

TRAFFIC IMPACT STUDY

For

**197 Ave. E Urban Renewal, LLC
Proposed Mixed-Use Building**

Property Located at:

**197 Avenue E
Block 221 – Lot 12.01
City of Bayonne, Hudson County, NJ**

Prepared by:



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3688-22-02192

INTRODUCTION

It is proposed to construct a 13-story mixed-use building containing two-hundred fifty (250) residential dwelling units and 656 SF of ground floor retail space (“The Project”) on a parcel of land currently undeveloped, located along the west side of Avenue E between East 19th Street and Standard Place in the City of Bayonne, Hudson County, New Jersey (see Figure 1 in Appendix A). The site is designated as Block 221 – Lot 12.01 on the City of Bayonne Tax Maps. Access to the site is proposed via one (1) full movement driveway along Standard Place. Parking will be provided via two-hundred fifty (250) parking spaces located on the lower levels of the building.

Dynamic Traffic, LLC has been retained to prepare this study to assess the traffic impact associated with the construction of The Project on the adjacent roadway network. This study documents the methodology, analyses, findings and conclusions of our study and includes:

- A detailed field inspection was conducted to obtain an inventory of existing roadway geometry, traffic control, and location and geometry of existing driveways and intersections.
- Existing traffic data was collected via manual turning movement (MTM) counts during the weekday AM and weekday PM peak periods at the intersection of Avenue E and Standard Place/the Lofts Driveway.
- Projections of traffic to be generated by the proposed development were prepared utilizing trip generation data as published by the Institute of Transportation Engineers. Site traffic was then assigned to the adjacent street system based upon the anticipated directional distribution.
- Capacity analyses were conducted for the Existing, No Build, and Build conditions for the study intersections.
- The proposed point of ingress and egress were inspected for adequacy of geometric design, spacing and/or alignment to streets and driveways on the opposite side of the street, relationship to other driveways adjacent to the development, and conformance with accepted design standards.
- The site plan as designed was reviewed for sufficiency in accommodating large wheel base vehicles such as delivery trucks, refuse trucks, and emergency vehicles.
- The parking layout and supply was assessed based on accepted design standards, local requirements, and demand experienced at similar developments.

EXISTING CONDITIONS

A review of the existing roadway conditions near the proposed site was conducted to provide the basis for assessing the traffic impact of the development. This included field investigations of the surrounding roadways and intersections, collection of traffic volume data, and extensive analyses.

Existing Roadway Conditions

The following are descriptions of the roadways in the study area:

Avenue E is a local roadway under the jurisdiction of the City of Bayonne with a general north/south orientation. In the vicinity of the site the speed limit is not posted and the roadway provides one travel lane in each direction. Curb and sidewalk are provided along both sides of the roadway. Avenue E provides a straight horizontal alignment and a relatively flat vertical alignment. The land uses along Standard Place in the vicinity of The Project are a mix of commercial and residential.

Standard Place is a local roadway under the jurisdiction of the City of Bayonne along the site frontage with a general east/west orientation. In the vicinity of the site the speed limit is not posted and the roadway provides one travel lane in each direction along the site frontage. Curb is provided along both sides of the roadway while sidewalk is not provided along either side of the roadway. Standard Place provides a straight horizontal alignment and a slightly downhill vertical alignment from west to east along the site frontage. The land uses along Standard Place in the vicinity of The Project are primarily residential.

Existing Traffic Volumes

Manual turning movement (MTM) counts were conducted on Wednesday, September 21, 2022 from 7:00 – 9:00 AM and from 4:30 – 6:30 PM at the intersection of Avenue E and Standard Place/the Lofts Driveway. Review of the collected traffic data reveals that the weekday morning peak street hour (PSH) occurs between 7:45 - 8:45 AM, and the weekday evening PSH occurs between 5:00 – 6:00 PM. Figure 2, located in Appendix A, shows the existing peak hour traffic volumes at the study intersections. All traffic counts are contained in Appendix B.

Existing Capacity Analysis

The methodology utilized in the capacity analyses is described in the *Highway Capacity Manual*, published by the Transportation Research Board. In general, the term Level of Service (LOS) is used to provide a “qualitative” evaluation of capacity based upon certain “quantitative” calculations related to empirical values, such as traffic volume and intersection control.

An unsignalized (STOP sign controlled) driveway or side street along a through route is seldom critical from an overall capacity standpoint, however, it may be of great significance to the capacity of the minor cross-route, and it may influence the quality of traffic flow on both. When analyzing an unsignalized intersection, it is assumed that both the major street through and right turn movements are unimpeded and have the right-of-way over all side street traffic and left turns from the major street. All other turning movements in the intersection cross, merge with, or are otherwise impeded by major street movements. Traffic delays at unsignalized intersections are determined by sequentially processing these impeded movements. Table I describes the Level of Service ranges for unsignalized (stop controlled) intersections.

**Table I
Level of Service Criteria
for Unsignalized Intersections**

Level of Service	Average Control Delay (seconds per vehicle)
A	0.0 to 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	greater than 50.0

All capacity analyses were performed utilizing Synchro 11 software. It should be noted that the existing percentage of trucks and peak hour factors were used in the existing analysis. Table II summarizes the existing Levels of Service (LOS) and delays. All capacity analysis calculation worksheets are contained in Appendix C.

**Table II
Existing Levels of Service**

Intersection	Direction/ Movement		AM PSH	PM PSH
Avenue E and Standard Place/ Lofts Driveway	EB	LTR	B (11)	B (13)
	WB	LTR	C (15)	B (13)
	NB	LTR	A (8)	A (8)
	SB	LTR	A (9)	A (8)

A (#) - Unsignalized Intersection Level of Service (seconds of delay per vehicle)

The following are discussions pertaining to each of the existing intersections analyzed.

Avenue E and Standard Place/Lofts Driveway

Standard Place/the Lofts Driveway intersect Avenue E to form an unsignalized four-leg intersection with Standard Place and the Lofts Driveway operating under stop control. The northbound and southbound approaches of Avenue E each provide a shared left turn/through/right turn lane. The eastbound approach of Standard Place provides a shared left turn/through/right turn lane. The westbound approach of the Lofts Driveway provides a shared left turn/through/right turn lane.

A review of the existing analysis reveals that the individual intersection movements operate at Levels of Service “C” or better during the analyzed peak periods. See Table II for the individual movement Levels of Service and delays.

FUTURE CONDITIONS

Traffic volumes and operational analyses were developed for both the No Build and Build conditions. The No Build conditions provide a baseline for assessing the impact of the site development traffic on the roadway system. The process of developing the No Build and Build traffic volumes and the subsequent analyses is outlined below.

Regardless of whether the subject site is developed or not, traffic volumes on the surrounding roadways are expected to increase as a result of developments throughout the region. A growth rate for roadways within the study area was obtained from the NJDOT Annual Background Growth Rate Table, which indicates a growth rate of 1.5% per year.

Future No Build traffic volumes were developed by applying the background growth rate of 1.5% for two (2) years to the study area roadways existing traffic volumes and adding the adjacent development traffic volumes. Figure 3, in Appendix A, shows the No Build traffic volumes.

Traffic Generation

Trip generation projections for The Project were prepared utilizing trip generation research data as published under Land Use Code 232 – High-Rise Residential with Ground-Floor Commercial in the Institute of Transportation Engineers’ (ITE) publication, *Trip Generation, 11th Edition*. This publication sets forth trip generation rates based on empirical traffic count data conducted at numerous research sites. Table IV summarizes the projected trips generated by the proposed development utilizing the ITE data.

**Table III
Trip Generation**

Land Use	AM PSH			PM PSH		
	In	Out	Total	In	Out	Total
250 Dwelling Units	9	69	78	37	16	53

It should also be noted that within a quarter mile from the site there is access to the 22nd Street Hudson-Bergen Light Rail (HBLR) Station and within half a mile there is access to New Jersey Transit bus lines 10, 81, 119 and 120. As such, it is anticipated that numerous tenants of the proposed building will utilize public transportation rather than drive.

Once the magnitude of traffic to be generated by the site is known, it is necessary to assign that traffic to the adjacent street system. The distribution of new traffic to the surrounding roadways is based on the location of primary arterial roadways, major signalized intersections and existing traffic patterns. Figures 4 and 5, located in Appendix A, illustrate the Trip Distribution and Site Generated Volumes, respectively. The Site Generated Volumes assigned to the study area network were then added to the No Build traffic volumes to generate the Build traffic volumes, which are shown in Figure 6.

Future Capacity Analysis

Operational conditions at the study intersections were analyzed under the No Build and Build conditions and are summarized in Table IV below.

**Table IV
Future Levels of Service**

Intersection	Direction/ Movement		AM PSH		PM PSH	
			No Build	Build	No Build	Build
Avenue E and Standard Place/ Lofts Driveway	EB	LTR	B (11)	C (16)	B (13)	B (14)
	WB	LTR	C (15)	C (16)	B (14)	B (14)
	NB	LTR	A (8)	A (8)	A (8)	A (8)
	SB	LTR	A (9)	A (9)	A (8)	A (8)
Standard Place and Site Driveway	WB	LT	-	a (7)	-	a (7)
	NB	LR	-	a (9)	-	a (8)

A (#) - Unsignalized Intersection Level of Service (seconds of delay per vehicle)

Avenue E and Standard Place/Lofts Driveway

With the addition of site generated traffic, the individual intersection movements are anticipated to continue operating at Levels of Service “C” or better during the analyzed peak hours, maintaining No Build Levels of Service. See Table IV for the individual movement Levels of Service and delays.

Standard Place and Site Driveway

The site driveway is proposed to intersect Standard Place to form an unsignalized T-intersection with the northbound approach of the site driveway operating under stop control. The eastbound approach of Standard Place is proposed to provide a shared through/right turn lane. The westbound approach of Standard Place is proposed to provide a shared left turn/through. The northbound approach of the site driveway is proposed to provide a shared lane for left and right turns.

As designed, the individual intersection movements are anticipated to operate at Level of Service “A” during the studied peak hours. See Table IV for the individual movement Levels of Service and delays.

SITE PLAN

Site Access and Circulation

The site plan was reviewed with respect to the site access and on-site circulation design. As noted previously, access to The Project will be provided via one (1) full movement driveway along Standard Place.

The newly constructed parking garage will be serviced by parking aisles with a width of 22', which are consistent with accepted engineering design standards. These aisles will allow for two-way circulation and 90-degree parking. Review of the site plan design indicates that the site can sufficiently accommodate the anticipated site traffic given that they will primarily be utilized by residents of the building who will be very familiar with the operations and circulation patterns of the site.

Parking

The Redevelopment Plan sets forth a minimum parking requirement of 1 parking space per unit for residential uses. This equates to a parking requirement of 250 spaces for the proposed 250 units. The site as proposed provides 250 parking spaces inclusive of 38 electric vehicle charging spaces. As per the current Municipal Land Use Law (MLUL) (N.J.A.C. 40:55-D), electric vehicle charging stations count as two spaces for the purposes of complying with parking supply requirements, up to a maximum of 10% of the requirement. As such, the effective proposed parking supply is calculated to be 275 spaces which exceeds the Ordinance requirement.

It should be noted that the Redevelopment Plan does not set forth a specific parking requirement for retail uses, however it states that a shared parking approach may be utilized for mixed-use developments inclusive of retail. The proposed retail space is expected to primarily serve walk-in customers either from the proposed building or the surrounding neighborhood. Any vehicular traffic for the retail portion would have the opportunity to utilize existing on-street parking available along the surrounding streets. Additionally, it can be expected that any on-street parking spaces being utilized by retail customers will be high-turnover, meaning spaces will not be occupied for long periods of time thus increasing the likelihood of finding a vacant space. Therefore, combination of on-site parking supply and the availability of on-street parking will adequately accommodate the peak parking demands of the proposed development.

It is proposed to provide parking stalls with dimensions that are consistent with accepted engineering design standards and will adequately accommodate the anticipated site traffic, particularly given that they will primarily be utilized by residents of the building who will be very familiar with the operations and circulation patterns of the site.

FINDINGS & CONCLUSIONS

Findings

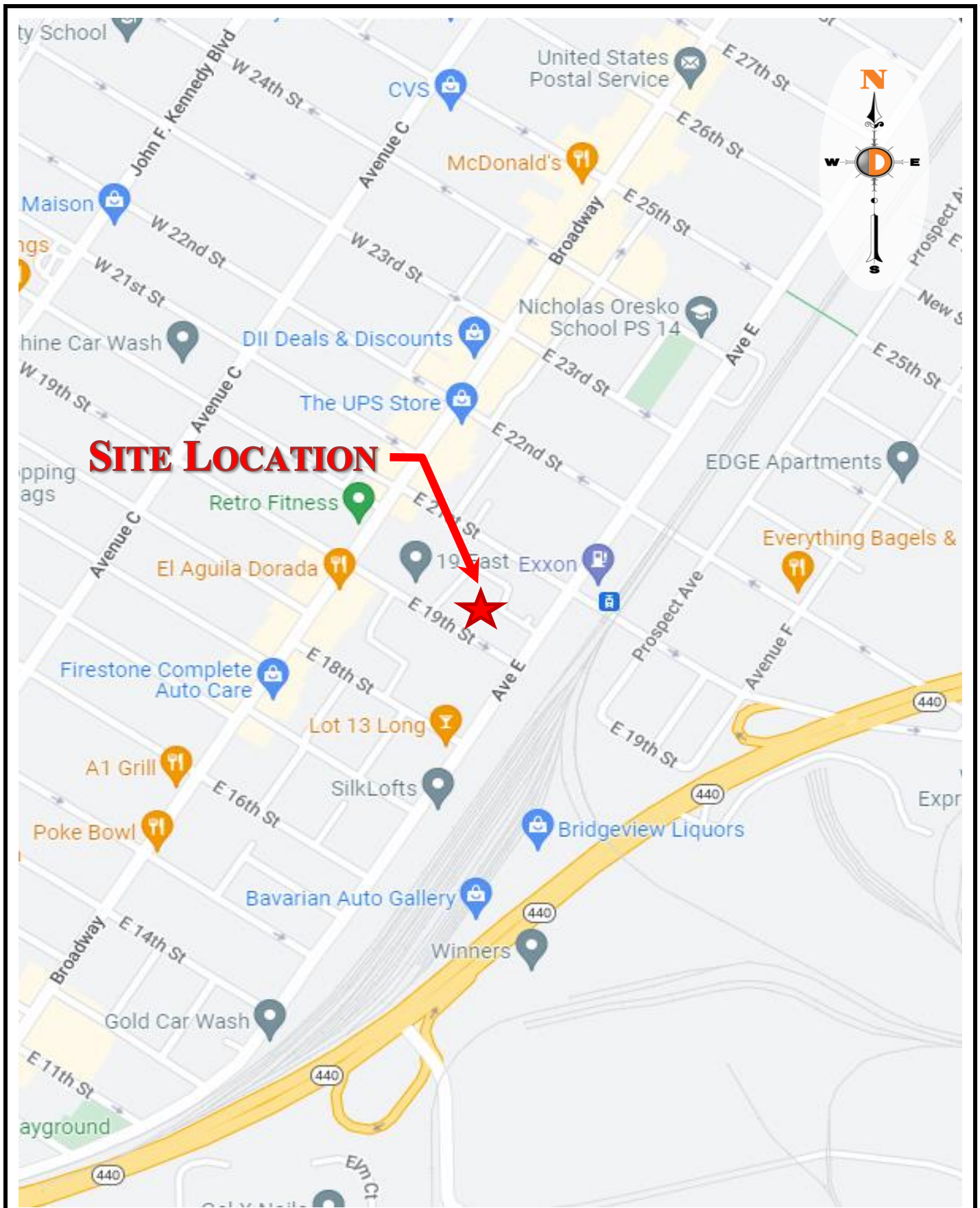
Based upon the detailed analyses as documented herein, the following findings are noted:

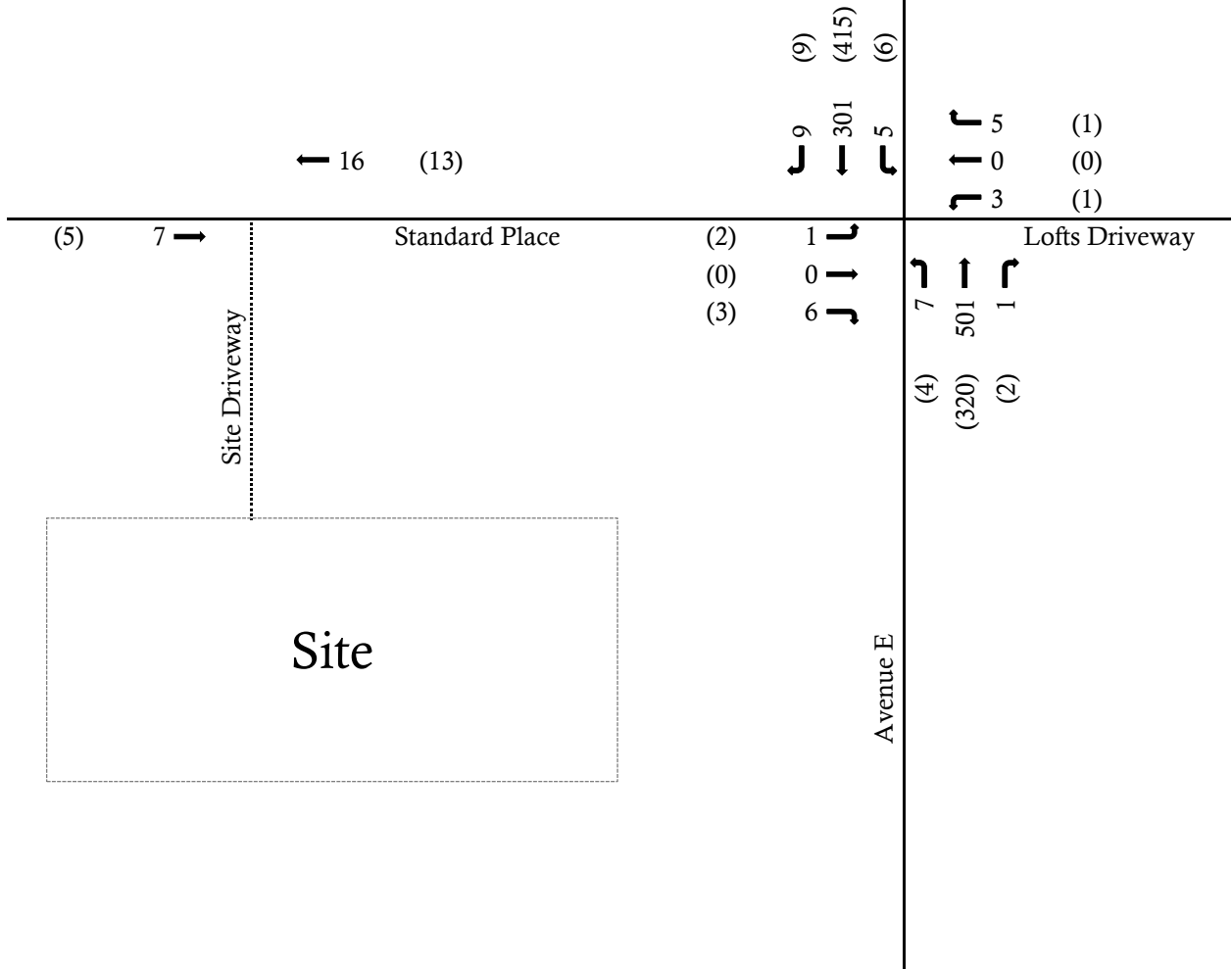
- The proposed 250 residential dwelling units and 656 SF of ground floor retail space are projected to generate 9 entering trips and 69 exiting trips during the weekday morning peak hour and 37 entering trips and 16 exiting trips during the evening peak hour.
- Access to the site is proposed to be provided via one (1) full movement driveway along Standard Place.
- With the addition of site generated traffic, the individual intersection movements of Avenue E and Standard Place/the Lofts Driveway are anticipated to continue operating at Levels of Service “C” or better during the peak hours studied, maintaining No Build Levels of Service.
- As designed, the individual intersection movements of Standard Place and the site driveway are anticipated to operate at Level of Service “A” during the peak hours studied.
- As proposed, The Project’s site driveway and internal circulation have been designed to provide for safe and efficient movement of the anticipated site traffic.
- The proposed parking supply and design is sufficient to support the projected demand and satisfies the Redevelopment Plan requirements.

Conclusions

Based upon our Traffic Impact Study as detailed in the body of this report, it is the professional opinion of Dynamic Traffic, LLC that the adjacent street system of the City of Bayonne will not experience any significant degradation in operating conditions with the construction of The Project. The site driveway is located to provide safe and efficient access to the adjacent roadway system. The site plan as proposed provides for good circulation throughout the site and provides adequate parking to accommodate The Project’s needs.

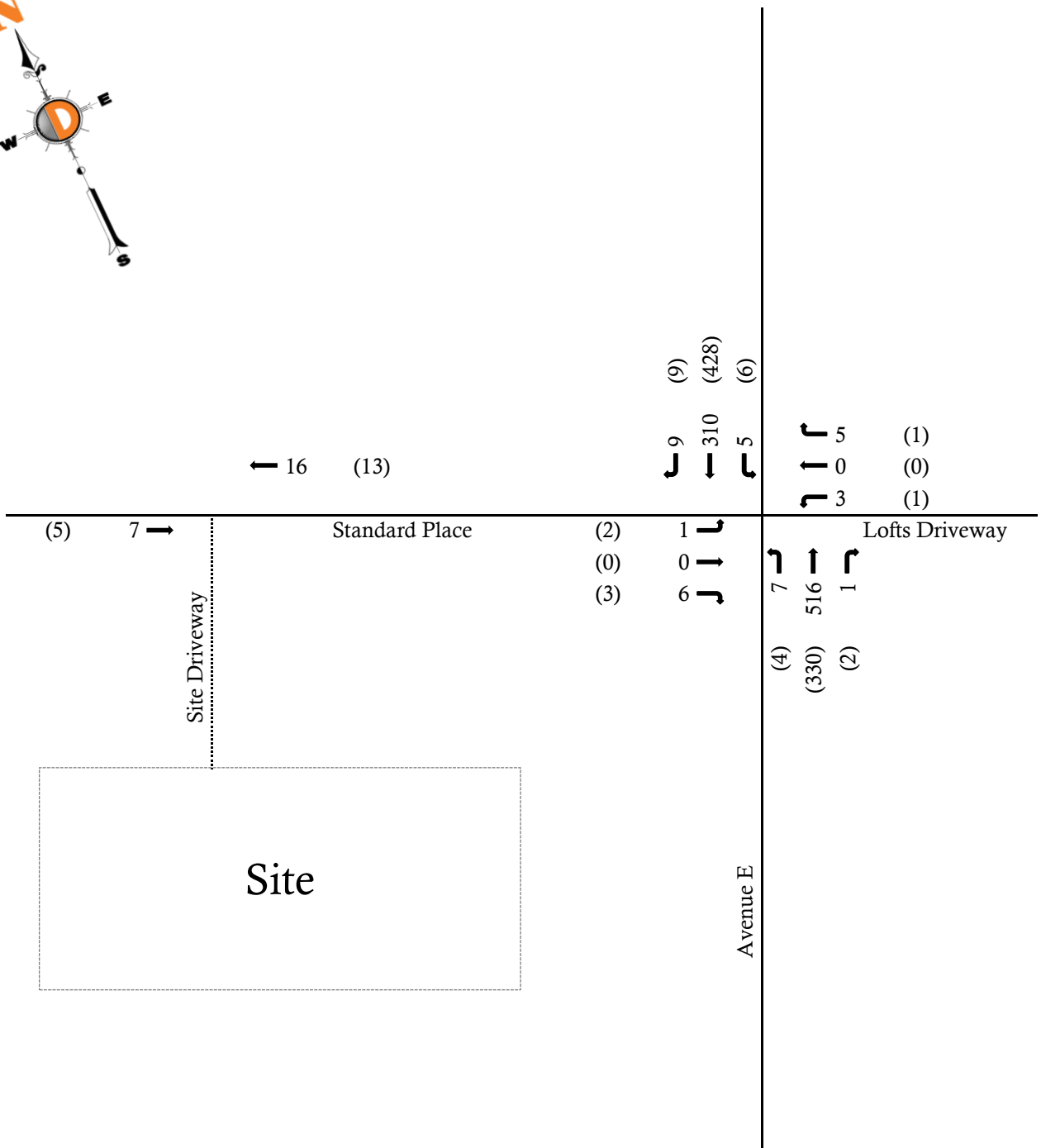
Appendix A
Traffic Volume Figures





- LEGEND**
- Existing Roadway
 - - - Proposed Roadway
 - ← AM (PM)

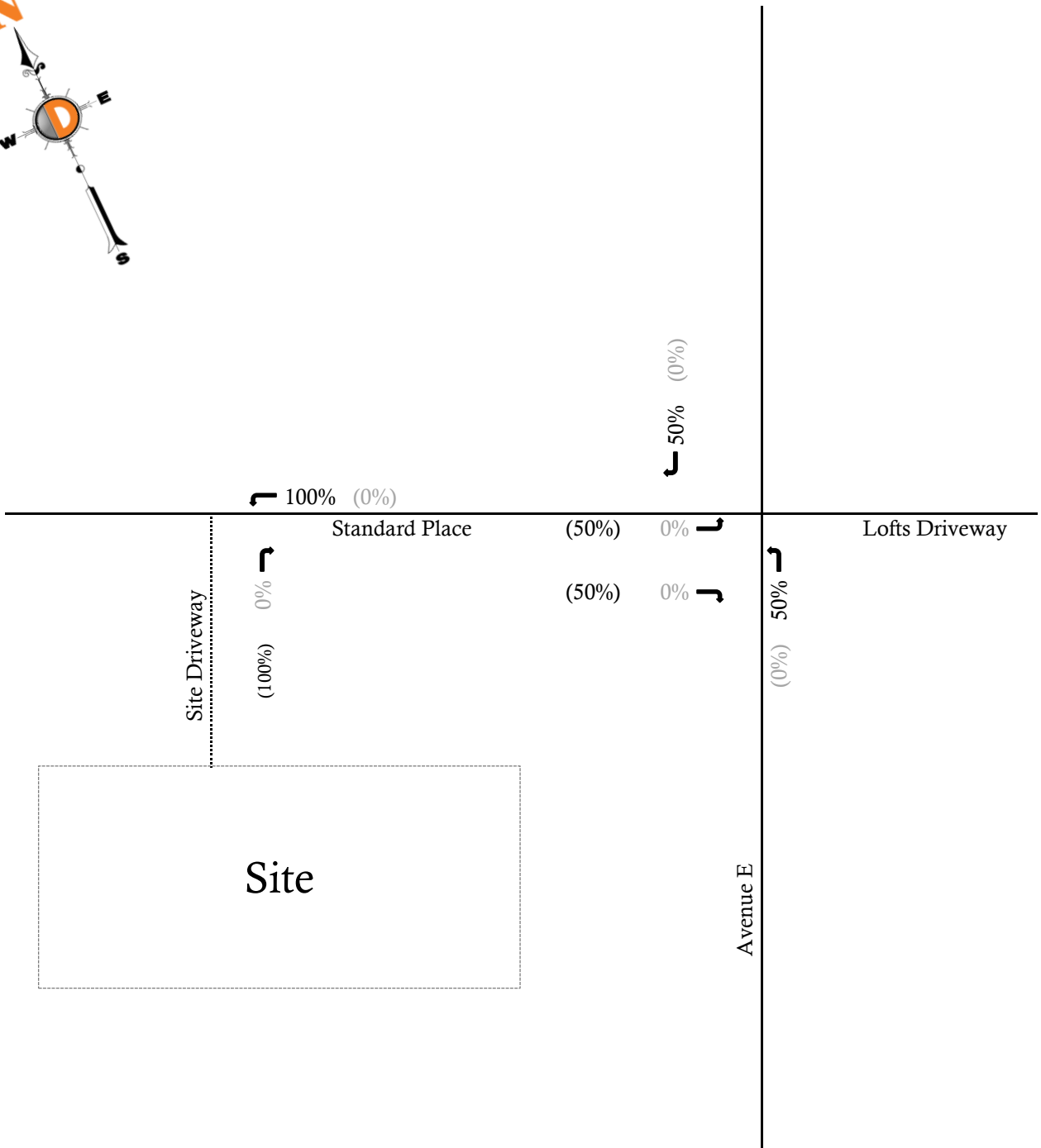
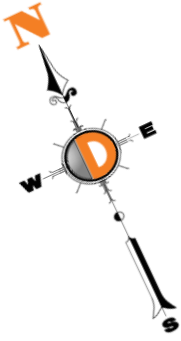




LEGEND

- Existing Roadway
- - - Proposed Roadway
- ← AM (PM)

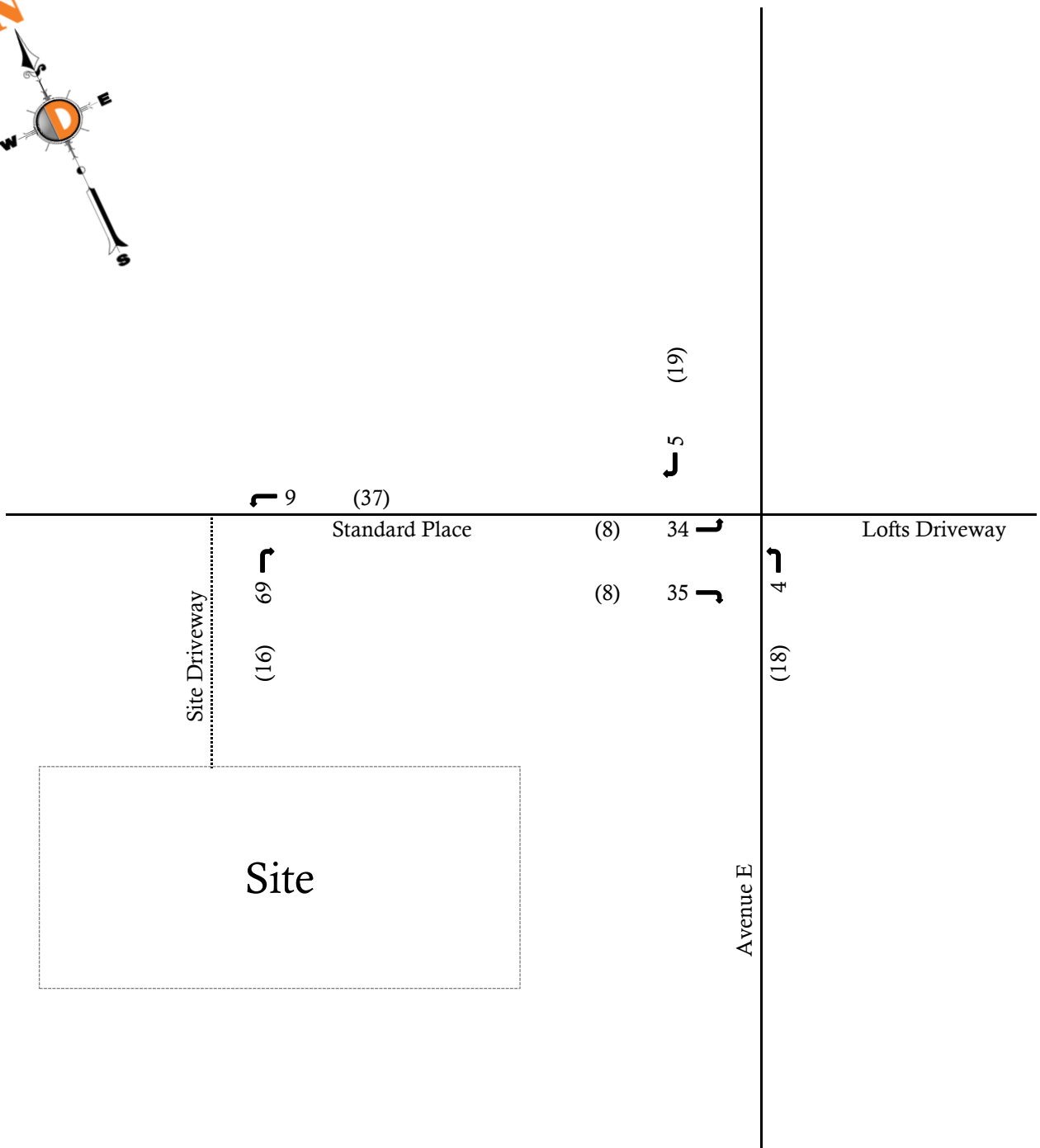




LEGEND

- Existing Roadway
- - - Proposed Roadway
- ← IN (OUT)

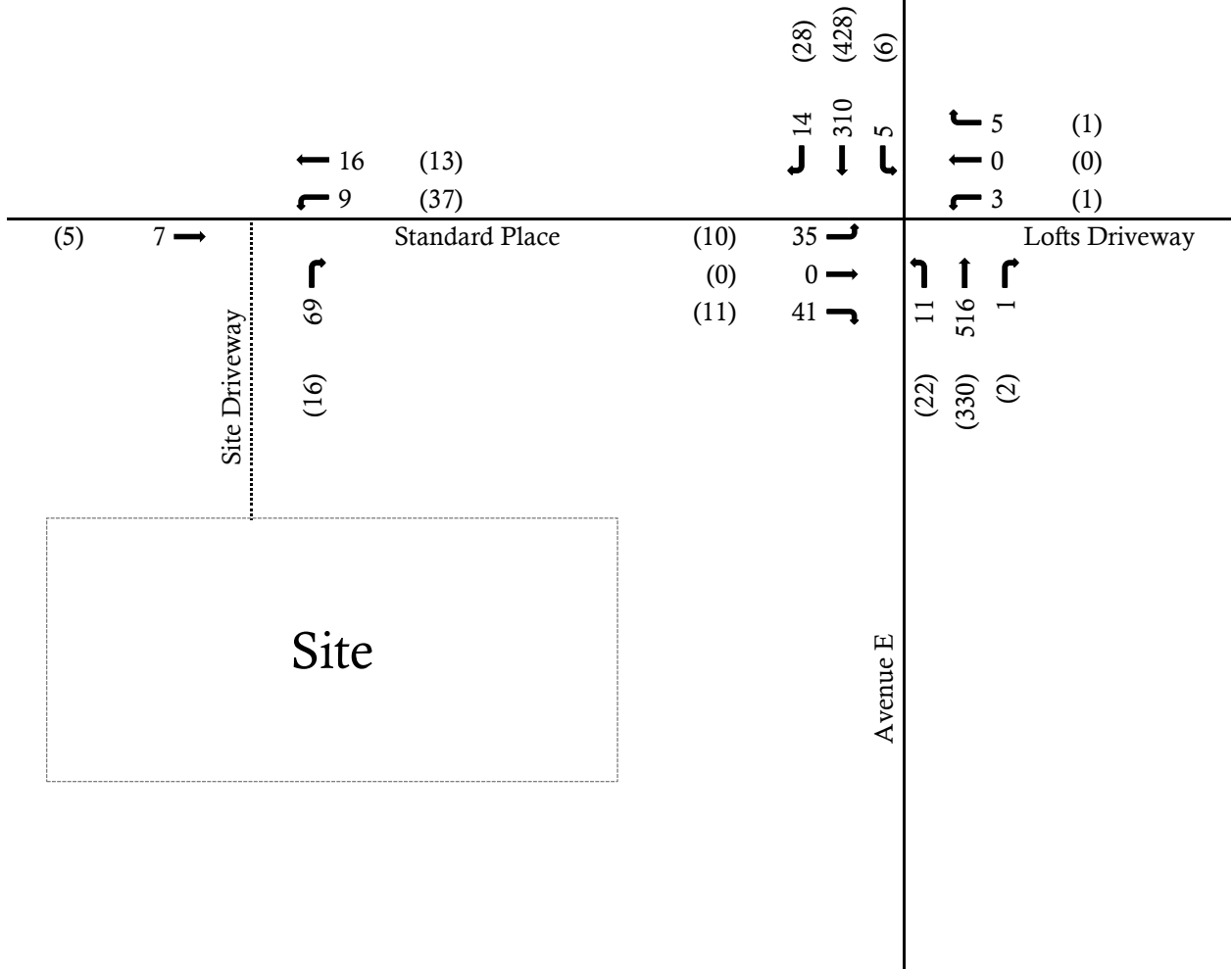




LEGEND

- Existing Roadway
- - - Proposed Roadway
- ← AM (PM)





LEGEND

- Existing Roadway
- - - Proposed Roadway
- ← AM (PM)



Appendix B
Project Information

Dynamic Traffic, LLC

1904 Main Street, Lake Como, NJ 07719
 245 Main Street - Suite #110, Chester, NJ 07930
 732-681-0760

E/W: Standard PI/Loft Dway
 N/S: Avenue E
 Town/County: Bayonne/Hudson
 Job #:3688-22-02192

File Name : Avenue E & Standard PI - AMPM
 Site Code : 00000000
 Start Date : 9/21/2022
 Page No : 1

Groups Printed- Cars - Trucks (SU) - Trucks (TT)

Start Time	Standard Place Eastbound					Loft Two 22 Driveway Westbound					Avenue E Northbound					Avenue E Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	2	0	0	7	9	2	0	1	18	21	0	89	0	0	89	0	38	2	0	40	159
07:15 AM	1	0	0	8	9	0	0	1	16	17	1	86	0	0	87	1	45	0	0	46	159
07:30 AM	2	0	0	11	13	0	0	3	8	11	1	89	0	0	90	0	52	2	0	54	168
07:45 AM	0	0	2	7	9	1	0	1	16	18	2	118	0	0	120	1	71	1	0	73	220
Total	5	0	2	33	40	3	0	6	58	67	4	382	0	0	386	2	206	5	0	213	706
08:00 AM	0	0	1	13	14	0	0	1	24	25	1	141	0	0	142	1	82	0	0	83	264
08:15 AM	1	0	1	17	19	2	0	1	11	14	1	114	1	0	116	1	57	1	0	59	208
08:30 AM	0	0	2	16	18	0	0	2	11	13	3	128	0	0	131	2	91	7	0	100	262
08:45 AM	2	0	1	10	13	0	0	2	9	11	2	81	0	0	83	1	66	2	0	69	176
Total	3	0	5	56	64	2	0	6	55	63	7	464	1	0	472	5	296	10	0	311	910
*** BREAK ***																					
04:30 PM	0	0	1	8	9	1	0	0	11	12	1	58	0	0	59	1	74	1	0	76	156
04:45 PM	1	0	1	7	9	0	0	1	13	14	2	56	0	0	58	1	81	1	0	83	164
Total	1	0	2	15	18	1	0	1	24	26	3	114	0	0	117	2	155	2	0	159	320
05:00 PM	0	0	2	9	11	1	0	0	17	18	1	83	1	0	85	1	98	1	0	100	214
05:15 PM	1	0	1	5	7	0	0	0	8	8	1	82	0	0	83	1	104	3	0	108	206
05:30 PM	0	0	0	9	9	0	0	0	7	7	1	78	1	0	80	3	108	3	0	114	210
05:45 PM	1	0	0	3	4	0	0	1	8	9	1	77	0	0	78	1	105	2	0	108	199
Total	2	0	3	26	31	1	0	1	40	42	4	320	2	0	326	6	415	9	0	430	829
06:00 PM	0	0	0	4	4	1	0	1	7	9	0	55	0	0	55	1	87	0	0	88	156
06:15 PM	1	0	0	4	5	0	0	1	8	9	1	49	0	0	50	1	68	2	0	71	135
*** BREAK ***																					
Grand Total	12	0	12	138	162	8	0	16	192	216	19	1384	3	0	1406	17	1227	28	0	1272	3056
Apprch %	7.4	0	7.4	85.2		3.7	0	7.4	88.9		1.4	98.4	0.2	0		1.3	96.5	2.2	0		
Total %	0.4	0	0.4	4.5	5.3	0.3	0	0.5	6.3	7.1	0.6	45.3	0.1	0	46	0.6	40.2	0.9	0	41.6	
Cars	12	0	12	138	162	8	0	16	192	216	19	1364	3	0	1386	17	1190	28	0	1235	2999
% Cars	100	0	100	100	100	100	0	100	100	100	100	98.6	100	0	98.6	100	97	100	0	97.1	98.1
Trucks (SU)	0	0	0	0	0	0	0	0	0	0	0	19	0	0	19	0	35	0	0	35	54
% Trucks (SU)	0	0	0	0	0	0	0	0	0	0	0	1.4	0	0	1.4	0	2.9	0	0	2.8	1.8
Trucks (TT)	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	3
% Trucks (TT)	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1	0	0.2	0	0	0.2	0.1

Appendix C
Capacity Analysis

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	1	0	6	3	0	5	7	501	1	5	301	9
Future Vol, veh/h	1	0	6	3	0	5	7	501	1	5	301	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	1	-	-	-1	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	4	0
Mvmt Flow	1	0	7	3	0	6	8	557	1	6	334	10

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	928	925	339	929	930	558	344	0	0	558	0	0
Stage 1	351	351	-	574	574	-	-	-	-	-	-	-
Stage 2	577	574	-	355	356	-	-	-	-	-	-	-
Critical Hdwy	6.5	5.9	5.9	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	5.5	4.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.5	4.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	292	316	728	250	269	533	1226	-	-	1023	-	-
Stage 1	710	674	-	507	506	-	-	-	-	-	-	-
Stage 2	557	557	-	666	633	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	286	311	728	245	265	533	1226	-	-	1023	-	-
Mov Cap-2 Maneuver	286	311	-	245	265	-	-	-	-	-	-	-
Stage 1	704	669	-	502	501	-	-	-	-	-	-	-
Stage 2	546	552	-	655	629	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.1		15		0.1		0.1	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1226	-	-	596	370	1023	-	-
HCM Lane V/C Ratio	0.006	-	-	0.013	0.024	0.005	-	-
HCM Control Delay (s)	8	0	-	11.1	15	8.5	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	3	1	0	1	4	320	2	6	415	9
Future Vol, veh/h	2	0	3	1	0	1	4	320	2	6	415	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	1	-	-	-1	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	2	0	3	1	0	1	4	330	2	6	428	9

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	785	785	433	785	788	331	437	0	0	332	0	0
Stage 1	445	445	-	339	339	-	-	-	-	-	-	-
Stage 2	340	340	-	446	449	-	-	-	-	-	-	-
Critical Hdwy	6.5	5.9	5.9	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	5.5	4.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.5	4.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	356	373	650	313	326	715	1134	-	-	1239	-	-
Stage 1	642	623	-	680	643	-	-	-	-	-	-	-
Stage 2	719	680	-	595	576	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	353	369	650	309	323	715	1134	-	-	1239	-	-
Mov Cap-2 Maneuver	353	369	-	309	323	-	-	-	-	-	-	-
Stage 1	639	619	-	677	640	-	-	-	-	-	-	-
Stage 2	715	677	-	589	573	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.5		13.4		0.1		0.1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1134	-	-	486	432	1239	-	-
HCM Lane V/C Ratio	0.004	-	-	0.011	0.005	0.005	-	-
HCM Control Delay (s)	8.2	0	-	12.5	13.4	7.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	6	3	0	5	7	516	1	5	310	9
Future Vol, veh/h	1	0	6	3	0	5	7	516	1	5	310	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	1	-	-	-1	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	4	0
Mvmt Flow	1	0	7	3	0	6	8	573	1	6	344	10

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	954	951	349	955	956	574	354	0	0	574	0	0
Stage 1	361	361	-	590	590	-	-	-	-	-	-	-
Stage 2	593	590	-	365	366	-	-	-	-	-	-	-
Critical Hdwy	6.5	5.9	5.9	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	5.5	4.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.5	4.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	282	307	719	240	260	522	1216	-	-	1009	-	-
Stage 1	703	668	-	497	498	-	-	-	-	-	-	-
Stage 2	547	550	-	658	626	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	276	302	719	235	256	522	1216	-	-	1009	-	-
Mov Cap-2 Maneuver	276	302	-	235	256	-	-	-	-	-	-	-
Stage 1	696	663	-	492	493	-	-	-	-	-	-	-
Stage 2	536	545	-	647	622	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.2		15.3		0.1		0.1	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1216	-	-	585	358	1009	-	-
HCM Lane V/C Ratio	0.006	-	-	0.013	0.025	0.006	-	-
HCM Control Delay (s)	8	0	-	11.2	15.3	8.6	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	3	1	0	1	4	330	2	6	428	9
Future Vol, veh/h	2	0	3	1	0	1	4	330	2	6	428	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	1	-	-	-1	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	2	0	3	1	0	1	4	340	2	6	441	9

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	808	808	446	808	811	341	450	0	0	342	0	0
Stage 1	458	458	-	349	349	-	-	-	-	-	-	-
Stage 2	350	350	-	459	462	-	-	-	-	-	-	-
Critical Hdwy	6.5	5.9	5.9	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	5.5	4.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.5	4.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	345	363	640	302	316	706	1121	-	-	1228	-	-
Stage 1	633	616	-	671	637	-	-	-	-	-	-	-
Stage 2	711	675	-	586	568	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	342	359	640	298	313	706	1121	-	-	1228	-	-
Mov Cap-2 Maneuver	342	359	-	298	313	-	-	-	-	-	-	-
Stage 1	630	612	-	668	634	-	-	-	-	-	-	-
Stage 2	707	672	-	579	564	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.7		13.6		0.1		0.1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1121	-	-	475	419	1228	-	-
HCM Lane V/C Ratio	0.004	-	-	0.011	0.005	0.005	-	-
HCM Control Delay (s)	8.2	0	-	12.7	13.6	7.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	35	0	41	3	0	5	11	516	1	5	310	14
Future Vol, veh/h	35	0	41	3	0	5	11	516	1	5	310	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	1	-	-	-1	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	4	0
Mvmt Flow	39	0	46	3	0	6	12	573	1	6	344	16

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	965	962	352	985	970	574	360	0	0	574	0	0
Stage 1	364	364	-	598	598	-	-	-	-	-	-	-
Stage 2	601	598	-	387	372	-	-	-	-	-	-	-
Critical Hdwy	6.5	5.9	5.9	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	5.5	4.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.5	4.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	278	303	717	229	255	522	1210	-	-	1009	-	-
Stage 1	700	667	-	492	494	-	-	-	-	-	-	-
Stage 2	542	546	-	641	622	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	270	296	717	211	249	522	1210	-	-	1009	-	-
Mov Cap-2 Maneuver	270	296	-	211	249	-	-	-	-	-	-	-
Stage 1	690	662	-	485	487	-	-	-	-	-	-	-
Stage 2	528	538	-	596	618	-	-	-	-	-	-	-

Approach	EB		WB		NB			SB		
HCM Control Delay, s	16.1		16		0.2			0.1		
HCM LOS	C		C							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1210	-	-	407	336	1009	-	-
HCM Lane V/C Ratio	0.01	-	-	0.207	0.026	0.006	-	-
HCM Control Delay (s)	8	0	-	16.1	16	8.6	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.8	0.1	0	-	-

Intersection						
Int Delay, s/veh	6.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	7	0	9	16	0	69
Future Vol, veh/h	7	0	9	16	0	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	3	0	-
Peak Hour Factor	48	48	48	48	48	48
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	15	0	19	33	0	144

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	15	0	86
Stage 1	-	-	-	-	15
Stage 2	-	-	-	-	71
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1603	-	915
Stage 1	-	-	-	-	1008
Stage 2	-	-	-	-	952
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1603	-	904
Mov Cap-2 Maneuver	-	-	-	-	904
Stage 1	-	-	-	-	1008
Stage 2	-	-	-	-	941

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1065	-	-	1603	-
HCM Lane V/C Ratio	0.135	-	-	0.012	-
HCM Control Delay (s)	8.9	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	0	11	1	0	1	22	330	2	6	428	28
Future Vol, veh/h	10	0	11	1	0	1	22	330	2	6	428	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	1	-	-	-1	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	10	0	11	1	0	1	23	340	2	6	441	29

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	856	856	456	860	869	341	470	0	0	342	0	0
Stage 1	468	468	-	387	387	-	-	-	-	-	-	-
Stage 2	388	388	-	473	482	-	-	-	-	-	-	-
Critical Hdwy	6.5	5.9	5.9	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	5.5	4.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.5	4.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	323	343	632	278	292	706	1102	-	-	1228	-	-
Stage 1	626	610	-	641	613	-	-	-	-	-	-	-
Stage 2	683	653	-	576	557	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	315	332	632	266	282	706	1102	-	-	1228	-	-
Mov Cap-2 Maneuver	315	332	-	266	282	-	-	-	-	-	-	-
Stage 1	610	606	-	624	597	-	-	-	-	-	-	-
Stage 2	664	636	-	562	553	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.9		14.4		0.5		0.1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1102	-	-	427	386	1228	-	-
HCM Lane V/C Ratio	0.021	-	-	0.051	0.005	0.005	-	-
HCM Control Delay (s)	8.3	0	-	13.9	14.4	7.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0	0	-	-

Intersection						
Int Delay, s/veh	5.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	5	0	37	13	0	16
Future Vol, veh/h	5	0	37	13	0	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	3	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	7	0	49	17	0	21

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	7	0	122
Stage 1	-	-	-	-	7
Stage 2	-	-	-	-	115
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1614	-	873
Stage 1	-	-	-	-	1016
Stage 2	-	-	-	-	910
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1614	-	846
Mov Cap-2 Maneuver	-	-	-	-	846
Stage 1	-	-	-	-	1016
Stage 2	-	-	-	-	882

Approach	EB	WB	NB
HCM Control Delay, s	0	5.4	8.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1075	-	-	1614	-
HCM Lane V/C Ratio	0.02	-	-	0.031	-
HCM Control Delay (s)	8.4	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-