DOLAN&DEAN
CONSULTING ENGINEERS, LLC

181 WEST HIGH STREET
SOMERVILLE, NJ 08876

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TRAFFIC IMPACT ANALYSIS

FOR

PROPOSED QUICK CHEK

U.S. ROUTE 130 AND WASHINGTON PLACE
BLOCK 230, LOT 15
TOWNSHIP OF NORTH BRUNSWICK
MIDDLESEX COUNTY, NEW JERSEY

NOVEMBER 7, 2019

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EIC/lrc
Middlesex/NorthBrunswick/EastRidge/Documents\2019-11-07 TIA

INTRODUCTION

A site plan application is being filed with the Township of North Brunswick for a 5,670 square foot Quick Chek market with 8 fuel pumps. The site is in the southwestern corner of the intersection formed by Route 130 and Nimitz Place and is currently undeveloped.

Access to the new Quick Chek is proposed via two driveways along Route 130 where the western most driveway will provide access to the existing traffic signal located at the intersection of Route 130 and Washington Place. The second highway driveway would be limited to right turn ingress/egress as Route 130 is a divided highway. Alternative ingress is also proposed via a right-turn only driveway along Nimitz Place. No egress is proposed to Nimitz Place.

Dolan & Dean Consulting Engineers, LLC (D&D) has been retained by the applicant to prepare this Traffic Impact Analysis for the proposed Quick Chek. This report provides an assessment of the existing roadways and intersection operations near to the site, a projection of future traffic volumes inclusive of site generated traffic, and an assessment of future driveway and intersection conditions. In addition, this report provides a review of the proposed site access, on-site circulation design, and parking supply.

Existing Conditions

As noted, the subject property is located in the southwestern corner of the intersection formed by Route 130 and Nimitz Place. The site is designated as Block 230, Lot 15 and is shown on appended Figure 1.

EXISTING ROADWAY CONDITIONS

U.S. Route 130 is considered an urban accessible principal arterial roadway and is under NJDOT jurisdiction. The roadway has a general northeast/southwest orientation, and within the general site vicinity provides two lanes of travel in each direction with a posted speed limit of 50 miles per hour and is divided by a grassed median with intermediate openings at select intersections.

Nimitz Place intersects Route 130 from the north at a STOP controlled, 3-leg intersection. The roadway provides one lane of travel in each direction, with a non-posted statutory speed limit of 25 miles per hour. Nimitz Place provides access to single family residential homes located northwest of the site.

Washington Place is a local roadway with a general northwest/southeast orientation. The Roadway provides one lane of travel in each direction with a posted speed limit of 25 miles per hour. Washington Place intersects Route 130 at a signalized "T"-Type intersection that aligns opposite the proposed Quick Chek driveways. There is a 4-ton truck weight limited on Washington Place.

At the signalized intersection of Washington Place & Route 130, the northbound Route 130 approach to the intersection provides an exclusive through lane and a shared through/right-turn lane within the median. The southbound approach was recently widened to provide an exclusive left-turn lane, an exclusive through lane and a shared through/right-turn lane. The westbound Washington Place approach provides an exclusive left-turn lane and an exclusive right-turn lane.

EXISTING TRAFFIC VOLUMES

In 2019, D&D performed traffic counts at the Route 130 intersection with Nimitz Place and Washington Place during those times when the highway traffic is typically busiest. The counts were conducted during peak traffic hours on Thursday, July 11, 2019 from 7:00 a.m. to 9:00 a.m. and from 4:00 p.m. to 6:30 p.m. The existing peak hour volumes were then balanced between intersections and are shown on appended Figure 2.

ANALYSIS OF EXISTING TRAFFIC CONDITIONS

A volume/capacity Level of Service analysis was conducted for the existing traffic volumes using the Highway Capacity Manual (HCM) computer software. This type of analysis is performed to assess intersection operations and to identify any areas of excessive delay.

By definition, capacity represents the maximum vehicular volume that can be accommodated on a given road segment or intersection lane as a function of roadway geometry, the general environs, traffic characteristics, regulations 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.

Based on this analysis, and as shown in Figure 3, all movements at the study intersections currently operate at Levels of Service "D" or better during both peak hours. A description of intersection Levels of Service is noted below:

Signalized Intersections	
Level of Service	Delay per Vehicle (seconds)
A	<10.0
B	>10.0 and <20.0
C	>20.0 and < 35.0
D	>35.0 and < 55.0
E	>55.0 and < 80.0
F	>80.0

Unsignalized (STOP/YIELD) Intersections	
Level of Service	Delay per Vehicle (seconds)
A	<0-10
B	>10 to <15
C	>15 to <25
D	>25 to <35
E	> 35 to <50
F	>50

Traffic Characteristics of the Proposed Use

TRIP GENERATION

Trip generation estimates for the Quick Chek were developed using the 10th Edition of the Trip Generation Manual by the Institute of Transportation Engineers (ITE). For the proposed Quick Chek the proper land use category is "Super Convenience Store with Gas Pumps". Table I summarizes the Quick Chek trip generation projections.

TABLE I
TRIP GENERATION ESTIMATES – 5,670 SF QUICK CHEK
ITE RATES

PEAK HOUR	ENTER	EXIT	TOTAL
Morning	236	236	472
Evening	197	197	394

As noted in the ITE Trip Generation Handbook, certain uses such as convenience stores, restaurants, banks, gas stations, etc., are ideally located adjacent to busy streets in order to attract existing motorists. These uses generally attract most of their customers from traffic passing the site on the way from an origin to an ultimate destination. These trips are therefore not new to the adjacent street system but are considered "pass-by" trips. Pass-by trips are defined as: *"...trips attracted to a particular development from the traffic "passing-by" on the adjacent street."*[1]

Based on a 2001 ITE study, peak hour pass-by percentages of 80% would be reasonably anticipated during the morning and evening peak hours, respectively. Research performed by this firm and others at convenience stores, gas stations, and combination gas/store sites, indicate pass-by percentages well in excess of 80% as rarely does a customer make a specific trip to a convenience store or service station during peak hours. However, to allow for a conservative analysis, NJDOT's percentages for "pass-by" distribution shown below were used:

Morning Peak Hour – 75%
Evening Peak Hour – 75%

[1] ITE Journal, May, 1992 - "Refinement of Procedures Used for Estimating Pass-By Trip Percentages

The following table summarizes trip generation by trip type:

TABLE II
TRIP GENERATION BY TYPE

PEAK HOUR	TRIP TYPE	ITE RATES		
		ENTER	EXIT	TOTAL
Morning	Quick Chek – New	59	59	118
	Quick Chek – Pass By	177	177	354
	Total	236	236	472
Evening	Quick Chek – New	49	49	98
	Quick Chek – Pass By	148	148	296
	Total	197	197	394

DISTRIBUTION OF SITE GENERATED TRAFFIC

The majority of site traffic will be influenced by the likely attraction of pass-by traffic as previously discussed. Particularly during peak hours, many site visits will be linked to another primary trip purpose, for example, traveling to work, returning home from work or a combined trip with other shopping related errands.

"New" trips are likely to follow existing travel patterns. The distribution of newly generated trips is shown in Table III.

TABLE III
DISTRIBUTION

To/From	Percentage
North – Route 130	40%
South – Route 130	40%
East – Washington Place	18%
West – Nimitz Place	2%

Site generated traffic is shown on Figure 4.

FUTURE TRAFFIC CONDITIONS

FUTURE TRAFFIC VOLUMES

For the purposes of this analysis, a two-year build-out has been assumed. To project traffic volumes to the design year, a background growth factor was applied to existing traffic volumes. Based on data compiled by NJDOT, the typical growth rate for Middlesex County principal arterial highways is 1.00% per year. The background growth was implemented for a projected two-year buildout to create the "no-build" volumes shown in Figure 5.

Projected site traffic from the proposed Quick Chek was then added to the "no-build" traffic volumes to establish future “build” traffic volumes. These future build traffic volumes are shown on Figure 6.

ANALYSIS OF FUTURE TRAFFIC CONDITIONS

The projected “no-build” and “build” traffic volumes were analyzed to determine future operational conditions at the study intersection under build conditions. Driveway movements at the signalized Route 130 and Washington Place intersection were analyzed with the proposed lane configuration of a shared through/left-turn lane, and an exclusive right-turn only lane for Quick Chek. Figures 7 and 8 illustrate the resultant “no-build” and “build” levels of service.

As shown under build conditions, all movements will continue to operate at a level of service “D” or better during both peak hours. Therefore, new traffic generated by the proposed Quick Chek will not have a negative effect on roadway operating conditions.

SITE ACCESS AND CIRCULATION

The Site Plans prepared by Bohler Engineering, LLC has been reviewed with regard to site access, circulation, and parking supply and orientation. The following comments address the overall site circulation for vehicular traffic:

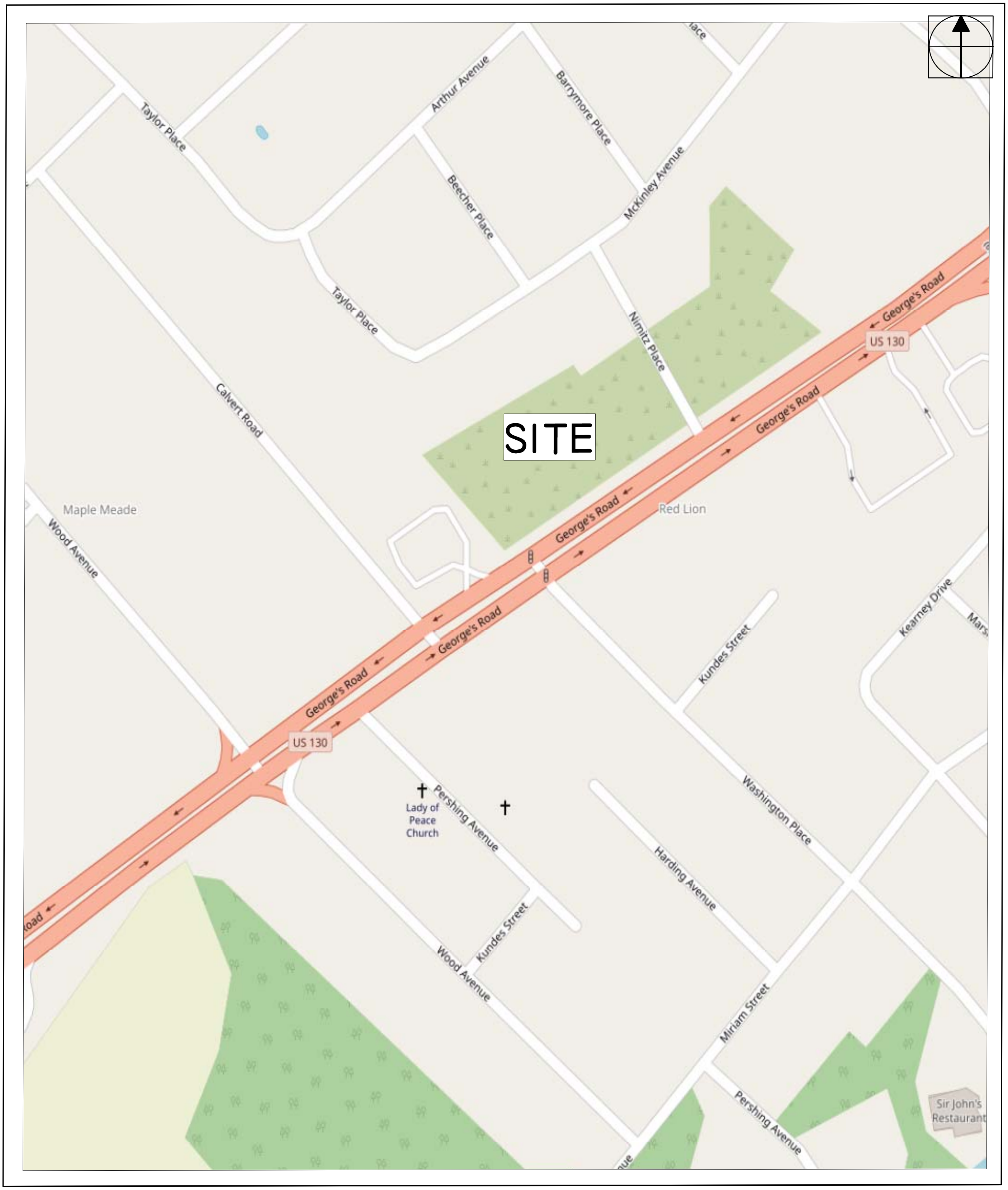
- Site access is proposed via a right-in/right-out driveway and a signalized, full-movement driveway location along Route 130. Alternative ingress to serve the adjacent neighborhood is proposed via a right-turn, in-only driveway along Nimitz Place. The benefit of this driveway would allow local residents to enter the site without having to exit onto Route 130 and then immediately turn into the site, thereby making for a much safer ingress.

- 8 fuel dispensers, allowing for 16 fueling positions, are proposed. The provision of multiple fueling positions results in a more efficient operation, allowing vehicles to enter the site and readily access a fueling position which accommodate their gas tank location. By providing multiple fueling positions, vehicular queuing typically does not occur.

- The Site Plan provides 67 striped parking spaces on site for multi-purpose gas/mart customers. The 16 fueling positions will act as *de facto* parking. The combination of a mart or convenience store and fueling stations is customary, in that store purchases can be made while vehicles are being fueled. The provision of 83 parking positions on-site is expected to more than adequately accommodate parking demands.

- The site layout provides for two-way circulation around the building, around the fueling area, and between parking spaces. The site design will accommodate passenger vehicles, delivery vehicles, and refuse trucks.

TECHNICAL APPENDIX



Proposed Quick Chek
Township of North Brunswick
Middlesex County, New Jersey

FIGURE 1

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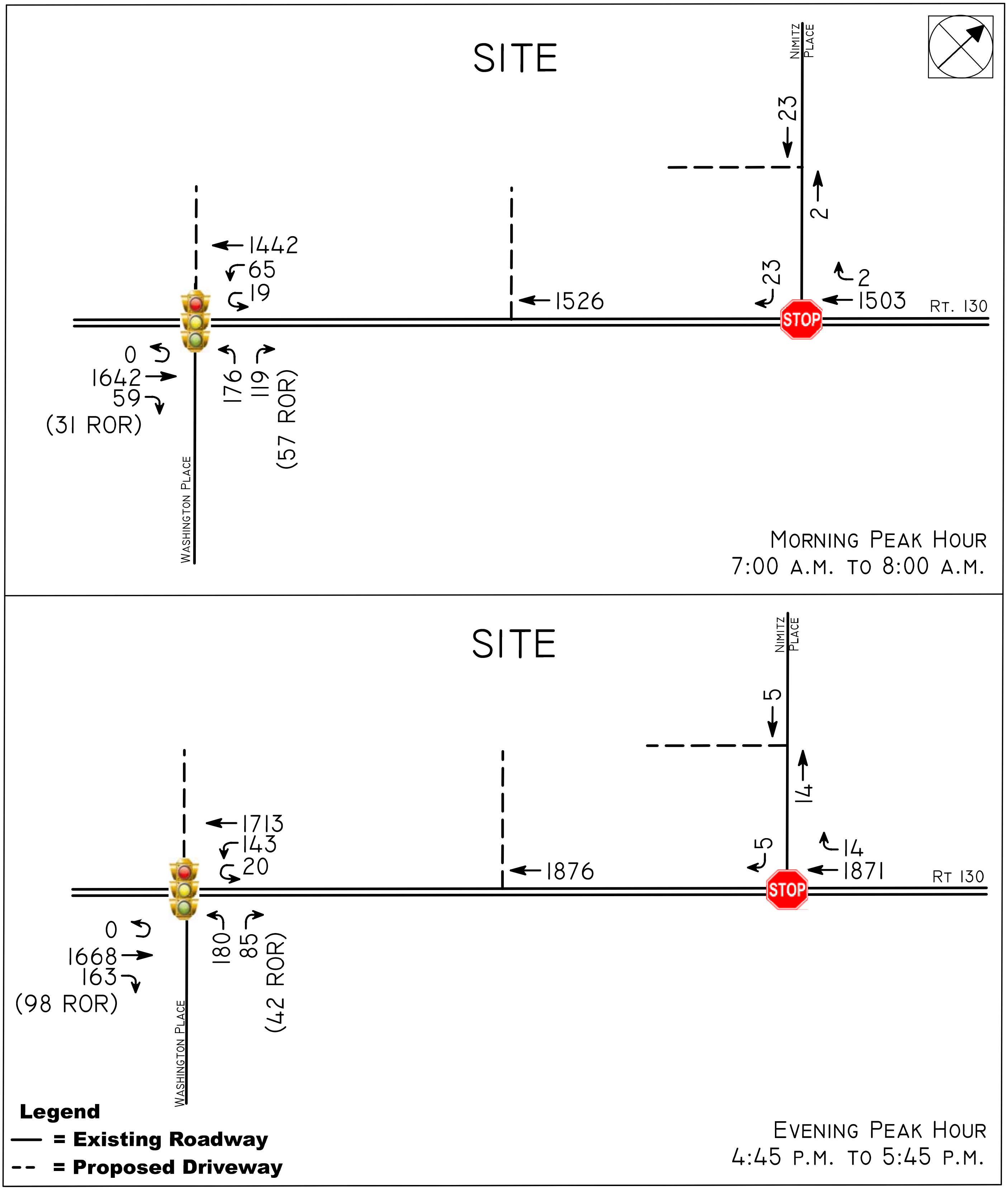
SITE LOCATION MAP



PROPOSED QUICK CHEK
TOWNSHIP OF NORTH BRUNSWICK
MIDDLESEX COUNTY, NEW JERSEY

FIGURE 2

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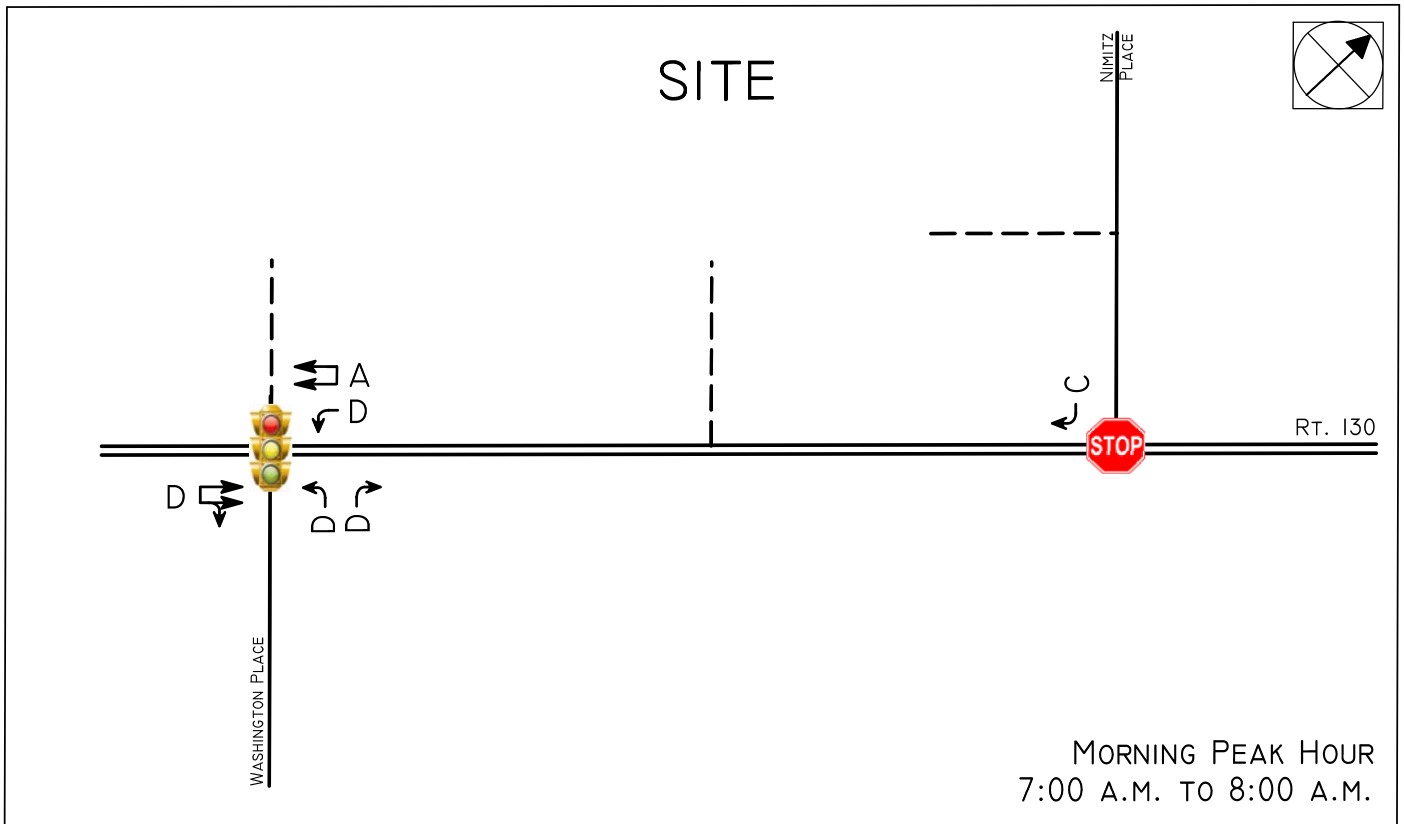
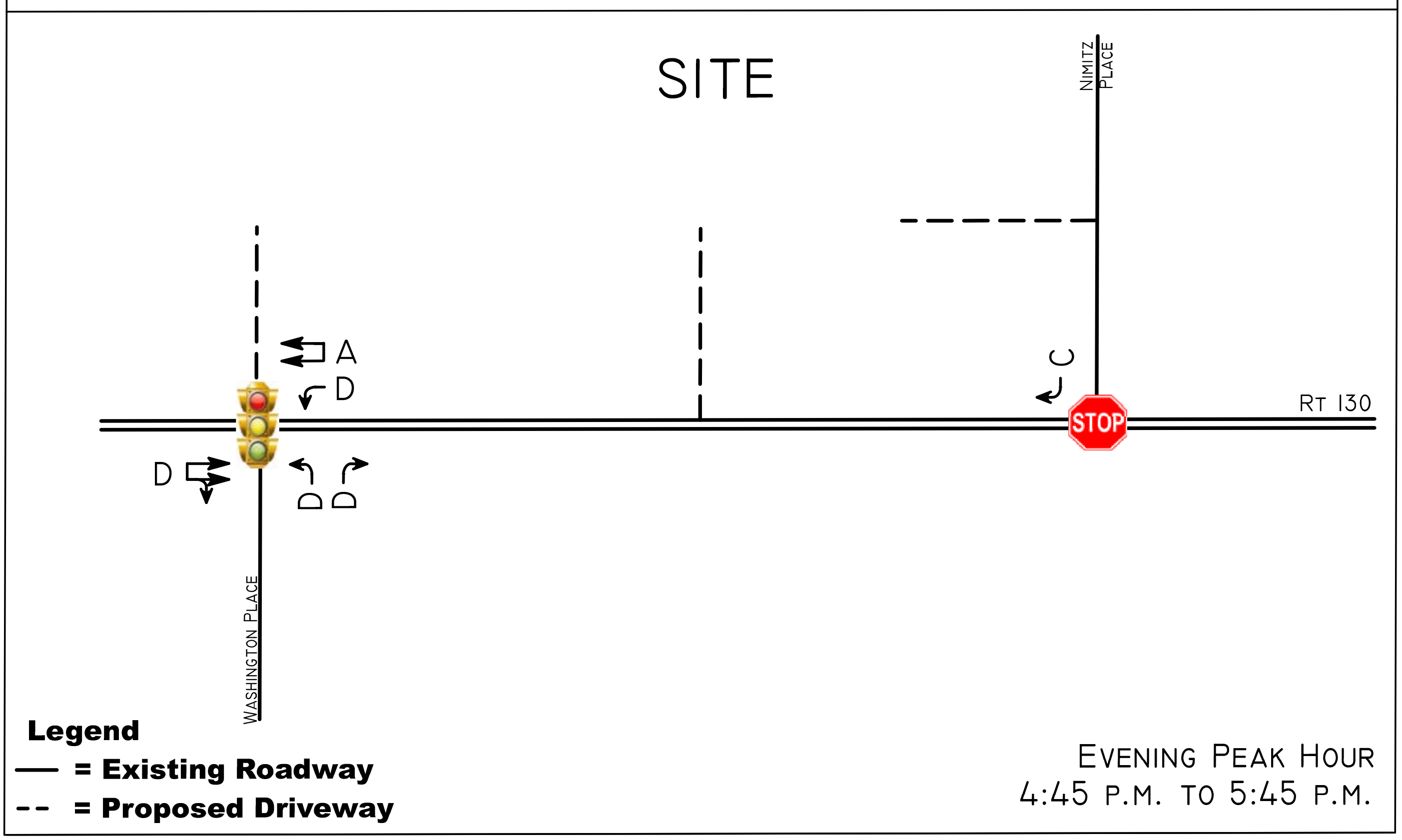
EXISTING TRAFFIC VOLUMES





PROPOSED QUICK CHEK
TOWNSHIP OF NORTH BRUNSWICK
MIDDLESEX COUNTY, NEW JERSEY

FIGURE 3

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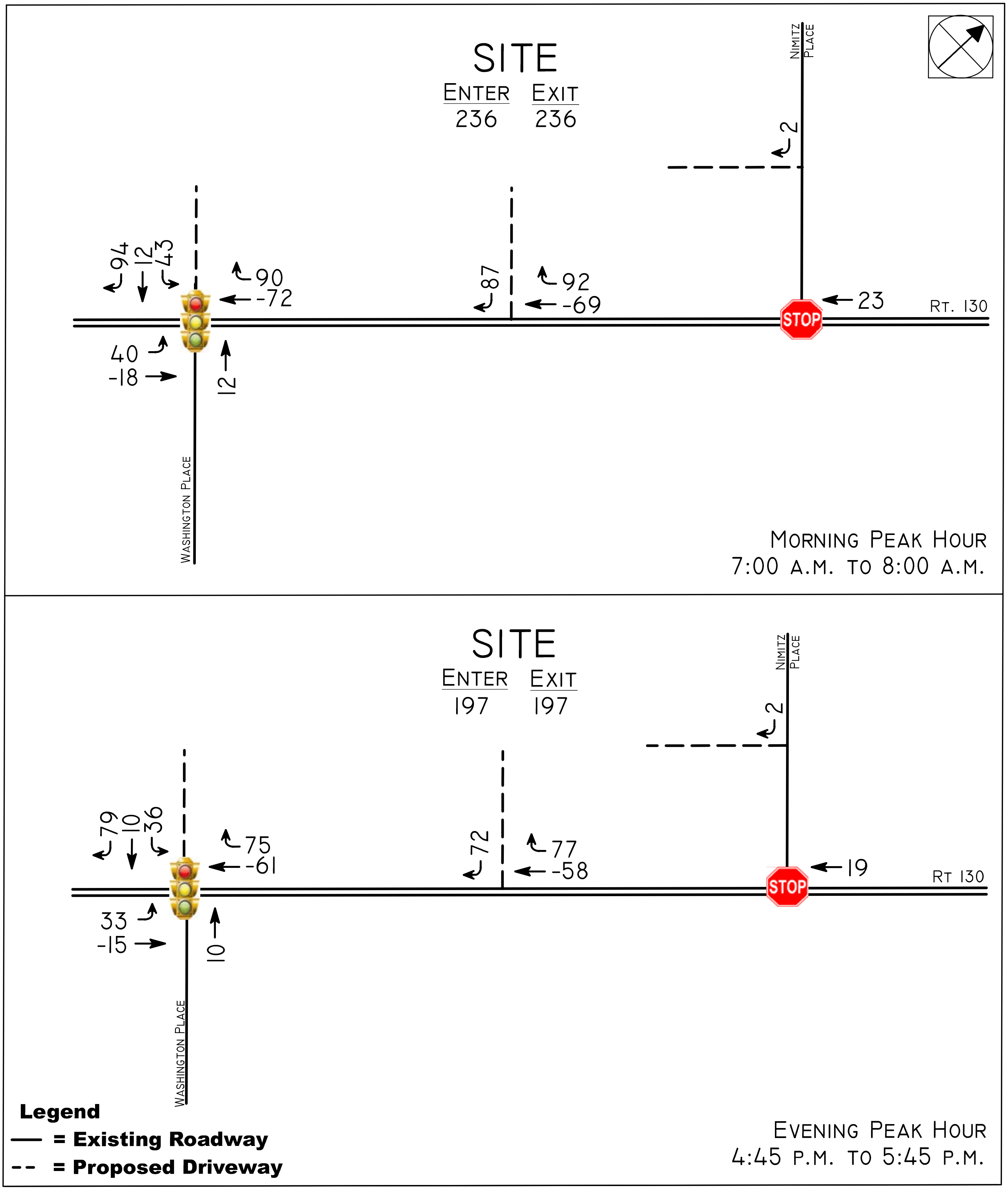
EXISTING LEVELS OF SERVICE



PROPOSED QUICK CHEK
TOWNSHIP OF NORTH BRUNSWICK
MIDDLESEX COUNTY, NEW JERSEY

FIGURE 4

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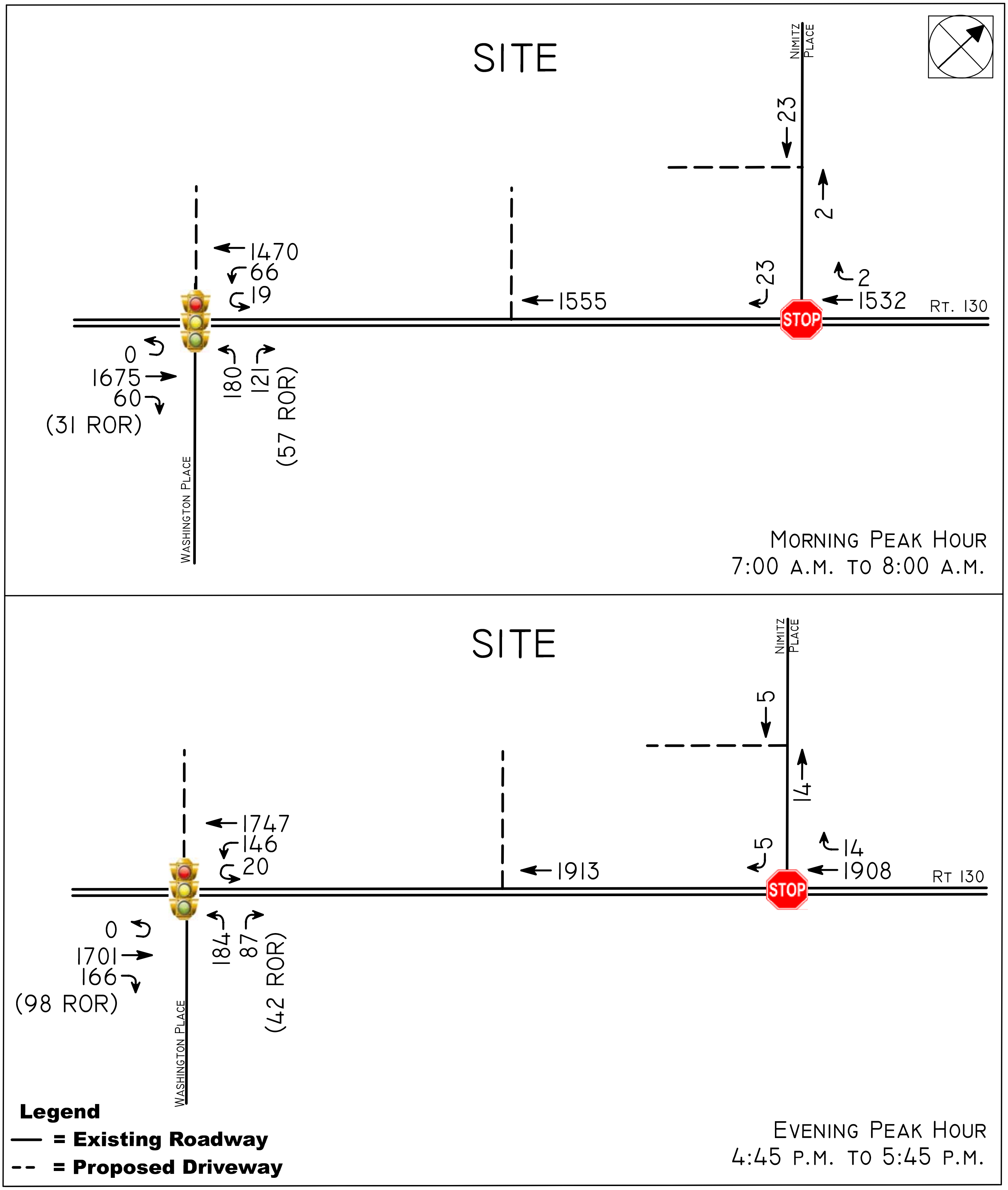
SITE GENERATED TRAFFIC VOLUMES



PROPOSED QUICK CHEK
TOWNSHIP OF NORTH BRUNSWICK
MIDDLESEX COUNTY, NEW JERSEY

FIGURE 5

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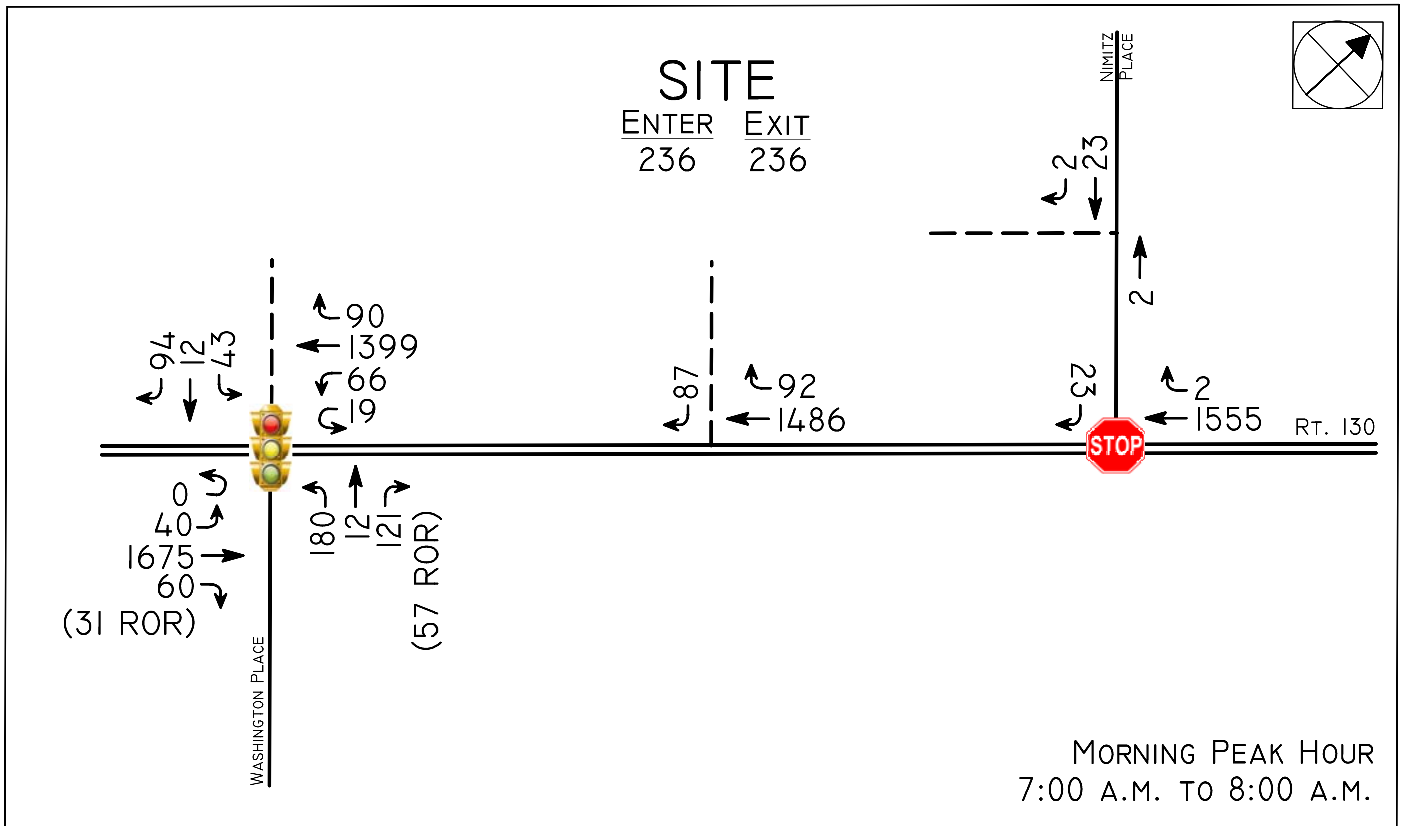
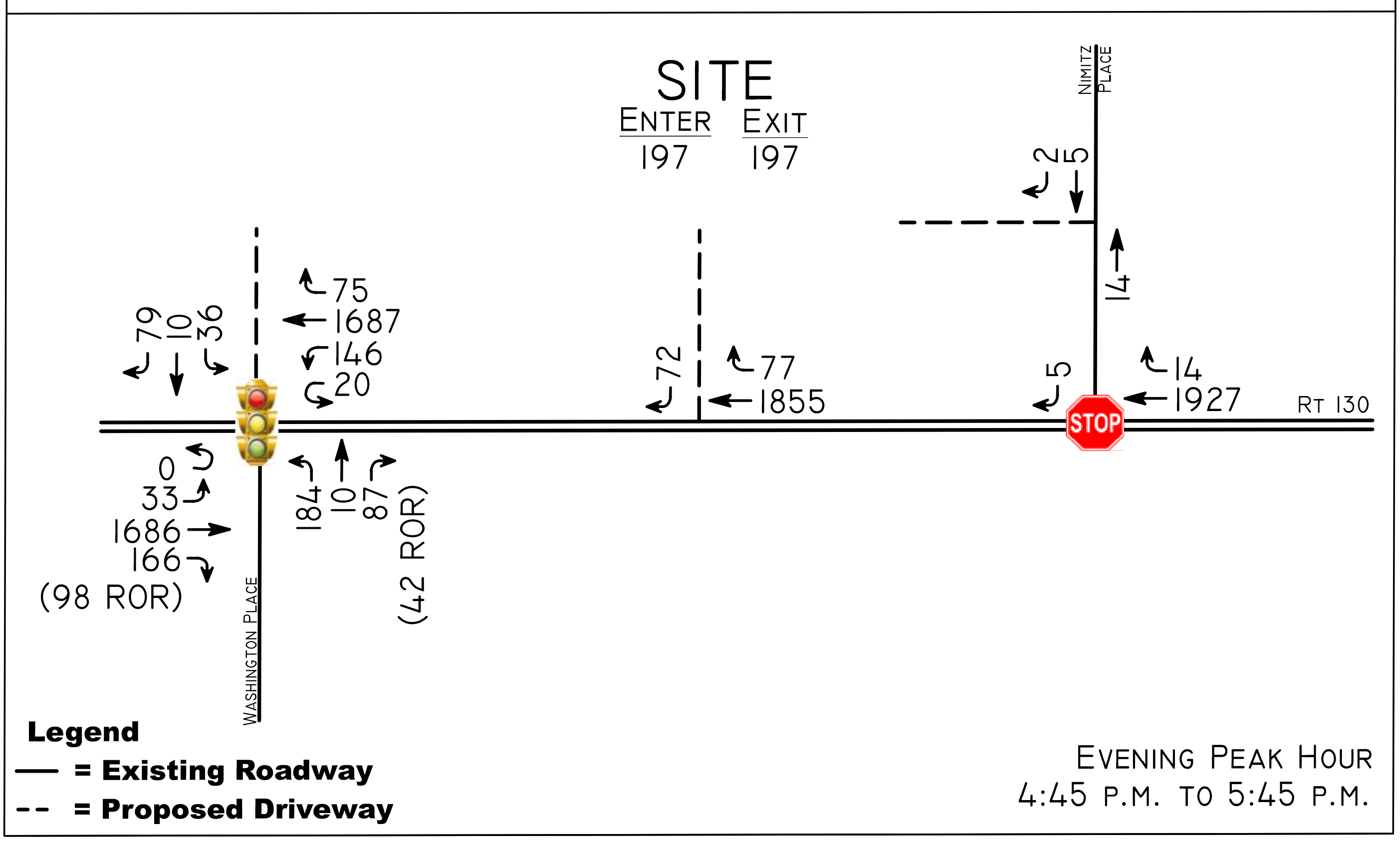
NO-BUILD TRAFFIC VOLUMES



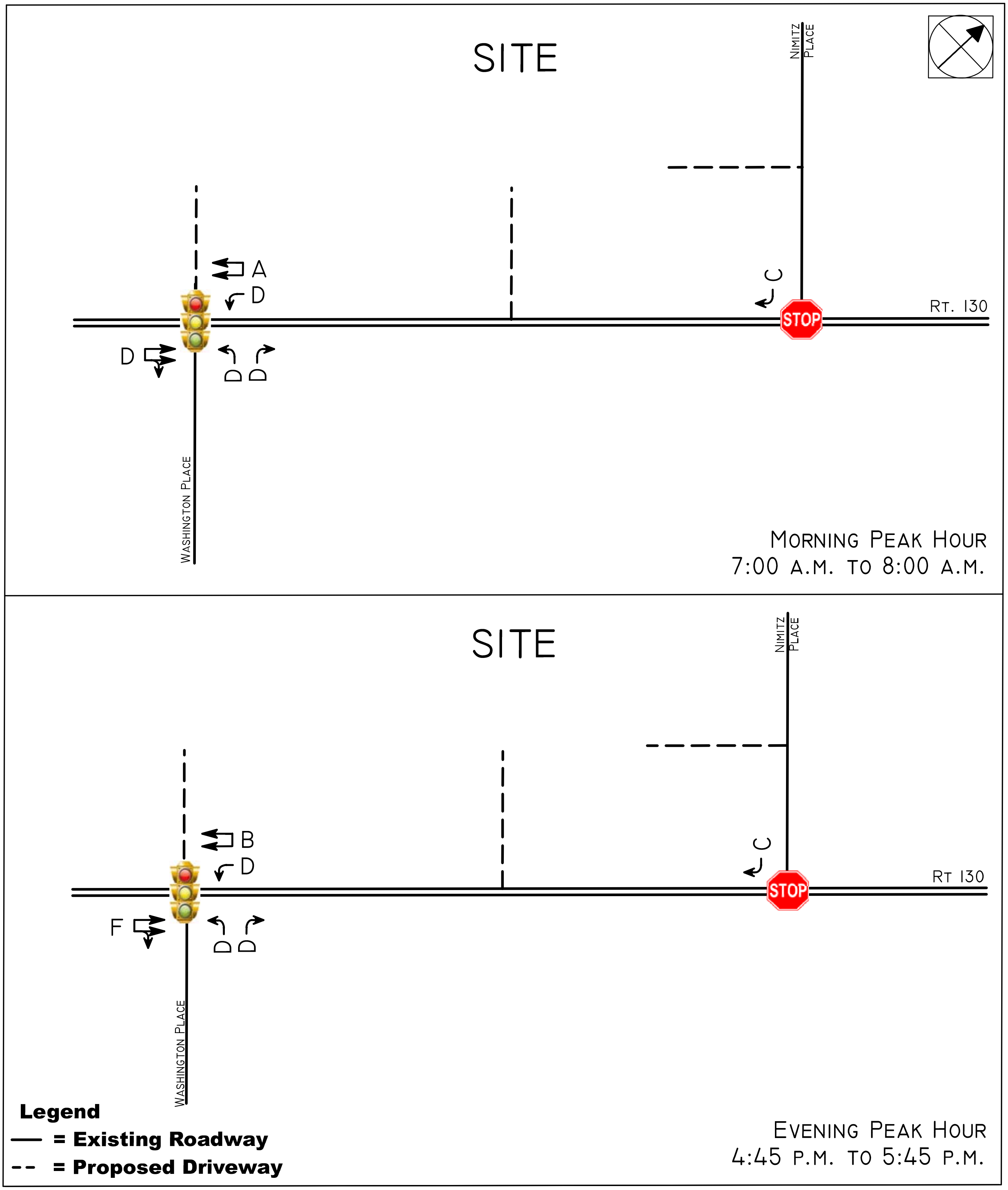


PROPOSED QUICK CHEK
TOWNSHIP OF NORTH BRUNSWICK
MIDDLESEX COUNTY, NEW JERSEY

FIGURE 6

DOLAN & DEAN CONSULTING ENGINEERS, LLC

BUILD TRAFFIC VOLUMES

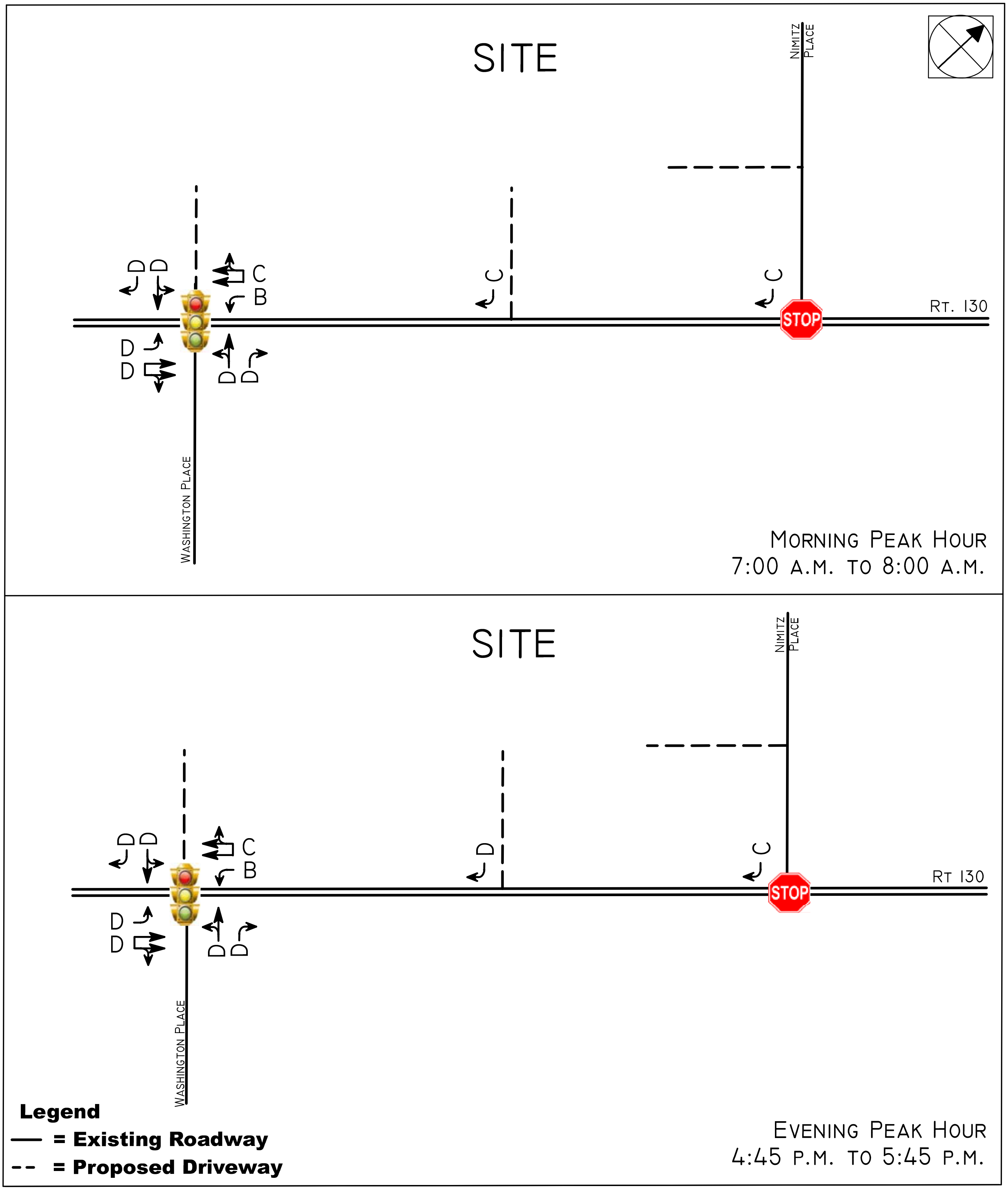


Proposed Quick Chek
Township of North Brunswick
Middlesex County, New Jersey

FIGURE 7

DOLAN&DEAN CONSULTING ENGINEERS, LLC

NO-BUILD LEVELS OF SERVICE



Proposed Quick Chek
Township of North Brunswick
Middlesex County, New Jersey

FIGURE 8

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BUILD LEVELS OF SERVICE

Route 130 & Washington place/Nimitz Place

Thursday, July 11, 2019 from 7:00 to 9:00 am & from 4:00 to 6:30 pm

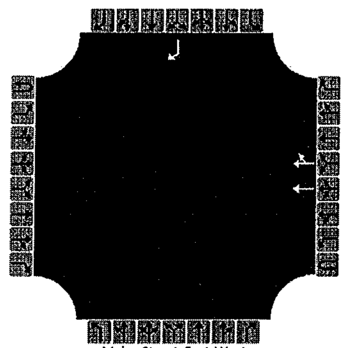
	Passenger Vehicles													Heavy Vehicles													Total	Hour Total
	1	2	3	4	5	6	7	8	12	13	14	15	16	1	2	3	4	5	6	7	8	12	13	14	15	16		
7:00 AM	303	11	9	12	322	3	4	25	5	0	326	1	3	29	0	0	6	25	0	0	1	0	0	30	0	0	1115	
7:15 AM	341	17	14	14	389	3	7	46	5	0	382	0	6	23	0	0	0	39	0	1	0	0	0	24	0	0	1311	
7:30 AM	334	13	16	13	423	14	6	46	3	0	340	0	7	32	1	1	0	45	2	1	1	0	0	24	0	0	1322	
7:45 AM	277	20	14	15	374	6	12	57	6	0	342	1	7	34	3	3	2	25	0	0	0	0	0	35	0	0	1233	4981
8:00 AM	105	9	7	6	149	4	4	22	3	0	314	5	3	14	0	0	0	19	0	0	0	0	0	30	0	0	694	4560
8:15 AM	300	21	11	12	454	16	6	48	3	0	311	1	5	23	2	2	1	31	0	1	1	0	0	37	0	0	1286	4535
8:30 AM	424	32	17	23	204	19	12	86	6	0	293	1	7	58	7	7	0	26	2	0	1	0	0	35	1	0	1261	4474
8:45 AM	265	10	9	17	383	8	14	49	5	0	274	2	2	28	12	12	3	49	2	1	0	0	0	37	0	0	1182	4423
Peak Hour	1255	61	53	54	1508	26	29	174	19	0	1390	2	23														PHF =	0.94
Heavy	118	4	4	8	134	2	2	2	0	0	113	0	0														HV% =	8%
Total	1373	65	57	62	1642	28	31	176	19	0	1503	2	23															

	Passenger Vehicles													Heavy Vehicles													Total	Hour Total
	1	2	3	4	5	6	7	8	12	13	14	15	16	1	2	3	4	5	6	7	8	12	13	14	15	16		
4:00 PM	383	25	19	27	357	20	18	38	4	0	384	1	3	27	1	1	15	26	0	1	2	0	0	28	0	0	1380	
4:15 PM	341	36	14	5	333	14	10	38	2	0	381	3	2	21	1	0	1	14	1	0	1	0	0	2	0	0	1220	
4:30 PM	346	34	6	9	381	26	13	29	5	0	349	2	0	29	0	0	0	25	0	0	0	0	0	27	0	0	1281	
4:45 PM	402	34	8	13	417	11	19	42	6	0	441	5	1	17	0	0	0	14	0	0	1	0	0	18	0	0	1449	5330
5:00 PM	371	36	11	15	395	9	32	41	4	0	418	2	0	21	1	0	1	19	0	0	0	0	0	21	0	0	1397	5347
5:15 PM	417	29	10	9	373	17	30	66	6	0	388	2	2	14	1	0	0	16	0	0	1	0	0	18	0	0	1399	5526
5:30 PM	447	38	12	5	409	28	17	29	4	0	547	5	2	17	4	1	0	25	0	0	0	0	0	20	0	0	1610	5855
5:45 PM	387	36	12	7	349	14	22	3	4	0	461	3	2	24	3	0	0	11	1	0	0	0	0	19	0	0	1358	5764
6:00 PM	429	23	15	12	318	17	19	45	3	0	443	2	2	23	0	0	0	14	0	0	0	0	0	22	0	0	1387	5754
6:15 PM	318	28	6	7	288	13	19	29	4	0	380	2	1	13	0	0	2	15	1	0	2	0	0	16	0	0	1144	5499
Peak Hour	1637	137	41	42	1594	65	98	178	20	0	1794	14	5														PHF =	0.91
Heavy	69	6	1	1	74	0	0	2	0	0	77	0	0														HV% =	4%
Total	1706	143	42	43	1668	65	98	180	20	0	1871	14	5															

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	EIC	Intersection	Nimitz & Rt. 130
Agency/Co.	DD	Jurisdiction	
Date Performed	7/19/2019	East/West Street	Route 130
Analysis Year	2019	North/South Street	Nimitz Place
Time Analyzed	Am Existing	Peak Hour Factor	0.94
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Major Street: East-West

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	0	0	0	0	2	0		0	0	0		0	0	1
Configuration							T	TR								R
Volume (veh/h)							1503	2								23
Percent Heavy Vehicles (%)																8
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

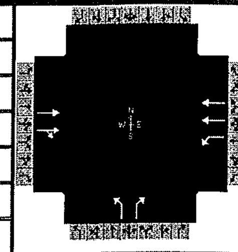
Base Critical Headway (sec)																6.9
Critical Headway (sec)																7.06
Base Follow-Up Headway (sec)																3.3
Follow-Up Headway (sec)																3.38

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																24
Capacity, c (veh/h)																315
v/c Ratio																0.08
95% Queue Length, Q_{95} (veh)																0.3
Control Delay (s/veh)																17.4
Level of Service (LOS)																C
Approach Delay (s/veh)													17.4			
Approach LOS													C			

HCS7 Signalized Intersection Results Summary

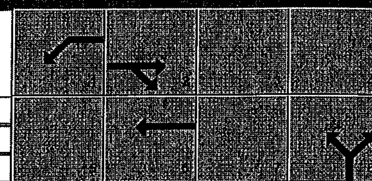
General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	7/22/2019	Area Type	Other
Jurisdiction		Time Period		PHF	0.94
Urban Street		Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Route 130 & Washingto…	File Name	130 & Washington Am Existing.xus		
Project Description	Am Existing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h		1642	59	84	1443		176		119			

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.0	53.0	15.0	0.0	0.0	0.0
Yellow	5.0	5.0	3.0	0.0	0.0	0.0
Red	0.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		8.3	2.0	4.0		9.0		
Phase Duration, s		60.0	20.0	80.0		20.0		
Change Period, ($Y+R_c$), s		7.0	5.0	7.0		5.0		
Max Allow Headway (*MAH*), s		0.0	3.1	0.0		3.2		
Queue Clearance Time (g_s), s			6.7			12.5		
Green Extension Time (g_e), s		0.0	0.1	0.0		0.2		
Phase Call Probability			1.00			1.00		
Max Out Probability			0.00			1.00		

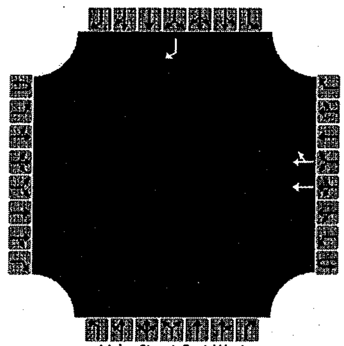
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18			
Adjusted Flow Rate (v), veh/h		889	887	89	1535		187		127			
Adjusted Saturation Flow Rate (s), veh/h/ln		1781	1771	1697	1696		1697		1510			
Queue Service Time (g_s), s		47.0	47.2	4.7	22.3		10.5		7.8			
Cycle Queue Clearance Time (g_c), s		47.0	47.2	4.7	22.3		10.5		7.8			
Green Ratio (*g/C*)		0.53	0.53	0.15	0.73		0.15		0.15			
Capacity (*c*), veh/h		944	939	254	2476		254		226			
Volume-to-Capacity Ratio (*X*)		0.942	0.946	0.351	0.620		0.736		0.559			
Back of Queue (*Q*), ft/ln (50 th percentile)		596	564.7	52	174.1		132.3		78.5			
Back of Queue (*Q*), veh/ln (50 th percentile)		22.4	22.6	2.0	6.5		5.0		2.9			
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00			
Uniform Delay (d_1), s/veh		22.1	22.1	38.1	6.7		40.6		39.4			
Incremental Delay (d_2), s/veh		18.2	18.8	0.3	1.2		9.4		1.9			
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0			
Control Delay (*d*), s/veh		40.2	41.0	38.4	7.8		50.0		41.3			
Level of Service (LOS)		D	D	D	A		D		D			
Approach Delay, s/veh / LOS	40.6	D		9.5	A		46.5	D		0.0		
Intersection Delay, s/veh / LOS	27.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	EIC	Intersection	Nimitz & Rt. 130
Agency/Co.	DD	Jurisdiction	
Date Performed	7/19/2019	East/West Street	Route 130
Analysis Year	2019	North/South Street	Nimitz Place
Time Analyzed	Pm Existing	Peak Hour Factor	0.91
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Major Street: East-West

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	0	0	0	0	2	0		0	0	0		0	0	1
Configuration							T	TR								R
Volume (veh/h)							1871	14								5
Percent Heavy Vehicles (%)																4
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

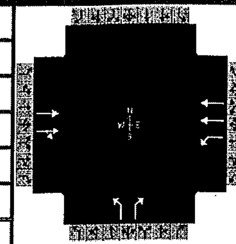
Base Critical Headway (sec)																6.9
Critical Headway (sec)																6.98
Base Follow-Up Headway (sec)																3.3
Follow-Up Headway (sec)																3.34

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																5
Capacity, c (veh/h)																225
v/c Ratio																0.02
95% Queue Length, Q_{95} (veh)																0.1
Control Delay (s/veh)																21.4
Level of Service (LOS)																C
Approach Delay (s/veh)													21.4			
Approach LOS													C			

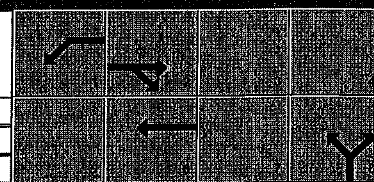
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	7/22/2019	Area Type	Other
Jurisdiction		Time Period		PHF	0.91
Urban Street		Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Route 130 & Washingto…	File Name	130 & Washington Pm Existing.xus		
Project Description	Pm Existing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h		1668	163	163	1713		180		85			

Signal Information										
Cycle, s	100.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	15.0	53.0	15.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	5.0	5.0	3.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		8.3	2.0	4.0		9.0		
Phase Duration, s		60.0	20.0	80.0		20.0		
Change Period, ($Y+R_c$), s		7.0	5.0	7.0		5.0		
Max Allow Headway (*MAH*), s		0.0	3.1	0.0		3.2		
Queue Clearance Time (g_s), s			11.7			12.8		
Green Extension Time (g_e), s		0.0	0.1	0.0		0.1		
Phase Call Probability			1.00			1.00		
Max Out Probability			0.81			1.00		

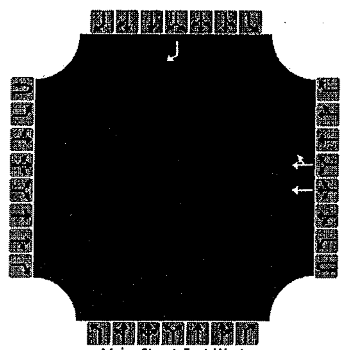
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18			
Adjusted Flow Rate (v), veh/h		953	952	179	1882		198		93			
Adjusted Saturation Flow Rate (s), veh/h/ln		1841	1816	1753	1752		1753		1560			
Queue Service Time (g_s), s		51.0	51.7	9.7	31.3		10.8		5.4			
Cycle Queue Clearance Time (g_c), s		51.0	51.7	9.7	31.3		10.8		5.4			
Green Ratio (*g/C*)		0.53	0.53	0.15	0.73		0.15		0.15			
Capacity (c), veh/h		976	963	263	2558		263		234			
Volume-to-Capacity Ratio (X)		0.977	0.989	0.681	0.736		0.752		0.399			
Back of Queue (Q), ft/ln (50 th percentile)		672.3	673.5	116.3	247.7		137.3		53.2			
Back of Queue (Q), veh/ln (50 th percentile)		26.1	26.9	4.5	9.6		5.3		2.1			
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00			
Uniform Delay (d_1), s/veh		22.9	23.2	40.2	7.9		40.7		38.4			
Incremental Delay (d_2), s/veh		23.7	26.4	5.8	1.9		10.3		0.4			
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0			
Control Delay (d), s/veh		46.6	49.6	46.0	9.8		51.1		38.8			
Level of Service (LOS)		D	D	D	A		D		D			
Approach Delay, s/veh / LOS	48.1	D		13.0	B		47.1	D		0.0		
Intersection Delay, s/veh / LOS	31.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	EIC	Intersection	Nimitz & Rt. 130
Agency/Co.	DD	Jurisdiction	
Date Performed	7/19/2019	East/West Street	Route 130
Analysis Year	2019	North/South Street	Nimitz Place
Time Analyzed	Am NoBuild	Peak Hour Factor	0.94
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description			

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	0	0	0	0	2	0		0	0	0		0	0	1
Configuration							T	TR								R
Volume (veh/h)							1532	2								23
Percent Heavy Vehicles (%)																8
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)																7.06
Base Follow-Up Headway (sec)																3.3
Follow-Up Headway (sec)																3.38

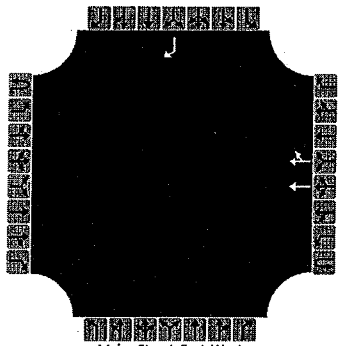
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																24
Capacity, c (veh/h)																308
v/c Ratio																0.08
95% Queue Length, Q_{95} (veh)																0.3
Control Delay (s/veh)																17.7
Level of Service (LOS)																C
Approach Delay (s/veh)													17.7			
Approach LOS													C			

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	EIC	Intersection	Nimitz & Rt. 130
Agency/Co.	DD	Jurisdiction	
Date Performed	7/19/2019	East/West Street	Route 130
Analysis Year	2019	North/South Street	Nimitz Place
Time Analyzed	Pm NoBuild	Peak Hour Factor	0.91
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Major Street: East-West

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	0	0	0	0	2	0		0	0	0		0	0	1
Configuration							T	TR								R
Volume (veh/h)							1908	14								5
Percent Heavy Vehicles (%)																4
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)																6.98
Base Follow-Up Headway (sec)																3.3
Follow-Up Headway (sec)																3.34

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																5
Capacity, c (veh/h)																218
v/c Ratio																0.03
95% Queue Length, Q_{95} (veh)																0.1
Control Delay (s/veh)																21.9
Level of Service (LOS)																C
Approach Delay (s/veh)													21.9			
Approach LOS													C			

HCS7™ TWSC Version 7.8
Nimitz & Rt 130 Pm NoBuild.xtw

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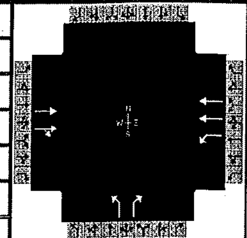
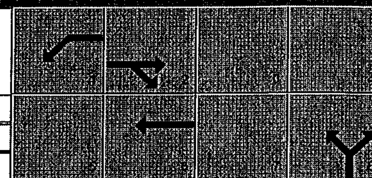
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	7/22/2019	Area Type	Other
Jurisdiction		Time Period		PHF	0.94
Urban Street		Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Route 130 & Washingto…	File Name	130 & Washington Am NoBuild.xus		
Project Description	Am NoBuild				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1675	60	85	1472		180		121			

Signal Information										
Cycle, s	100.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	15.0	53.0	15.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	5.0	5.0	3.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	2.0	2.0	0.0	0.0	0.0



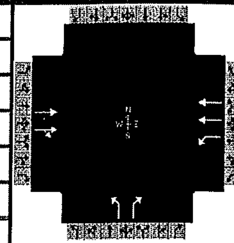
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		8.3	2.0	4.0		9.0		
Phase Duration, s		60.0	20.0	80.0		20.0		
Change Period, (*Y+R* $_c$), s		7.0	5.0	7.0		5.0		
Max Allow Headway (*MAH*), s		0.0	3.1	0.0		3.2		
Queue Clearance Time (g_s), s			6.8			12.8		
Green Extension Time (g_e), s		0.0	0.1	0.0		0.2		
Phase Call Probability			1.00			1.00		
Max Out Probability			0.00			1.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18			
Adjusted Flow Rate (*v*), veh/h		907	906	90	1566		191		129			
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1781	1771	1697	1696		1697		1510			
Queue Service Time (g_s), s		49.0	49.2	4.8	23.2		10.8		7.9			
Cycle Queue Clearance Time (g_c), s		49.0	49.2	4.8	23.2		10.8		7.9			
Green Ratio (*g/C*)		0.53	0.53	0.15	0.73		0.15		0.15			
Capacity (*c*), veh/h		944	938	254	2476		254		226			
Volume-to-Capacity Ratio (*X*)		0.961	0.965	0.355	0.632		0.752		0.568			
Back of Queue (*Q*), ft/ln (50 th percentile)		636.5	604.1	52.6	180.9		137.7		80.2			
Back of Queue (*Q*), veh/ln (50 th percentile)		23.9	24.2	2.0	6.8		5.2		3.0			
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00			
Uniform Delay (d_1), s/veh		22.5	22.6	38.2	6.8		40.7		39.5			
Incremental Delay (d_2), s/veh		21.2	22.1	0.3	1.2		10.7		2.1			
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0			
Control Delay (*d*), s/veh		43.7	44.7	38.5	8.0		51.4		41.6			
Level of Service (LOS)		D	D	D	A		D		D			
Approach Delay, s/veh / LOS	44.2		D	9.7		A	47.5		D	0.0		
Intersection Delay, s/veh / LOS	29.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	7/22/2019	Area Type	Other
Jurisdiction		Time Period		PHF	0.91
Urban Street		Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Route 130 & Washingto...	File Name	130 & Washington Pm NoBuild.xus		
Project Description	Pm NoBuild				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h		1701	166	166	1747		184		87			

Signal Information										
Cycle, s	100.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	15.0	53.0	15.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	5.0	5.0	3.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	2.0	2.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		8.3	2.0	4.0		9.0		
Phase Duration, s		60.0	20.0	80.0		20.0		
Change Period, ($Y+R_c$), s		7.0	5.0	7.0		5.0		
Max Allow Headway (*MAH*), s		0.0	3.1	0.0		3.2		
Queue Clearance Time (g_s), s			11.9			13.1		
Green Extension Time (g_e), s		0.0	0.1	0.0		0.1		
Phase Call Probability			1.00			1.00		
Max Out Probability			0.99			1.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18			
Adjusted Flow Rate (*v*), veh/h		972	972	182	1920		202		96			
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1841	1816	1753	1752		1753		1560			
Queue Service Time (g_s), s		53.3	53.0	9.9	32.7		11.1		5.5			
Cycle Queue Clearance Time (g_c), s		53.3	53.0	9.9	32.7		11.1		5.5			
Green Ratio (*g/C*)		0.53	0.53	0.15	0.73		0.15		0.15			
Capacity (*c*), veh/h		976	962	263	2558		263		234			
Volume-to-Capacity Ratio (*X*)		0.996	1.010	0.694	0.750		0.769		0.409			
Back of Queue (*Q*), ft/ln (50 th percentile)		723.4	719.1	119.8	259.1		143		54.6			
Back of Queue (*Q*), veh/ln (50 th percentile)		28.0	28.8	4.6	10.0		5.5		2.1			
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00			
Uniform Delay (d_1), s/veh		23.4	23.5	40.3	8.1		40.8		38.5			
Incremental Delay (d_2), s/veh		27.9	31.5	6.5	2.1		11.8		0.4			
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0			
Control Delay (*d*), s/veh		51.4	55.0	46.8	10.1		52.6		38.9			
Level of Service (LOS)		D	F	D	B		D		D			
Approach Delay, s/veh / LOS	53.2		D	13.3		B	48.2		D	0.0		
Intersection Delay, s/veh / LOS	33.5						C					

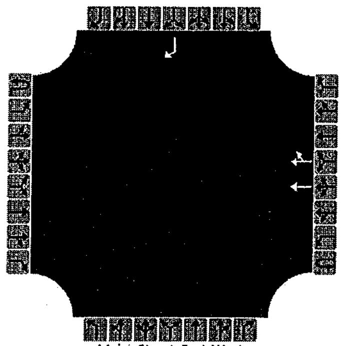
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

 HCS™ Streets Version 7.8 Generated: 7/24/2019 11:52:07 AM

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	EIC	Intersection	Rt. 130 & Site Driveway
Agency/Co.	DD	Jurisdiction	
Date Performed	7/24/2019	East/West Street	Rt. 130
Analysis Year	2019	North/South Street	Site Driveway
Time Analyzed	Am Build	Peak Hour Factor	0.94
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Major Street: East-West

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	0	0	0	0	2	0		0	0	0		0	0	1
Configuration							T	TR								R
Volume (veh/h)							1487	89								86
Percent Heavy Vehicles (%)																8
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													Yes			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

	EB U	EB L	EB T	EB R	WB U	WB L	WB T	WB R	NB U	NB L	NB T	NB R	SB U	SB L	SB T	SB R
Base Critical Headway (sec)																6.9
Critical Headway (sec)																7.06
Base Follow-Up Headway (sec)																3.3
Follow-Up Headway (sec)																3.38

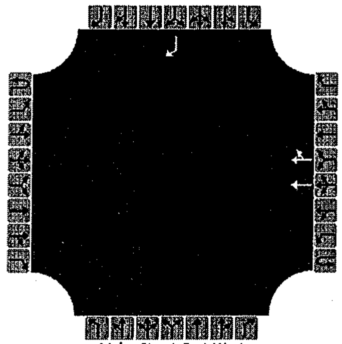
Delay, Queue Length, and Level of Service

	EB U	EB L	EB T	EB R	WB U	WB L	WB T	WB R	NB U	NB L	NB T	NB R	SB U	SB L	SB T	SB R
Flow Rate, v (veh/h)																91
Capacity, c (veh/h)																297
v/c Ratio																0.31
95% Queue Length, Q_{95} (veh)																1.3
Control Delay (s/veh)																22.4
Level of Service (LOS)																C
Approach Delay (s/veh)													22.4			
Approach LOS													C			

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	EIC	Intersection	Nimitz & Rt. 130
Agency/Co.	DD	Jurisdiction	
Date Performed	7/19/2019	East/West Street	Route 130
Analysis Year	2019	North/South Street	Nimitz Place
Time Analyzed	Am Build	Peak Hour Factor	0.94
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Major Street: East-West

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	0	0	0	0	2	0		0	0	0		0	0	1
Configuration							T	TR								R
Volume (veh/h)							1552	5								24
Percent Heavy Vehicles (%)																8
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

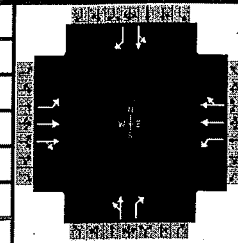
	EB U	EB L	EB T	EB R	WB U	WB L	WB T	WB R	NB U	NB L	NB T	NB R	SB U	SB L	SB T	SB R
Base Critical Headway (sec)																6.9
Critical Headway (sec)																7.06
Base Follow-Up Headway (sec)																3.3
Follow-Up Headway (sec)																3.38

Delay, Queue Length, and Level of Service

	EB U	EB L	EB T	EB R	WB U	WB L	WB T	WB R	NB U	NB L	NB T	NB R	SB U	SB L	SB T	SB R
Flow Rate, v (veh/h)																26
Capacity, c (veh/h)																302
v/c Ratio																0.08
95% Queue Length, Q_{95} (veh)																0.3
Control Delay (s/veh)																18.0
Level of Service (LOS)																C
Approach Delay (s/veh)													18.0			
Approach LOS													C			

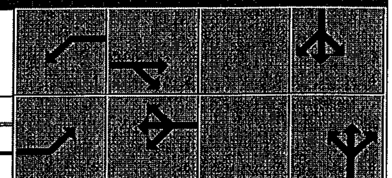
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	7/22/2019	Area Type	Other
Jurisdiction		Time Period		PHF	0.94
Urban Street		Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Route 130 & Washingto…	File Name	130 & Washington Am Build.xus		
Project Description	Am Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	1675	60	85	1398	90	180	12	121	43	12	92

Signal Information										
Cycle, s	100.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	15.0	53.0	15.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	5.0	5.0	3.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	1.1	4.0		7.0		7.0
Phase Duration, s	20.0	60.0	20.0	60.0		20.0		20.0
Change Period, (*Y+R* c), s	5.0	7.0	5.0	7.0		5.0		5.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0		3.2		3.2
Queue Clearance Time (*g* s), s	4.2		3.8			17.0		7.9
Green Extension Time (*g* e), s	0.0	0.0	0.1	0.0		0.0		0.6
Phase Call Probability	1.00		1.00			1.00		1.00
Max Out Probability	0.00		0.00			1.00		0.08

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	43	907	906	90	797	786		204	68		59	98
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1697	1781	1771	1697	1781	1743		1356	1510		1426	1510
Queue Service Time (*g* s), s	2.2	48.8	49.2	1.8	38.0	38.6		11.5	4.0		0.0	5.9
Cycle Queue Clearance Time (*g* c), s	2.2	48.8	49.2	1.8	38.0	38.6		15.0	4.0		3.5	5.9
Green Ratio (*g/C*)	0.15	0.53	0.53	0.68	0.53	0.53		0.15	0.15		0.15	0.15
Capacity (*c*), veh/h	254	944	938	331	944	924		273	226		278	226
Volume-to-Capacity Ratio (*X*)	0.167	0.961	0.965	0.273	0.844	0.851		0.748	0.301		0.210	0.432
Back of Queue (*Q*), ft/ln (50 th percentile)	24	636.5	604.1	28.3	444.5	418.4		149.6	39.3		33.5	57.9
Back of Queue (*Q*), veh/ln (50 th percentile)	0.9	23.9	24.2	1.1	16.7	16.7		5.6	1.5		1.3	2.2
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Uniform Delay (*d* 1), s/veh	37.1	22.5	22.6	19.4	20.0	20.1		42.5	37.8		37.6	38.6
Incremental Delay (*d* 2), s/veh	0.1	21.2	22.1	0.2	9.1	9.7		9.7	0.3		0.1	0.5
Initial Queue Delay (*d* 3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Control Delay (*d*), s/veh	37.2	43.7	44.7	19.6	29.1	29.8		52.2	38.1		37.7	39.1
Level of Service (LOS)	D	D	D	B	C	C		D	D		D	D
Approach Delay, s/veh / LOS	44.0	D		28.9	C		48.7	D		38.6	D	
Intersection Delay, s/veh / LOS	37.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

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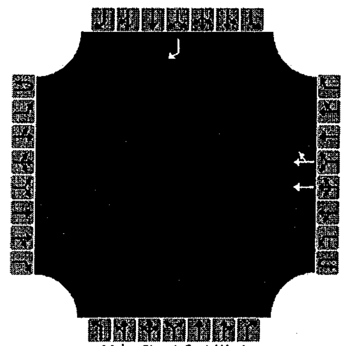
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	EIC	Intersection	Rt. 130 & Site Driveway
Agency/Co.	DD	Jurisdiction	
Date Performed	7/24/2019	East/West Street	Rt. 130
Analysis Year	2019	North/South Street	Site Driveway
Time Analyzed	Am Build	Peak Hour Factor	0.91
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description			

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	0	0	0	0	2	0		0	0	0		0	0	1
Configuration							T	TR								R
Volume (veh/h)							1856	75								71
Percent Heavy Vehicles (%)																4
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													Yes			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																6.9
Critical Headway (sec)																6.98
Base Follow-Up Headway (sec)																3.3
Follow-Up Headway (sec)																3.34

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																78
Capacity, c (veh/h)																217
v/c Ratio																0.36
95% Queue Length, Q_{95} (veh)																1.6
Control Delay (s/veh)																30.7
Level of Service (LOS)																D
Approach Delay (s/veh)													30.7			
Approach LOS													D			

HCS™ TWSC Version 7.8
Rt 130 & Site Pm Build.xtw
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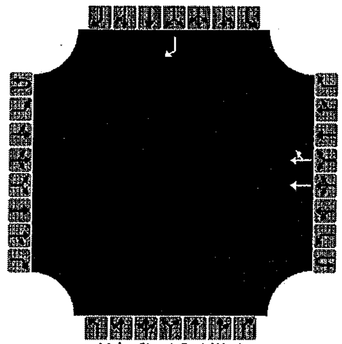
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	EIC	Intersection	Rt. 130 & Site Driveway
Agency/Co.	DD	Jurisdiction	
Date Performed	7/24/2019	East/West Street	Rt. 130
Analysis Year	2019	North/South Street	Site Driveway
Time Analyzed	Am Build	Peak Hour Factor	0.91
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description			

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	0	0	0	0	2	0		0	0	0		0	0	1
Configuration							T	TR								R
Volume (veh/h)							1856	75								71
Percent Heavy Vehicles (%)																4
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													Yes			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																6.9
Critical Headway (sec)																6.98
Base Follow-Up Headway (sec)																3.3
Follow-Up Headway (sec)																3.34

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																78
Capacity, c (veh/h)																217
v/c Ratio																0.36
95% Queue Length, Q_{95} (veh)																1.6
Control Delay (s/veh)																30.7
Level of Service (LOS)																D
Approach Delay (s/veh)													30.7			
Approach LOS													D			

HCS™ TWSC Version 7.8
Rt 130 & Site Pm Build.xtw

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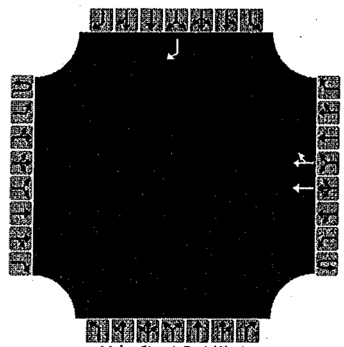
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	EIC	Intersection	Nimitz & Rt. 130
Agency/Co.	DD	Jurisdiction	
Date Performed	7/19/2019	East/West Street	Route 130
Analysis Year	2019	North/South Street	Nimitz Place
Time Analyzed	Pm Build	Peak Hour Factor	0.91
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description			

Lanes


Major Street: East-West

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	0	0	0	0	2	0		0	0	0		0	0	1
Configuration							T	TR								R
Volume (veh/h)							1925	16								6
Percent Heavy Vehicles (%)																4
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

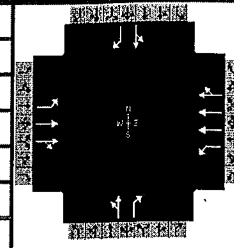
Base Critical Headway (sec)																6.9
Critical Headway (sec)																6.98
Base Follow-Up Headway (sec)																3.3
Follow-Up Headway (sec)																3.34

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																7
Capacity, c (veh/h)																215
v/c Ratio																0.03
95% Queue Length, Q_{95} (veh)																0.1
Control Delay (s/veh)																22.3
Level of Service (LOS)																C
Approach Delay (s/veh)													22.3			
Approach LOS													C			

HCS7 Signalized Intersection Results Summary

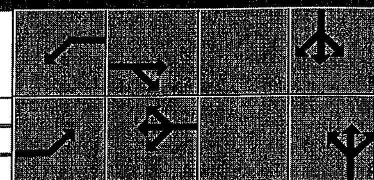
General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	7/22/2019	Area Type	Other
Jurisdiction		Time Period		PHF	0.91
Urban Street		Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Route 130 & Washingto...	File Name	130 & Washington Pm Build.xus		
Project Description	Pm Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	33	1686	166	166	1686	75	184	10	87	36	10	77

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	14.0	54.0	15.0	0.0	0.0	0.0
Yellow	5.0	5.0	3.0	0.0	0.0	0.0
Red	0.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	1.1	4.0		7.0		7.0
Phase Duration, s	19.0	61.0	19.0	61.0		20.0		20.0
Change Period, (Y+R c), s	5.0	7.0	5.0	7.0		5.0		5.0
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0		3.2		3.2
Queue Clearance Time (g s), s	3.8		7.4			16.7		6.7
Green Extension Time (g e), s	0.0	0.0	0.2	0.0		0.0		0.5
Phase Call Probability	1.00		1.00			1.00		1.00
Max Out Probability	0.00		0.03			1.00		0.03

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	36	964	963	182	1299	636		213	49		51	85
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1841	1815	1753	1841	1799		1444	1560		1522	1610
Queue Service Time (g s), s	1.8	50.6	52.0	5.4	25.1	25.2		11.9	2.8		0.0	4.7
Cycle Queue Clearance Time (g c), s	1.8	50.6	52.0	5.4	25.1	25.2		14.7	2.8		2.8	4.7
Green Ratio (g/C)	0.14	0.54	0.54	0.68	0.54	0.54		0.15	0.15		0.15	0.15
Capacity (c), veh/h	253	994	980	317	1988	971		287	234		292	242
Volume-to-Capacity Ratio (X)	0.143	0.970	0.983	0.575	0.653	0.655		0.743	0.211		0.173	0.350
Back of Queue (Q), ft/ln (50 th percentile)	19.4	662	665.3	59.8	262	260.9		145.8	27.3		26.9	46.3
Back of Queue (Q), veh/ln (50 th percentile)	0.8	25.7	26.6	2.3	10.2	10.4		5.8	1.1		1.1	1.9
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Uniform Delay (d 1), s/veh	37.7	22.2	22.5	25.6	16.3	16.4		42.4	37.3		37.3	38.1
Incremental Delay (d 2), s/veh	0.1	22.1	24.9	1.7	1.7	3.4		8.9	0.2		0.1	0.3
Initial Queue Delay (d 3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Control Delay (d), s/veh	37.8	44.3	47.4	27.3	18.0	19.8		51.3	37.5		37.4	38.5
Level of Service (LOS)	D	D	D	C	B	B		D	D		D	D
Approach Delay, s/veh / LOS	45.7		D	19.4		B	48.7		D	38.0		D
Intersection Delay, s/veh / LOS	33.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								