - Cambronne		
Time Analyzed	AM Build			Peak Hour Factor	0.77		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12		
Priority																	
Number of Lanes	0	0	1	0	0	0	1	0	0	1	1		0	1	0		
Configuration			LTR				LTR			LT		R			LTR		
Volume (veh/h)		10	397	17		30	582	24		28	31	33		4	9	4	
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3	
Proportion Time Blocked																	
Percent Grade (%)										0				0			
Right Turn Channelized										No							
Median Type Storage					Undivided												

Critical and Follow-up Headways

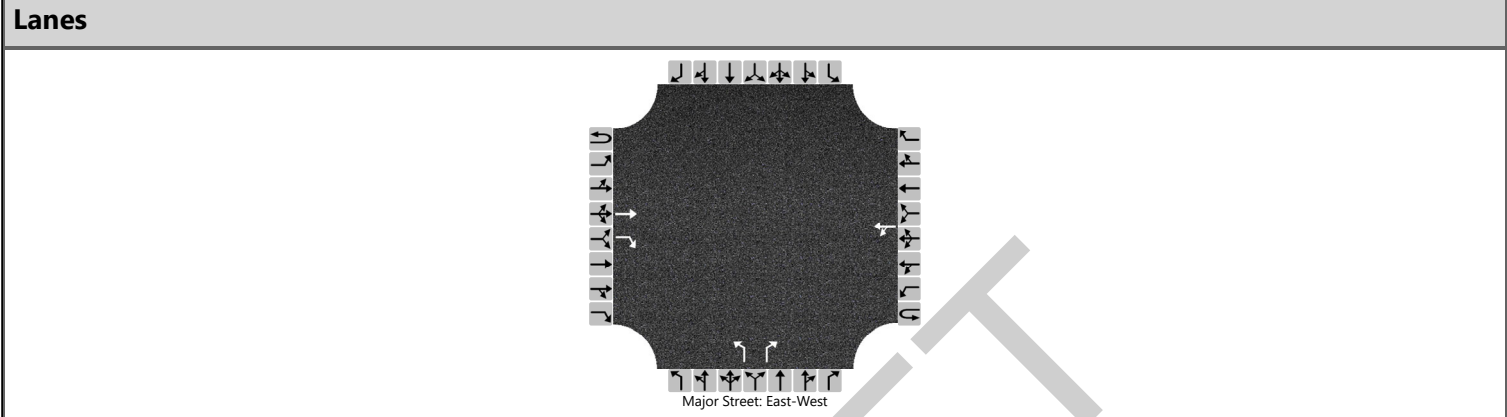
Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		13				39				77		43			22		
Capacity, c (veh/h)		828				1025				111		549			123		
v/c Ratio		0.02				0.04				0.69		0.08			0.18		
95% Queue Length, Q ₉₅ (veh)		0.0				0.1				3.6		0.3			0.6		
Control Delay (s/veh)		9.4				8.6				90.7		12.1			40.7		
Level of Service (LOS)		A				A				F		B			E		
Approach Delay (s/veh)		0.4				1.0				62.5				40.7			
Approach LOS		A				A				F				E			

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Antibes W		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	11/7/22			East/West Street	Monroe St		
Analysis Year	2045			North/South Street	Antibes St W		
Time Analyzed	AM Build			Peak Hour Factor	0.81		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12		
Priority																	
Number of Lanes	0	0	1	1	0	0	1	0	1	0	1		0	0	0		
Configuration			T	R			LT				L		R				
Volume (veh/h)			417	41			8	621			29		1				
Percent Heavy Vehicles (%)							3				3		3				
Proportion Time Blocked																	
Percent Grade (%)										0							
Right Turn Channelized		No								No							
Median Type Storage					Left Only								1				

Critical and Follow-up Headways

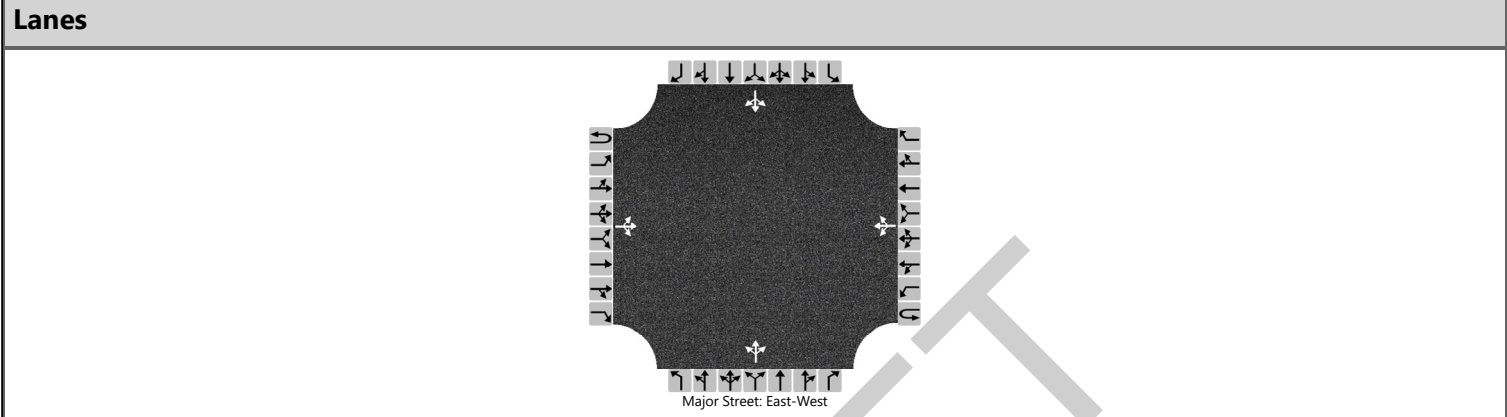
Base Critical Headway (sec)						4.1					7.1		6.2			
Critical Headway (sec)						4.13					6.43		6.23			
Base Follow-Up Headway (sec)						2.2					3.5		3.3			
Follow-Up Headway (sec)						2.23					3.53		3.33			

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					10					36		1				
Capacity, c (veh/h)					1001					308		558				
v/c Ratio					0.01					0.12		0.00				
95% Queue Length, Q ₉₅ (veh)					0.0					0.4		0.0				
Control Delay (s/veh)					8.6					18.2		11.5				
Level of Service (LOS)					A					C		B				
Approach Delay (s/veh)					0.3						18.0					
Approach LOS											C					

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Massena St		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	11/7/22			East/West Street	Monroe St		
Analysis Year	2045			North/South Street	Massena St		
Time Analyzed	AM Build			Peak Hour Factor	0.70		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	1	0		0	1	0	
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		7	415	7		1	640	13		1	0	6		8	0	24
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

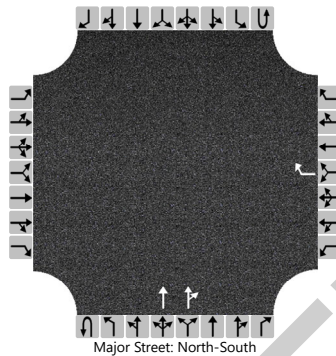
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		10				1					10					46	
Capacity, c (veh/h)		730				970					285					196	
v/c Ratio		0.01				0.00					0.04					0.23	
95% Queue Length, Q ₉₅ (veh)		0.0				0.0					0.1					0.9	
Control Delay (s/veh)		10.0				8.7					18.1					28.9	
Level of Service (LOS)		B				A					C					D	
Approach Delay (s/veh)		0.4				0.0				18.1				28.9			
Approach LOS		C				D				C				D			

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	E Causeway at Mariners		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	11/7/22			East/West Street	Mariners Blvd		
Analysis Year	2045			North/South Street	E Causeway Approach		
Time Analyzed	PM Build			Peak Hour Factor	0.94		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1		0	0	2	0	0	0	0
Configuration								R			T	TR				
Volume (veh/h)								47			1187	50				
Percent Heavy Vehicles (%)								3								
Proportion Time Blocked																
Percent Grade (%)								0								
Right Turn Channelized								No								
Median Type Storage								Undivided								

Critical and Follow-up Headways

Base Critical Headway (sec)								6.9								
Critical Headway (sec)								6.96								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.33								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								50								
Capacity, c (veh/h)								404								
v/c Ratio								0.12								
95% Queue Length, Q ₉₅ (veh)								0.4								
Control Delay (s/veh)								15.2								
Level of Service (LOS)								C								
Approach Delay (s/veh)								15.2								
Approach LOS								C								

Queues

3: E Causeway Approach & Monroe St

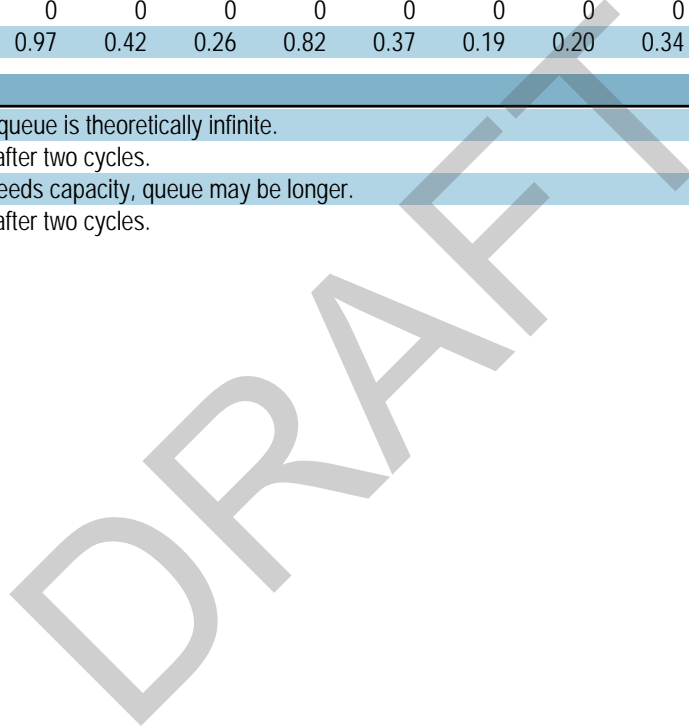
11/16/2022



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	794	416	109	953	242	46	229	248
v/c Ratio	0.97	0.74	0.26	0.82	0.37	0.37	0.48	0.34
Control Delay	67.2	50.2	35.2	40.3	7.9	57.0	46.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.2	50.2	35.2	40.3	7.9	57.0	46.2	3.7
Queue Length 50th (ft)	~285	141	59	314	15	30	76	6
Queue Length 95th (ft)	#472	201	118	#477	80	70	121	32
Internal Link Dist (ft)	220	346		227			155	
Turn Bay Length (ft)			130			130		
Base Capacity (vph)	815	980	424	1167	662	240	1167	723
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.42	0.26	0.82	0.37	0.19	0.20	0.34





















Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



HCM 6th Signalized Intersection Summary
 3: E Causeway Approach & Monroe St

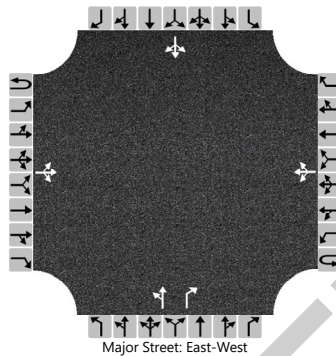
11/16/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	159	603	0	64	303	32	105	915	232	44	220	238
Future Volume (veh/h)	159	603	0	64	303	32	105	915	232	44	220	238
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	166	628	0	67	316	33	109	953	242	46	229	248
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	177	708	0	81	402	44	343	1171	522	65	617	663
Arrive On Green	0.24	0.24	0.00	0.14	0.14	0.14	0.19	0.33	0.33	0.04	0.17	0.17
Sat Flow, veh/h	721	2983	0	564	2790	304	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	422	372	0	219	0	197	109	953	242	46	229	248
Grp Sat Flow(s),veh/h/ln	1834	1777	0	1842	0	1816	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	22.1	19.6	0.0	11.3	0.0	10.2	5.2	24.1	11.8	2.5	5.6	10.6
Cycle Q Clear(g_c), s	22.1	19.6	0.0	11.3	0.0	10.2	5.2	24.1	11.8	2.5	5.6	10.6
Prop In Lane	0.39		0.00	0.31		0.17	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	449	435	0	266	0	262	343	1171	522	65	617	663
V/C Ratio(X)	0.94	0.85	0.00	0.82	0.00	0.75	0.32	0.81	0.46	0.71	0.37	0.37
Avail Cap(c_a), veh/h	449	435	0	545	0	537	343	1233	550	255	1233	938
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.3	35.3	0.0	40.7	0.0	40.2	34.0	30.1	26.0	46.7	35.8	19.6
Incr Delay (d2), s/veh	27.5	14.5	0.0	2.5	0.0	1.7	0.2	4.8	1.4	5.2	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.1	10.1	0.0	5.3	0.0	4.6	2.2	10.6	4.5	1.2	2.4	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.8	49.8	0.0	43.2	0.0	41.9	34.2	34.9	27.4	51.9	36.6	20.4
LnGrp LOS	E	D	A	D	A	D	C	C	C	D	D	C
Approach Vol, veh/h		794			416			1304			523	
Approach Delay, s/veh		57.2			42.6			33.5			30.2	
Approach LOS		E			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	38.3		30.0	24.8	23.0		20.1				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	14.0	34.0		24.0	14.0	34.0		29.0				
Max Q Clear Time (g_c+I1), s	4.5	26.1		24.1	7.2	12.6		13.3				
Green Ext Time (p_c), s	0.0	6.2		0.0	0.1	4.4		0.8				
Intersection Summary												
HCM 6th Ctrl Delay				40.4								
HCM 6th LOS				D								

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Antibes St E		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	11/7/22			East/West Street	Monroe St		
Analysis Year	2045			North/South Street	Antibes St E - Cambronne		
Time Analyzed	PM Build			Peak Hour Factor	0.90		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12		
Priority																	
Number of Lanes	0	0	1	0	0	0	1	0	0	1	1		0	1	0		
Configuration			LTR				LTR			LT		R			LTR		
Volume (veh/h)		11	773	44		52	314	8		33	10	46		13	19	6	
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3	
Proportion Time Blocked																	
Percent Grade (%)										0				0			
Right Turn Channelized										No							
Median Type Storage					Undivided												

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

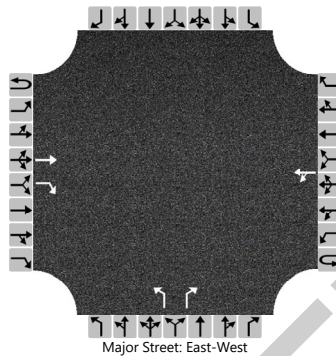
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		12				58				48		51			42	
Capacity, c (veh/h)		1195				746				100		343			120	
v/c Ratio		0.01				0.08				0.48		0.15			0.35	
95% Queue Length, Q ₉₅ (veh)		0.0				0.3				2.1		0.5			1.4	
Control Delay (s/veh)		8.0				10.2				70.7		17.3			50.7	
Level of Service (LOS)		A				B				F		C			F	
Approach Delay (s/veh)		0.3				2.3				43.1				50.7		
Approach LOS		E				E				E				F		

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Antibes W		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	11/7/22			East/West Street	Monroe St		
Analysis Year	2045			North/South Street	Antibes St W		
Time Analyzed	PM Build			Peak Hour Factor	0.89		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12		
Priority																	
Number of Lanes	0	0	1	1	0	0	1	0	1	0	1		0	0	0		
Configuration			T	R			LT				L		R				
Volume (veh/h)			801	58			6	348			41		21				
Percent Heavy Vehicles (%)							3				3		3				
Proportion Time Blocked																	
Percent Grade (%)										0							
Right Turn Channelized		No								No							
Median Type Storage					Left Only								1				

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

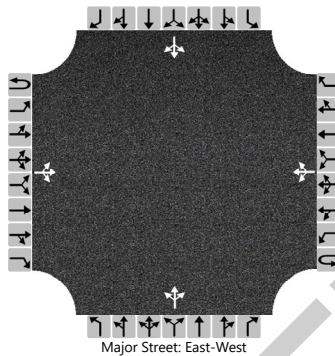
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					7				46		24					
Capacity, c (veh/h)					709				298		336					
v/c Ratio					0.01				0.15		0.07					
95% Queue Length, Q ₉₅ (veh)					0.0				0.5		0.2					
Control Delay (s/veh)					10.1				19.3		16.5					
Level of Service (LOS)					B				C		C					
Approach Delay (s/veh)					0.3				18.4							
Approach LOS									C							

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Massena St		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	11/7/22			East/West Street	Monroe St		
Analysis Year	2045			North/South Street	Massena St		
Time Analyzed	PM Build			Peak Hour Factor	0.93		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	1	0		0	1	0	
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		15	778	13		4	357	15		7	1	11		27	1	24
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		16				4					20					56	
Capacity, c (veh/h)		1153				784					210					211	
v/c Ratio		0.01				0.01					0.10					0.27	
95% Queue Length, Q ₉₅ (veh)		0.0				0.0					0.3					1.0	
Control Delay (s/veh)		8.2				9.6					24.0					28.1	
Level of Service (LOS)		A				A					C					D	
Approach Delay (s/veh)		0.4				0.2				24.0				28.1			
Approach LOS		A				A				C				D			

Sucette Harbor TIA Appendix

2045 Build Turn Lane Warrants

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URBAN SYSTEMS inc.



Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

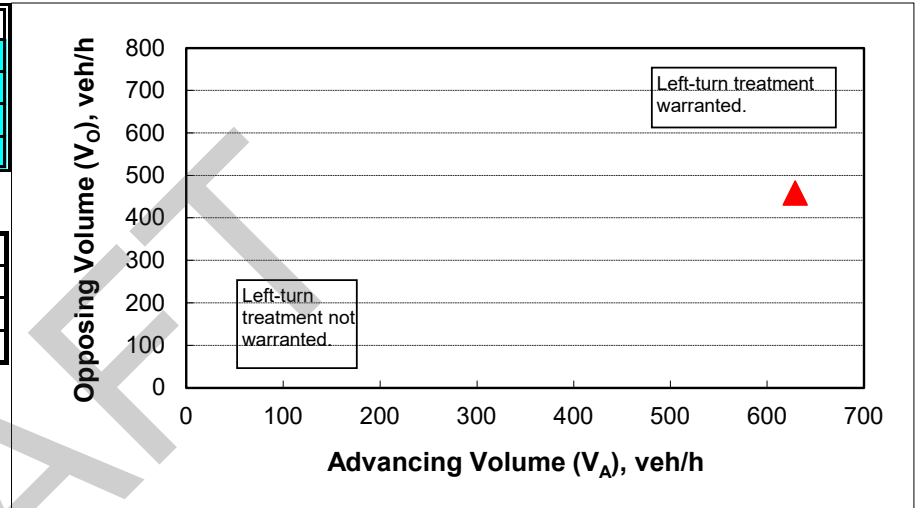
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	629
Opposing volume (V_O), veh/h:	458

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1036
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

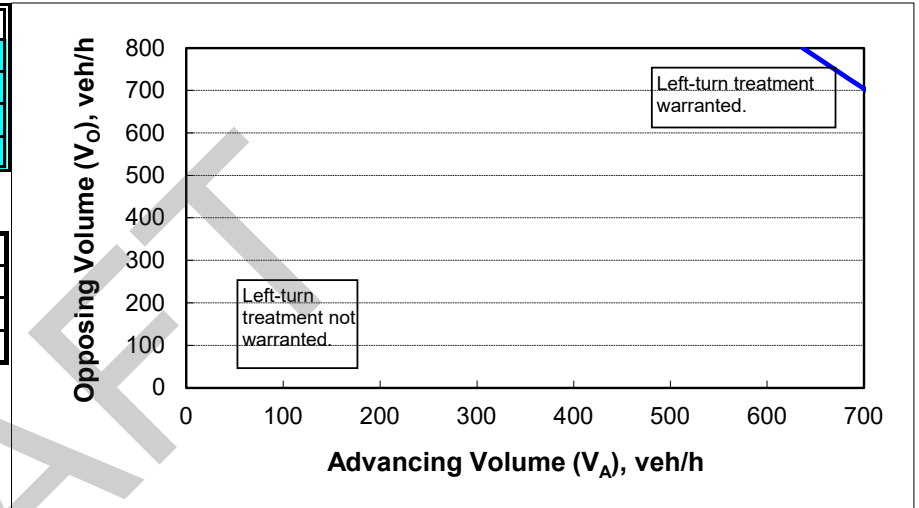
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	354
Opposing volume (V_O), veh/h:	859

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	601
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

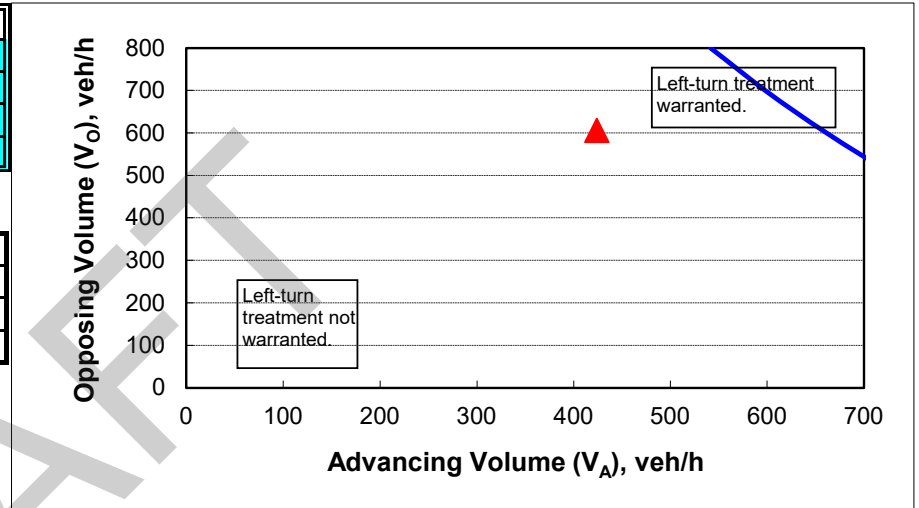
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	424
Opposing volume (V_O), veh/h:	606

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	657
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

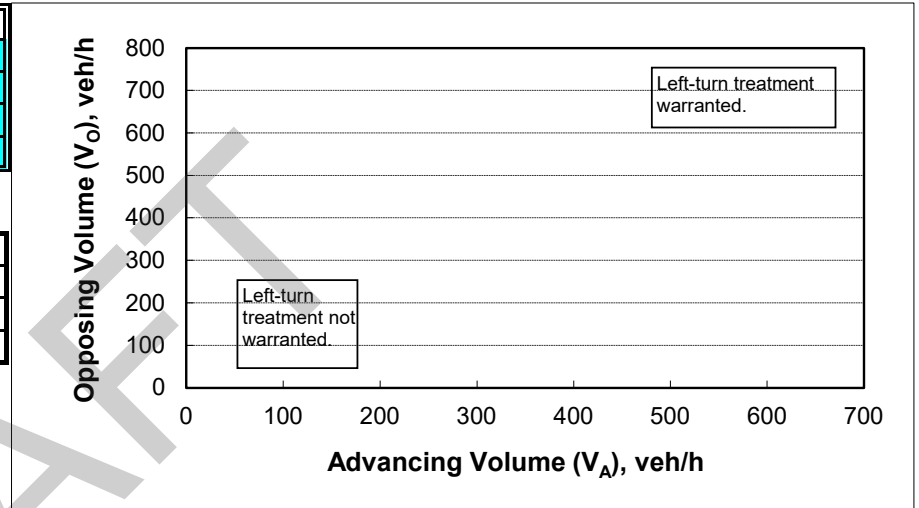
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	828
Opposing volume (V_O), veh/h:	322

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1171
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

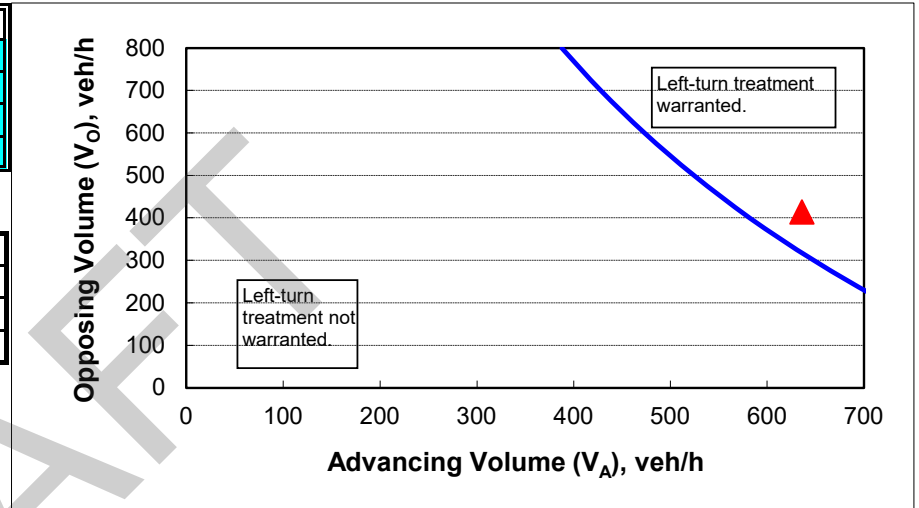
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	5%
Advancing volume (V_A), veh/h:	636
Opposing volume (V_O), veh/h:	414

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	573
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

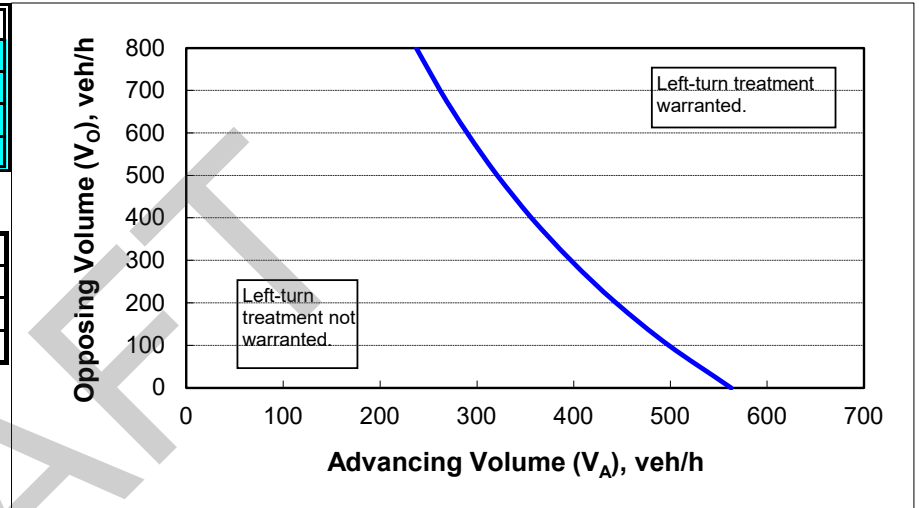
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	14%
Advancing volume (V_A), veh/h:	374
Opposing volume (V_O), veh/h:	817

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	234
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

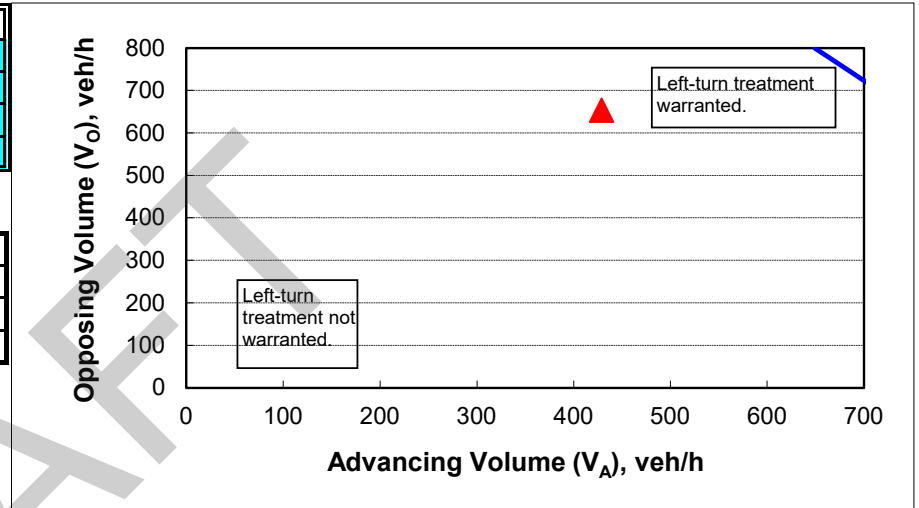
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	429
Opposing volume (V_O), veh/h:	653

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	751
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

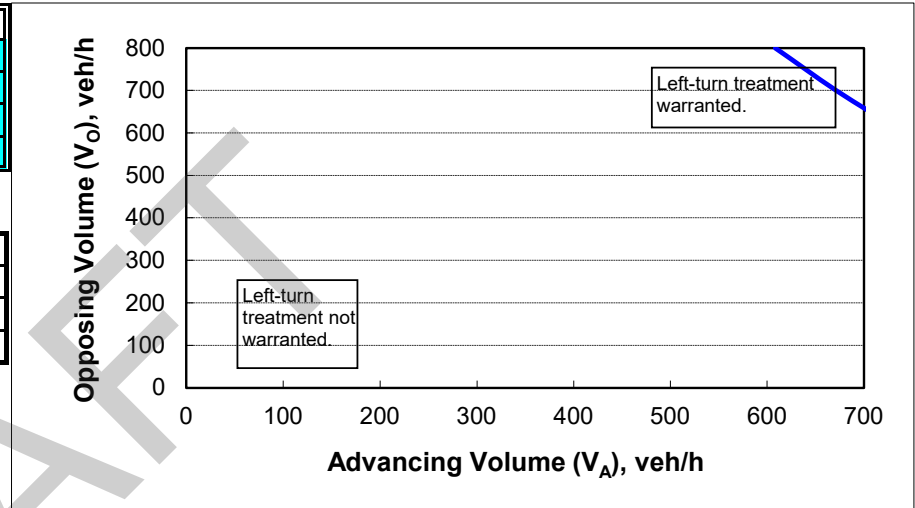
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	806
Opposing volume (V_O), veh/h:	372

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	941
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

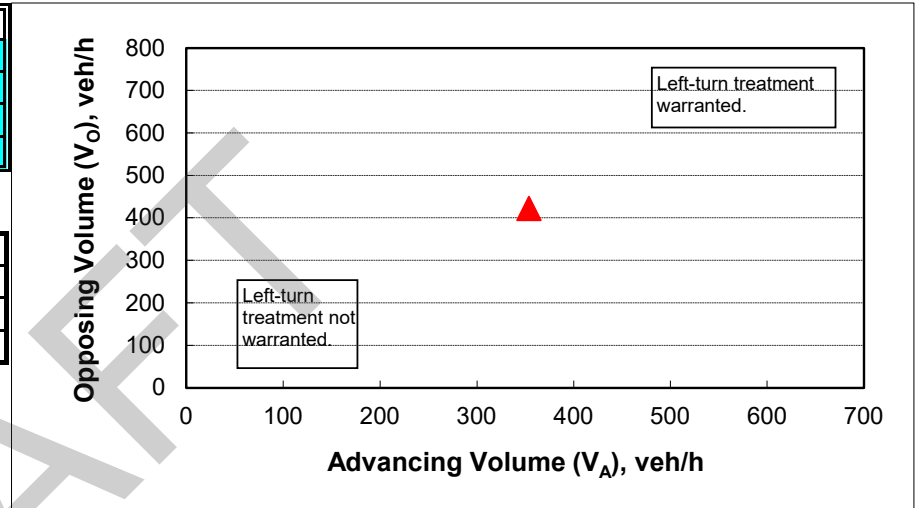
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	354
Opposing volume (V_O), veh/h:	422

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	2271
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

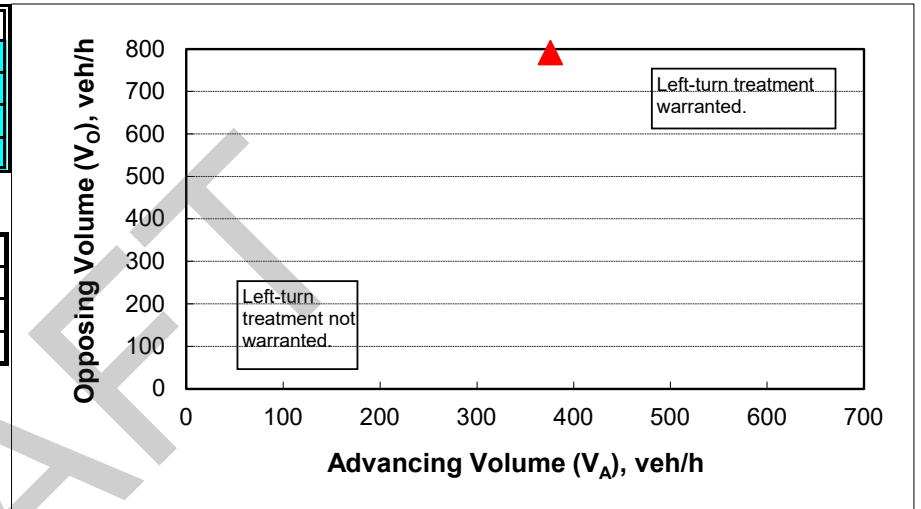
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	376
Opposing volume (V_O), veh/h:	791

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	808
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

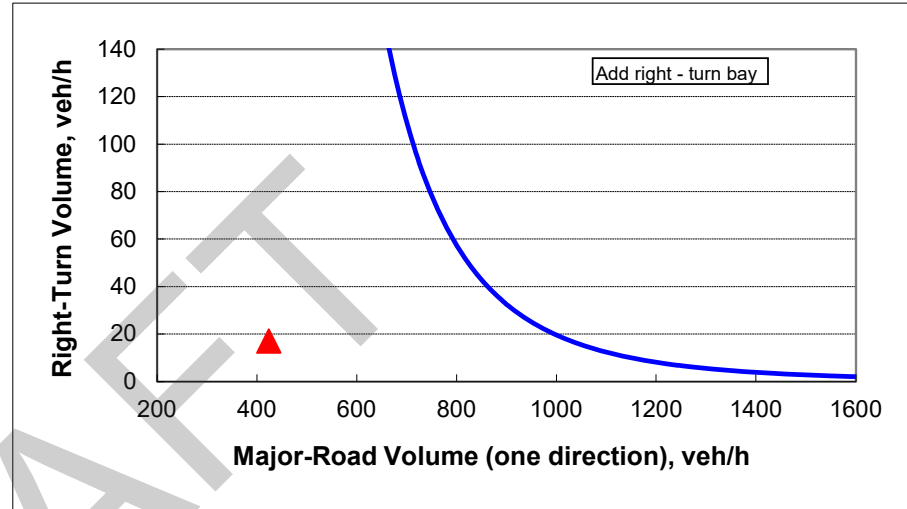
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	424
Right-turn volume, veh/h:	17

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	1221
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



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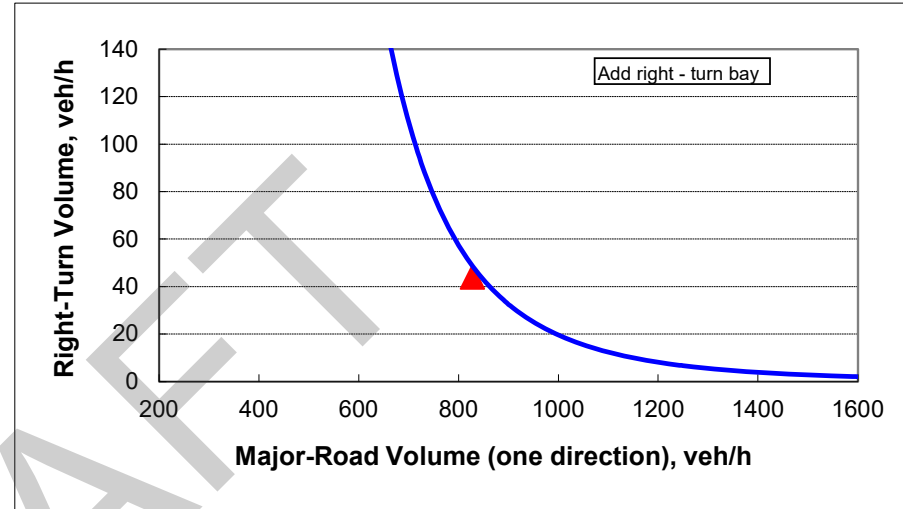
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	828
Right-turn volume, veh/h:	44

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	49
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



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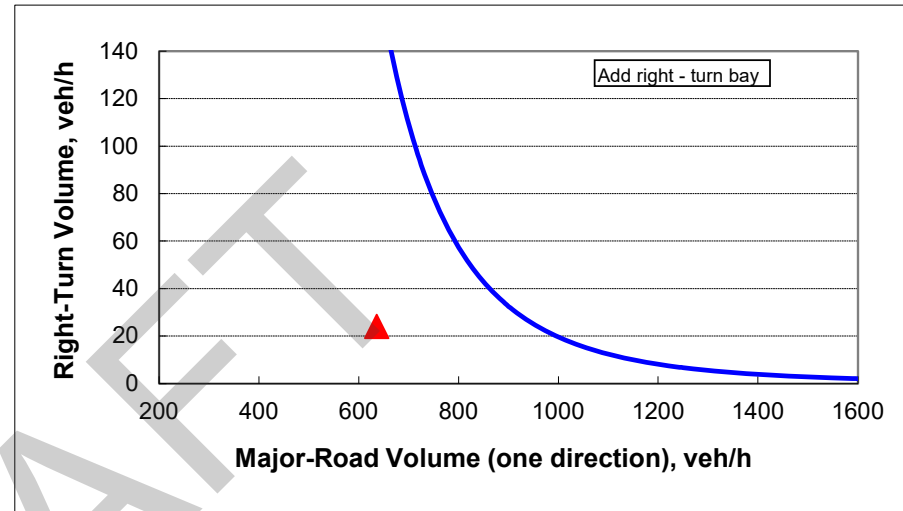
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:		2-lane roadway
Variable	Value	
Major-road speed, mph:	30	
Major-road volume (one direction), veh/h:	636	
Right-turn volume, veh/h:	24	

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	173
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



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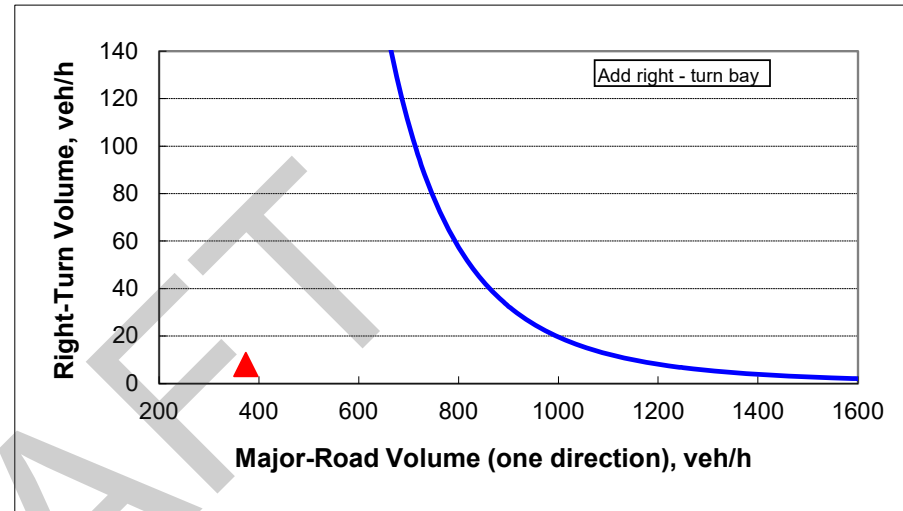
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	374
Right-turn volume, veh/h:	8

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	2235
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



DRAFT

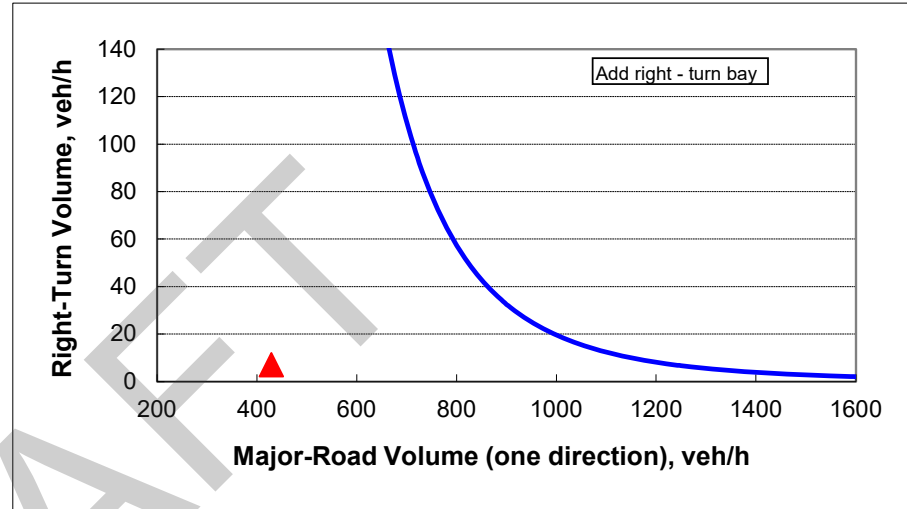
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:		2-lane roadway
Variable	Value	
Major-road speed, mph:	30	
Major-road volume (one direction), veh/h:	429	
Right-turn volume, veh/h:	7	

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	1154
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



DRAFT

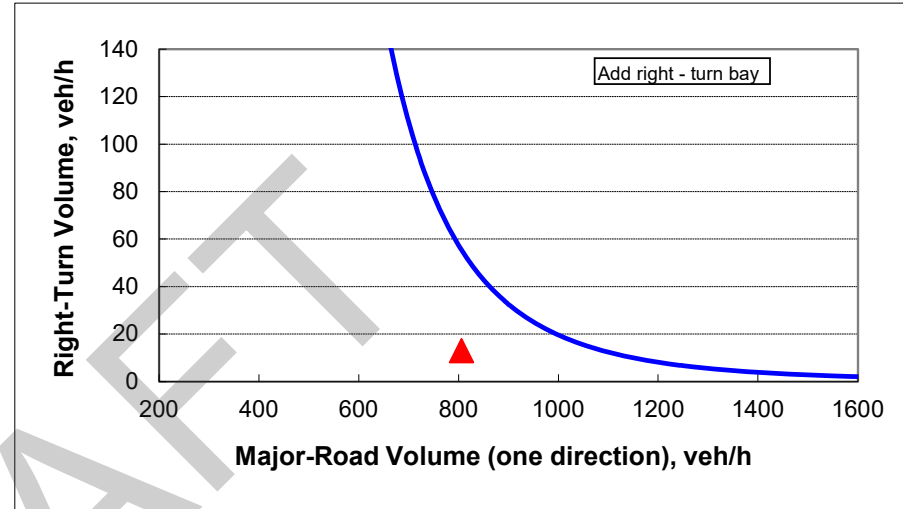
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	806
Right-turn volume, veh/h:	13

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	55
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



DRAFT

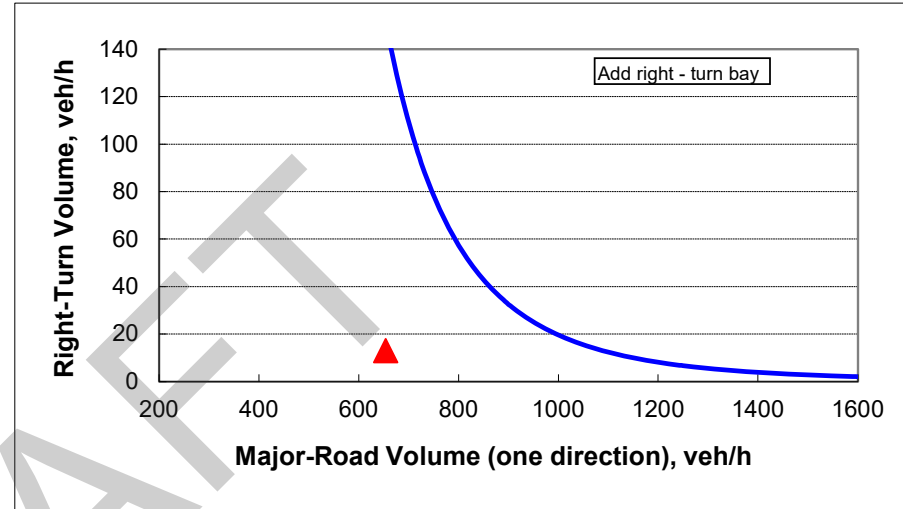
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:		2-lane roadway
Variable	Value	
Major-road speed, mph:	30	
Major-road volume (one direction), veh/h:	654	
Right-turn volume, veh/h:	13	

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	151
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



DRAFT

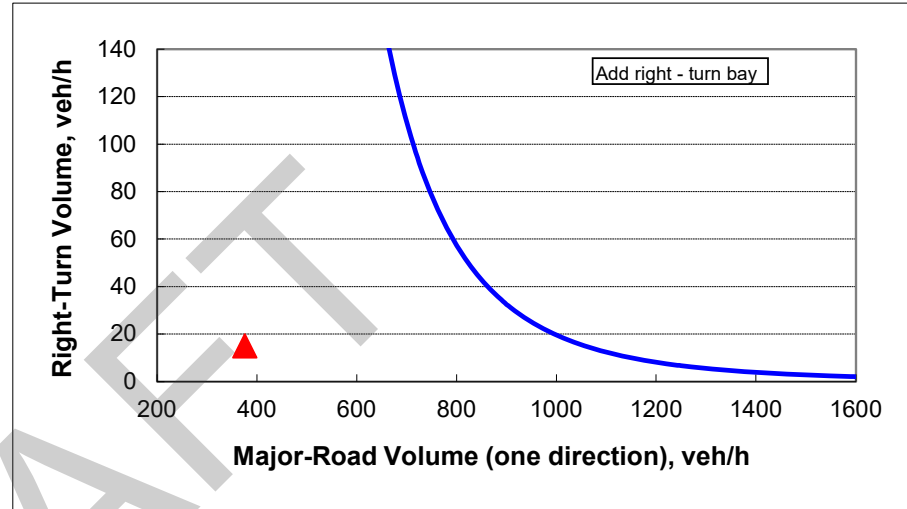
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	376
Right-turn volume, veh/h:	15

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	2178
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	

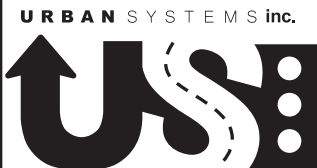


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Sucette Harbor TIA Appendix

2045 Build Analysis with Improvements Analysis

DRAFT



- HV % defaults were used: 2% for Synchro and 3% for HCS
- Intersection PHFs were calculated for the entire intersection and used in the analysis.

Queues

3: E Causeway Approach & Monroe St

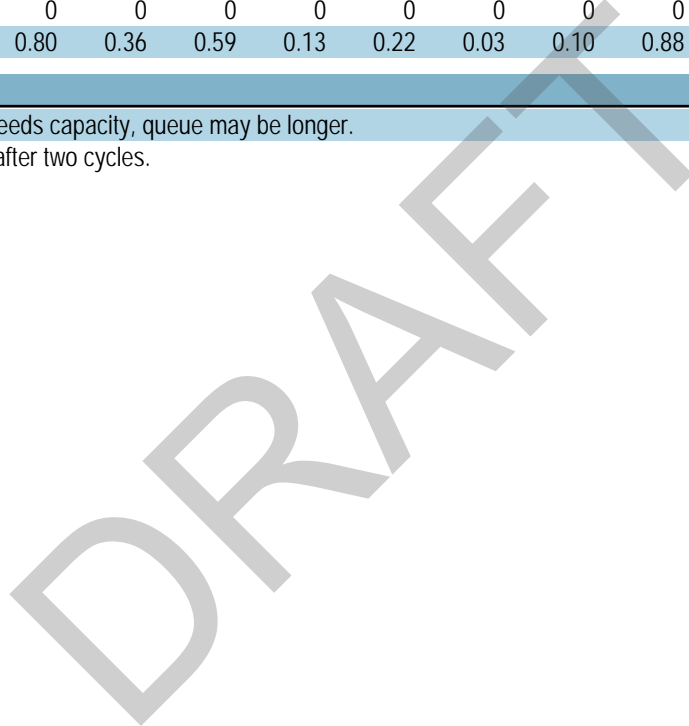
11/17/2022



Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	651	178	579	31	251	21	32	1024	248
v/c Ratio	0.84	0.49	0.80	0.28	0.29	0.04	0.12	0.88	0.24
Control Delay	52.0	42.8	48.8	57.6	39.5	0.2	39.3	45.6	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.0	42.8	48.8	57.6	39.5	0.2	39.3	45.6	1.8
Queue Length 50th (ft)	235	113	206	22	88	0	18	372	0
Queue Length 95th (ft)	#339	174	258	52	126	0	47	#521	22
Internal Link Dist (ft)	220		346		227			155	
Turn Bay Length (ft)				130			130		
Base Capacity (vph)	810	495	985	239	1162	607	334	1162	1031
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.36	0.59	0.13	0.22	0.03	0.10	0.88	0.24






















Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



HCM 6th Signalized Intersection Summary
 3: E Causeway Approach & Monroe St

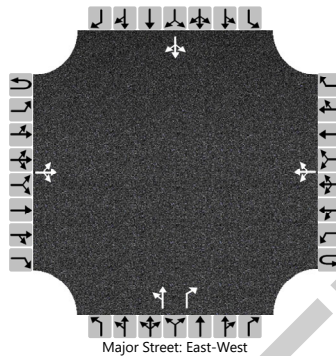
11/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	412	4	151	458	34	26	213	18	27	870	211
Future Volume (veh/h)	137	412	4	151	458	34	26	213	18	27	870	211
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	161	485	5	178	539	40	31	251	21	32	1024	248
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	181	579	6	337	635	47	52	427	190	430	1182	856
Arrive On Green	0.21	0.21	0.21	0.19	0.19	0.19	0.03	0.12	0.12	0.24	0.33	0.33
Sat Flow, veh/h	871	2791	30	1781	3354	248	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	338	0	313	178	285	294	31	251	21	32	1024	248
Grp Sat Flow(s),veh/h/ln	1827	0	1865	1781	1777	1826	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	17.9	0.0	15.9	8.9	15.4	15.5	1.7	6.6	1.2	1.4	26.8	8.5
Cycle Q Clear(g_c), s	17.9	0.0	15.9	8.9	15.4	15.5	1.7	6.6	1.2	1.4	26.8	8.5
Prop In Lane	0.48		0.02	1.00		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	379	0	387	337	336	346	52	427	190	430	1182	856
V/C Ratio(X)	0.89	0.00	0.81	0.53	0.85	0.85	0.60	0.59	0.11	0.07	0.87	0.29
Avail Cap(c_a), veh/h	441	0	451	520	519	533	251	1217	543	430	1217	871
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.3	0.0	37.5	36.3	38.9	38.9	47.7	41.4	39.0	29.1	31.1	12.5
Incr Delay (d2), s/veh	16.6	0.0	7.9	0.5	4.7	4.8	4.1	2.7	0.5	0.0	7.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	0.0	8.0	3.9	7.1	7.3	0.8	3.0	0.5	0.6	12.2	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.9	0.0	45.4	36.7	43.6	43.7	51.8	44.1	39.5	29.1	38.4	12.8
LnGrp LOS	D	A	D	D	D	D	D	D	D	C	D	B
Approach Vol, veh/h		651			757			303			1304	
Approach Delay, s/veh		50.3			42.0			44.6			33.3	
Approach LOS		D			D			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.0	17.9		26.6	8.9	39.0		24.8				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	14.0	34.0		24.0	14.0	34.0		29.0				
Max Q Clear Time (g_c+I1), s	3.4	8.6		19.9	3.7	28.8		17.5				
Green Ext Time (p_c), s	0.0	3.3		0.7	0.0	4.2		1.4				
Intersection Summary												
HCM 6th Ctrl Delay				40.3								
HCM 6th LOS				D								

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Antibes St E		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	11/7/22			East/West Street	Monroe St		
Analysis Year	2045			North/South Street	Antibes St E - Cambronne		
Time Analyzed	AM Build w/ Improvements			Peak Hour Factor	0.77		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12		
Priority																	
Number of Lanes	0	0	1	0	0	0	1	0	0	1	1		0	1	0		
Configuration			LTR				LTR			LT		R			LTR		
Volume (veh/h)		10	397	17		30	582	24		28	31	33		4	9	4	
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3	
Proportion Time Blocked																	
Percent Grade (%)										0				0			
Right Turn Channelized										No							
Median Type Storage				Left + Thru									1				

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		13				39				77		43			22		
Capacity, c (veh/h)		828				1025				225		549			248		
v/c Ratio		0.02				0.04				0.34		0.08			0.09		
95% Queue Length, Q ₉₅ (veh)		0.0				0.1				1.4		0.3			0.3		
Control Delay (s/veh)		9.4				8.6				29.1		12.1			20.9		
Level of Service (LOS)		A				A				D		B			C		
Approach Delay (s/veh)		0.4				1.0				23.0				20.9			
Approach LOS		C				C				C				C			

Queues

3: E Causeway Approach & Monroe St

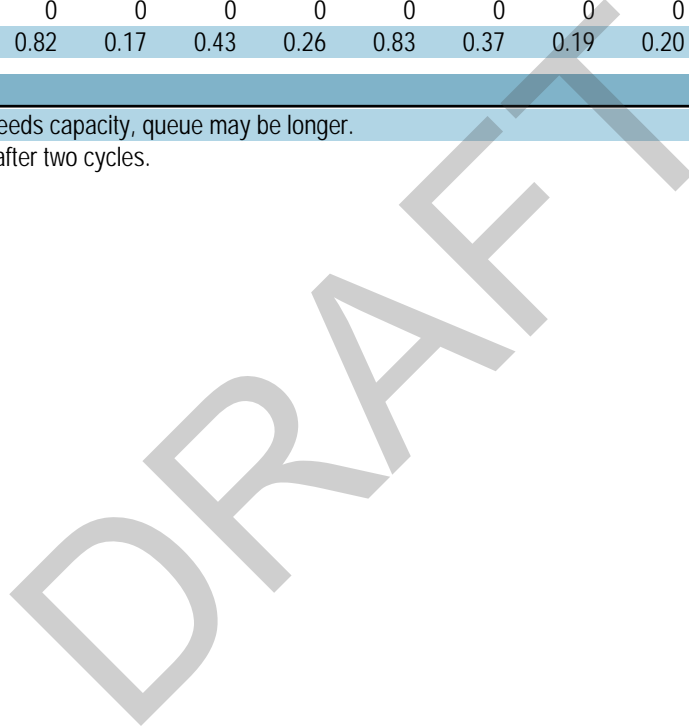
11/17/2022



Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	794	67	349	109	953	242	46	229	248
v/c Ratio	0.86	0.27	0.71	0.26	0.83	0.37	0.37	0.48	0.33
Control Delay	49.2	45.5	51.7	36.9	42.4	8.2	58.6	47.5	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.2	45.5	51.7	36.9	42.4	8.2	58.6	47.5	4.4
Queue Length 50th (ft)	278	43	122	62	330	16	32	79	13
Queue Length 95th (ft)	#426	87	177	122	#498	83	72	124	40
Internal Link Dist (ft)	220		346		227			155	
Turn Bay Length (ft)				130			130		
Base Capacity (vph)	969	405	804	414	1147	655	236	1147	762
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.17	0.43	0.26	0.83	0.37	0.19	0.20	0.33

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



HCM 6th Signalized Intersection Summary

3: E Causeway Approach & Monroe St

11/17/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕		↖	↕↕		↖	↕↕	↖	↖	↕↕	↖
Traffic Volume (veh/h)	159	603	0	64	303	32	105	915	232	44	220	238
Future Volume (veh/h)	159	603	0	64	303	32	105	915	232	44	220	238
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	166	628	0	67	316	33	109	953	242	46	229	248
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	184	738	0	220	402	42	352	1188	530	66	616	680
Arrive On Green	0.26	0.26	0.00	0.12	0.12	0.12	0.20	0.33	0.33	0.04	0.17	0.17
Sat Flow, veh/h	721	2983	0	1781	3250	337	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	422	372	0	67	172	177	109	953	242	46	229	248
Grp Sat Flow(s),veh/h/ln	1834	1777	0	1781	1777	1810	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	21.4	18.9	0.0	3.3	9.0	9.1	5.0	23.4	11.5	2.4	5.5	10.2
Cycle Q Clear(g_c), s	21.4	18.9	0.0	3.3	9.0	9.1	5.0	23.4	11.5	2.4	5.5	10.2
Prop In Lane	0.39		0.00	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	468	454	0	220	220	224	352	1188	530	66	616	680
V/C Ratio(X)	0.90	0.82	0.00	0.30	0.78	0.79	0.31	0.80	0.46	0.70	0.37	0.36
Avail Cap(c_a), veh/h	554	537	0	446	444	453	352	1259	562	260	1259	966
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.6	33.6	0.0	38.3	40.8	40.9	32.9	29.1	25.1	45.7	35.0	18.6
Incr Delay (d2), s/veh	14.8	7.2	0.0	0.3	2.3	2.4	0.2	4.3	1.3	5.0	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.2	8.9	0.0	1.4	4.0	4.2	2.1	10.2	4.4	1.2	2.4	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.3	40.8	0.0	38.6	43.1	43.3	33.1	33.4	26.4	50.7	35.8	19.3
LnGrp LOS	D	D	A	D	D	D	C	C	C	D	D	B
Approach Vol, veh/h		794			416			1304			523	
Approach Delay, s/veh		45.4			42.4			32.1			29.3	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.5	38.1		30.5	25.0	22.6		17.9				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	14.0	34.0		29.0	14.0	34.0		24.0				
Max Q Clear Time (g_c+I1), s	4.4	25.4		23.4	7.0	12.2		11.1				
Green Ext Time (p_c), s	0.0	6.7		1.1	0.1	4.5		0.7				

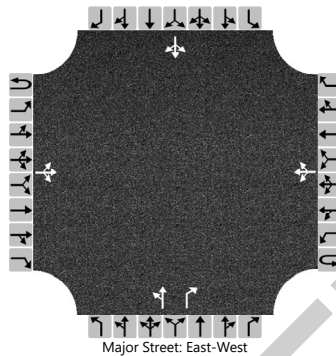
Intersection Summary

HCM 6th Ctrl Delay	36.5
HCM 6th LOS	D

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MAC			Intersection	Monroe St at Antibes St E		
Agency/Co.	USI			Jurisdiction	St Tammany		
Date Performed	11/7/22			East/West Street	Monroe St		
Analysis Year	2045			North/South Street	Antibes St E - Cambronne		
Time Analyzed	PM Build w/ Improvements			Peak Hour Factor	0.90		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	22-068						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12		
Priority																	
Number of Lanes	0	0	1	0	0	0	1	0	0	1	1		0	1	0		
Configuration			LTR				LTR			LT		R			LTR		
Volume (veh/h)		11	773	44		52	314	8		33	10	46		13	19	6	
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3	
Proportion Time Blocked																	
Percent Grade (%)										0				0			
Right Turn Channelized										No							
Median Type Storage				Left + Thru									1				

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		12				58				48		51			42		
Capacity, c (veh/h)		1195				746				223		343			212		
v/c Ratio		0.01				0.08				0.21		0.15			0.20		
95% Queue Length, Q ₉₅ (veh)		0.0				0.3				0.8		0.5			0.7		
Control Delay (s/veh)		8.0				10.2				25.5		17.3			26.2		
Level of Service (LOS)		A				B				D		C			D		
Approach Delay (s/veh)		0.3				2.3				21.3				26.2			
Approach LOS		C				D				D				D			

Sucette Harbor TIA Appendix

Trip Distribution Justification

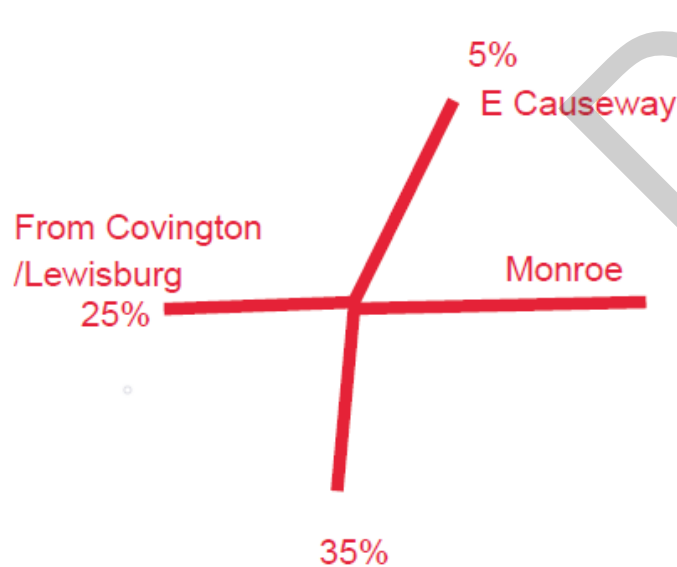
DRAFT

URBAN SYSTEMS inc.

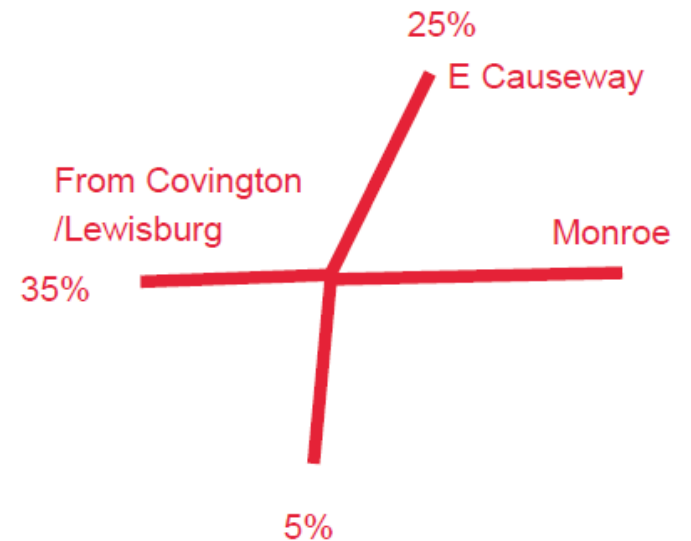


		EXISTING TRAFFIC PATTERNS/LAND USE						LOCALIZED ONLY					
AM		2045 Build Conditions			2045 Build Conditions w improv			2045 Build Conditions TEST			2045 Build Conditions TEST W improv		
Intersection	Approach	LOS	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio
E Causeway Approach at Monroe	Overall	D	49.8	--	D	36.5	--	D	49.4	--	D	40.7	--
	Monroe EB	E	58.6	0.91	D	45.40	0.90	E	58.5	0.91	D	50.9	0.89
	Monroe WB	D	54.3	0.91	D	42.40	0.79	D	53.6	0.91	D	42.5	0.85
	E Causeway NB	D	49.3	0.62	C	32.10	0.80	D	49.0	0.65	D	44.7	0.62
	E Causeway SB	D	42.9	0.93	C	29.30	0.70	D	42.5	0.93	C	33.7	0.87

		2045 Build Conditions			2045 Build Conditions w improv			2045 Build Conditions TEST			2045 Build Conditions TEST W improv		
Intersection	Approach	LOS	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio
E Causeway Approach at Monroe	Overall	D	40.4	--	D	40.3	--	D	42.6	--	D	38.2	--
	Monroe EB	E	57.2	0.94	D	50.30	0.89	E	62.9	0.97	D	44.5	0.90
	Monroe WB	D	42.6	0.82	D	42.00	0.85	D	43.5	0.82	D	43.3	0.80
	E Causeway NB	C	33.5	0.81	D	44.60	0.60	C	34.5	0.83	D	35.9	0.86
	E Causeway SB	C	30.2	0.71	C	33.30	0.87	C	31.6	0.77	C	30.7	0.77



EXISTING TRAFFIC PATTERNS/LAND USE



LOCALIZED ONLY

Queues

3: E Causeway Approach & Monroe St

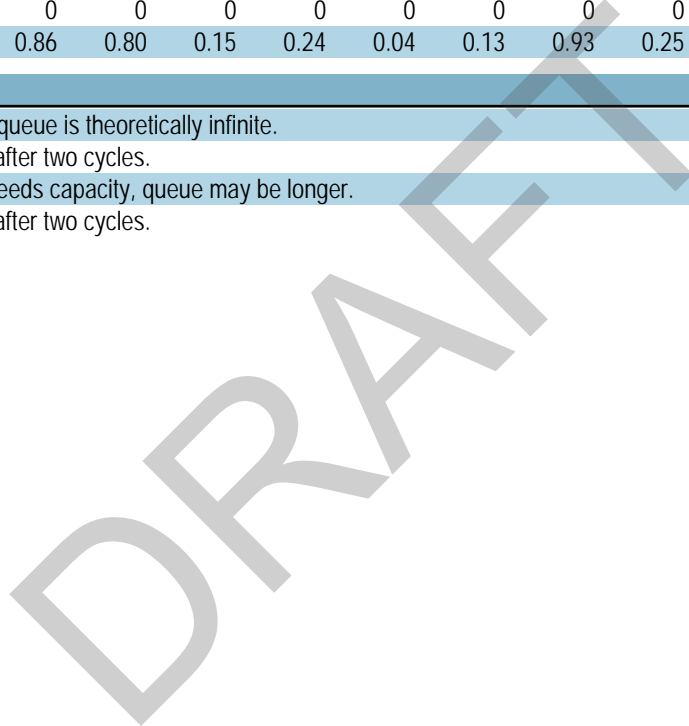
02/02/2023



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	655	742	34	261	21	42	1024	248
v/c Ratio	0.87	0.89	0.31	0.32	0.05	0.17	0.93	0.25
Control Delay	57.0	54.6	60.1	41.2	0.2	42.1	53.8	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.0	54.6	60.1	41.2	0.2	42.1	53.8	1.8
Queue Length 50th (ft)	257	283	25	98	0	26	-410	0
Queue Length 95th (ft)	#343	343	56	131	0	57	#523	22
Internal Link Dist (ft)	220	346		227			155	
Turn Bay Length (ft)			130			130		
Base Capacity (vph)	766	922	226	1099	582	313	1099	988
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.80	0.15	0.24	0.04	0.13	0.93	0.25

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



HCM 6th Signalized Intersection Summary

3: E Causeway Approach & Monroe St

02/02/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↗	↕↕	↗	↗	↕↕	↗
Traffic Volume (veh/h)	137	416	4	137	460	34	29	222	18	36	870	211
Future Volume (veh/h)	137	416	4	137	460	34	29	222	18	36	870	211
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	161	489	5	161	541	40	34	261	21	42	1024	248
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	177	572	6	177	630	48	53	424	189	394	1106	818
Arrive On Green	0.20	0.20	0.20	0.23	0.23	0.23	0.03	0.12	0.12	0.22	0.31	0.31
Sat Flow, veh/h	865	2797	30	760	2699	207	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	340	0	315	388	0	354	34	261	21	42	1024	248
Grp Sat Flow(s),veh/h/ln	1827	0	1865	1832	0	1833	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	19.7	0.0	17.5	22.4	0.0	19.9	2.0	7.6	1.3	2.0	30.2	9.7
Cycle Q Clear(g_c), s	19.7	0.0	17.5	22.4	0.0	19.9	2.0	7.6	1.3	2.0	30.2	9.7
Prop In Lane	0.47		0.02	0.41		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	374	0	382	428	0	428	53	424	189	394	1106	818
V/C Ratio(X)	0.91	0.00	0.83	0.91	0.00	0.83	0.65	0.62	0.11	0.11	0.93	0.30
Avail Cap(c_a), veh/h	404	0	413	490	0	490	230	1114	497	394	1114	821
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.1	0.0	41.3	40.4	0.0	39.5	52.1	45.4	42.6	33.7	36.1	15.1
Incr Delay (d2), s/veh	22.1	0.0	11.1	18.0	0.0	8.8	4.9	3.1	0.5	0.0	13.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.1	0.0	9.2	12.1	0.0	9.9	1.0	3.5	0.5	0.9	14.7	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.3	0.0	52.3	58.4	0.0	48.3	56.9	48.5	43.2	33.7	49.4	15.5
LnGrp LOS	E	A	D	E	A	D	E	D	D	C	D	B
Approach Vol, veh/h		655			742			316			1314	
Approach Delay, s/veh		58.5			53.6			49.0			42.5	
Approach LOS		E			D			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.0	18.9		28.2	9.2	39.7		31.3				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	14.0	34.0		24.0	14.0	34.0		29.0				
Max Q Clear Time (g_c+I1), s	4.0	9.6		21.7	4.0	32.2		24.4				
Green Ext Time (p_c), s	0.0	3.4		0.5	0.0	1.5		0.9				

Intersection Summary

HCM 6th Ctrl Delay	49.4
HCM 6th LOS	D

Queues

3: E Causeway Approach & Monroe St

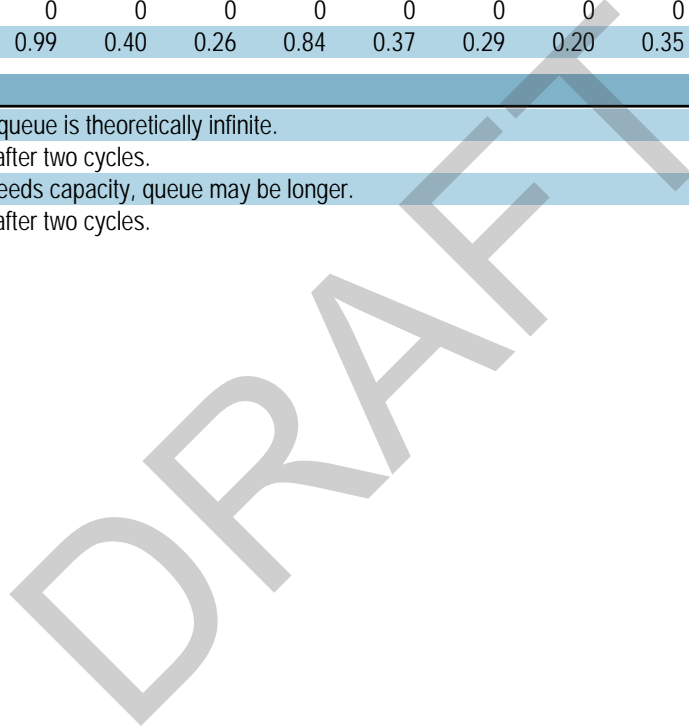
02/02/2023



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	806	394	114	971	242	70	229	248
v/c Ratio	0.99	0.73	0.26	0.84	0.37	0.49	0.48	0.35
Control Delay	72.3	50.9	34.5	42.0	8.4	59.4	46.7	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.3	50.9	34.5	42.0	8.4	59.4	46.7	4.1
Queue Length 50th (ft)	~310	134	61	326	17	47	77	8
Queue Length 95th (ft)	#493	194	122	#506	85	96	123	36
Internal Link Dist (ft)	220	346		227			155	
Turn Bay Length (ft)			130			130		
Base Capacity (vph)	811	977	442	1160	657	239	1160	715
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.40	0.26	0.84	0.37	0.29	0.20	0.35

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



HCM 6th Signalized Intersection Summary

3: E Causeway Approach & Monroe St

02/02/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↔	↔↔	↔	↔	↔↔	↔
Traffic Volume (veh/h)	159	614	0	39	307	32	109	932	232	67	220	238
Future Volume (veh/h)	159	614	0	39	307	32	109	932	232	67	220	238
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	166	640	0	41	320	33	114	971	242	70	229	248
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	172	702	0	50	408	44	367	1168	521	90	615	658
Arrive On Green	0.24	0.24	0.00	0.14	0.14	0.14	0.21	0.33	0.33	0.05	0.17	0.17
Sat Flow, veh/h	711	2994	0	366	2978	321	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	429	377	0	208	0	186	114	971	242	70	229	248
Grp Sat Flow(s),veh/h/ln	1835	1777	0	1852	0	1813	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	22.9	20.3	0.0	10.8	0.0	9.8	5.4	25.1	12.0	3.9	5.7	10.8
Cycle Q Clear(g_c), s	22.9	20.3	0.0	10.8	0.0	9.8	5.4	25.1	12.0	3.9	5.7	10.8
Prop In Lane	0.39		0.00	0.20		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	444	430	0	254	0	248	367	1168	521	90	615	658
V/C Ratio(X)	0.97	0.88	0.00	0.82	0.00	0.75	0.31	0.83	0.46	0.77	0.37	0.38
Avail Cap(c_a), veh/h	444	430	0	541	0	530	367	1218	543	251	1218	926
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.2	36.2	0.0	41.6	0.0	41.2	33.4	30.8	26.4	46.5	36.3	20.1
Incr Delay (d2), s/veh	33.7	17.7	0.0	2.5	0.0	1.7	0.2	5.5	1.4	5.2	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.2	10.8	0.0	5.1	0.0	4.5	2.3	11.2	4.6	1.8	2.5	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.9	53.9	0.0	44.1	0.0	42.9	33.6	36.3	27.8	51.8	37.1	20.9
LnGrp LOS	E	D	A	D	A	D	C	D	C	D	D	C
Approach Vol, veh/h		806			394			1327				547
Approach Delay, s/veh		62.9			43.5			34.5				31.6
Approach LOS		E			D			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.0	38.6		30.0	26.5	23.2		19.6				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	14.0	34.0		24.0	14.0	34.0		29.0				
Max Q Clear Time (g_c+I1), s	5.9	27.1		24.9	7.4	12.8		12.8				
Green Ext Time (p_c), s	0.0	5.6		0.0	0.1	4.4		0.8				

Intersection Summary

HCM 6th Ctrl Delay	42.6
HCM 6th LOS	D

Queues

3: E Causeway Approach & Monroe St

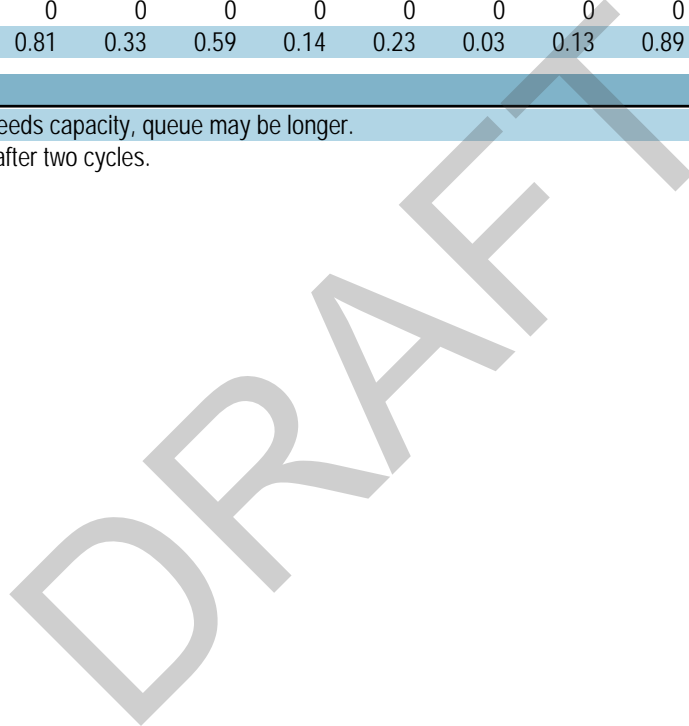
02/02/2023



Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	655	161	581	34	261	21	42	1024	248
v/c Ratio	0.84	0.44	0.80	0.30	0.30	0.04	0.16	0.89	0.24
Control Delay	52.0	41.8	49.2	58.1	39.3	0.2	40.4	46.2	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.0	41.8	49.2	58.1	39.3	0.2	40.4	46.2	1.8
Queue Length 50th (ft)	238	102	207	24	92	0	24	374	0
Queue Length 95th (ft)	#343	160	260	56	131	0	57	#523	22
Internal Link Dist (ft)	220		346		227			155	
Turn Bay Length (ft)				130			130		
Base Capacity (vph)	807	493	981	238	1157	605	328	1157	1027
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.33	0.59	0.14	0.23	0.03	0.13	0.89	0.24






















Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



HCM 6th Signalized Intersection Summary
 3: E Causeway Approach & Monroe St

02/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	416	4	137	460	34	29	222	18	36	870	211
Future Volume (veh/h)	137	416	4	137	460	34	29	222	18	36	870	211
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	161	489	5	161	541	40	34	261	21	42	1024	248
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	582	6	338	636	47	54	440	196	424	1178	855
Arrive On Green	0.21	0.21	0.21	0.19	0.19	0.19	0.03	0.12	0.12	0.24	0.33	0.33
Sat Flow, veh/h	865	2797	30	1781	3355	248	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	340	0	315	161	286	295	34	261	21	42	1024	248
Grp Sat Flow(s),veh/h/ln	1827	0	1865	1781	1777	1826	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	18.1	0.0	16.1	8.0	15.5	15.6	1.9	6.9	1.2	1.8	27.0	8.5
Cycle Q Clear(g_c), s	18.1	0.0	16.1	8.0	15.5	15.6	1.9	6.9	1.2	1.8	27.0	8.5
Prop In Lane	0.47		0.02	1.00		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	380	0	388	338	337	346	54	440	196	424	1178	855
V/C Ratio(X)	0.89	0.00	0.81	0.48	0.85	0.85	0.62	0.59	0.11	0.10	0.87	0.29
Avail Cap(c_a), veh/h	439	0	448	517	516	530	250	1210	540	424	1210	870
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	0.0	37.7	36.1	39.1	39.1	47.8	41.4	38.9	29.7	31.4	12.5
Incr Delay (d2), s/veh	17.1	0.0	8.2	0.4	5.0	5.1	4.3	2.7	0.5	0.0	7.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	0.0	8.1	3.5	7.2	7.4	0.9	3.1	0.5	0.8	12.3	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.6	0.0	45.9	36.4	44.1	44.2	52.1	44.1	39.4	29.7	38.9	12.9
LnGrp LOS	E	A	D	D	D	D	D	D	D	C	D	B
Approach Vol, veh/h		655			742			316			1314	
Approach Delay, s/veh		50.9			42.5			44.7			33.7	
Approach LOS		D			D			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	29.8	18.3		26.8	9.1	39.1		24.9				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	14.0	34.0		24.0	14.0	34.0		29.0				
Max Q Clear Time (g_c+I1), s	3.8	8.9		20.1	3.9	29.0		17.6				
Green Ext Time (p_c), s	0.0	3.4		0.7	0.0	4.1		1.3				
Intersection Summary												
HCM 6th Ctrl Delay				40.7								
HCM 6th LOS				D								

Queues

3: E Causeway Approach & Monroe St

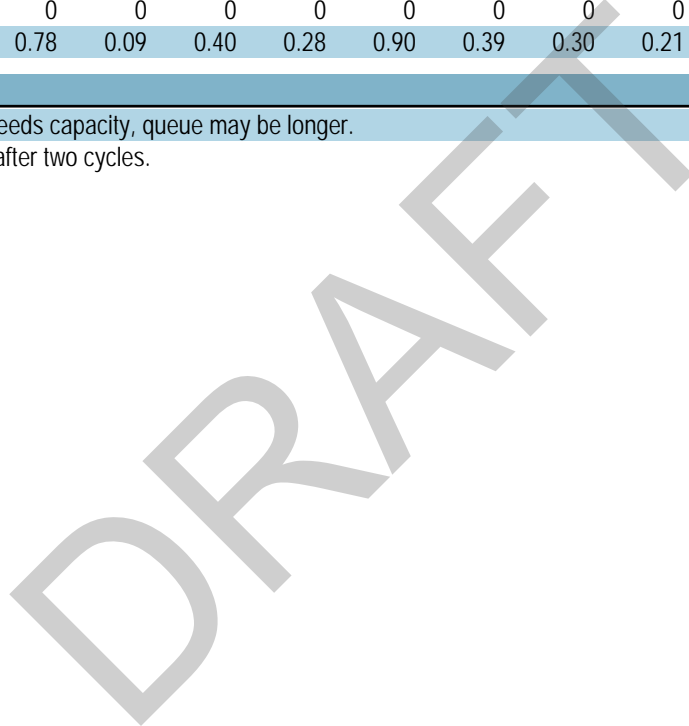
02/02/2023



Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	806	41	353	114	971	242	70	229	248
v/c Ratio	0.86	0.16	0.71	0.28	0.90	0.39	0.48	0.48	0.33
Control Delay	48.5	44.2	52.0	38.4	49.5	10.2	61.2	48.0	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.5	44.2	52.0	38.4	49.5	10.2	61.2	48.0	4.4
Queue Length 50th (ft)	283	26	125	67	357	24	49	81	14
Queue Length 95th (ft)	#430	61	183	129	#560	98	100	127	41
Internal Link Dist (ft)	220		346		227			155	
Turn Bay Length (ft)				130			130		
Base Capacity (vph)	1039	440	874	400	1084	621	237	1084	790
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.09	0.40	0.28	0.90	0.39	0.30	0.21	0.31

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



HCM 6th Signalized Intersection Summary

3: E Causeway Approach & Monroe St

02/02/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↔	↔↔		↔	↔↔	↔	↔	↔↔	↔
Traffic Volume (veh/h)	159	614	0	39	307	32	109	932	232	67	220	238
Future Volume (veh/h)	159	614	0	39	307	32	109	932	232	67	220	238
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	166	640	0	41	320	33	114	971	242	70	229	248
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	185	753	0	221	404	41	356	1134	506	90	605	681
Arrive On Green	0.26	0.26	0.00	0.12	0.12	0.12	0.20	0.32	0.32	0.05	0.17	0.17
Sat Flow, veh/h	711	2994	0	1781	3254	333	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	429	377	0	41	174	179	114	971	242	70	229	248
Grp Sat Flow(s),veh/h/ln	1835	1777	0	1781	1777	1810	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	22.0	19.5	0.0	2.0	9.2	9.4	5.3	24.9	12.0	3.8	5.6	10.3
Cycle Q Clear(g_c), s	22.0	19.5	0.0	2.0	9.2	9.4	5.3	24.9	12.0	3.8	5.6	10.3
Prop In Lane	0.39		0.00	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	476	461	0	221	221	225	356	1134	506	90	605	681
V/C Ratio(X)	0.90	0.82	0.00	0.19	0.79	0.80	0.32	0.86	0.48	0.77	0.38	0.36
Avail Cap(c_a), veh/h	584	565	0	475	474	483	356	1167	521	256	1167	932
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.8	33.9	0.0	38.2	41.4	41.5	33.3	31.1	26.7	45.7	35.9	18.8
Incr Delay (d2), s/veh	13.4	6.3	0.0	0.1	2.4	2.5	0.2	7.0	1.5	5.2	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	9.0	0.0	0.9	4.2	4.3	2.3	11.3	4.6	1.8	2.4	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.2	40.2	0.0	38.4	43.8	43.9	33.5	38.1	28.2	50.9	36.7	19.5
LnGrp LOS	D	D	A	D	D	D	C	D	C	D	D	B
Approach Vol, veh/h		806			394			1327				547
Approach Delay, s/veh		44.5			43.3			35.9				30.7
Approach LOS		D			D			D				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.9	37.1		31.3	25.5	22.6		18.1				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	14.0	32.0		31.0	14.0	32.0		26.0				
Max Q Clear Time (g_c+I1), s	5.8	26.9		24.0	7.3	12.3		11.4				
Green Ext Time (p_c), s	0.0	4.2		1.3	0.1	4.3		0.7				
Intersection Summary												
HCM 6th Ctrl Delay				38.2								
HCM 6th LOS				D								