DOLAN&DEAN
CONSULTING ENGINEERS, LLC

181 WEST HIGH STREET
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TRAFFIC IMPACT ANALYSIS

FOR

F&C PROFESSIONAL ALUMINUM RAILING CORPORATION

PROPOSED WAREHOUSE EXPANSION

BLOCK 227, LOTS 13 & 14
1143-1147 WEST FRONT STREET
CITY OF PLAINFIELD
UNION COUNTY, NEW JERSEY

AUGUST 16, 2022

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RSK/lrc
22107

INTRODUCTION

Dolan & Dean Consulting Engineers, LLC (D&D) has been commissioned by F&C Professional Aluminum Railing Corp. to prepare this Traffic Impact Study in support of the proposed expansion of the F&C Professional Aluminum Railing facility located on Block 227, Lots 13 & 14 in the City of Plainfield, Union County. The site is located at 1143-1147 West Front Street, east of Mariners Place. The subject property is currently operated by F&C Professional Aluminum Railing Corp. with a 3,258 square foot office and showroom and 2,600 square foot shop and storage building serving as a warehouse for the operations.

Site access is provided via a full-movement driveway along West Front Street across from Mariners Place. The development proposal includes the expansion of the existing warehouse to provide an additional 9,635 square feet. Access to/from West Front Street would remain unchanged with only a single full-movement driveway to be provided.

While any further development of the property will result in traffic changes, both the volume and characteristics of that traffic are of important consideration in the evaluation of this application. As will be demonstrated, the traffic characteristics of the existing site use are very low and will not be materially changed with the proposed expansion. D&D has been retained by the applicant to conduct this Traffic Impact Analysis for the proposed development and to evaluate the adequacy of the roadway system to accommodate the new traffic generated by the warehouse expansion.

This traffic impact study identifies the projected traffic increases on the adjacent roadway system that could occur from the proposed development and has further examined the ability of the roadway system to efficiently accommodate the new traffic demand. Accordingly, this analysis includes the following information:

- A review of the existing roadway and traffic conditions in the site vicinity including roadway configuration, traffic volumes and operations, roadway capacities and surrounding land uses;

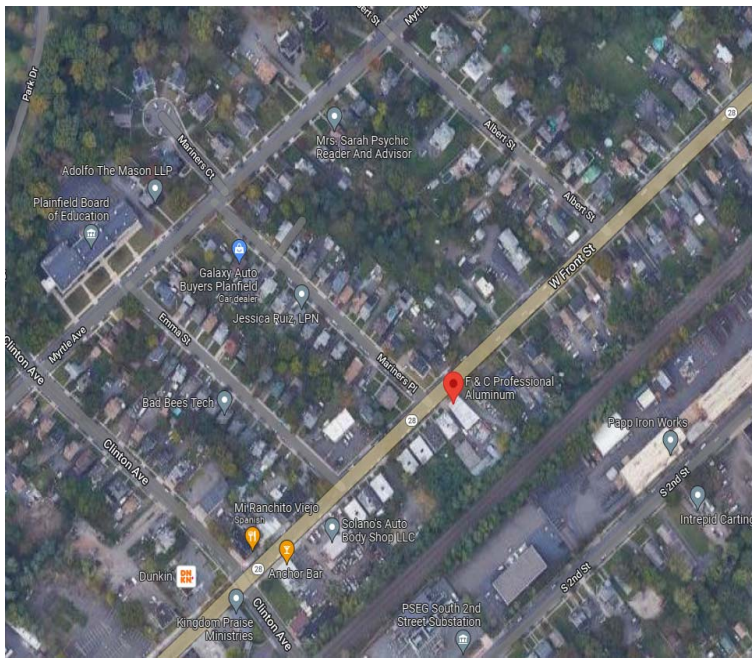
- A projection of traffic volumes that could be generated based on an extrapolation of the existing peak hour site traffic proportional to the additional building area as recommended by practices of the Institute of Transportation Engineers (ITE);

- A site plan review focusing on the access design, interior circulation, and parking supply; and

- Recommendations and conclusions.

EXISTING CONDITIONS

The site is located at 1143-1147 West Front Street, designated as Lots 13 & 14 in Block 227 in the City of Plainfield and located immediately east of Mariners Place as shown on appended Figure 1 and noted on the photograph. The site is currently developed with a 3,258 square foot office and showroom and 2,600 square foot shop/storage/warehouse building with access only to West Front Street.



EXISTING ROADWAY CONDITIONS

West Front Street is an Urban Principal Arterial designated as NJ Route 28 under Morris County jurisdiction. In the city of Plainfield, the roadway has an east-west orientation and provides one lane of in each travel direction with a speed limit of 35 miles per hour. The street primarily serves single family homes and a similar, industrial type buildings. A sidewalk is provided along both sides of the road. On-street parking is permitted along both sides of the road unless otherwise noted and the road is curbed. NJ Transit bus routes 59 & 113 have periodic stops along West Front Street with the closest to the site being the West Front Street stop at Mariners Place.

Mariners Place is a local roadway that runs between West Front Street to the south and Myrtle Avenue to the north. The roadway provides one lane with no shoulders in in each travel direction. The road has no posted speed limit but operates under a statutory 25 MPH speed limit for a residential area. Parking is permitted on the western side of the roadway and sidewalks are provided along both sides of the street. Mariners Place intersects with West Front Street at an unsignalized T-intersection with the road operating under STOP sign control.

EXISTING TRAFFIC VOLUMES

To examine the existing traffic conditions that could be affected by new site traffic, manual turning movement traffic volume counts were recently conducted during peak weekday morning and evening periods when area traffic is typically at peak levels. Vehicular traffic counts were performed at the intersection of West Front Street & Mariners Place/the existing site driveway on Wednesday August 3, 2022, from 7:30 to 9:00 a.m. and from 3:00 to 5:00 p.m.

The morning peak hour was found to occur from 7:30 a.m. to 8:30 a.m. and the evening peak hour was found to occur between 4:00 p.m. and 5:00 p.m. Copies of the turning movement counts are provided in the Technical Appendix. Appended Figure 2 shows the weekday morning and evening peak hour volumes.

EXISTING TRAFFIC CONDITIONS

While traffic volumes provide a measure of activity on the area roadway system, it is also important to evaluate how well that system can accommodate those volumes – i.e., a comparison of peak hour traffic volumes with available roadway capacity. Capacity represents the maximum number of vehicles that can be accommodated given the constraints of roadway geometry, environment, traffic characteristics, and controls. Intersections are usually the critical point in any road network since it is at such points that conflicts exist between through, crossing, and turning traffic. It is at these locations where congestion is most likely to occur. A description of intersection Levels of Service is noted on the following page:

INTERSECTION LEVELS OF SERVICE AND DELAY

Level of Service	Signalized Delay per Vehicle (seconds)	Unsignalized Delay per Vehicle (seconds)
A	< 10.0	<0-10
B	>10 and <20	>10 to <15
C	>20 and < 35	>15 to <25
D	>35 and < 55	> 25 to <35
E	>55 and < 80	> 35 to <50
F	> 80	>50

A volume/capacity Level of Service analysis[1] was conducted for the existing peak hour traffic volumes at the subject intersections using the updated Highway Capacity Manual (HCM) and Highway Capacity Software (HCS) that follows the HCM procedures. This type of analysis is performed to assist intersection operations and to identify any areas of excessive delay or congestion.

From the analyses and because of the low traffic volumes experienced on the subject roadways and site driveway, all movements at the Mariners Place/site driveway intersection with West Front Street operate at acceptable Levels of Service "C" or better during both peak hours. Observations made during the traffic counts show that intersections operate free from congestion or any significant delays, thus confirming the HCS and LOS modeling. The existing Level of Service results are summarized on Figure 3.

[1] See Technical Appendix for volume/capacity analysis and Level of Service descriptions.

TRAFFIC CHARACTERISTICS OF THE PROPOSED USE

PROJECTED TRIP GENERATION

Data compiled by the Institute of Transportation Engineers (ITE) is typically used to forecast trip generation for new development. Based on a review of the 11th Edition of the ITE Trip Generation Manual, Land Use 150 – "Warehousing" is applicable to the development proposal. When possible, for a known site or end user, the ITE Trip Generation Manual Handbook recommends collecting site-specific data as a preferred and more accurate means to predict future traffic characteristics for a given development over the published ITE rates collected at many different sites. Therefore, the observed counts and rates as determined through the actual site traffic counts will govern for the calculation of trips for the proposed warehouse expansion.

Table I summarizes the peak hour trips for the existing 3,258 square foot office and showroom and 2,600 square foot shop/storage/warehouse building and the weekday morning and evening peak hour rates per 1000 SF of building area.

TABLE I
EXISTING TRIP GENERATION
5,858 SF – F&C PROFESSIONAL ALUMINUM RAILING BUILDINGS

Vehicle Type	Morning Peak Hour			Evening Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total
Car	0	0	0	0	0	0
Trucks	0	1	1	1	1	2
Total	0	1	1	1	1	2
Rate	0.17			0.34		

As shown, trip activity for the peak hours is similar, resulting in approximately 1 to 2 trips during each peak hour – or less than one vehicle per every 30 minutes minute on average.

The development proposal includes a 9,635 square foot expansion comprised of the warehouse. As the proposed use is similar to the current, a simple extrapolation of traffic that is proportional

to the building area was used to forecast the additional traffic demand using the observed rates shown in Table I. Table II summarizes the traffic associated with the expansion.

TABLE II
PROJECTED TRIP GENERATION
F&C PROFESSIONAL ALUMINUM RAILING – 9,635 SF EXPANSION

Vehicle Type	Morning Peak Hour			Evening Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total
Car	0	0	0	0	0	0
Truck	0	2	2	2	2	4
Total	0	2	2	2	2	4

As shown in Table II, the expansion will generate a minimal level of additional traffic activity and will continue to have limited traffic impact on the area roadway system. This increase in traffic equates to one new trip added to the network every 15 to 30 minutes. From a traffic or roadway capacity perspective, the impacts are virtually immeasurable and are not typically considered "significant", which is defined by ITE and NJDOT as an additional 100 or more trips in one hour.

The site generated volumes associated with the proposed warehouse expansion are shown on appended Figure 4 and are assumed to follow the current patterns.

FUTURE TRAFFIC CONDITIONS

FUTURE TRAFFIC VOLUMES

The existing traffic volumes were conservatively increased by a background growth factor of 1.0% per year over a projected two-year development build-out horizon to create a projection of future conditions that would exist if the site were to remain unchanged. This background traffic growth rate is consistent with the current estimate for Local and Principal Arterial roadways in Union County as published by the NJDOT in April 2019 and is typically used to develop the future "no-build" traffic volumes. The "no-build" volumes are shown on appended Figure 5.

Future "build" traffic volumes were established by surcharging the site-generated traffic volumes onto the future "no-build" traffic volumes, along with "new" traffic caused by the proposed Messinas expansion. The resulting future "build" traffic volumes are shown on Figure 6.

ANALYSIS OF FUTURE TRAFFIC VOLUMES

Level of Service analyses were conducted for the future "no-build" and "build" weekday morning and evening peak hour traffic volumes at the study intersections. The Level of Service results are summarized on Figures 7 and 8 in the technical appendix.

Under the build condition, all movements at the subject intersection are projected to continue to operate at Level of Service "C" during the study peak hours with no changes in Levels of Service. As such, the site driveway is calculated to continue to operate at acceptable conditions with short delays during the study peak hours.

This study therefore demonstrates that the proposed warehouse expansion will not have a negative or perceptible impact on operating conditions at the site access or the surrounding roadway network.

SITE ACCESS, CIRCULATION AND PARKING

An evaluation of the Site Plan prepared by C2EM Urban, LLC, dated April 9, 2018, and revised November 10, 2021, was conducted. The following comments address access and parking as shown on the plans:

- Access is currently provided via a single 11' wide full-movement driveway along West Front Street that will remain unchanged for the proposed expansion. The proposed building addition will be on the western side of the existing warehouse building.

- The site plan provides nine 9-foot wide by 18-foot-deep car parking stalls on the east side of the warehouse building served by a two-way parking aisle, thereby providing adequate access and circulation.

- Per the City Ordinance 20 parking spaces are required. The Site Plan proposes 9 spaces. ITE Parking Generation, 5th Edition recommends 6 parking stalls for a development of this size (0.39 spaces per 1,000 square feet). Therefore the proposed parking supply is sufficient to meet the anticipated staffing and operational needs along the southerly property line.

- Two new loading docks of 10' wide by 45' depth are proposed. On-site circulation has been designed to provide efficient two-way flow and parking maneuvers, especially for larger trucks that would frequent the site.

Based on this review, it is concluded that safe and efficient access and circulation can be provided to the site with reasonable and prudent driver behavior.

Based on the findings contained in this report, from a traffic engineering perspective, the site is particularly well suited for the proposed development and will have no detrimental impact on traffic conditions on the roads surrounding the site.

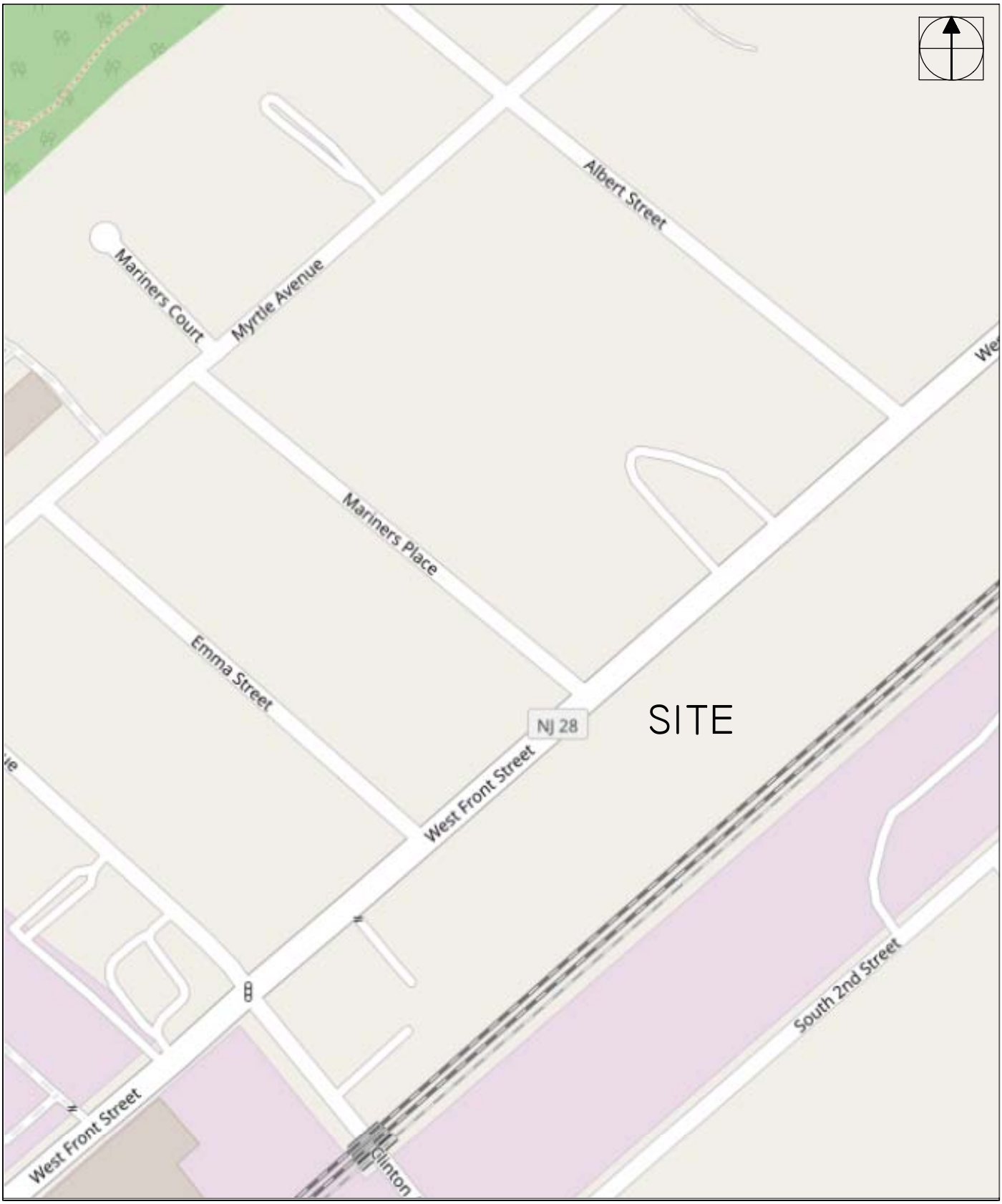
CONCLUSIONS

In summary, it is evident from this study of existing site traffic operations and detailed analysis of projected future traffic conditions, that the proposed warehouse expansion facility would generate minimal traffic increases and will not create a negative impact on the local roadway network.

With only minor traffic increases associated with the application, adequate roadway capacity will continue to exist to accommodate future site traffic. All movements to and from the site will operate safely and efficiently with reasonable and prudent driver behavior.

Based on these findings, it is concluded that the site is particularly well suited for the proposed development. Such an operation will not negatively impact the traffic in the surrounding area or along the adjacent streets as adequate roadway capacity exists to accommodate the increases. The traffic characteristics of the uses will be consistently minimal and will not result in any additional off tract congestion or unfavorable conditions.

Technical Appendix



PROPOSED WAREHOUSE EXPANSION
CITY OF PLAINFIELD
UNION COUNTY, NEW JERSEY

FIGURE 1

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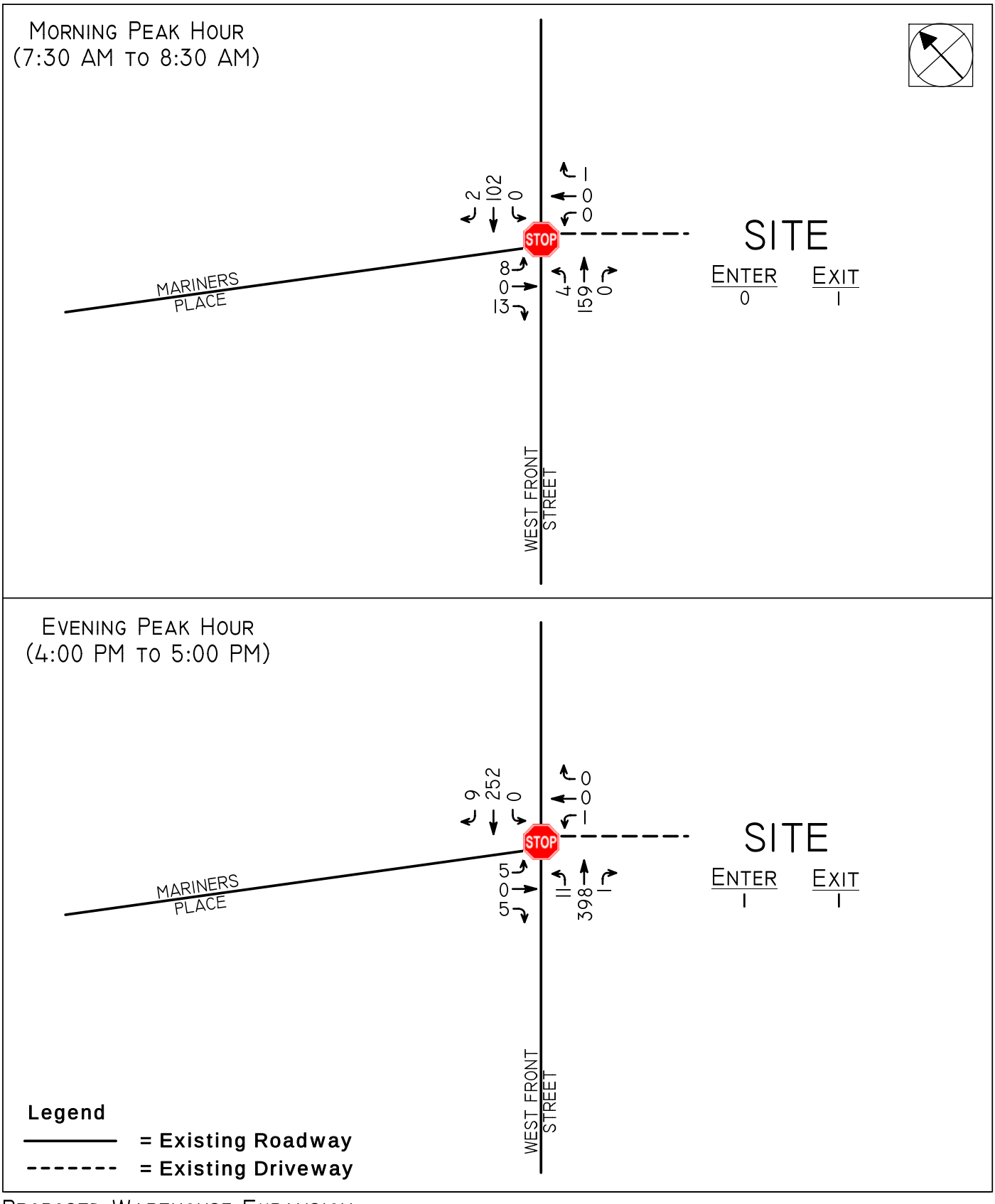
SITE LOCATION MAP



PROPOSED WAREHOUSE EXPANSION
CITY OF PLAINFIELD
UNION COUNTY, NEW JERSEY

FIGURE 2

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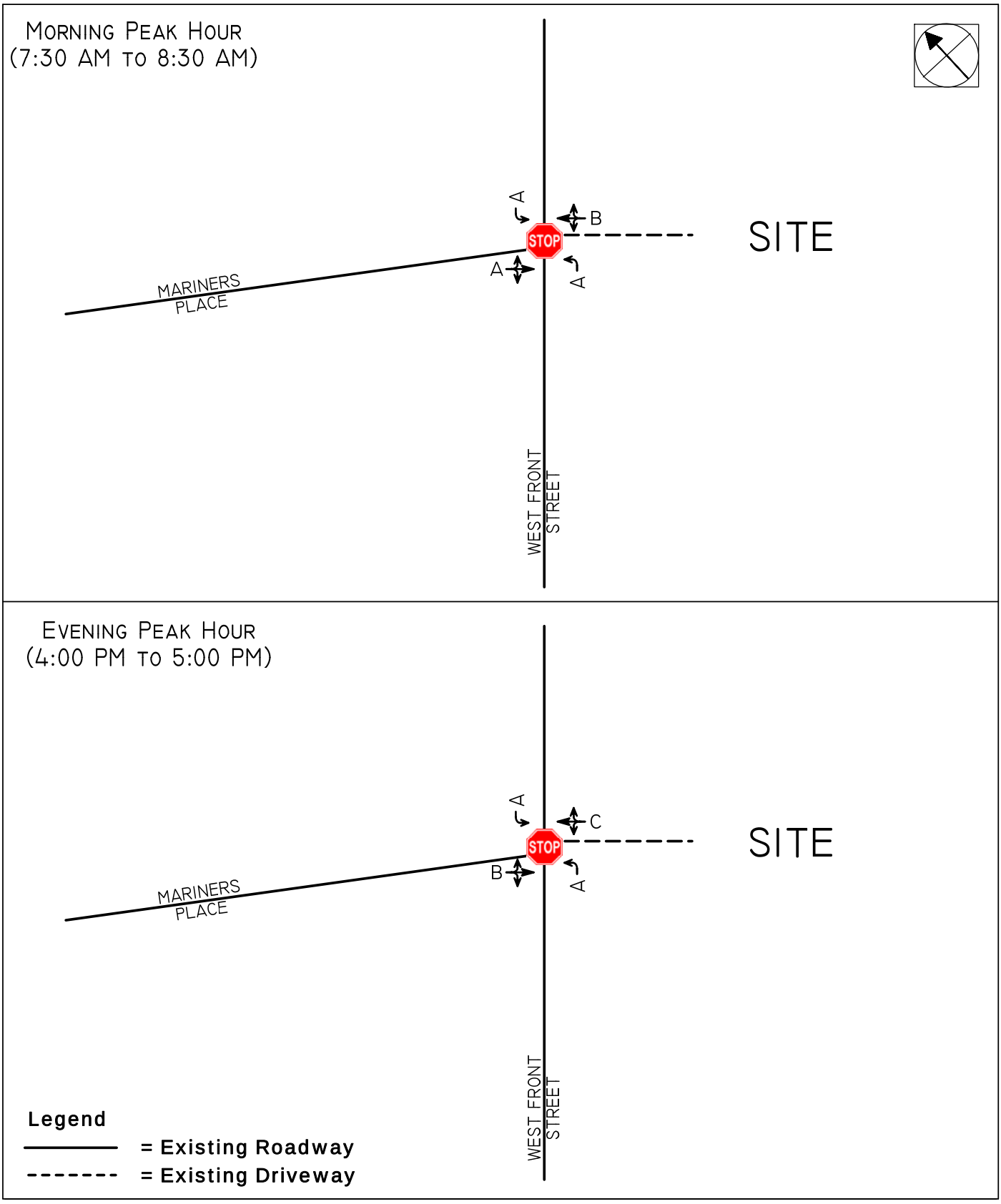
2022 EXISTING TRAFFIC VOLUMES



PROPOSED WAREHOUSE EXPANSION
CITY OF PLAINFIELD
UNION COUNTY, NEW JERSEY

FIGURE 3

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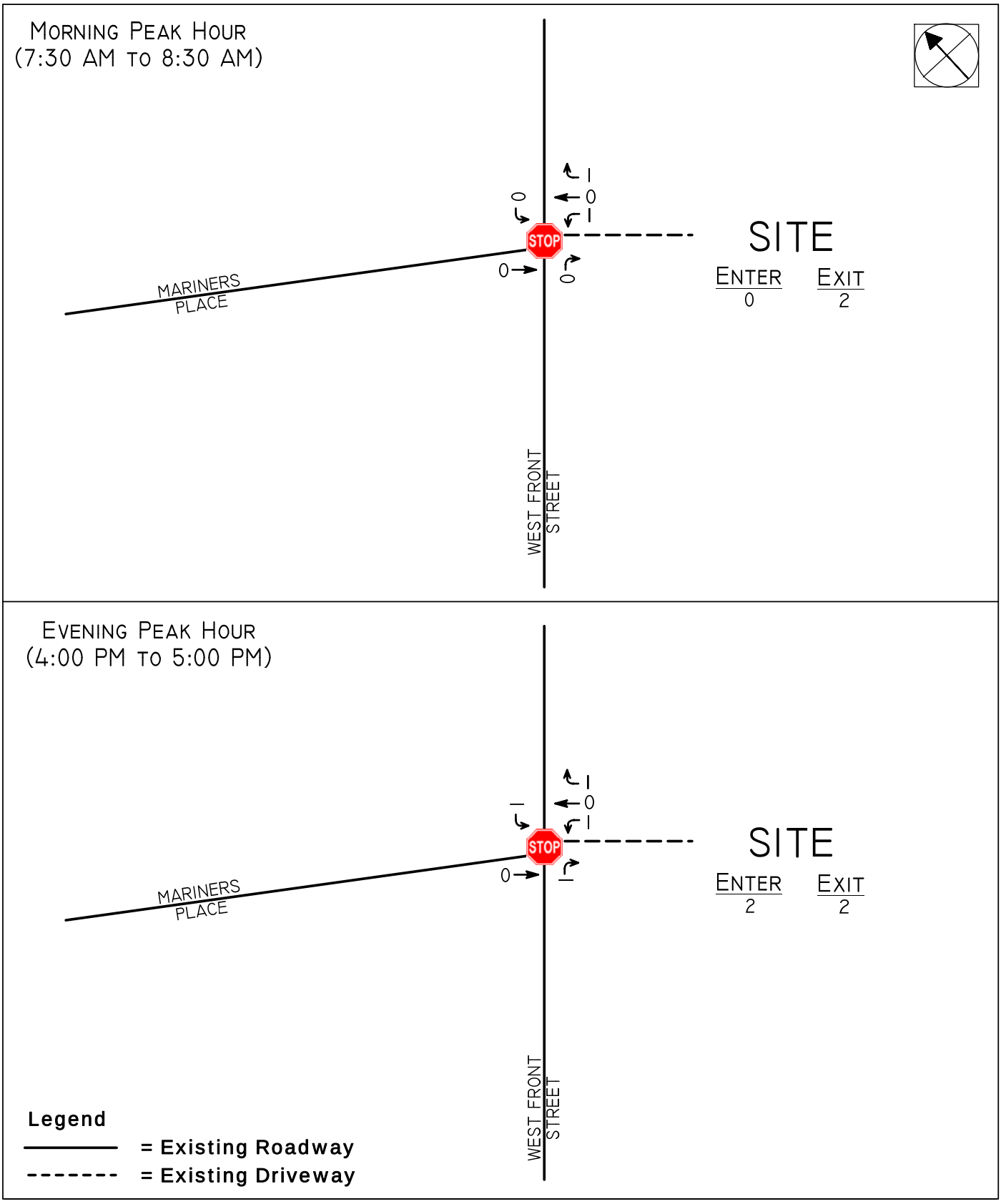
2022 EXISTING LEVELS OF SERVICE



PROPOSED WAREHOUSE EXPANSION
CITY OF PLAINFIELD
UNION COUNTY, NEW JERSEY

FIGURE 4

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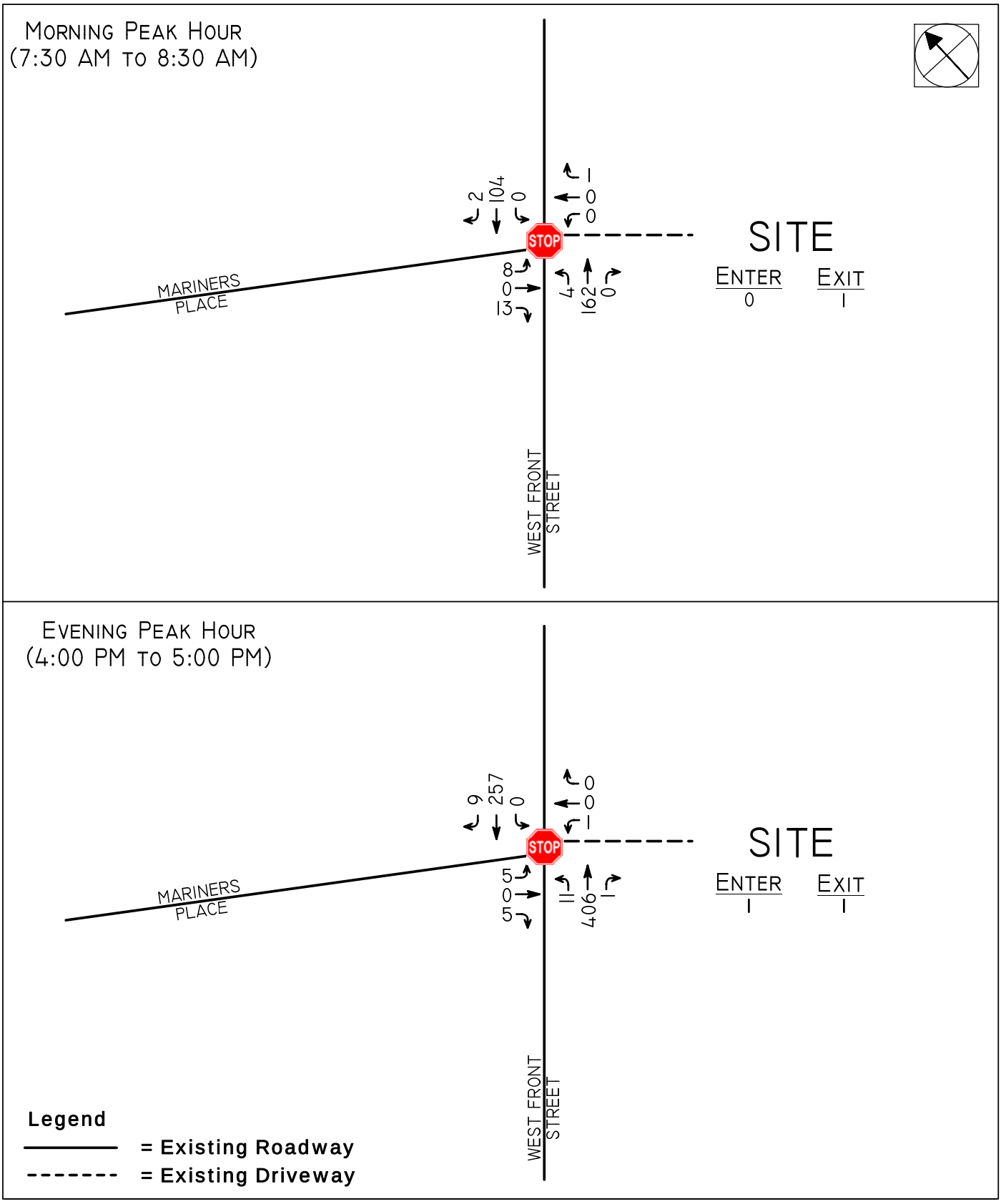
SITE GENERATEAD TRAFFIC VOLUMES



PROPOSED WAREHOUSE EXPANSION
CITY OF PLAINFIELD
UNION COUNTY, NEW JERSEY

FIGURE 5

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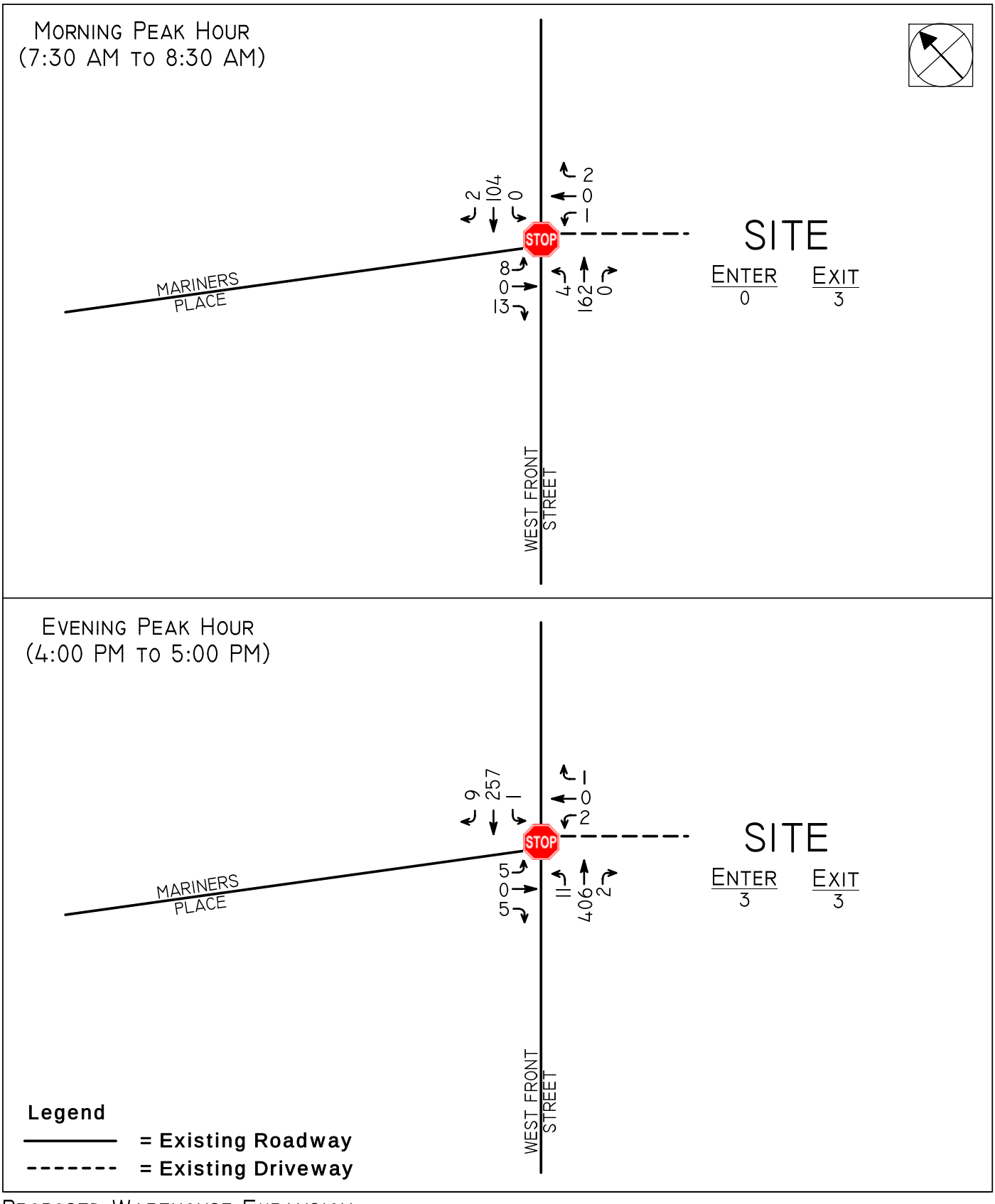
NO BUILD TRAFFIC VOLUMES



PROPOSED WAREHOUSE EXPANSION
CITY OF PLAINFIELD
UNION COUNTY, NEW JERSEY

FIGURE 6

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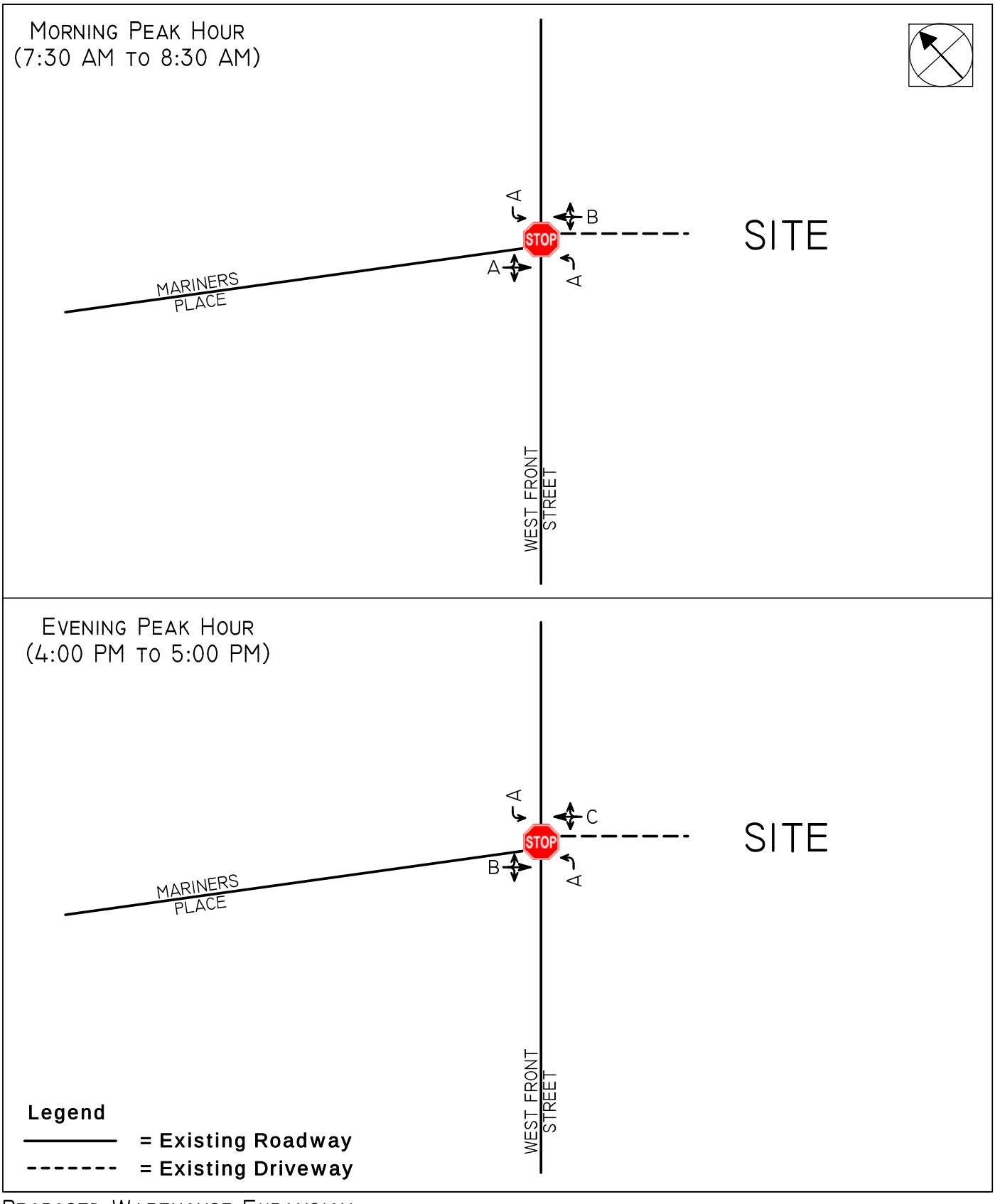
BUILD TRAFFIC VOLUMES



PROPOSED WAREHOUSE EXPANSION
CITY OF PLAINFIELD
UNION COUNTY, NEW JERSEY

FIGURE 7

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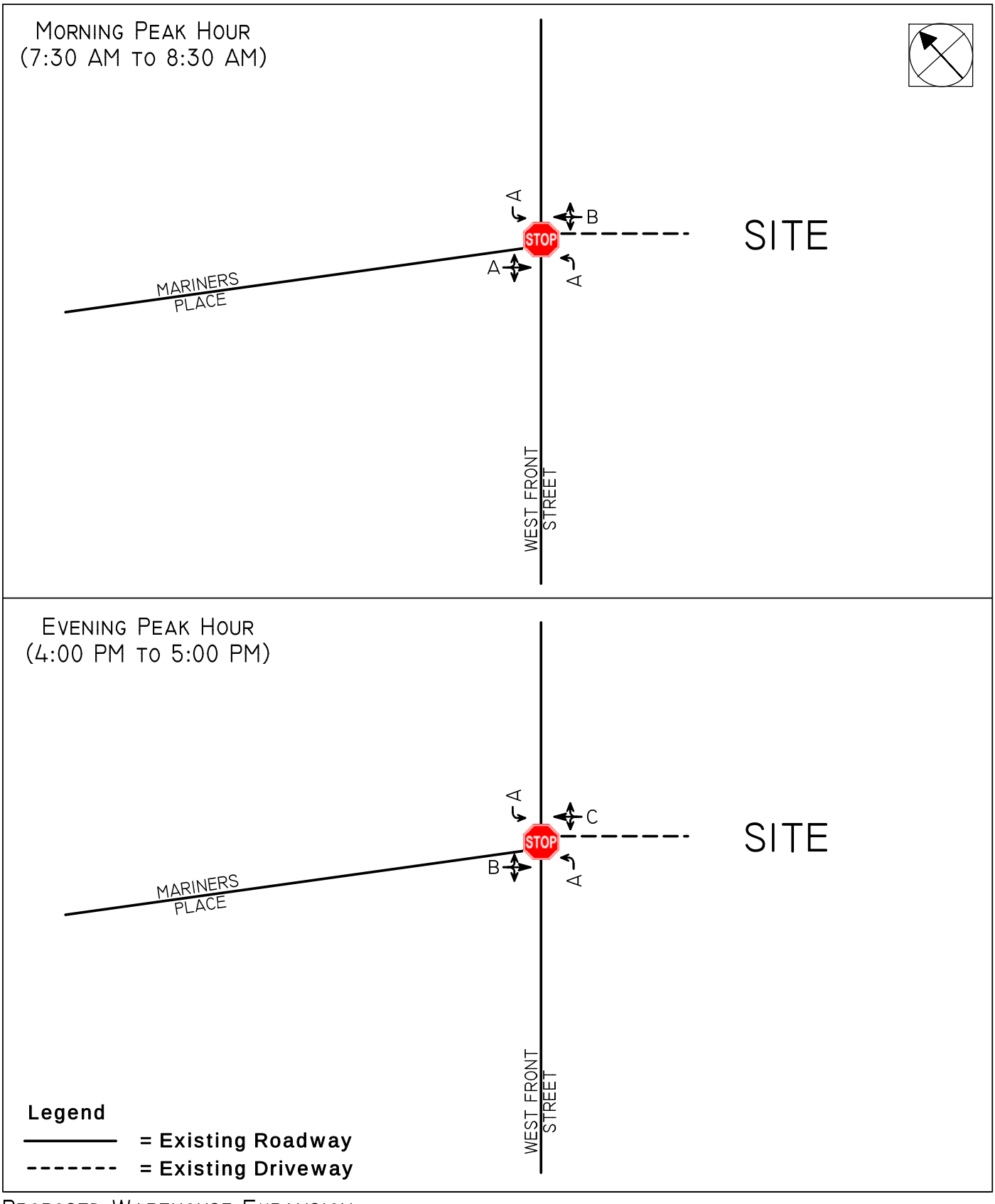
NO BUILD LEVELS OF SERVICE



PROPOSED WAREHOUSE EXPANSION
CITY OF PLAINFIELD
UNION COUNTY, NEW JERSEY

FIGURE 8

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BUILD LEVELS OF SERVICE

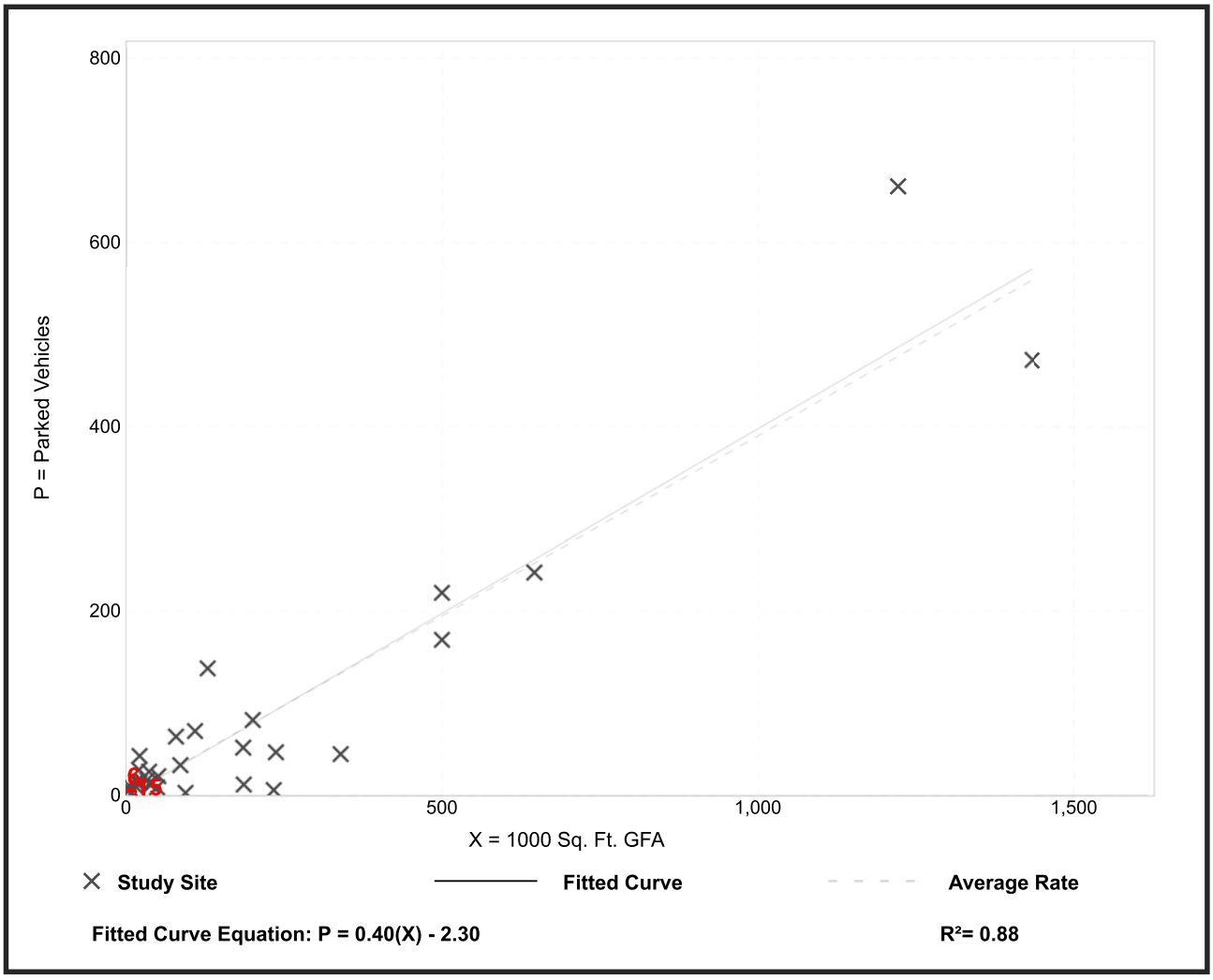
Warehousing
(150)

Peak Period Parking Demand vs: **1000 Sq. Ft. GFA**
On a: **Weekday (Monday - Friday)**
Setting/Location: **General Urban/Suburban**
Peak Period of Parking Demand: **11:00 a.m. - 4:00 p.m.**
Number of Studies: 31
Avg. 1000 Sq. Ft. GFA: 212

Peak Period Parking Demand per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.39	0.03 - 1.96	0.34 / 1.11	0.31 - 0.47	0.22 (56%)

Data Plot and Equation



Parking Generation Manual, 5th Edition ● Institute of Transportation Engineers

Prepared by National Data & Surveying Services

W Front St & Mariners Pl/F & C Professional Aluminum Dwy

Peak Hour Turning Movement Count

ID: 22-340085-001
City: Plainfield

Day: Wednesday
Date: 8/3/2022

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:30 AM - 09:00 AM
NONE	NONE
04:00 PM - 05:00 PM	3:00 PM - 05:00 PM

CONTROL: 1-Way Stop(EB)

	AM	NOON	PM
TEV	289	0	682
PHF	0.80		0.95

SOUTHBOUND (W Front St)

	L	T	R	U		
AM	2	102	0	0	168	AM
NOON	0	0	0	0	0	NOON
PM	9	252	0	0	403	PM

EASTBOUND (Mariners Pl/F & C Professional Aluminum Dwy)

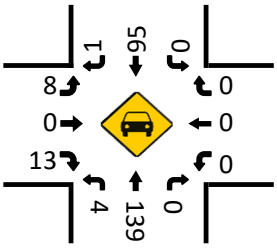
	L	T	R	U		
AM	6	0	20			AM
NOON	0	0	0			NOON
PM	13	0	5			PM

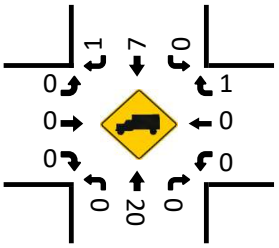
WESTBOUND (Mariners Pl/F & C Professional Aluminum Dwy)

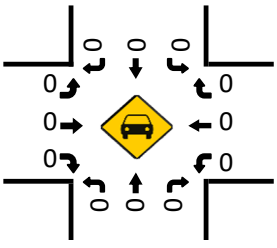
	L	T	R	U		
AM	0	0	1			AM
NOON	0	0	0			NOON
PM	1	0	0			PM

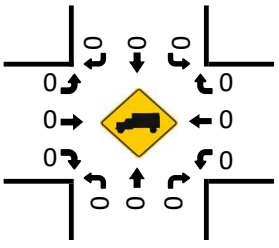
NORTHBOUND (W Front St)

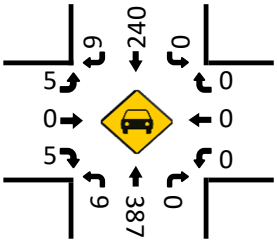
	L	T	R	U		
AM	115	0	4	159	0	AM
NOON	0	0	0	0	0	NOON
PM	258	0	11	398	1	PM

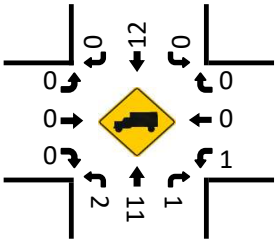


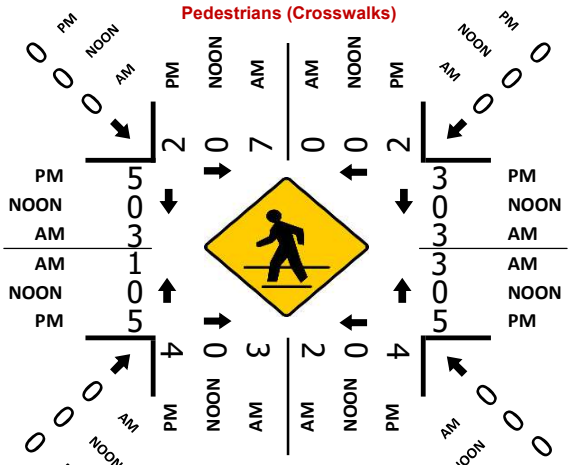












HCS7 Two-Way Stop-Control Report

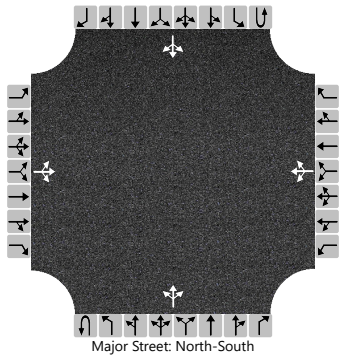
General Information

Analyst	SF
Agency/Co.	D&D
Date Performed	8/2022
Analysis Year	2022
Time Analyzed	AM
Intersection Orientation	North-South
Project Description	Existing

Site Information

Intersection	Mariners Pl & W Front St
Jurisdiction	
East/West Street	Mariners Place/Site Dwy
North/South Street	West Front Street
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		8	0	13		0	0	1		4	159	0		0	102	2
Percent Heavy Vehicles (%)		0	0	0		0	0	100		0				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	7.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	4.20		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			26				1			5				0		
Capacity, c (veh/h)			778				645			1468				1386		
v/c Ratio			0.03				0.00			0.00				0.00		
95% Queue Length, Q_{95} (veh)			0.1				0.0			0.0				0.0		
Control Delay (s/veh)			9.8				10.6			7.5				7.6		
Level of Service (LOS)			A				B			A				A		
Approach Delay (s/veh)	9.8				10.6				0.2				0.0			
Approach LOS	A				B											

HCS7 Two-Way Stop-Control Report

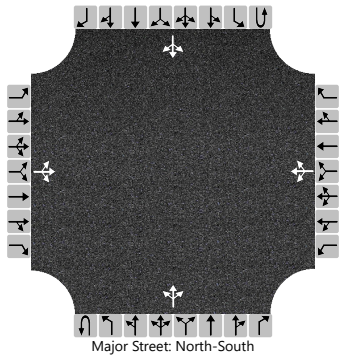
General Information

Analyst	SF
Agency/Co.	D&D
Date Performed	8/2022
Analysis Year	2022
Time Analyzed	PM
Intersection Orientation	North-South
Project Description	Existing

Site Information

Intersection	Mariners Pl & W Front St
Jurisdiction	
East/West Street	Mariners Place/Site Dwy
North/South Street	West Front Street
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		5	0	5		1	0	0		11	398	1		0	252	9
Percent Heavy Vehicles (%)		0	0	0		100	0	0		18				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		8.10	6.50	6.20		4.28				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		4.40	4.00	3.30		2.36				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			11				1			12				0		
Capacity, c (veh/h)			478				241			1201				1150		
v/c Ratio			0.02				0.00			0.01				0.00		
95% Queue Length, Q_{95} (veh)			0.1				0.0			0.0				0.0		
Control Delay (s/veh)			12.7				20.0			8.0				8.1		
Level of Service (LOS)			B				C			A				A		
Approach Delay (s/veh)	12.7				20.0				0.3				0.0			
Approach LOS	B				C											

HCS7 Two-Way Stop-Control Report

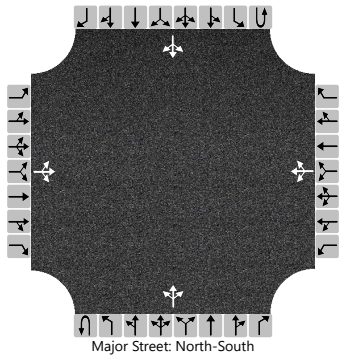
General Information

Analyst	SF
Agency/Co.	D&D
Date Performed	8/2022
Analysis Year	2024
Time Analyzed	AM
Intersection Orientation	North-South
Project Description	No Build

Site Information

Intersection	Mariners Pl & W Front St
Jurisdiction	
East/West Street	Mariners Place/Site Dwy
North/South Street	West Front Street
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		8	0	13		0	0	1		4	162	0		0	104	2
Percent Heavy Vehicles (%)		0	0	0		0	0	100		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	7.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	4.20		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			26				1			5				0		
Capacity, c (veh/h)			773				642			1465				1381		
v/c Ratio			0.03				0.00			0.00				0.00		
95% Queue Length, Q_{95} (veh)			0.1				0.0			0.0				0.0		
Control Delay (s/veh)			9.8				10.6			7.5				7.6		
Level of Service (LOS)			A				B			A				A		
Approach Delay (s/veh)		9.8				10.6				0.2				0.0		
Approach LOS		A				B										

HCS7 Two-Way Stop-Control Report

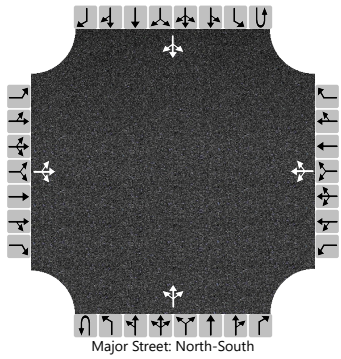
General Information

Analyst	SF
Agency/Co.	D&D
Date Performed	8/2022
Analysis Year	2024
Time Analyzed	PM
Intersection Orientation	North-South
Project Description	No Build

Site Information

Intersection	Mariners Pl & W Front St
Jurisdiction	
East/West Street	Mariners Place/Site Dwy
North/South Street	West Front Street
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		5	0	5		1	0	0		11	406	1		0	257	9
Percent Heavy Vehicles (%)		0	0	0		100	0	0		18				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		8.10	6.50	6.20		4.28				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		4.40	4.00	3.30		2.36				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			11				1			12				0		
Capacity, c (veh/h)			470				236			1196				1142		
v/c Ratio			0.02				0.00			0.01				0.00		
95% Queue Length, Q_{95} (veh)			0.1				0.0			0.0				0.0		
Control Delay (s/veh)			12.8				20.3			8.0				8.2		
Level of Service (LOS)			B				C			A				A		
Approach Delay (s/veh)	12.8				20.3				0.3				0.0			
Approach LOS	B				C											

HCS7 Two-Way Stop-Control Report

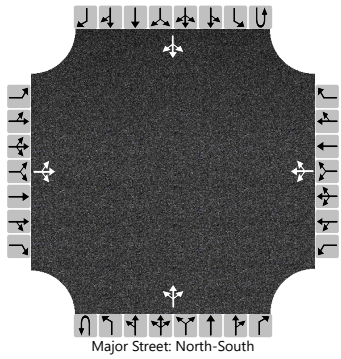
General Information

Analyst	SF
Agency/Co.	D&D
Date Performed	8/2022
Analysis Year	2024
Time Analyzed	AM
Intersection Orientation	North-South
Project Description	Build

Site Information

Intersection	Mariners Pl & W Front St
Jurisdiction	
East/West Street	Mariners Place/Site Dwy
North/South Street	West Front Street
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		8	0	13		1	0	2		4	162	0		0	104	2
Percent Heavy Vehicles (%)		0	0	0		100	0	100		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		8.10	6.50	7.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		4.40	4.00	4.20		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			26				4			5				0		
Capacity, c (veh/h)			772				560			1465				1381		
v/c Ratio			0.03				0.01			0.00				0.00		
95% Queue Length, Q_{95} (veh)			0.1				0.0			0.0				0.0		
Control Delay (s/veh)			9.8				11.5			7.5				7.6		
Level of Service (LOS)			A				B			A				A		
Approach Delay (s/veh)		9.8				11.5				0.2				0.0		
Approach LOS		A				B										

HCS7 Two-Way Stop-Control Report

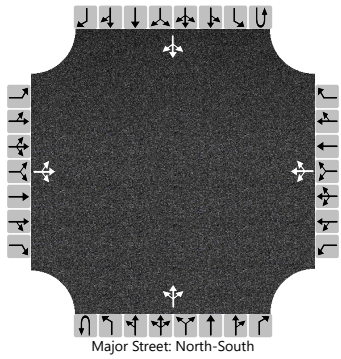
General Information

Analyst	SF
Agency/Co.	D&D
Date Performed	8/2022
Analysis Year	2024
Time Analyzed	PM
Intersection Orientation	North-South
Project Description	Build

Site Information

Intersection	Mariners Pl & W Front St
Jurisdiction	
East/West Street	Mariners Place/Site Dwy
North/South Street	West Front Street
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		5	0	5		2	0	1		11	406	2		1	257	9
Percent Heavy Vehicles (%)		0	0	0		100	0	100		18				100		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		8.10	6.50	7.20		4.28				5.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		4.40	4.00	4.20		2.36				3.10		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			11				3			12				1		
Capacity, c (veh/h)			468				281			1196				756		
v/c Ratio			0.02				0.01			0.01				0.00		
95% Queue Length, Q_{95} (veh)			0.1				0.0			0.0				0.0		
Control Delay (s/veh)			12.9				18.0			8.0				9.8		
Level of Service (LOS)			B				C			A				A		
Approach Delay (s/veh)	12.9				18.0				0.3				0.1			
Approach LOS	B				C											