Traffic Impact Study

Proposed Mixed-Use Development
Block 201, Lots 10-14
Block 205, Lots 1, 2, and 4
Borough of Englewood Cliffs
Bergen County, New Jersey

Prepared for:
CFI Development, LLC

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INTRODUCTION

This Traffic Impact Study was prepared to investigate the potential impacts of the proposed mixed-use residential and commercial/retail development on the adjacent roadway network. The subject property is located along Bayview Avenue in the Borough of Englewood Cliffs, Bergen County, New Jersey. The site location is shown on appended **Figure 1**.

The subject property is designated as Block 201, Lots 10 through 14 and Block 205, Lots 1, 2, and 4 as depicted on the Borough of Englewood Cliffs Tax Map. The site has approximately 50 feet of frontage along Bayview Avenue, approximately 393 feet of frontage along Sylvan Avenue, and approximately 289 feet of frontage along Fifth Street. The existing site is occupied by six (6) buildings and undeveloped land. Access is presently provided via one (1) right-in/right-out driveway for each property along Sylvan Avenue and one (1) full-movement driveway along Bayview Avenue. Under the proposed development program, the existing structures would be razed and a 48-unit residential development and 9,494 square feet of commercial/retail would be constructed. Access is proposed via one (1) full-movement driveway along Bayview Avenue.

METHODOLOGY

Stonefield Engineering & Design, LLC has prepared this Traffic Impact Study in accordance with the recommended guidelines and practices outlined by the Institute of Transportation Engineers (ITE) within Transportation Impact Analyses for Site Development. A detailed field investigation was performed to assess the existing conditions of the adjacent roadway network. A data collection effort was completed to identify the existing traffic volumes at the study intersections to serve as a base for the traffic analyses. Capacity analysis, a procedure used to estimate the traffic-carrying ability of roadway facilities over a range of defined operating conditions, was performed using the Highway Capacity Manual, 7th Edition (HCM) and Synchro 12 Software for all study conditions to assess the roadway operations.

For an unsignalized intersection, Level of Service (LOS) A indicates operations with delay of less than 10 seconds per vehicle, while LOS F describes operations with delay in excess of 50 seconds per vehicle. For a signalized intersection, LOS A indicates operations with delay of less than 10 seconds per vehicle, while LOS F describes operations with delay in excess of 80 seconds per vehicle. The Technical Appendix contains the Highway Capacity Analysis Detail Sheets for the study intersections analyzed in this assessment. The traffic signal timing utilized within the signalized analysis is based on timing directives provided by the New Jersey Department of Transportation (NJDOT).

2024 EXISTING CONDITION

2024 EXISTING ROADWAY CONDITIONS

The proposed mixed-use development is located along Bayview Avenue in the Borough of Englewood Cliffs, Bergen County, New Jersey. The subject property is designated as Block 201, Lots 10 through 14 and Block 205, Lots 1, 2, and 4 as depicted on the Borough of Englewood Cliffs Tax Map. The site has approximately 50 feet of frontage along Bayview Avenue, approximately 393 feet of frontage along Sylvan Avenue and approximately 289 feet of frontage along Fifth Street. Land uses in the area are a mix of residential and commercial uses.

Bayview Avenue is a local roadway with a general east-west orientation and is under the jurisdiction of the Borough of Englewood Cliffs. Along the site frontage, the roadway provides one (1) lane of travel in each direction and has a posted speed limit of 25 mph. Curb is provided along both sides of the roadway, sidewalk and shoulders are not provided, and on-street parking is permitted along both sides of the roadway with parking restrictions in effect school days 8:00 a.m. to 5:00 p.m. on the northerly side of the roadway. Bayview Avenue provides access to Hudson Terrace (County Route 505) at its easterly terminus and serves predominately residential uses along its length.

Sylvan Avenue (U.S. Route 9W) is classified as an Urban Principal Arterial roadway with a general north-south orientation and is under the jurisdiction of the NJDOT. Along the site frontage, the roadway provides two (2) lanes of travel in each direction and has a posted speed limit of 30 mph with restrictions in effect school days 8:00 a.m. to 5:00 p.m. to reduce the posted speed limit to 25 mph. Curb and sidewalk are provided along both sides of the roadway, shoulders are not provided, and on-street parking is permitted along both sides of the roadway. Sylvan Avenue provides north-south mobility within Bergen County and provides access to the Palisades Interstate Parkway to the north and U.S. Route 46 and the NJ Turnpike to the south with commercial land uses along its length.

Bayview Avenue and Sylvan Avenue intersect to form a four (4)-leg intersection controlled by a two (2)-phase traffic signal operating on a 90-second fixed background cycle length. The northbound and southbound approaches of Sylvan Avenue each provide one (1) shared left-turn/through lane and one (1) shared through/right-turn lane. The eastbound and westbound approaches of Bayview Avenue each provide one (1) shared left-turn/through/right-turn lane. Crosswalks and pedestrian signals are provided across all approaches of the intersection.

EXISTING TRANSIT SERVICE

The subject site is located within 131 feet (1-minute walk) from bus stops that service three (3) NJ Transit bus routes and two (2) Coach USA bus routes, with the nearest stop located at the intersection of Sylvan Ave at Bayview Ave. NJ Transit Bus Routes 786, 186, and 156 provide service to New York Port Authority Bus Terminal and various points of interest throughout Bergen and Hudson Counties. Coach USA Bus Routes 9/9A and 9W provide service to New York Port Authority Bus Terminal, George Washington Bridge Bus Terminal, and various points of interest throughout Bergen County and Rockland County, New York. The non-vehicular transportation modes available in the general vicinity of the subject site are summarized on **Table 1**.

TABLE 1: MULTI-MODAL TRANSPORTATION OPTIONS

Travel Mode	Proximity to Site	Peak Commuter Period Headways	Destination(s)	Time Travel to Major Destination
NJ Transit Bus Route 156	44 Feet	Inbound: 12 minutes Outbound: 30 minutes	NY Waterway, NY Port Authority Bus Terminal	To NY Port Authority Bus Terminal: 77 minutes
NJ Transit Bus Route 186	44 Feet	Inbound: 15 minutes Outbound: 15 minutes	Dumont, Coytesville, George Washington Bridge Bus Terminal	George Washington Bridge Bus Terminal: 16 minutes
NJ Transit Bus Route 756	44 Feet	Inbound: 35 minutes Outbound: 60 minutes	Fort Lee, Teaneck, Brookchester, North Hackensack, Paramus	To Garden State Plaza: 51 minutes To Bergen Community College: 67 minutes
Coach USA Bus Route 9/9A	Along Site Frontage	Inbound: 30 minutes Outbound: 30 minutes	NY Port Authority Bus Terminal	To NY Port Authority Bus Terminal: 38 minutes

2024 EXISTING TRAFFIC VOLUME

Manual turning movement counts were collected during the typical weekday morning, weekday evening, and Saturday midday time periods to evaluate existing traffic conditions and identify the specific hours when traffic activity on the adjacent roadways is at a maximum and could be potentially impacted by the development of the site. Specifically, manual turning movement counts at the intersection of Bayview Avenue and Sylvan Avenue were conducted on the following dates and during the following times:

- Tuesday, January 8, 2019, from 7:00 a.m. to 9:00 a.m. and from 4:00 p.m. to 7:00 p.m.
- Saturday, January 5, 2019, from 11:00 a.m. to 2:00 p.m.

The study time periods were chosen as they are representative of the peak periods of both the adjacent roadway network and the proposed development. The traffic volume data was collected and analyzed to identify the design peak hour in accordance with HCM and ITE guidelines. Based on the review of the count data the weekday morning peak hour occurred from 8:00 a.m. to 9:00 a.m.; the weekday evening peak hour

occurred from 4:45 p.m. to 5:45 p.m., and the Saturday midday peak hour occurred from 11:45 a.m. to 12:45 p.m. The Technical Appendix contains a summary of the turning movement count data.

New Jersey Transportation Planning Authority (NJTPA) provides an annual 0.4% annual increase in population change between the years 2015 to 2050 for the Borough of Englewood Cliffs in Bergen County. The 2024 Existing Traffic Volumes were calculated using the 2019 turning movement count data and the 0.4% growth rate per year. The 2024 Existing weekday morning, weekday evening, and Saturday midday peak-hour volumes are summarized on appended **Figure 2**.

2024 EXISTING LOS/CAPACITY ANALYSIS

A Level of Service and Volume/Capacity analysis was conducted for the 2024 Existing Condition during the weekday morning, weekday evening, and Saturday midday peak-hours at the study intersection. Under the existing condition, the signalized intersection of Bayview Avenue and Sylvan Avenue is calculated to operate at overall Level of Service A during each of the peak hours studied. The eastbound and westbound approaches of Bayview Avenue are calculated to operate at an acceptable Level of Service D during each of the peak hours studied. The 95th percentile queue of the westbound approach of Bayview Avenue is calculated to be approximately six (6) vehicles during the critical weekday morning peak hour. The westbound approach provides space for approximately four (4) vehicles before extending beyond the proposed driveway location. Based on observations conducted by our office, the queues at the Bayview Avenue approaches clear with each cycle and as such, would provide vehicles an opportunity to exit the proposed driveway.

2026 NO-BUILD CONDITION

BACKGROUND GROWTH

The 2024 Existing Condition traffic volume data was grown to a future horizon year of 2026, which is a conservative estimate for when the proposed residential development is expected to be fully constructed. In accordance with industry guidelines, the existing traffic volumes at the study intersections were increased by 1.25% annually for two (2) years to generate the 2026 Base Traffic Volumes. These volumes are summarized on appended **Figure 3**. The 1.25% background growth rate was obtained from the NJDOT Annual Background Growth Rate Table.

OTHER PLANNED DEVELOPMENT PROJECTS

To evaluate the future traffic conditions, it is important to consider the potential site-generated traffic of other projects that could influence the traffic volume at the study intersections. Other planned development projects include those that as of the date of the traffic counts, were either in the entitlement process or

approved for building permits in proximity to the proposed development. Based on consultations with Lisette Duffy of the Borough of Englewood Cliffs Clerk's office, the following development is anticipated to impact traffic volumes within the study area:

- LG Electronics Headquarters Building – 350,806 square feet of office space between Sylvan Avenue and Hudson Terrace to the northeast of the study area

Appended **Figure 4** illustrates the site-generated traffic associated with the proposed LG Electronics Headquarters Building assigned to the study area network.

2026 NO-BUILD TRAFFIC VOLUMES

The site-generated trips associated with the LG Electronics Headquarters Building were added to the 2026 Base Traffic Volumes to calculate the 2026 No-Build Traffic Volumes for the weekday morning, weekday evening, and Saturday midday peak hours. These volumes are summarized on appended **Figure 5**.

2026 NO-BUILD LOS/CAPACITY ANALYSIS

A Level of Service and Volume/Capacity analysis was also conducted for the 2026 No-Build Condition during the weekday morning, weekday evening, and Saturday midday peak hours at the study intersections. The signalized intersection of Sylvan Avenue and Bayview Avenue is calculated to operate generally consistent with the findings of the Existing Condition during each of the peak hours studied.

2026 BUILD CONDITION

The site-generated traffic volume of the proposed mixed-use development was estimated to identify the potential impacts of the project. For the purpose of this analysis, a complete project "build out" is assumed within two (2) years of the preparation of this study.

TRIP GENERATION

Trip generation projections for the proposed mixed-use development were prepared utilizing the ITE's Trip Generation Manual, 11th Edition. Trip generation rates associated with Land Use 221 "Multifamily Housing (Mid-Rise)" and Land Use 822 "Strip Retail Plaza (<40k)" were cited for the 48 residential units. To maintain a conservative analysis, no trip reduction was applied for the existing land uses on site. **Table 2** provides the weekday morning, weekday evening, and Saturday midday peak hour trip generation volumes associated with the proposed development. **Table 3** provides the weekday and Saturday daily volumes associated with the proposed development.

TABLE 2 – PROPOSED TRIP GENERATION

	Weekday Morning Peak Hour			Weekday Evening Peak Hour			Saturday Midday Peak Hour		
Land Use	**Enter**	**Exit**	**Total**	**Enter**	**Exit**	**Total**	**Enter**	**Exit**	**Total**
48 Unit Multifamily Housing (Mid-Rise) *ITE Land Use 221*	4	13	17	11	8	19	10	9	19
9,494 SF Strip Retail Plaza (<40K) *ITE Land Use 822*	13	9	22	31	32	63	32	30	62
Total	**17**	**22**	**39**	**42**	**40**	**82**	**42**	**39**	**81**

As stated within Chapter 10 of ITE's Trip Generation Handbook, 3rd Edition, there are instances when the total number of trips generated by a site is different from the amount of new traffic added to the street system by the generator. Strip Retail Plazas are specifically located on or adjacent to busy streets to attract motorists already on the roadway. Therefore, the proposed ITE Land Use 822, associated with the development would be expected to attract a portion of its trips from the traffic passing the site on the way from an origin to an ultimate destination. These trips do not add new traffic to the adjacent roadway system and are referred to as pass-by trips.

Based upon NJDOT approved pass-by rates for similar Land Use 820 "Shopping Center" 34% of the site-generated traffic during the weekday evening peak hour, and 26% during the Saturday peak hour is comprised of pass-by traffic. **Table 2** shows the additional site generated traffic for the proposed development after applying the appropriate trip reductions to account for pass-by traffic. NJDOT pass-by rates were used since the proposed commercial/retail development would face U.S. Route 9W, Sylvan Avenue.

TABLE 3 – PROPOSED TRIP GENERATION – NEW & PASS-BY TRIPS

	Weekday Morning Peak Hour			Weekday Evening Peak Hour			Saturday Midday Peak Hour		
Land Use	**Enter**	**Exit**	**Total**	**Enter**	**Exit**	**Total**	**Enter**	**Exit**	**Total**
ITE Land Use 221 "New" Trips	4	13	17	11	8	19	10	9	19
ITE Land Use 822 "New" Trips	13	9	22	21	21	42	24	22	46
Total "New" Trips	17	22	39	32	29	61	34	31	65
"Pass-By" Trips *ITE Land Use 221*	-	-	-	-	-	-	-	-	-
"Pass-By" Trips *ITE Land Use 822*	-	-	-	10	11	21	8	8	16
Total "Pass-By" Trips	-	-	-	10	11	21	8	8	16
Total	**17**	**22**	**39**	**42**	**40**	**82**	**42**	**39**	**81**

Factors such as transit use and walkability have been found to significantly decrease the trip generation of residential developments located proximate to transit. Based on American Community Survey data provided

by the U.S. Census Bureau, approximately 16% of Borough of Englewood Cliffs residents living in Census Tract 160, where the site is located, use public transportation, walk, or use means other than single-passenger vehicles to commute to work. Based on the available transit options within walking distance to the subject site and commuter characteristic data provided by the U.S. Census Bureau, a reduction in external site-generated traffic originating and departing from the site can be applied to account for transit use. To maintain a conservative analysis, no transit trip reduction was applied to the proposed trip generation.

The proposed development is expected to generate 82 new trips during the critical weekday evening peak hour. Based on Transportation Impact Analysis for Site Development published by ITE, a trip increase of less than 100 vehicle trips would likely not change the level of service of the adjacent roadway system or appreciably increase the volume-to-capacity ratio of an intersection approach. As such, the proposed development is not anticipated to significantly impact the operations of the adjacent roadway network.

TRIP ASSIGNMENT/DISTRIBUTION

The trips generated by the proposed development were distributed according to the existing travel pattern along U.S. Route 9W, location of major arterial roadways, and the access management plan of the site. Specifically, the access management plan of the site dictates that all traffic must be routed to/from the Bayview Avenue driveway to enter and exit the site. The retail distribution, which includes both "new" and "pass-by volumes, were routed to/from the site driveway via Sylvan Avenue as it is an adjacent major arterial roadway that would convey retail traffic. The residential distribution was routed to/from the site driveway via both Sylvan Avenue and Hudson Terrace, accounting for both local and commuting traffic characteristics of residents.

The New Site-Generated Traffic Volumes are illustrated on **Figure 6** and the "Pass-By" Site-Generated Traffic Volumes are illustrated on **Figure 7**. Total Site-Generated Traffic Volumes are illustrated on **Figure 8.**

2026 BUILD TRAFFIC VOLUMES

The Total Site-Generated Trips were added to the 2026 No-Build Traffic Volumes to calculate the 2026 Build Traffic Volumes and are shown on appended **Figure 9**.

2026 BUILD LOS/CAPACITY ANALYSIS

A Level of Service and Volume/Capacity analysis was also conducted for the 2026 Build Condition during the weekday morning, weekday evening, and Saturday midday peak hours at the study intersections and proposed site driveways.

The signalized intersection of Bayview Avenue and Sylvan Avenue is calculated to operate generally consistent with the findings of the No-Build Condition during each of the peak hours studied. The 95th percentile queue at the westbound approach of Bayview Avenue is calculated to be seven (7) vehicles during the critical weekday morning peak hour. The queues along Bayview Avenue would clear with each signal cycle to facilitate full-movement egress from the proposed site driveway. The proposed development is calculated to add less than one (1) vehicle per signal cycle to the westbound approach of Bayview Avenue during the peak hours studied.

The turning movements at the proposed full-movement driveway along Bayview Avenue are calculated to operate at Level of Service A during each of the peak hours studied.

COMPARATIVE LEVEL OF SERVICE (DELAY) TABLES

Tables 5 through **8** compare the Existing, No-Build, and Build Conditions Level of Service and delay values.

SYLVAN AVENUE & BAYVIEW AVENUE
EB (Eastbound) and WB (Westbound) approaches are the Bayview Avenue approaches
NB (Northbound) and SB (Southbound) approaches are the Sylvan Avenue approaches
X (n) = Level of Service (seconds of delay)

TABLE 5 – WEEKDAY MORNING PEAK HOUR

Lane Group	2024 Existing	2026 No-Build	2026 Build
EB Left/Through/Right	D (48.6)	D (48.4)	D (46.4)
WB Left/Through/Right	D (50.8)	D (50.7)	D (49.9)
NB Left/Through	A (3.3)	A (4.8)	A (5.5)
NB Through/Right	A (3.5)	A (5.0)	A (5.8)
SB Left/Through	A (3.1)	A (3.4)	A (3.9)
SB Through/Right	A (3.3)	A (3.6)	A (4.2)
Intersection	**A (7.9)**	**A (7.9)**	**A (8.8)**

TABLE 6 – WEEKDAY EVENING PEAK HOUR

Lane Group	2024 Existing	2026 No-Build	2026 Build
EB Left/Through/Right	D (51.1)	D (51.0)	D (48.9)
WB Left/Through/Right	D (48.4)	D (48.4)	D (50.4)
NB Left/Through	A (3.1)	A (3.2)	A (3.6)
NB Through/Right	A (3.2)	A (3.4)	A (3.8)
SB Left/Through	A (6.5)	B (15.1)	C (25.2)
SB Through/Right	A (5.9)	A (9.2)	B (10.6)
Intersection	**A (8.0)**	**A (11.7)**	**B (16.0)**

TABLE 7 – SATURDAY MIDDAY PEAK HOUR

Lane Group	2024 Existing	2026 No-Build	2026 Build
EB Left/Through/Right	D (48.9)	D (48.9)	D (46.1)
WB Left/Through/Right	D (50.9)	D (51.0)	D (51.0)
NB Left/Through	A (2.5)	A (2.5)	A (3.2)
NB Through/Right	A (2.6)	A (2.6)	A (3.3)
SB Left/Through	A (3.0)	A (3.1)	A (4.0)
SB Through/Right	A (3.2)	A (3.2)	A (4.2)
Intersection	**A (4.8)**	**A (4.9)**	**A (6.5)**

BAYVIEW AVENUE & PROPOSED DRIVEWAY

EB (Eastbound) and WB (Westbound) approaches are the Bayview Avenue approaches
NB (Northbound) approach is the proposed driveway approach
X (n) = Level of Service (seconds of delay)

TABLE 8 – 2026 BUILD CONDITION

Lane Group	Weekday Morning Peak Hour	Weekday Evening Peak Hour	Saturday Midday Peak Hour
NB Left/Right	A (9.5)	B (10.3)	A (9.7)
WB Through/Left	A (0.4)	A (1.3)	A (1.5)

SITE CIRCULATION/PARKING SUPPLY

A review was conducted of the proposed residential development using the Site Plan prepared by Collazuol Engineering & Surveying Associates LLC. In completing this review, particular attention was focused on the site access, circulation, and parking supply.

Access is proposed via one (1) full-movement driveway along Bayview Avenue. The proposed building would be centrally located along the Sylvan Avenue frontage of the site, with ground-level surface parking on the southeasterly side of the building and covered parking located on the ground level of the proposed building structure. Two-way vehicular circulation throughout the site would be facilitated by drive aisles with a minimum width of 24 feet.

Regarding the parking requirement for the residential portion of the proposed development, the Township of Englewood Cliffs requires 1.7 parking spaces per dwelling unit. For the residential portion of the proposed development consisting of 48 units, this equates to 82 required parking spaces. Regarding the parking requirement for the retail portion of the proposed development, the Township of Englewood Cliffs requires one (1) parking space per 200 square feet of retail space. For the retail portion of the proposed development consisting of 9,494 square feet, this equates to 48 required parking spaces. The total parking requirement for this development is 130 parking spaces. The site would provide 135 total parking spaces, which meets the parking requirement and would be sufficient to support this project's parking demand. The right-angle spaces

would be located along the 24-foot-wide two-way drive aisles and would be a minimum of nine (9) feet wide by 18 feet deep in accordance with industry standards.

CONCLUSIONS

This report was prepared to examine the potential traffic impact of the proposed mixed-use residential and commercial/retail development. The analysis findings, which have been based on industry-standard guidelines, indicate that the proposed development would not have a significant impact on the traffic operations of the adjacent roadway network. The vehicle storage supply along the westbound approach of Bayview Avenue is sufficient to support the queues at the signalized intersection. The site driveways and on-site layout have been designed to provide for effective access to and from the subject property, and the parking supply meets the Ordinance requirements and would be sufficient to support this project.

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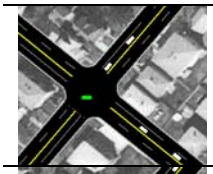
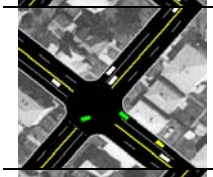
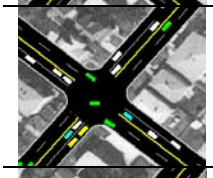
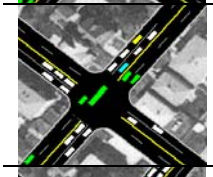
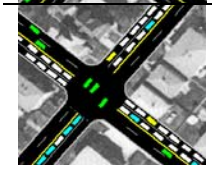
TECHNICAL APPENDIX

LEVEL OF SERVICE/AVERAGE CONTROL DELAY CRITERIA

LEVEL OF SERVICE /AVERAGE CONTROL DELAY CRITERIA

The ability of a roadway to effectively accommodate traffic demand is determined through an assessment of the volume-to-capacity ratio, delay and Level of Service of the lane group and/or intersection. The volume-to-capacity ratio is the ratio of traffic flow rate to capacity for a given transportation facility. As defined within the Highway Capacity Manual, 7th Edition (HCM), intersection delay is the total additional travel time experienced by drivers, passengers, or pedestrians as a result of control measures and interaction with other users of the facility, divided by the volume departing from the corresponding cross section of the facility. Level of service is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience.

For an unsignalized intersection, LOS A indicates operations with delay less than 10 seconds per vehicle, while LOS F describes operations with delay in excess of 50 seconds per vehicle. For a signalized intersection, LOS A indicates operations with delay less than 10 seconds per vehicle and LOS F denotes operations with delay in excess of 80 seconds per vehicle.

	Level Of Service (LOS)	Signalized Delay Range (average control delay in sec/veh)	Unsignalized Delay Range (average control delay in sec/veh)
	A	<=10	<=10
	B	>10 and <=20	>10 and <=15
	C	>20 and <=35	>15 and <=25
	D	>35 and <=55	>25 and <=35
	E	>55 and <=80	>35 and <=50
	F	>80	>50

Source: Highway Capacity Manual, 7th Edition

TURNING MOVEMENT COUNT DATA

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Intersection of Bayview Avenue (EB/WB)
and Sylvan Avenue (NB/SB)
Englewood Cliffs, Bergen County, New Jersey
Tuesday, January 8, 2019

File Name : s-19005
Site Code : 00019005
Start Date : 1/8/2019
Page No : 1

Groups Printed- Auto - HV - B/SB

	Bayview Avenue Eastbound					Bayview Avenue Westbound					Sylvan Avenue Northbound					Sylvan Avenue Southbound					
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Int. Total
07:00 AM	1	0	1	1	3	2	0	7	0	9	1	108	1	0	110	5	158	1	0	164	286
07:15 AM	2	0	2	0	4	1	1	6	0	8	3	96	3	0	102	3	180	6	0	189	303
07:30 AM	1	7	3	2	13	9	2	5	0	16	1	104	1	0	106	9	182	2	0	193	328
07:45 AM	1	1	0	0	2	5	0	14	0	19	0	124	0	0	124	6	162	2	0	170	315
Total	5	8	6	3	22	17	3	32	0	52	5	432	5	0	442	23	682	11	0	716	1232
08:00 AM	1	0	0	1	2	4	1	4	0	9	0	110	2	0	112	4	87	1	0	92	215
08:15 AM	1	2	1	0	4	4	0	1	0	5	0	105	1	0	106	10	110	1	0	121	236
08:30 AM	6	5	9	0	20	8	3	16	0	27	5	156	6	0	167	3	161	2	0	166	380
08:45 AM	5	9	15	3	32	7	8	21	0	36	10	248	3	0	261	4	190	1	0	195	524
Total	13	16	25	4	58	23	12	42	0	77	15	619	12	0	646	21	548	5	0	574	1355
*** BREAK ***																					
04:00 PM	2	1	3	1	7	1	0	7	0	8	0	179	6	0	185	5	236	2	0	243	443
04:15 PM	3	0	5	0	8	5	3	7	0	15	1	162	3	0	166	10	212	1	0	223	412
04:30 PM	4	3	3	0	10	1	2	3	0	6	5	129	4	0	138	5	168	1	0	174	328
04:45 PM	4	6	11	1	22	7	2	3	0	12	2	131	2	0	135	18	241	1	0	260	429
Total	13	10	22	2	47	14	7	20	0	41	8	601	15	0	624	38	857	5	0	900	1612
05:00 PM	6	5	14	0	25	3	1	9	0	13	1	177	5	0	183	27	337	1	1	366	587
05:15 PM	3	5	3	3	14	2	2	7	0	11	0	138	6	0	144	5	277	0	0	282	451
05:30 PM	3	3	5	0	11	7	1	6	0	14	0	141	4	0	145	14	194	0	0	208	378
05:45 PM	3	6	7	1	17	1	0	6	0	7	0	148	3	0	151	13	231	1	0	245	420
Total	15	19	29	4	67	13	4	28	0	45	1	604	18	0	623	59	1039	2	1	1101	1836
06:00 PM	7	3	13	3	26	8	0	4	1	13	1	108	4	0	113	18	247	0	0	265	417
06:15 PM	6	5	5	2	18	1	2	4	0	7	0	152	8	0	160	15	240	0	0	255	440
06:30 PM	6	3	8	5	22	2	2	10	0	14	3	112	2	0	117	11	222	0	0	233	386
06:45 PM	0	1	2	0	3	2	2	7	0	11	3	146	4	0	153	11	180	1	0	192	359
Total	19	12	28	10	69	13	6	25	1	45	7	518	18	0	543	55	889	1	0	945	1602
Grand Total	65	65	110	23	263	80	32	147	1	260	36	2774	68	0	2878	196	4015	24	1	4236	7637
Apprch %	24.7	24.7	41.8	8.7		30.8	12.3	56.5	0.4		1.3	96.4	2.4	0		4.6	94.8	0.6	0		
Total %	0.9	0.9	1.4	0.3	3.4	1	0.4	1.9	0	3.4	0.5	36.3	0.9	0	37.7	2.6	52.6	0.3	0	55.5	
Auto	65	64	110	23	262	78	31	147	1	257	36	2689	66	0	2791	195	3915	24	1	4135	7445
% Auto	100	98.5	100	100	99.6	97.5	96.9	100	100	98.8	100	96.9	97.1	0	97	99.5	97.5	100	100	97.6	97.5
HV	0	1	0	0	1	0	0	0	0	0	0	35	0	0	35	0	48	0	0	48	84
% HV	0	1.5	0	0	0.4	0	0	0	0	0	0	1.3	0	0	1.2	0	1.2	0	0	1.1	1.1
B/SB	0	0	0	0	0	2	1	0	0	3	0	50	2	0	52	1	52	0	0	53	108
% B/SB	0	0	0	0	0	2.5	3.1	0	0	1.2	0	1.8	2.9	0	1.8	0.5	1.3	0	0	1.3	1.4

Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of Bayview Avenue (EB/WB)
and Sylvan Avenue (NB/SB)
Englewood Cliffs, Bergen County, New Jersey
Tuesday, January 8, 2019

File Name : s-19005
Site Code : 00019005
Start Date : 1/8/2019
Page No : 2

	Bayview Avenue Eastbound					Bayview Avenue Westbound					Sylvan Avenue Northbound					Sylvan Avenue Southbound					
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	1	0	0	1	2	4	1	4	0	9	0	110	2	0	112	4	87	1	0	92	215
08:15 AM	1	2	1	0	4	4	0	1	0	5	0	105	1	0	106	10	110	1	0	121	236
08:30 AM	6	5	9	0	20	8	3	16	0	27	5	156	6	0	167	3	161	2	0	166	380
08:45 AM	5	9	15	3	32	7	8	21	0	36	10	248	3	0	261	4	190	1	0	195	524
Total Volume	13	16	25	4	58	23	12	42	0	77	15	619	12	0	646	21	548	5	0	574	1355
% App. Total	22.4	27.6	43.1	6.9		29.9	15.6	54.5	0		2.3	95.8	1.9	0		3.7	95.5	0.9	0		
PHF	.542	.444	.417	.333	.453	.719	.375	.500	.000	.535	.375	.624	.500	.000	.619	.525	.721	.625	.000	.736	.646
Auto	13	16	25	4	58	22	11	42	0	75	15	606	12	0	633	21	529	5	0	555	1321
% Auto	100	100	100	100	100	95.7	91.7	100	0	97.4	100	97.9	100	0	98.0	100	96.5	100	0	96.7	97.5
HV	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	0	13	0	0	13	22
% HV	0	0	0	0	0	0	0	0	0	0	0	1.5	0	0	1.4	0	2.4	0	0	2.3	1.6
B/SB	0	0	0	0	0	1	1	0	0	2	0	4	0	0	4	0	6	0	0	6	12
% B/SB	0	0	0	0	0	4.3	8.3	0	0	2.6	0	0.6	0	0	0.6	0	1.1	0	0	1.0	0.9
Peak Hour Analysis From 12:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	4	6	11	1	22	7	2	3	0	12	2	131	2	0	135	18	241	1	0	260	429
05:00 PM	6	5	14	0	25	3	1	9	0	13	1	177	5	0	183	27	337	1	1	366	587
05:15 PM	3	5	3	3	14	2	2	7	0	11	0	138	6	0	144	5	277	0	0	282	451
05:30 PM	3	3	5	0	11	7	1	6	0	14	0	141	4	0	145	14	194	0	0	208	378
Total Volume	16	19	33	4	72	19	6	25	0	50	3	587	17	0	607	64	1049	2	1	1116	1845
% App. Total	22.2	26.4	45.8	5.6		38	12	50	0		0.5	96.7	2.8	0		5.7	94	0.2	0.1		
PHF	.667	.792	.589	.333	.720	.679	.750	.694	.000	.893	.375	.829	.708	.000	.829	.593	.778	.500	.250	.762	.786
Auto	16	18	33	4	71	19	6	25	0	50	3	570	17	0	590	63	1026	2	1	1092	1803
% Auto	100	94.7	100	100	98.6	100	100	100	0	100	100	97.1	100	0	97.2	98.4	97.8	100	100	97.8	97.7
HV	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	0	11	0	0	11	16
% HV	0	5.3	0	0	1.4	0	0	0	0	0	0	0.7	0	0	0.7	0	1.0	0	0	1.0	0.9
B/SB	0	0	0	0	0	0	0	0	0	0	0	13	0	0	13	1	12	0	0	13	26
% B/SB	0	0	0	0	0	0	0	0	0	0	0	2.2	0	0	2.1	1.6	1.1	0	0	1.2	1.4

Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of Bayview Avenue (EB/WB)
and Sylvan Avenue (NB/SB)
Englewood Cliffs, Bergen County, New Jersey
Saturday, January 5, 2019

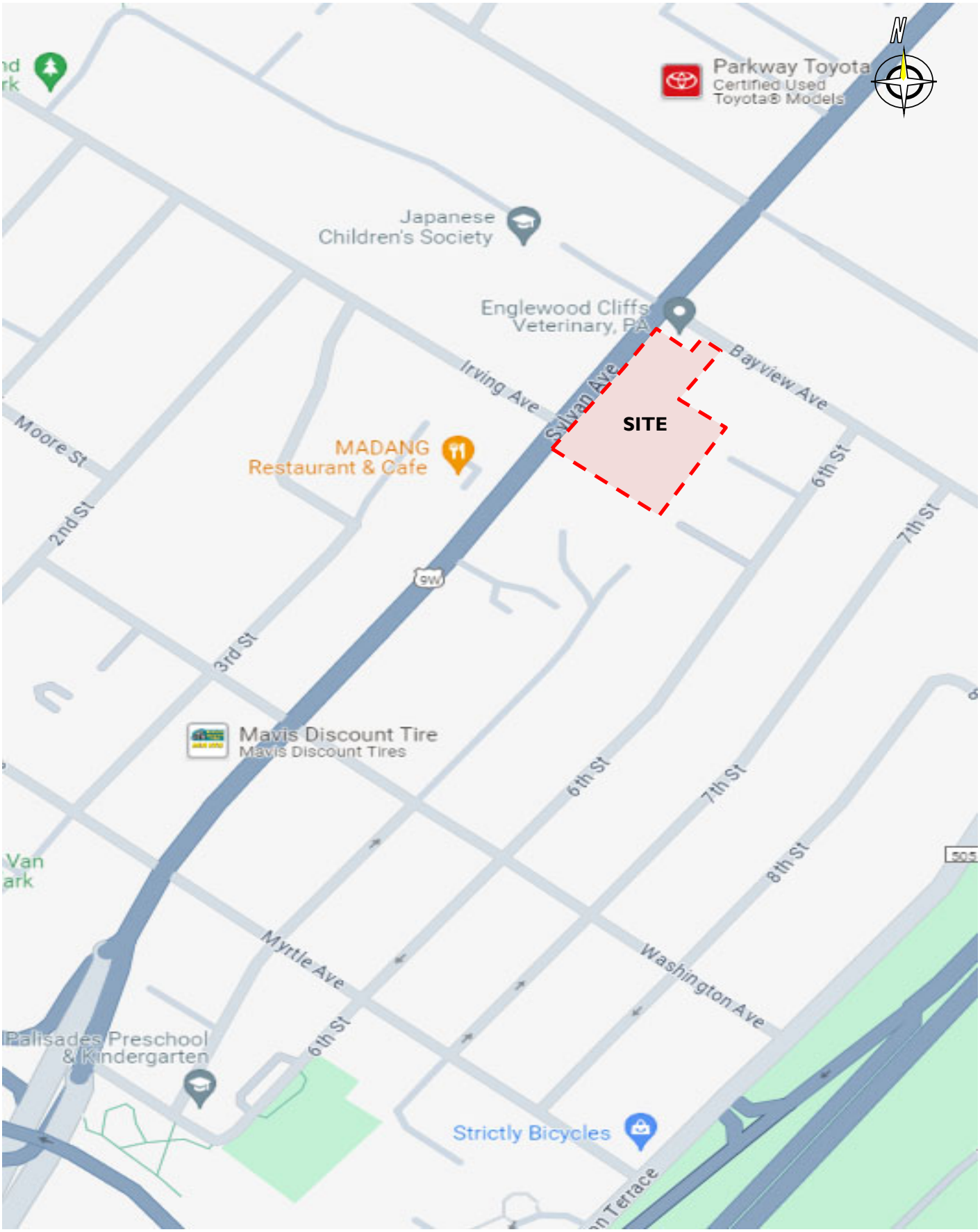
File Name : s-19005_sat
Site Code : 00019005
Start Date : 1/5/2019
Page No : 1

Groups Printed- Auto - HV - B/SB

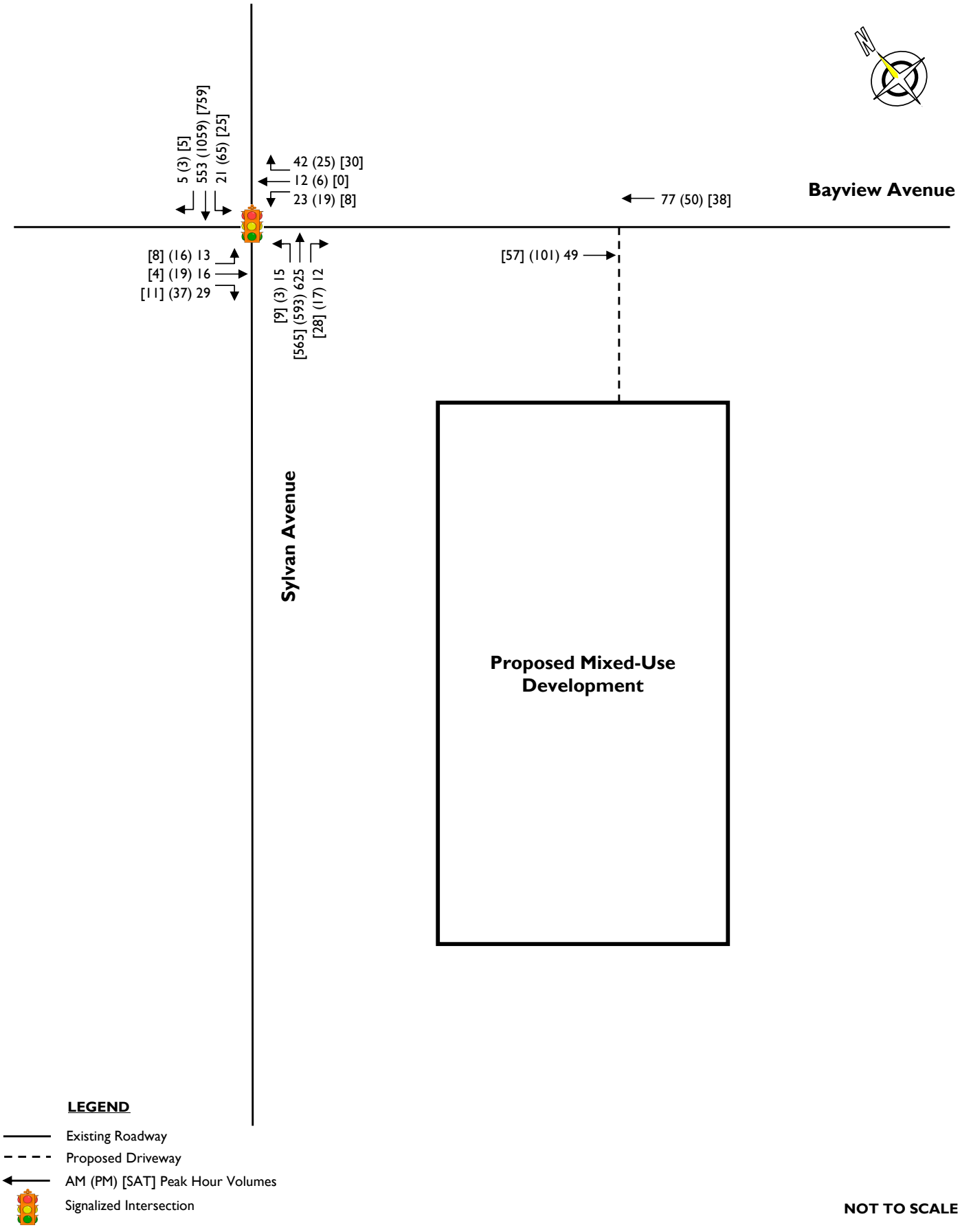
	Bayview Avenue Eastbound					Bayview Avenue Westbound					Sylvan Avenue Northbound					Sylvan Avenue Southbound					
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Int. Total
11:00 AM	6	0	1	0	7	3	0	6	0	9	0	113	2	0	115	11	151	4	0	166	297
11:15 AM	1	1	0	1	3	5	1	3	2	11	2	115	3	1	121	14	161	0	0	175	310
11:30 AM	1	0	2	0	3	3	0	6	1	10	3	121	7	1	132	10	172	1	0	183	328
11:45 AM	0	0	2	1	3	0	0	5	0	5	1	127	9	0	137	7	166	4	0	177	322
Total	8	1	5	2	16	11	1	20	3	35	6	476	21	2	505	42	650	9	0	701	1257
12:00 PM	2	1	1	0	4	1	0	5	0	6	2	141	7	0	150	8	190	0	0	198	358
12:15 PM	2	1	1	0	4	3	0	6	1	10	2	151	6	0	159	8	203	1	0	212	385
12:30 PM	4	2	6	0	12	4	0	12	1	17	4	140	6	0	150	2	192	0	0	194	373
12:45 PM	2	0	2	0	4	8	0	7	0	15	3	134	2	0	139	5	189	0	0	194	352
Total	10	4	10	0	24	16	0	30	2	48	11	566	21	0	598	23	774	1	0	798	1468
01:00 PM	1	1	0	1	3	6	0	3	0	9	2	127	4	1	134	4	171	1	0	176	322
01:15 PM	0	0	2	1	3	5	0	2	1	8	1	136	6	0	143	3	183	0	0	186	340
01:30 PM	0	0	0	1	1	3	0	3	2	8	1	127	4	0	132	11	175	1	0	187	328
01:45 PM	0	2	3	0	5	4	0	5	0	9	2	135	4	1	142	7	169	0	0	176	332
Total	1	3	5	3	12	18	0	13	3	34	6	525	18	2	551	25	698	2	0	725	1322
Grand Total	19	8	20	5	52	45	1	63	8	117	23	1567	60	4	1654	90	2122	12	0	2224	4047
Apprch %	36.5	15.4	38.5	9.6		38.5	0.9	53.8	6.8		1.4	94.7	3.6	0.2		4	95.4	0.5	0		
Total %	0.5	0.2	0.5	0.1	1.3	1.1	0	1.6	0.2	2.9	0.6	38.7	1.5	0.1	40.9	2.2	52.4	0.3	0	55	
Auto	19	8	20	5	52	45	1	63	8	117	23	1540	60	4	1627	90	2095	12	0	2197	3993
% Auto	100	100	100	100	100	100	100	100	100	100	100	98.3	100	100	98.4	100	98.7	100	0	98.8	98.7
HV	0	0	0	0	0	0	0	0	0	0	0	19	0	0	19	0	20	0	0	20	39
% HV	0	0	0	0	0	0	0	0	0	0	0	1.2	0	0	1.1	0	0.9	0	0	0.9	1
B/SB	0	0	0	0	0	0	0	0	0	0	0	8	0	0	8	0	7	0	0	7	15
% B/SB	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0.5	0	0.3	0	0	0.3	0.4

	Bayview Avenue Eastbound					Bayview Avenue Westbound					Sylvan Avenue Northbound					Sylvan Avenue Southbound					
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	2	1	1	0	4	1	0	5	0	6	2	141	7	0	150	8	190	0	0	198	358
12:15 PM	2	1	1	0	4	3	0	6	1	10	2	151	6	0	159	8	203	1	0	212	385
12:30 PM	4	2	6	0	12	4	0	12	1	17	4	140	6	0	150	2	192	0	0	194	373
12:45 PM	2	0	2	0	4	8	0	7	0	15	3	134	2	0	139	5	189	0	0	194	352
Total Volume	10	4	10	0	24	16	0	30	2	48	11	566	21	0	598	23	774	1	0	798	1468
% App. Total	41.7	16.7	41.7	0		33.3	0	62.5	4.2		1.8	94.6	3.5	0		2.9	97	0.1	0		
PHF	.625	.500	.417	.000	.500	.500	.000	.625	.500	.706	.688	.937	.750	.000	.940	.719	.953	.250	.000	.941	.953
Auto	10	4	10	0	24	16	0	30	2	48	11	555	21	0	587	23	771	1	0	795	1454
% Auto	100	100	100	0	100	100	0	100	100	100	100	98.1	100	0	98.2	100	99.6	100	0	99.6	99.0
HV	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	2	0	0	2	9
% HV	0	0	0	0	0	0	0	0	0	0	0	1.2	0	0	1.2	0	0.3	0	0	0.3	0.6
B/SB	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	1	0	0	1	5
% B/SB	0	0	0	0	0	0	0	0	0	0	0	0.7	0	0	0.7	0	0.1	0	0	0.1	0.3

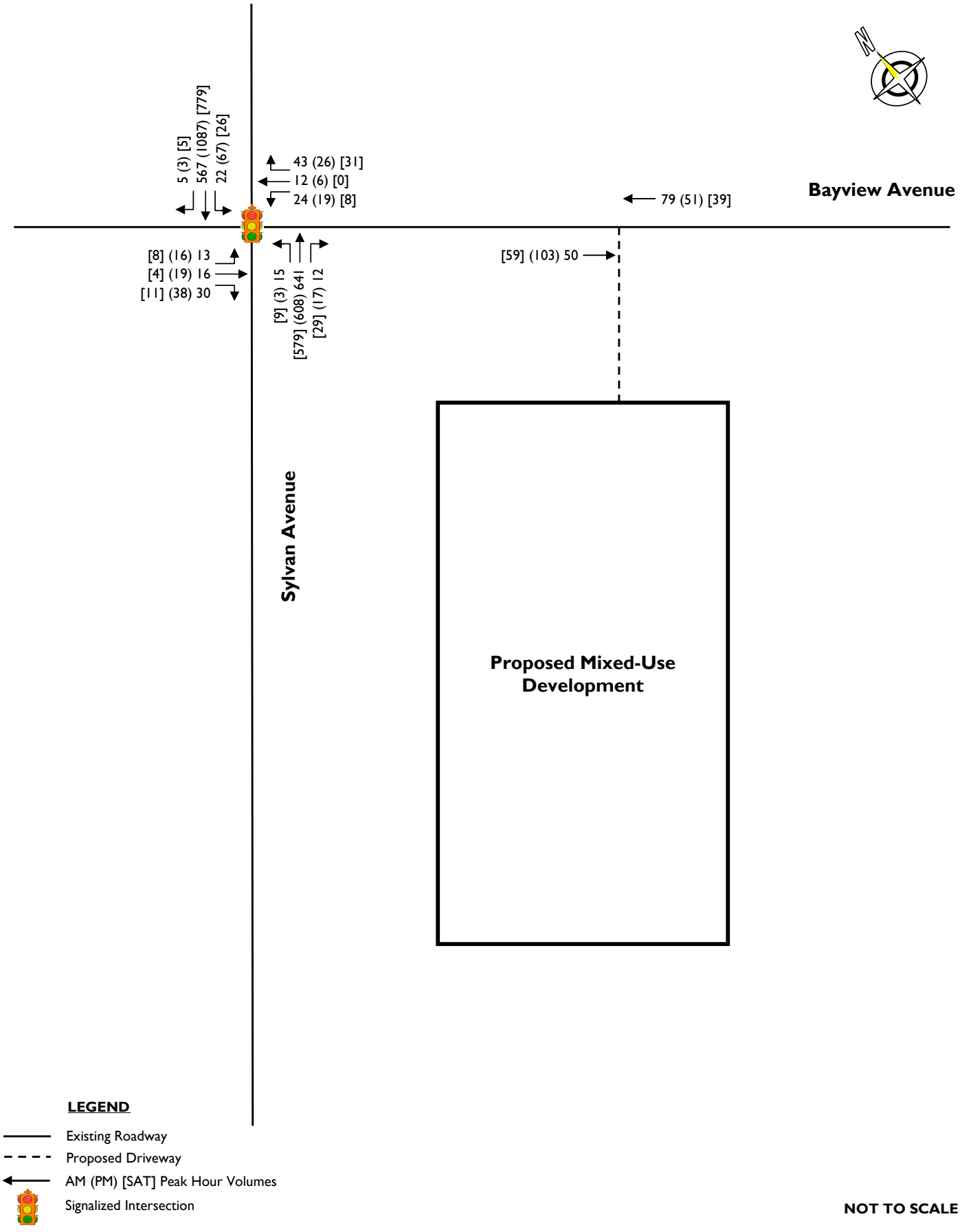
FIGURES



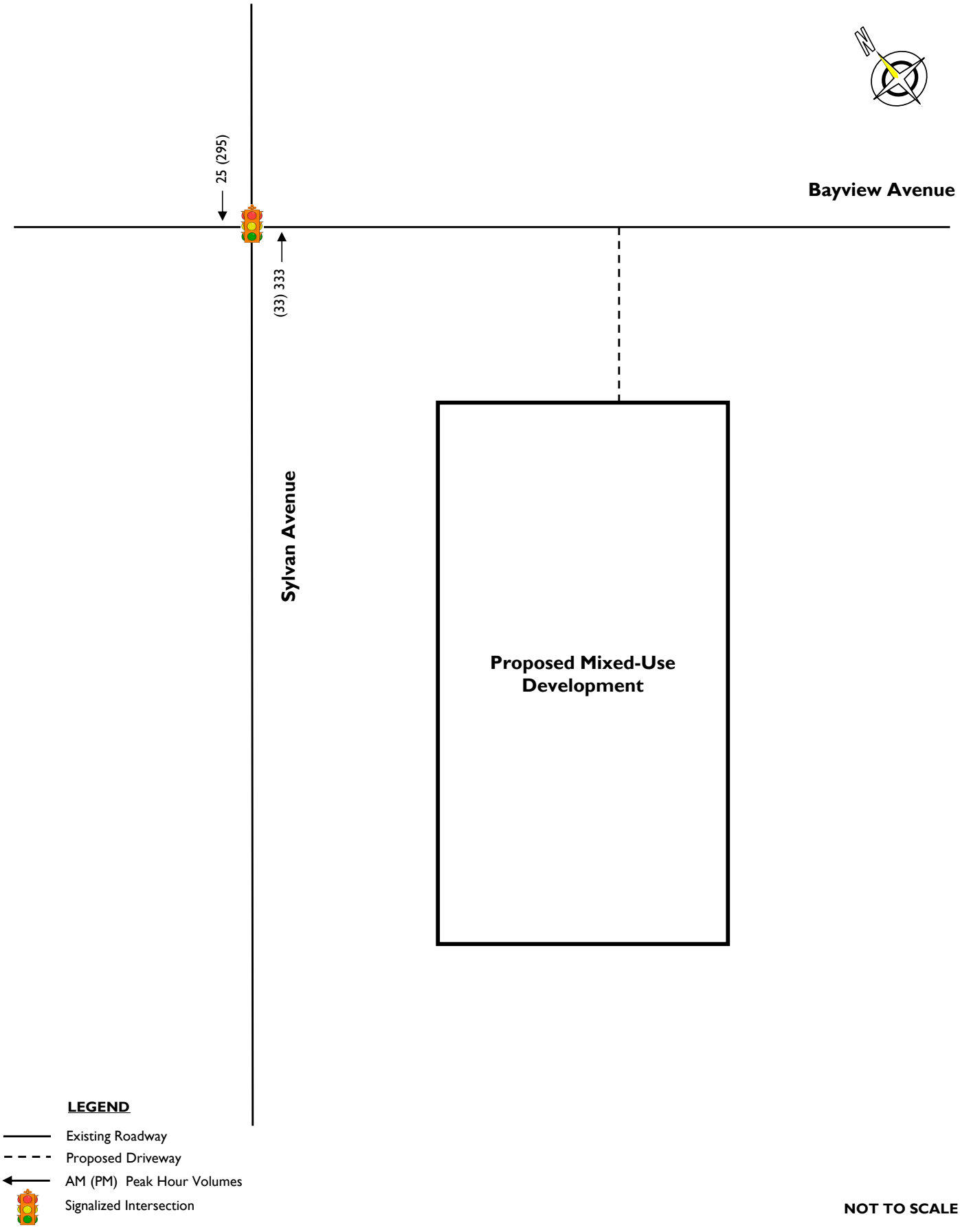
STONEFIELD	**Proposed Mixed-Use Development** **Sylvan Avenue & Bayview Avenue** **Englewood Cliffs, Bergen County, New Jersey** **Traffic Impact Study**	**FIGURE 1** **Site Location Map**



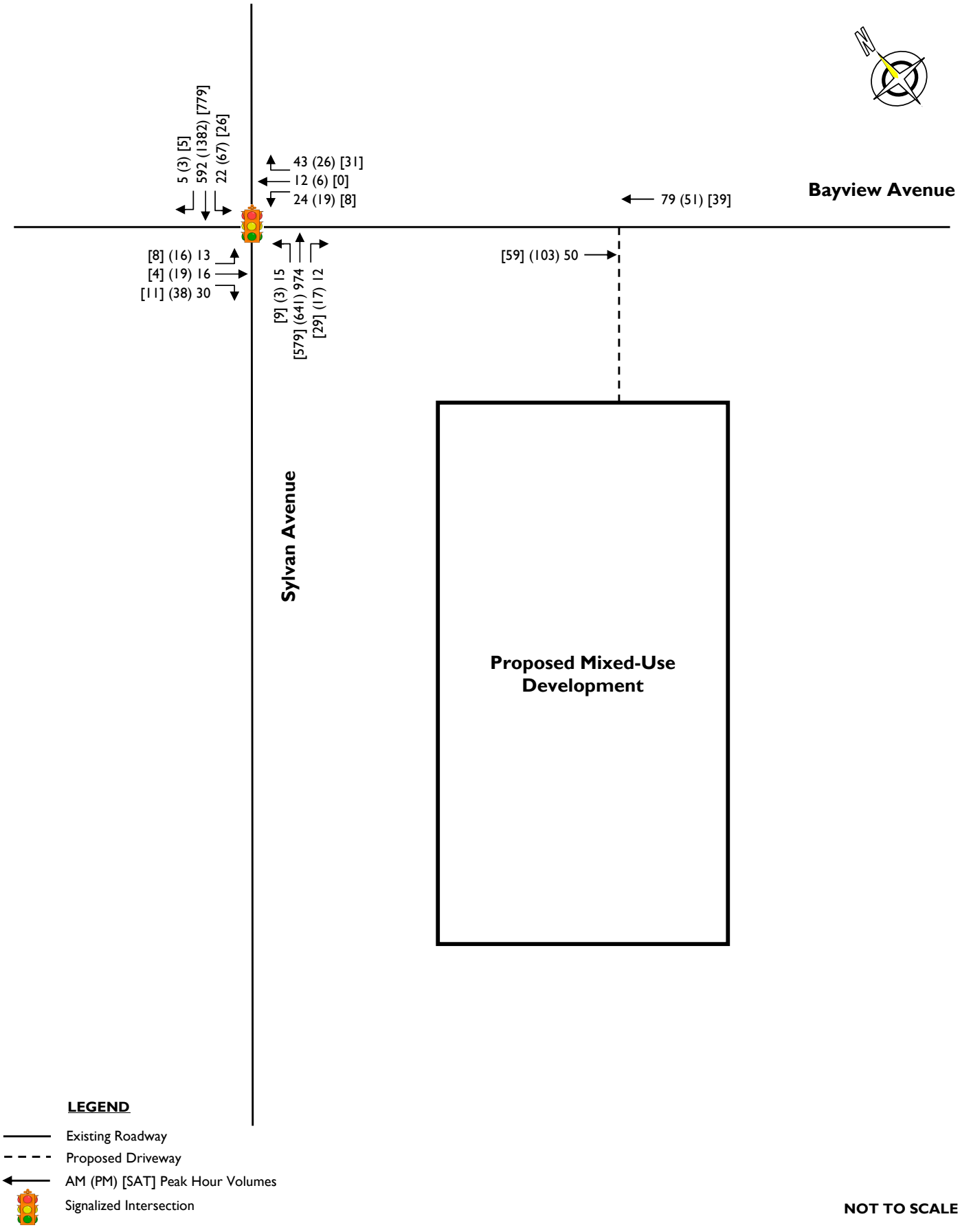
STONEFIELD	**Proposed Mixed-Use Development** **Sylvan Avenue & Bayview Avenue** **Englewood Cliffs, Bergen County, New Jersey** **Traffic Impact Study**	**FIGURE 2** **2024 Existing Traffic Volumes**



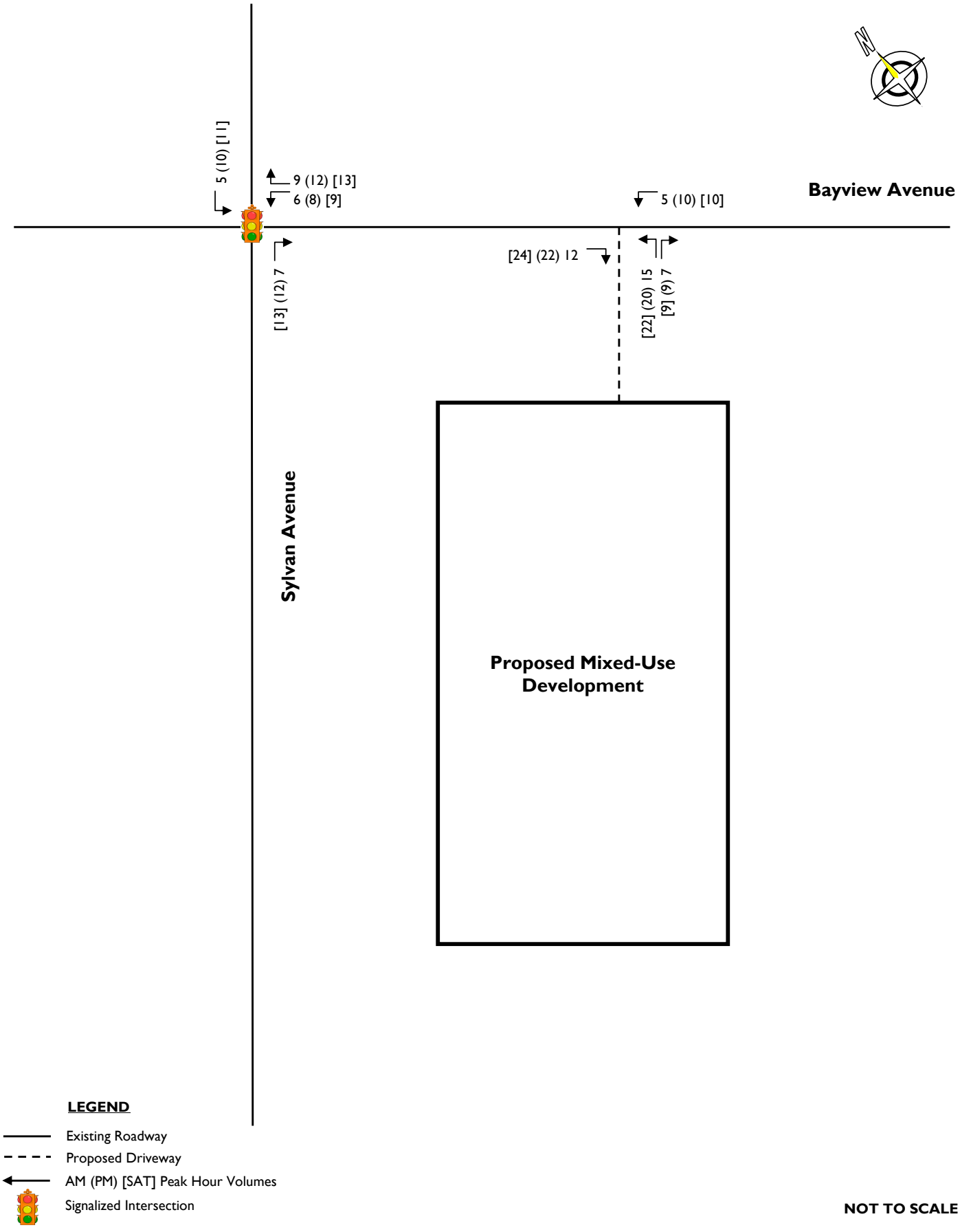
STONEFIELD	**Proposed Mixed-Use Development** **Sylvan Avenue & Bayview Avenue** **Englewood Cliffs, Bergen County, New Jersey** **Traffic Impact Study**	**FIGURE 3** **2026 Base Traffic Volumes**



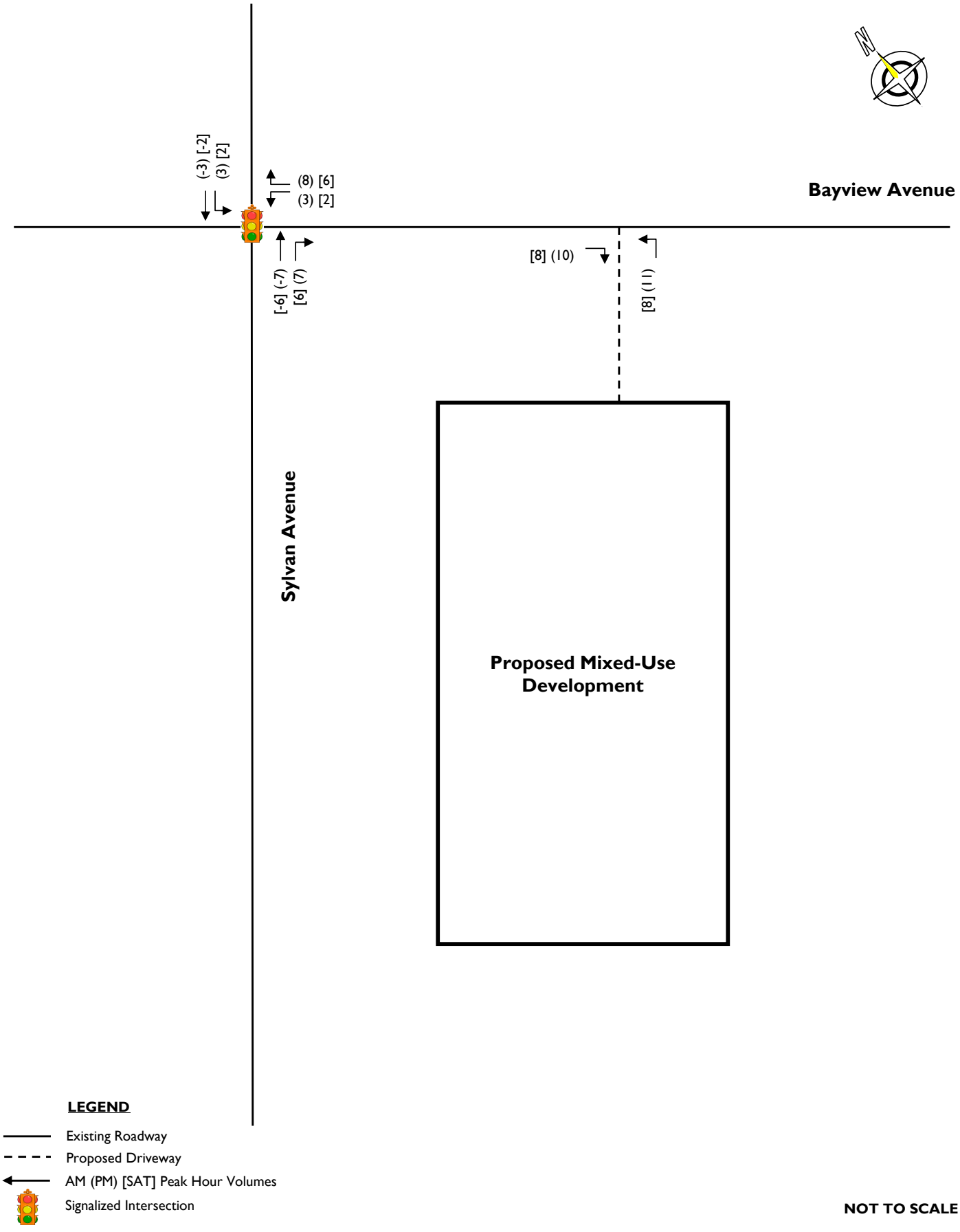
STONEFIELD	**Proposed Mixed-Use Development** **Sylvan Avenue & Bayview Avenue** **Englewood Cliffs, Bergen County, New Jersey** **Traffic Impact Study**	**FIGURE 4** **Other Planned Projects** **Future Traffic Volumes**



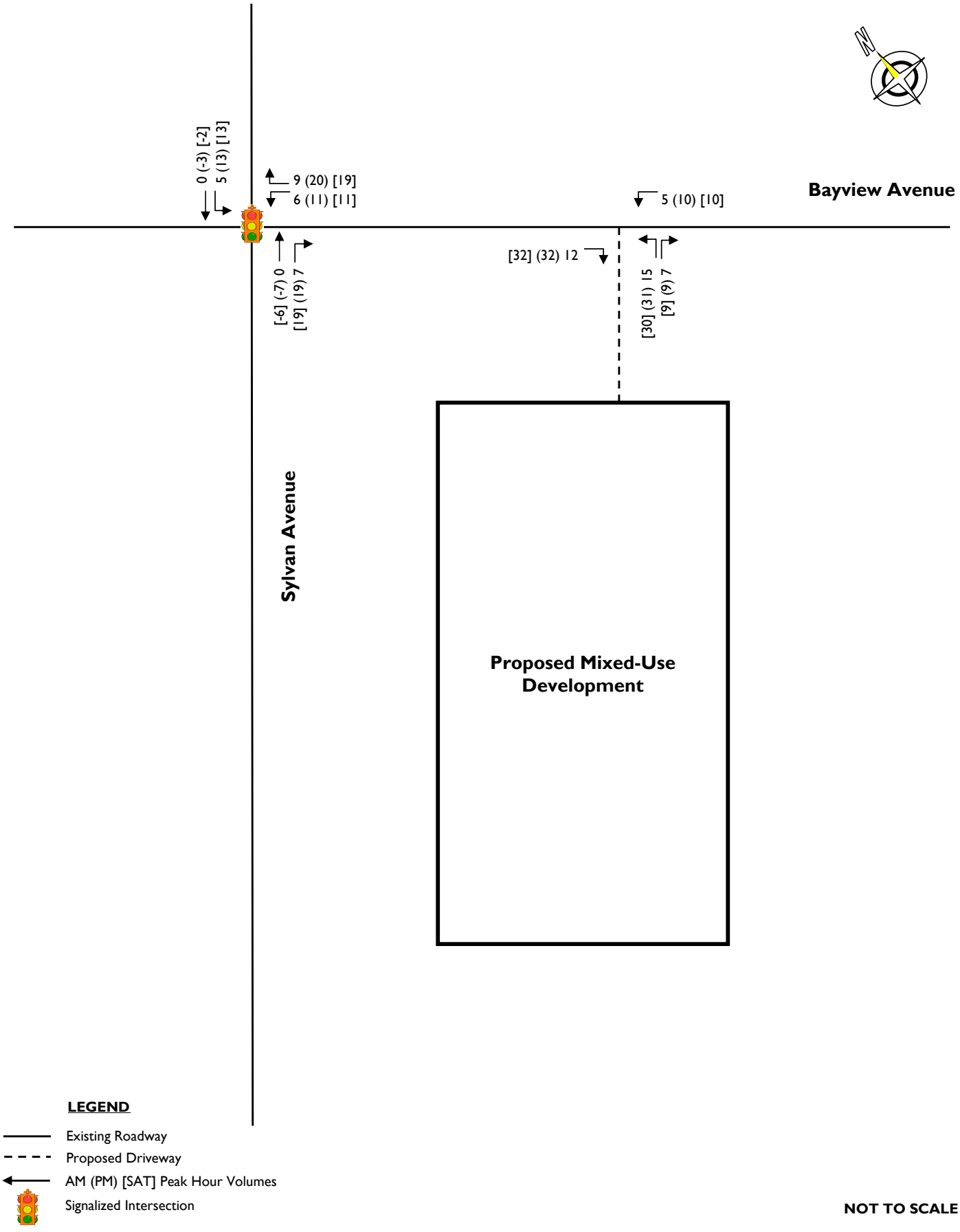
STONEFIELD	**Proposed Mixed-Use Development** **Sylvan Avenue & Bayview Avenue** **Englewood Cliffs, Bergen County, New Jersey** **Traffic Impact Study**	**FIGURE 5** **2026 No-Build Traffic Volumes**



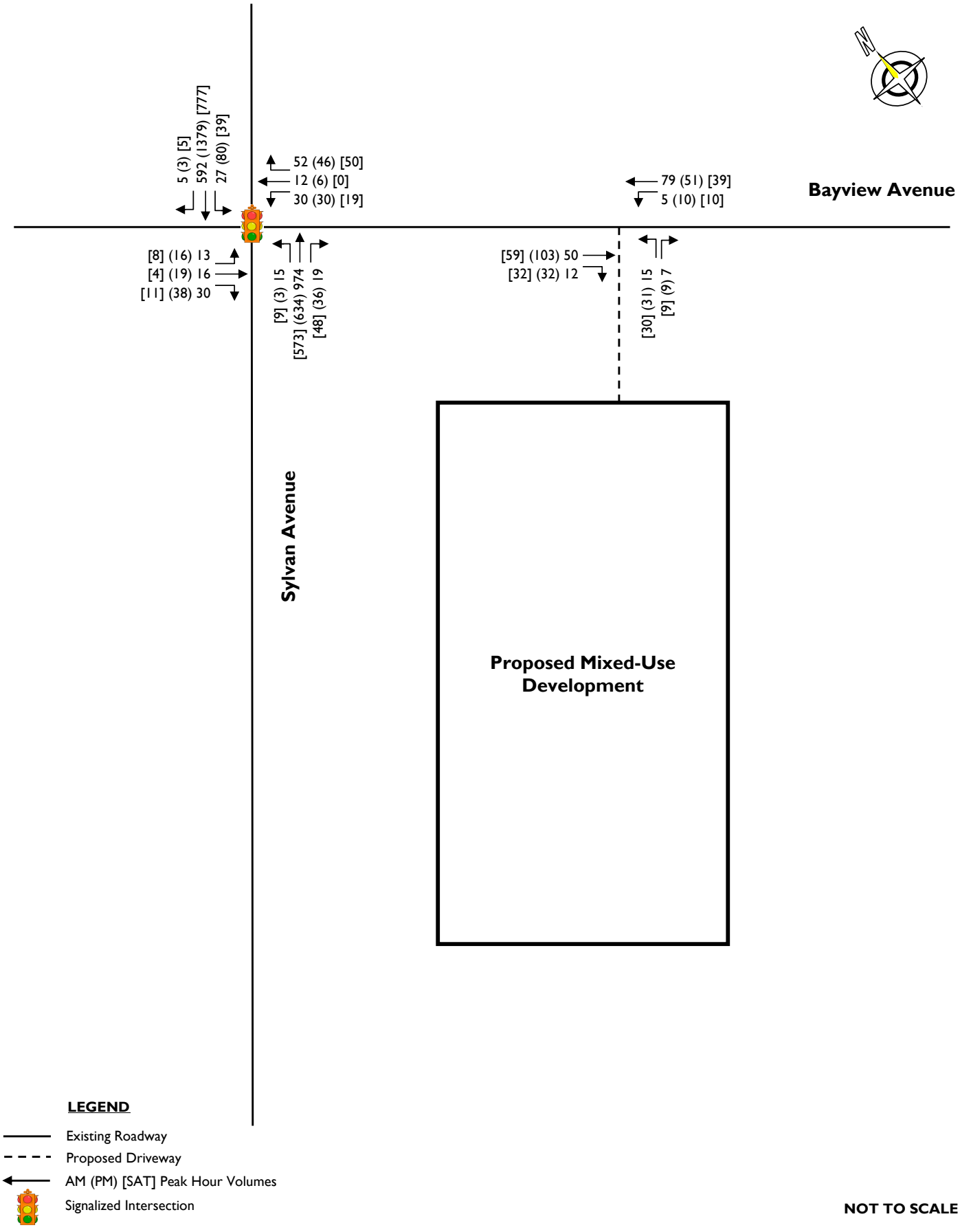
STONEFIELD	**Proposed Mixed-Use Development** **Sylvan Avenue & Bayview Avenue** **Englewood Cliffs, Bergen County, New Jersey** **Traffic Impact Study**	**FIGURE 6** **New Site-Generated Traffic Volumes**



STONEFIELD	**Proposed Mixed-Use Development** **Sylvan Avenue & Bayview Avenue** **Englewood Cliffs, Bergen County, New Jersey** **Traffic Impact Study**	**FIGURE 7** **"Pass-By" Site-Generated Traffic Volumes**



STONEFIELD	**Proposed Mixed-Use Development** **Sylvan Avenue & Bayview Avenue** **Englewood Cliffs, Bergen County, New Jersey** **Traffic Impact Study**	**FIGURE 8** **Total Site-Generated Traffic Volumes**



STONEFIELD	Proposed Mixed-Use Development Sylvan Avenue & Bayview Avenue Englewood Cliffs, Bergen County, New Jersey Traffic Impact Study	FIGURE 9 2026 Build Traffic Volumes

HIGHWAY CAPACITY ANALYSIS DETAIL SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	16	29	23	12	42	15	625	12	21	553	5
Future Volume (veh/h)	13	16	29	23	12	42	15	625	12	21	553	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	20	25	45	35	18	65	23	962	18	32	851	8
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	0	0	2	0
Cap, veh/h	64	54	77	79	32	82	71	2728	51	103	2645	25
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.81	0.81	0.81	0.81	0.81	0.81
Sat Flow, veh/h	265	615	880	402	363	938	44	3370	62	83	3267	30
Grp Volume(v), veh/h	90	0	0	118	0	0	516	0	487	444	0	447
Grp Sat Flow(s),veh/h/ln	1759	0	0	1702	0	0	1786	0	1691	1684	0	1697
Q Serve(g_s), s	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	8.3	0.0	0.0	7.3
Cycle Q Clear(g_c), s	5.2	0.0	0.0	7.1	0.0	0.0	7.8	0.0	8.3	6.4	0.0	7.3
Prop In Lane	0.22		0.50	0.30		0.55	0.04		0.04	0.07		0.02
Lane Grp Cap(c), veh/h	195	0	0	193	0	0	1481	0	1369	1399	0	1373
V/C Ratio(X)	0.46	0.00	0.00	0.61	0.00	0.00	0.35	0.00	0.36	0.32	0.00	0.33
Avail Cap(c_a), veh/h	415	0	0	406	0	0	1481	0	1369	1399	0	1373
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.9	0.0	0.0	47.7	0.0	0.0	2.7	0.0	2.7	2.5	0.0	2.6
Incr Delay (d2), s/veh	1.7	0.0	0.0	3.1	0.0	0.0	0.6	0.0	0.7	0.6	0.0	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.3	0.0	0.0	5.9	0.0	0.0	4.3	0.0	4.2	3.6	0.0	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.6	0.0	0.0	50.8	0.0	0.0	3.3	0.0	3.5	3.1	0.0	3.3
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		90			118			1003			891	
Approach Delay, s/veh		48.6			50.8			3.4			3.2	
Approach LOS		D			D			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		92.6		14.4		92.6		14.4				
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0				
Max Green Setting (Gmax), s		72.0		24.0		72.0		24.0				
Max Q Clear Time (g_c+I1), s		10.3		7.2		9.3		9.1				
Green Ext Time (p_c), s		9.3		0.3		8.0		0.3				

Intersection Summary												
HCM 7th Control Delay, s/veh			7.9									
HCM 7th LOS			A									

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	49	0	0	77	0	0
Future Vol, veh/h	49	0	0	77	0	0
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, %	0	-	-	0	0	-
Peak Hour Factor	61	61	61	61	61	61
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	80	0	0	126	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	80	0	207	80
Stage 1	-	-	-	-	80	-
Stage 2	-	-	-	-	126	-
Critical Hdwy	-	-	4.1	-	5.9	5.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1530	-	809	996
Stage 1	-	-	-	-	948	-
Stage 2	-	-	-	-	904	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1530	-	809	996
Mov Cap-2 Maneuver	-	-	-	-	809	-
Stage 1	-	-	-	-	948	-
Stage 2	-	-	-	-	904	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1530	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	19	37	19	6	25	3	593	17	65	1059	3
Future Volume (veh/h)	16	19	37	19	6	25	3	593	17	65	1059	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	25	29	57	29	9	38	5	912	26	100	1629	5
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	0	0	2	0
Cap, veh/h	65	46	73	87	30	71	37	2792	79	160	2512	8
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.81	0.81	0.81	0.81	0.81	0.81
Sat Flow, veh/h	280	551	877	488	355	843	4	3433	97	151	3089	10
Grp Volume(v), veh/h	111	0	0	76	0	0	494	0	449	875	0	859
Grp Sat Flow(s),veh/h/ln	1709	0	0	1687	0	0	1850	0	1684	1549	0	1700
Q Serve(g_s), s	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.3	10.9	0.0	20.4
Cycle Q Clear(g_c), s	6.7	0.0	0.0	4.5	0.0	0.0	7.2	0.0	7.3	21.6	0.0	20.4
Prop In Lane	0.23		0.51	0.38		0.50	0.01		0.06	0.11		0.01
Lane Grp Cap(c), veh/h	184	0	0	188	0	0	1539	0	1370	1298	0	1383
V/C Ratio(X)	0.60	0.00	0.00	0.40	0.00	0.00	0.32	0.00	0.33	0.67	0.00	0.62
Avail Cap(c_a), veh/h	411	0	0	401	0	0	1539	0	1370	1298	0	1383
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.9	0.0	0.0	47.0	0.0	0.0	2.5	0.0	2.5	3.6	0.0	3.8
Incr Delay (d2), s/veh	3.1	0.0	0.0	1.4	0.0	0.0	0.6	0.0	0.6	2.8	0.0	2.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.5	0.0	0.0	3.6	0.0	0.0	3.9	0.0	3.6	9.7	0.0	9.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	51.1	0.0	0.0	48.4	0.0	0.0	3.1	0.0	3.2	6.5	0.0	5.9
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		111			76			943			1734	
Approach Delay, s/veh		51.1			48.4			3.1			6.2	
Approach LOS		D			D			A			A	

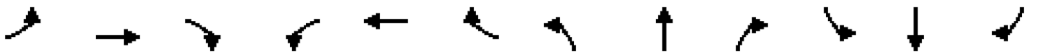
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		93.0		14.0		93.0		14.0				
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0				
Max Green Setting (Gmax), s		72.0		24.0		72.0		24.0				
Max Q Clear Time (g_c+I1), s		9.3		8.7		23.6		6.5				
Green Ext Time (p_c), s		8.4		0.3		24.9		0.2				

Intersection Summary												
HCM 7th Control Delay, s/veh			8.0									
HCM 7th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	4	11	8	0	30	9	565	28	25	759	5
Future Volume (veh/h)	8	4	11	8	0	30	9	565	28	25	759	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	12	6	17	12	0	46	14	869	43	38	1168	8
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	0	0	2	0
Cap, veh/h	69	30	50	54	7	78	54	2752	135	94	2785	19
Arrive On Green	0.06	0.06	0.06	0.06	0.00	0.06	0.84	0.84	0.84	0.84	0.84	0.84
Sat Flow, veh/h	382	490	824	216	115	1267	23	3293	162	70	3332	23
Grp Volume(v), veh/h	35	0	0	58	0	0	481	0	445	614	0	600
Grp Sat Flow(s),veh/h/ln	1696	0	0	1597	0	0	1804	0	1673	1727	0	1698
Q Serve(g_s), s	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	6.4	0.0	0.0	9.6
Cycle Q Clear(g_c), s	2.1	0.0	0.0	3.7	0.0	0.0	6.1	0.0	6.4	8.6	0.0	9.6
Prop In Lane	0.34		0.49	0.21		0.79	0.03		0.10	0.06		0.01
Lane Grp Cap(c), veh/h	149	0	0	139	0	0	1542	0	1398	1479	0	1419
V/C Ratio(X)	0.23	0.00	0.00	0.42	0.00	0.00	0.31	0.00	0.32	0.42	0.00	0.42
Avail Cap(c_a), veh/h	404	0	0	393	0	0	1542	0	1398	1479	0	1419
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.1	0.0	0.0	48.9	0.0	0.0	1.9	0.0	2.0	2.1	0.0	2.2
Incr Delay (d2), s/veh	0.8	0.0	0.0	2.0	0.0	0.0	0.5	0.0	0.6	0.9	0.0	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	0.0	0.0	2.9	0.0	0.0	3.0	0.0	2.8	4.3	0.0	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.9	0.0	0.0	50.9	0.0	0.0	2.5	0.0	2.6	3.0	0.0	3.2
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		35			58			926			1214	
Approach Delay, s/veh		48.9			50.9			2.5			3.1	
Approach LOS		D			D			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		95.4		11.6		95.4		11.6				
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0				
Max Green Setting (Gmax), s		72.0		24.0		72.0		24.0				
Max Q Clear Time (g_c+I1), s		8.4		4.1		11.6		5.7				
Green Ext Time (p_c), s		8.3		0.1		13.0		0.1				

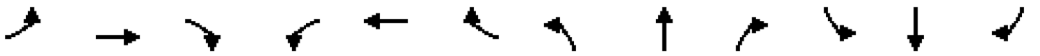
Intersection Summary												
HCM 7th Control Delay, s/veh			4.8									
HCM 7th LOS			A									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	16	30	24	12	43	15	974	12	22	592	5
Future Volume (veh/h)	13	16	30	24	12	43	15	974	12	22	592	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	20	25	46	37	18	66	23	1498	18	34	911	8
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	0	0	2	0
Cap, veh/h	64	55	80	81	32	83	56	2781	33	98	2524	22
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.81	0.81	0.81	0.81	0.81	0.81
Sat Flow, veh/h	260	609	888	418	355	927	26	3444	41	76	3126	27
Grp Volume(v), veh/h	91	0	0	121	0	0	800	0	739	453	0	500
Grp Sat Flow(s),veh/h/ln	1757	0	0	1700	0	0	1816	0	1695	1532	0	1697
Q Serve(g_s), s	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	15.9	0.0	0.0	8.6
Cycle Q Clear(g_c), s	5.2	0.0	0.0	7.2	0.0	0.0	15.4	0.0	15.9	6.6	0.0	8.6
Prop In Lane	0.22		0.51	0.31		0.55	0.03		0.02	0.08		0.02
Lane Grp Cap(c), veh/h	198	0	0	196	0	0	1502	0	1369	1273	0	1371
V/C Ratio(X)	0.46	0.00	0.00	0.62	0.00	0.00	0.53	0.00	0.54	0.36	0.00	0.37
Avail Cap(c_a), veh/h	415	0	0	406	0	0	1502	0	1369	1273	0	1371
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.8	0.0	0.0	47.6	0.0	0.0	3.5	0.0	3.5	2.6	0.0	2.8
Incr Delay (d2), s/veh	1.6	0.0	0.0	3.1	0.0	0.0	1.4	0.0	1.5	0.8	0.0	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.4	0.0	0.0	6.0	0.0	0.0	8.4	0.0	8.1	3.8	0.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.4	0.0	0.0	50.7	0.0	0.0	4.8	0.0	5.0	3.4	0.0	3.6
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		91			121			1539			953	
Approach Delay, s/veh		48.4			50.7			4.9			3.5	
Approach LOS		D			D			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		92.4		14.6		92.4		14.6				
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0				
Max Green Setting (Gmax), s		72.0		24.0		72.0		24.0				
Max Q Clear Time (g_c+I1), s		17.9		7.2		10.6		9.2				
Green Ext Time (p_c), s		19.5		0.3		9.4		0.4				

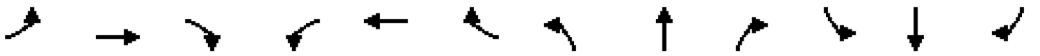
Intersection Summary	
HCM 7th Control Delay, s/veh	7.9
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	19	38	19	6	26	3	641	17	67	1382	3
Future Volume (veh/h)	16	19	38	19	6	26	3	641	17	67	1382	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	25	29	58	29	9	40	5	986	26	103	2126	5
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	0	0	2	0
Cap, veh/h	65	46	75	86	29	73	37	2788	73	134	2568	7
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.81	0.81	0.81	0.81	0.81	0.81
Sat Flow, veh/h	278	547	886	475	347	865	4	3430	90	120	3159	8
Grp Volume(v), veh/h	112	0	0	78	0	0	531	0	486	1171	0	1063
Grp Sat Flow(s),veh/h/ln	1711	0	0	1687	0	0	1838	0	1686	1587	0	1701
Q Serve(g_s), s	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.1	43.2	0.0	33.4
Cycle Q Clear(g_c), s	6.7	0.0	0.0	4.6	0.0	0.0	7.9	0.0	8.1	53.3	0.0	33.4
Prop In Lane	0.22		0.52	0.37		0.51	0.01		0.05	0.09		0.00
Lane Grp Cap(c), veh/h	185	0	0	188	0	0	1528	0	1370	1326	0	1382
V/C Ratio(X)	0.60	0.00	0.00	0.41	0.00	0.00	0.35	0.00	0.35	0.88	0.00	0.77
Avail Cap(c_a), veh/h	411	0	0	401	0	0	1528	0	1370	1326	0	1382
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.9	0.0	0.0	47.0	0.0	0.0	2.6	0.0	2.6	6.3	0.0	5.0
Incr Delay (d2), s/veh	3.2	0.0	0.0	1.5	0.0	0.0	0.6	0.0	0.7	8.8	0.0	4.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.6	0.0	0.0	3.7	0.0	0.0	4.4	0.0	4.1	20.6	0.0	15.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	51.0	0.0	0.0	48.4	0.0	0.0	3.2	0.0	3.4	15.1	0.0	9.2
LnGrp LOS	D			D			A		A	B		A
Approach Vol, veh/h		112			78			1017			2234	
Approach Delay, s/veh		51.0			48.4			3.3			12.3	
Approach LOS		D			D			A			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		93.0		14.0		93.0		14.0				
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0				
Max Green Setting (Gmax), s		72.0		24.0		72.0		24.0				
Max Q Clear Time (g_c+I1), s		10.1		8.7		55.3		6.6				
Green Ext Time (p_c), s		9.6		0.3		15.0		0.2				

Intersection Summary												
HCM 7th Control Delay, s/veh			11.7									
HCM 7th LOS			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	4	11	8	0	31	9	579	29	26	779	5
Future Volume (veh/h)	8	4	11	8	0	31	9	579	29	26	779	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	12	6	17	12	0	48	14	891	45	40	1198	8
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	0	0	2	0
Cap, veh/h	69	30	51	53	7	79	53	2749	138	96	2775	18
Arrive On Green	0.06	0.06	0.06	0.06	0.00	0.06	0.84	0.84	0.84	0.84	0.84	0.84
Sat Flow, veh/h	383	492	826	209	111	1278	22	3290	165	72	3321	22
Grp Volume(v), veh/h	35	0	0	60	0	0	493	0	457	629	0	617
Grp Sat Flow(s),veh/h/ln	1701	0	0	1598	0	0	1804	0	1672	1717	0	1698
Q Serve(g_s), s	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	6.6	0.0	0.0	10.0
Cycle Q Clear(g_c), s	2.1	0.0	0.0	3.9	0.0	0.0	6.3	0.0	6.6	8.9	0.0	10.0
Prop In Lane	0.34		0.49	0.20		0.80	0.03		0.10	0.06		0.01
Lane Grp Cap(c), veh/h	150	0	0	139	0	0	1542	0	1398	1471	0	1419
V/C Ratio(X)	0.23	0.00	0.00	0.43	0.00	0.00	0.32	0.00	0.33	0.43	0.00	0.43
Avail Cap(c_a), veh/h	404	0	0	394	0	0	1542	0	1398	1471	0	1419
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.1	0.0	0.0	48.9	0.0	0.0	2.0	0.0	2.0	2.2	0.0	2.3
Incr Delay (d2), s/veh	0.8	0.0	0.0	2.1	0.0	0.0	0.5	0.0	0.6	0.9	0.0	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	0.0	0.0	3.0	0.0	0.0	3.1	0.0	2.9	4.4	0.0	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.9	0.0	0.0	51.0	0.0	0.0	2.5	0.0	2.6	3.1	0.0	3.2
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		35			60			950			1246	
Approach Delay, s/veh		48.9			51.0			2.6			3.2	
Approach LOS		D			D			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		95.4		11.6		95.4		11.6				
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0				
Max Green Setting (Gmax), s		72.0		24.0		72.0		24.0				
Max Q Clear Time (g_c+I1), s		8.6		4.1		12.0		5.9				
Green Ext Time (p_c), s		8.6		0.1		13.6		0.2				

Intersection Summary												
HCM 7th Control Delay, s/veh			4.9									
HCM 7th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	16	30	30	12	52	15	974	19	27	592	5
Future Volume (veh/h)	13	16	30	30	12	52	15	974	19	27	592	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	20	25	46	46	18	80	23	1498	29	42	911	8
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	0	0	2	0
Cap, veh/h	67	65	92	90	32	98	55	2705	52	114	2383	21
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.79	0.79	0.79	0.79	0.79	0.79
Sat Flow, veh/h	244	615	877	439	304	929	26	3415	66	97	3008	26
Grp Volume(v), veh/h	91	0	0	144	0	0	806	0	744	441	0	520
Grp Sat Flow(s),veh/h/ln	1736	0	0	1672	0	0	1817	0	1690	1434	0	1697
Q Serve(g_s), s	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	17.5	0.0	0.0	9.8
Cycle Q Clear(g_c), s	5.2	0.0	0.0	8.8	0.0	0.0	16.8	0.0	17.5	6.9	0.0	9.8
Prop In Lane	0.22		0.51	0.32		0.56	0.03		0.04	0.10		0.02
Lane Grp Cap(c), veh/h	223	0	0	220	0	0	1474	0	1339	1173	0	1345
V/C Ratio(X)	0.41	0.00	0.00	0.65	0.00	0.00	0.55	0.00	0.56	0.38	0.00	0.39
Avail Cap(c_a), veh/h	414	0	0	404	0	0	1474	0	1339	1173	0	1345
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.2	0.0	0.0	46.7	0.0	0.0	4.1	0.0	4.1	3.0	0.0	3.3
Incr Delay (d2), s/veh	1.2	0.0	0.0	3.3	0.0	0.0	1.5	0.0	1.7	0.9	0.0	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.3	0.0	0.0	7.1	0.0	0.0	9.5	0.0	9.1	4.2	0.0	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	46.4	0.0	0.0	49.9	0.0	0.0	5.5	0.0	5.8	3.9	0.0	4.2
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		91			144			1550			961	
Approach Delay, s/veh		46.4			49.9			5.7			4.1	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	90.8	16.2	90.8	16.2
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0
Max Green Setting (Gmax), s	72.0	24.0	72.0	24.0
Max Q Clear Time (g_c+I1), s	19.5	7.2	11.8	10.8
Green Ext Time (p_c), s	19.6	0.3	9.8	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	8.8
HCM 7th LOS	A

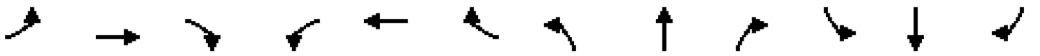
Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	50	12	5	79	15	7
Future Vol, veh/h	50	12	5	79	15	7
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, %	0	-	-	0	0	-
Peak Hour Factor	61	61	61	61	61	61
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	82	20	8	130	25	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	102	0	238	92
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	146	-
Critical Hdwy	-	-	4.1	-	5.9	5.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1503	-	780	984
Stage 1	-	-	-	-	937	-
Stage 2	-	-	-	-	886	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1503	-	776	984
Mov Cap-2 Maneuver	-	-	-	-	776	-
Stage 1	-	-	-	-	937	-
Stage 2	-	-	-	-	881	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.44	9.52
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	832	-	-	107	-
HCM Lane V/C Ratio	0.043	-	-	0.005	-
HCM Control Delay (s/veh)	9.5	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	19	38	30	6	46	3	634	36	80	1379	3
Future Volume (veh/h)	16	19	38	30	6	46	3	634	36	80	1379	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	25	29	58	46	9	71	5	975	55	123	2122	5
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	0	0	2	0
Cap, veh/h	67	54	86	94	21	88	37	2659	149	150	2441	6
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.80	0.80	0.80	0.80	0.80	0.80
Sat Flow, veh/h	273	563	898	500	215	923	4	3317	186	141	3045	8
Grp Volume(v), veh/h	112	0	0	126	0	0	543	0	492	1168	0	1082
Grp Sat Flow(s),veh/h/ln	1735	0	0	1638	0	0	1839	0	1668	1493	0	1701
Q Serve(g_s), s	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	8.9	67.3	0.0	37.1
Cycle Q Clear(g_c), s	6.5	0.0	0.0	7.9	0.0	0.0	8.7	0.0	8.9	76.2	0.0	37.1
Prop In Lane	0.22		0.52	0.37		0.56	0.01		0.11	0.11		0.00
Lane Grp Cap(c), veh/h	207	0	0	203	0	0	1508	0	1337	1234	0	1363
V/C Ratio(X)	0.54	0.00	0.00	0.62	0.00	0.00	0.36	0.00	0.37	0.95	0.00	0.79
Avail Cap(c_a), veh/h	413	0	0	397	0	0	1508	0	1337	1234	0	1363
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.7	0.0	0.0	47.2	0.0	0.0	3.0	0.0	3.0	9.5	0.0	5.8
Incr Delay (d2), s/veh	2.2	0.0	0.0	3.1	0.0	0.0	0.7	0.0	0.8	15.6	0.0	4.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.4	0.0	0.0	6.2	0.0	0.0	5.0	0.0	4.6	30.5	0.0	17.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.9	0.0	0.0	50.4	0.0	0.0	3.6	0.0	3.8	25.2	0.0	10.6
LnGrp LOS	D			D			A		A	C		B
Approach Vol, veh/h		112			126			1035			2250	
Approach Delay, s/veh		48.9			50.4			3.7			18.2	
Approach LOS		D			D			A			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		91.8		15.2		91.8		15.2				
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0				
Max Green Setting (Gmax), s		72.0		24.0		72.0		24.0				
Max Q Clear Time (g_c+I1), s		10.9		8.5		78.2		9.9				
Green Ext Time (p_c), s		9.9		0.3		0.0		0.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			16.0									
HCM 7th LOS			B									

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	103	32	10	51	31	9
Future Vol, veh/h	103	32	10	51	31	9
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, %	0	-	-	0	0	-
Peak Hour Factor	61	61	61	61	61	61
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	169	52	16	84	51	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	221	0	311	195
Stage 1	-	-	-	-	195	-
Stage 2	-	-	-	-	116	-
Critical Hdwy	-	-	4.1	-	5.9	5.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1360	-	716	875
Stage 1	-	-	-	-	843	-
Stage 2	-	-	-	-	914	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1360	-	706	875
Mov Cap-2 Maneuver	-	-	-	-	706	-
Stage 1	-	-	-	-	843	-
Stage 2	-	-	-	-	902	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.26	10.35
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	738	-	-	295	-
HCM Lane V/C Ratio	0.089	-	-	0.012	-
HCM Control Delay (s/veh)	10.3	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	4	11	19	0	50	9	573	48	39	777	5
Future Volume (veh/h)	8	4	11	19	0	50	9	573	48	39	777	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	12	6	17	29	0	77	14	882	74	60	1195	8
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	0	0	2	0
Cap, veh/h	78	44	73	70	9	98	51	2580	215	132	2575	17
Arrive On Green	0.09	0.09	0.09	0.09	0.00	0.09	0.81	0.81	0.81	0.81	0.81	0.81
Sat Flow, veh/h	385	514	849	323	110	1149	20	3178	264	118	3172	21
Grp Volume(v), veh/h	35	0	0	106	0	0	507	0	463	620	0	643
Grp Sat Flow(s),veh/h/ln	1749	0	0	1581	0	0	1808	0	1654	1613	0	1698
Q Serve(g_s), s	0.0	0.0	0.0	4.8	0.0	0.0	0.0	0.0	7.8	0.0	0.0	12.3
Cycle Q Clear(g_c), s	2.0	0.0	0.0	7.0	0.0	0.0	7.5	0.0	7.8	10.0	0.0	12.3
Prop In Lane	0.34		0.49	0.27		0.73	0.03		0.16	0.10		0.01
Lane Grp Cap(c), veh/h	195	0	0	178	0	0	1502	0	1343	1346	0	1378
V/C Ratio(X)	0.18	0.00	0.00	0.60	0.00	0.00	0.34	0.00	0.34	0.46	0.00	0.47
Avail Cap(c_a), veh/h	409	0	0	393	0	0	1502	0	1343	1346	0	1378
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.7	0.0	0.0	47.9	0.0	0.0	2.6	0.0	2.6	2.8	0.0	3.1
Incr Delay (d2), s/veh	0.4	0.0	0.0	3.2	0.0	0.0	0.6	0.0	0.7	1.1	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	0.0	0.0	5.3	0.0	0.0	4.1	0.0	3.9	5.7	0.0	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	46.1	0.0	0.0	51.0	0.0	0.0	3.2	0.0	3.3	4.0	0.0	4.2
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		35			106			970			1263	
Approach Delay, s/veh		46.1			51.0			3.3			4.1	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	92.9	14.1	92.9	14.1
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0
Max Green Setting (Gmax), s	72.0	24.0	72.0	24.0
Max Q Clear Time (g_c+I1), s	9.8	4.0	14.3	9.0
Green Ext Time (p_c), s	8.9	0.1	14.3	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	6.5
HCM 7th LOS	A

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	59	32	10	39	30	9
Future Vol, veh/h	59	32	10	39	30	9
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, %	0	-	-	0	0	-
Peak Hour Factor	61	61	61	61	61	61
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	97	52	16	64	49	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	149	0	220	123
Stage 1	-	-	-	-	123	-
Stage 2	-	-	-	-	97	-
Critical Hdwy	-	-	4.1	-	5.9	5.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1445	-	797	949
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	932	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1445	-	788	949
Mov Cap-2 Maneuver	-	-	-	-	788	-
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	921	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.53	9.76
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	820	-	-	367	-
HCM Lane V/C Ratio	0.078	-	-	0.011	-
HCM Control Delay (s/veh)	9.8	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

TRAFFIC SIGNAL TIMING DIRECTIVE

Englewood Cliffs Borough Bergen County

90 SECOND BACKGROUND CYCLE

PHASE	1-6	7-10	11,13,16,17	12,14,15,18	TIME
Without Pedestrian Actuation					
1. Route US 9W RO W	G	R	DW	W	66-49
Pedestrian Clearance	G	R	DW	FDW	6
Change	Y	R	DW	DW	4*
Clearance	R	R	DW	DW	2
2. Bayview Avenue R O W	R	G	DW	DW	7-24
Change	R	Y	DW	DW	3
Clearance	R	R	DW	DW	2
With Pedestrian Actuation					
1. Route US 9W R O W	G	R	DW	W	53-49
Pedestrian	G	R	DW	FDW	6
Change	Y	R	DW	DW	4*
Clearance	R	R	DW	DW	2
2. Bayview Avenue R O W	R	G	W	DW	10
Pedestrian	R	G	FDW	DW	10
Vehicle Extension	R	G	DW	DW	04
Change	R	Y	DW	DW	3
Clearance	R	R	DW	DW	2
Emergency Flash:	Y	R			

*An offset of eight (8) seconds is to be maintained from the beginning of yellow to Route US 9W traffic at Palisades Avenue to the beginning of yellow to Route US 9W traffic at this intersection.

Disconnect the memory circuit and employ a two (2) second vehicle extension interval on Phase 2.

The manual control is to be connected.

Between the hours of 10:00 p.m. and 6:00 a.m., daily, the signal is to operate on a "Free-Float" basis, with a minimum green time of thirty (30) seconds (walk) to Phase 1 traffic.