DOLAN&DEAN
CONSULTING ENGINEERS, LLC

181 WEST HIGH STREET
SOMERVILLE, NJ 08876

908 927 0100 p
908 927 0181 f

TRAFFIC IMPACT ANALYSIS

FOR

WEST COAST SHIPPING

1200 West Blancke Street
Block 421, Lot 49.01
City of Linden
Union County, New Jersey

May 27, 2020

DRAFT
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NJ LICENSE NO. 37071

DRAFT
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NJ LICENSE NO. 33722

INTRODUCTION

An application is being presented to the Linden Planning Board for site plan approval for indoor and outdoor vehicle storage at West Coast Shipping's facility located at 1200 West Blancke Street. This summary of findings has been prepared to assess the traffic impacts associated with potential increases in site activity.

Dolan & Dean Consulting Engineers, LLC (D&D) has been retained by the applicant to conduct a Traffic Impact Analysis to evaluate the adequacy of the roadway system to accommodate possible increases in peak hour driveway activity.

This report provides an assessment of the existing roadway infrastructure in the vicinity of the site, identification of existing traffic activity, projection of future traffic volumes, and an assessment of future driveway operations.

Existing Conditions

The subject property is designated as Lot 49.01 in Block 421, with frontage and access along West Blancke Street. The site is developed with a building comprised of 62,902 square feet of warehouse space 5,000 square feet of office space. Access is provided via two two-way driveways on West Blancke Street. The site also shares an access south of adjoining Lot 50, where an easement is provided for site ingress and egress.

West Blancke Street is a local roadway with a general northeast/southwest orientation. The roadway begins at North Stiles Street northeast of the site and becomes Whittier Street southwest of the site. In the site vicinity, one lane is provided per direction of travel.

TRAFFIC CHARACTERISTICS OF WEST COAST SHIPPING

Consultation with West Coast Shipping indicates that during normal operations (prior to shutdowns associated with COVID-19) the site was visited by approximately 10 car carriers per day, between the hours of 8:00 a.m. and 5:00 p.m.

The car carriers enter and exit the driveways on West Blancke Street, where cars are unloaded, and then driven by forklift to the rear of the property. Vehicles are processed and then are transported from the site in trucks. There are fewer than 10 trucks per day leaving the site.

Operations have slowed since mid-March due to COVID-19. Upon resuming normal operation, the applicant expects approximately 10 trucks per day delivering cars to the site and 10 trucks per day transporting cars from the site.

To further understand peak hour operations at the site, D&D reviewed security footage available from West Coast Shipping. The videos were reviewed from February 2020 prior to impacts of COVID-19.

The security gates open at 8:00 a.m. Monday through Friday and close at 5:00 p.m. when staff leaves the site. Based on detailed review of video recordings from Thursday, February 20, 2020, peak activity occurs from 8:00 a.m. to 9:00 a.m. and 4:00 p.m. to 5:00 p.m. It is noted that the weather was clear on Thursday, February 20, 2020 and school was in session.

The following trip generation was recorded during the weekday morning and evening peak hours:

TABLE I
EXISTING TRIP GENERATION

Peak Hour	Enter	Exit	Total
Morning	13 cars 3 trucks 16 total	4 cars 5 trucks 9 total	17 cars 8 trucks 25 total
Evening	4 cars 1 truck 5 total	8 cars 1 truck 9 total	12 cars 2 trucks 14 total

The traffic count data is appended. Peak hour driveway and street volumes are shown in appended Figure 1.

DRIVEWAY ANALYSIS

When watching the security videos, passenger vehicles and trucks were observed to enter and exit the driveways with little delay. The February 20, 2020 videos also showed the following:

- At 8:42 a.m. a truck blocked traffic on West Blancke Street along the site frontage while backing into a property on the opposite side of the street.
- At 8:32 a.m. three passenger vehicles turned left out of the western driveway. It took only 31 seconds for the three vehicles to exit.
- At 4:43 p.m. a tractor trailer turned right into the eastern driveway and turned left out of west driveway, using the site to complete a U-turn. The movements were completed in approximately 50 seconds.

Note that the tractor trailer movements were included in the total evening peak hour trip generation although the U-turn movements were not associated with West Coast Shipping.

Although the site traffic is not expected to significantly increase, the peak hour driveway movements have been doubled for analysis.

For the purposes of this analysis, a two-year build-out has been assumed. NJDOT's 2019-2021 Growth Rate Table was reviewed to determine an appropriate growth factor to apply to West Blancke Street peak hour volumes. According to the NJDOT Growth Rate Table, a 1% per year growth rate is applicable to local roadways in Union County. Therefore, the peak hour volumes recorded on West Blancke Street were increased at 1% compounded over two years to a 2022 design year.

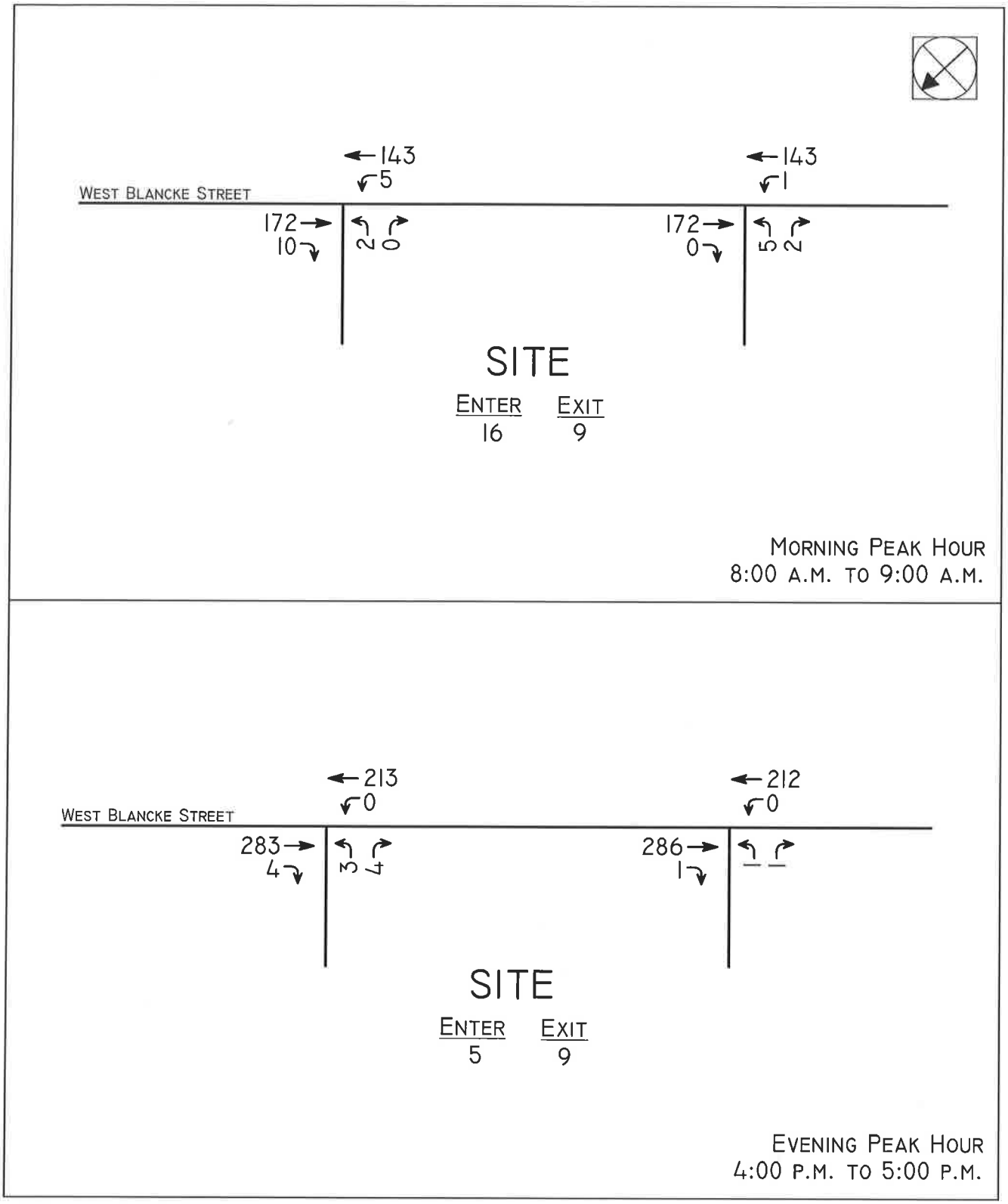
Figure 2 shows the resultant projected driveway volumes.

Volume/capacity Level of Service analyses were conducted for projected driveway volumes using the Highway Capacity Manual (HCM) computer software.

As shown on the appended printouts, critical movements at the site driveways are calculated to operate at Levels of Service A and B, which is consistent with observed driveway activity.

Based on this analysis, ample capacity is available along West Blancke Street to accommodate increases in peak hour traffic that may occur at West Coast Shipping.

TECHNICAL APPENDIX

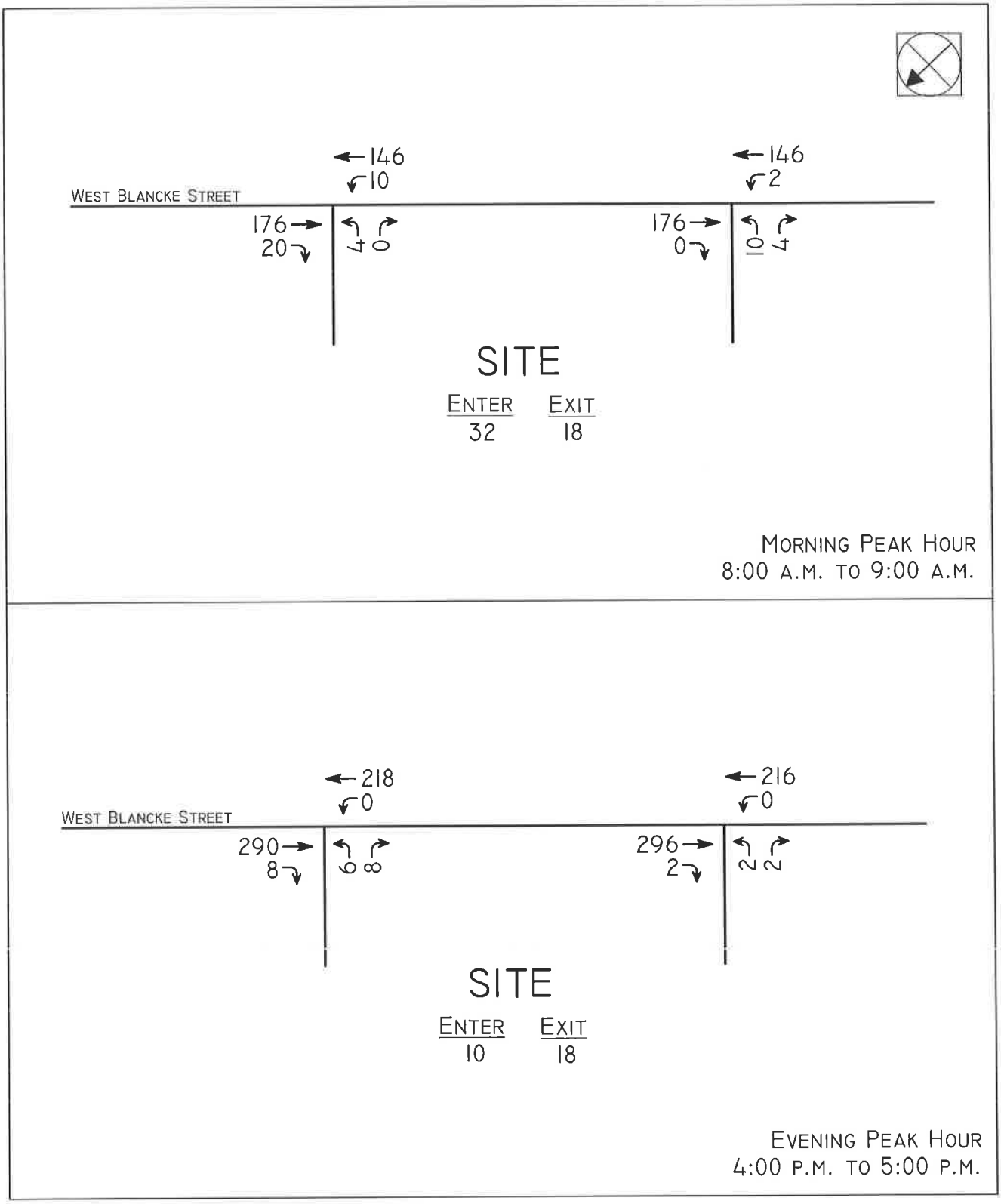


WEST COAST SHIPPING
CITY OF LINDEN
UNION COUNTY, NEW JERSEY

FIGURE 1

DOLAN&DEAN
CONSULTING ENGINEERS, LLC

2020 EXISTING TRAFFIC VOLUMES



WEST COAST SHIPPING
CITY OF LINDEN
UNION COUNTY, NEW JERSEY

FIGURE 2

DOLAN&DEAN
CONSULTING ENGINEERS, LLC

2022 PROJECTED TRAFFIC VOLUMES

TRAFFIC SURVEY SHEET

INDICATE NORTH BY ARROW

DOLAN & DEAN
CONSULTING ENGINEERS

181 West High Street
Somerville, NJ 08876

908-927-0100
908-927-0181 fax

PROJECT #: CLIENT: WEST COAST SHIPPING

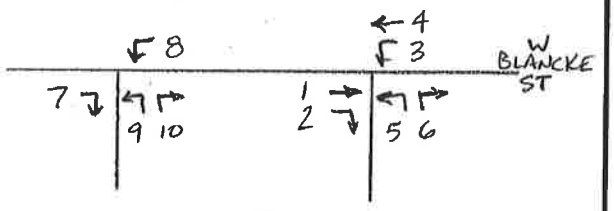
INTERSECTION:

MUNICIPALITY: LINDEN

COUNT BY: ED DATE: TH 2/20/2020

TIME from 8:00 AM to 9:00 AM / 4:00 PM to 5:00 PM

S M T W (T) F S
(CIRCLE DAY)



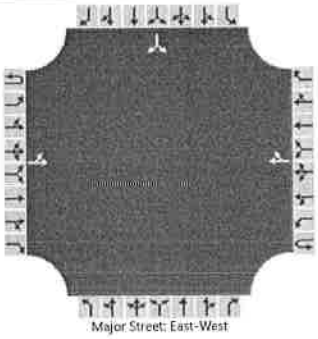
SKETCH SURVEY AREA (INCLUDE LANDMARKS)

START TIME	MOVEMENT NUMBER 1	2	3	4	5	6	7	8	9	10							TOTAL
8:00	43 (2HV)	0	0	38 (2)	0	0	3 PV	2 PV	0	0		86					
8:15	42 (1)	0	0	43 (1)	0	0	2 PV 1 HV	1 PV	2 HV	0		91					
8:30	43 (3)	0	1 PV	37 (3)	3 PV	1 PV	4 PV	1 HV	0	0		89					
8:45	44 (2)	0	0	25 (0)	2 HV	1 HV	0	1 HV	0	0		74					
AM PEAK	172	0	1	143	5	2	10	5	2	0		340		PHF 0.93			
4:00	54 (6HV)	1 PV	0	56 (6)	0	0	2 PV	0	1 PV	0		114					
4:15	78 (2)	0	0	50 (4)	0	0	0	0	0	0		128					
4:30	66 (3)	0	0	69 (3)	1 HV	0	1 PV 1 HV	0	1 PV	1 PV		135					
4:45	88 (4)	0	0	42 (0)	0	1 PV	0	0	1 PV	3 PV		135					
PM PEAK	286	1	0	212	1	1	4	0	3	4		512		PHF 0.95			
PEAK HOUR TOTAL																	

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	D&D	Intersection	East Driveway
Agency/Co.		Jurisdiction	
Date Performed	5/2020	East/West Street	Blancke St
Analysis Year	2022	North/South Street	East Dwy
Time Analyzed	AM Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	West Coast Shipping		

Lanes



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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		10	146				176	20						4		0
Percent Heavy Vehicles (%)		50												50		50
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.60												6.90		6.70
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.65												3.95		3.75

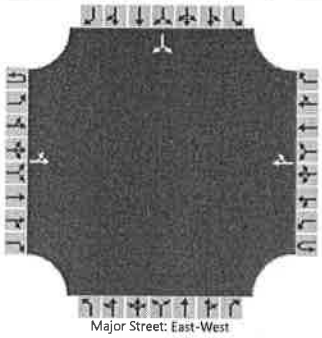
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11													4	
Capacity, c (veh/h)		1118													530	
v/c Ratio		0.01													0.01	
95% Queue Length, Q_{95} (veh)		0.0													0.0	
Control Delay (s/veh)		8.3													11.8	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)	0.6												11.8			
Approach LOS													B			

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	D&D	Intersection	West Driveway
Agency/Co.		Jurisdiction	
Date Performed	5/2020	East/West Street	Blancke St
Analysis Year	2022	North/South Street	West Dwy
Time Analyzed	AM Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	West Coast Shipping		

Lanes



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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		2	146				176	0						10		4
Percent Heavy Vehicles (%)		50												50		50
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.60												6.90		6.70
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.65												3.95		3.75

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		2													15	
Capacity, c (veh/h)		1141													599	
v/c Ratio		0.00													0.03	
95% Queue Length, Q_{95} (veh)		0.0													0.1	
Control Delay (s/veh)		8.2													11.2	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)	0.1												11.2			
Approach LOS													B			

HCS7 Two-Way Stop-Control Report

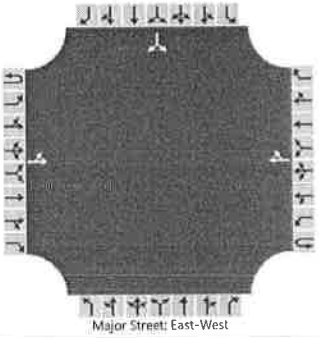
General Information

Analyst	D&D
Agency/Co.	
Date Performed	5/2020
Analysis Year	2022
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	West Coast Shipping

Site Information

Intersection	East Driveway
Jurisdiction	
East/West Street	Blancke St
North/South Street	East Dwy
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		0	218				290	8						6		8
Percent Heavy Vehicles (%)		50												50		50
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.60												6.90		6.70
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.65												3.95		3.75

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0													15	
Capacity, c (veh/h)		1009													515	
v/c Ratio		0.00													0.03	
95% Queue Length, Q_{95} (veh)		0.0													0.1	
Control Delay (s/veh)		8.6													12.2	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)	0.0												12.2			
Approach LOS													B			

HCS7 Two-Way Stop-Control Report

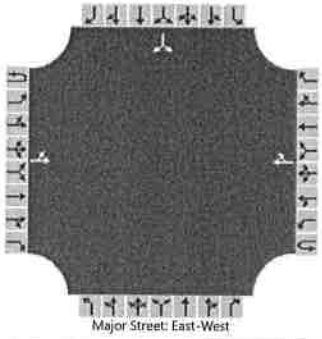
General Information

Analyst	D&D
Agency/Co.	
Date Performed	5/2020
Analysis Year	2022
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	West Coast Shipping

Site Information

Intersection	West Driveway
Jurisdiction	
East/West Street	Blancke St
North/South Street	West Dwy
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		0	216				296	2						2		2
Percent Heavy Vehicles (%)		50												50		50
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.60												6.90		6.70
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.65												3.95		3.75

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0													4	
Capacity, c (veh/h)		1009													500	
v/c Ratio		0.00													0.01	
95% Queue Length, Q_{95} (veh)		0.0													0.0	
Control Delay (s/veh)		8.6													12.3	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)	0.0												12.3			
Approach LOS													B			