
TRAFFIC STUDY

MARIANI GARDENS REDEVELOPMENT

**45 BEDFORD ROAD
TOWN OF NORTH CASTLE, NEW YORK**

Prepared for:

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45 Bedford Road
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Prepared by:



JMC Project **18053**

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I. INTRODUCTION

This Traffic Study has been prepared to assess existing conditions as well as future traffic operations in association with the proposed redevelopment of Mariani Gardens in the Town of North Castle, NY. The property is located in the southwest corner at the intersection of Maple Avenue and Bedford Road. The location of the site is illustrated on the figures included in Appendix B. This traffic study has been revised to address comments mentioned by the Town's Traffic Consultant (Frederick P. Clark Associates, Inc.) in their review memorandum dated 01/11/2019.

The property currently contains a 4.21 acre garden center nursery with ancillary storage, a 6,600 s.f. office space, a former 3,610 s.f. retail garden market space, and a former 3,500 s.f. wine bar/café space. There are three existing buildings on the property as well as surface parking spaces.

The applicant proposes to raze the existing buildings on the property and construct a multifamily residential development. The development proposes 50 townhouses/apartments. The townhouses propose to have a one or two car garage depending on the unit type. There are 120 proposed parking spaces (6 of which are landbanked) for the redevelopment which is a mix of covered and uncovered parking spaces.

The property is currently served by a single full movement driveway onto Bedford Road. Under proposed conditions, the full movement driveway is proposed to be reconstructed in the same location as the existing driveway.

II. EXISTING CONDITIONS

A. Existing Roadway Network

JMC performed field reconnaissance at the site and adjoining roadway network in order to gather existing conditions data. The field work included a determination of lane widths,

striping, horizontal and vertical alignments, signs, traffic signal phasing and timings, speed limits, pedestrian activities, traffic flows, on street parking, sidewalks, curbing, etc.

NY 22 is a state highway which generally traverses in a north/south direction. The functional classification by the NYSDOT of NY 22 is a principal arterial other within an urban area. Within the study area, it is a divided highway providing two lanes in each direction and widening at several intersections to provide additional turning lanes. On-street parking is prohibited on both sides of the highway. It has a posted speed limit of 55 mph within the study area.

NY 128 (Main Street) is a state highway which extends to Mount Kisco in the north and Armonk in the south. The functional classification by the New York State Department of Transportation (NYSDOT) of NY 128 is a minor arterial within an urban area. NY 128 provides one travel lane in each direction. The highway has a posted speed limit of 30 mph within the study area.

Maple Avenue is a town road which connects to NY 22 in the south and continues north and turns west to connect to NY 128. It has a posted speed limit of 30 mph and generally provides one travel lane in each direction.

Bedford Road is an east/west town road which provides one travel lane in each direction. It has a posted speed limit of 30 mph.

In order to evaluate the changes in traffic associated with the proposed redevelopment, the following intersections have been analyzed:

1. NY 22 & Maple Avenue with Business Park Drive
2. Maple Avenue & Bedford Road
3. Bedford Road & Mariani Gardens Driveway
4. NY 128 & Bedford Road with Kent Place

The intersection of NY 22 & Maple Avenue is a signalized four-legged intersection. The eastbound approach provides a 585 foot long, 11 foot wide left turn lane and two 12 foot wide thru lanes with a shared right turn. The westbound approach provides a 265 foot long, 11 foot wide left turn lane, two 12 foot wide thru lanes, and a 225 foot long, 12 foot wide right turn lane. The northbound approach provides an 11 foot wide thru lane with shared left turns and a 60 foot long, 11 foot wide right turn lane. The southbound approach provides a 60 foot long, 11 foot wide left turn lane and an 11 foot wide thru lane with shared right turns.

The intersection of Maple Avenue & Bedford Road is a signalized four-legged intersection. The eastbound approach provides a 14-foot wide travel lane with shared left and right turn movements. The westbound approach provides an 18 foot wide travel lane which tapers down to a 14-foot wide lane closer to the intersection providing shared turning movements. The northbound approach provides an 18 foot wide travel lane which widens to 20 feet wide. Due to the wide approach, it operates as a left/thru lane and a separate right turn lane; however, the study analyses this approach as a single lane approach. The southbound approach provides a 14 foot wide travel lane with shared left and right turn movements.

Mariani Gardens driveway intersects Bedford Road at an unsignalized T-type intersection. Bedford Road provides a single travel lane in each direction with shared turning movements. The driveway provides a single approach lane with shared turning movements. Mariani Gardens driveway is controlled by a stop sign.

NY 128 intersects Bedford Road and Kent Place as an unsignalized four-legged intersection. The northbound approach provides a 14 foot wide thru lane with shared turns and the southbound approach provides an 11 foot wide thru lane with shared turns. Bedford Road provides an 11 foot wide thru lane with shared turns and Kent Place provides a 16 foot wide thru lane with shared turns.

B. Base Volumes

Traffic counts were performed in order to quantify and analyze existing peak hour volumes as well as to establish base conditions for projecting future operations. The counts included pedestrian activities and truck traffic.

Traffic counts were conducted at all studied intersections except the site driveway on Saturday, January 7, 2017 from 11:00 PM – 1:00 PM. The peak hour volumes occurred between 11:30 – 12:30 PM during the Saturday midday. The turning movement counted volumes were increased and balanced conservatively where applicable. The intersection traffic count data is included in Appendix C. The 2018 existing volumes from the Eagle Ridge traffic study were utilized in this revised study for the peak weekday AM and PM hours. The weekday hours occurred between 8:00 – 9:00 AM and 5:00 – 6:00 PM.

Traffic volumes at the site driveway intersection were projected based on count information at the nearby intersection of Maple Avenue and Bedford Road. Additionally, traffic volumes related to the existing office use were projected at the site driveway intersection utilizing (ITE) Institute of Transportation Engineers' data from their publication "Trip Generation Manual, 10th Edition" (ITE Code 710). Table 1 depicts the projected peak hour volumes for the existing office use. The peak hour volumes with the existing office use volumes are shown on Figures 1 and 2 "2018 Base Volumes" and Figure 3 "2017 Base Volumes. All figures are included in Appendix B.

C. Intersection Analysis Methodology

The intersections have been analyzed based on the methodologies of the Highway Capacity Manual 6th Edition. Information derived from the manual relative to the level of service criteria is provided below.

I. Level-of-Service Criteria for Signalized Intersections

Levels of Service (LOS) for signalized intersections are defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during ideal conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of any incidents, and when there are no other vehicles on the road. Only the portion of total delay attributed to the control facility is quantified. This delay is called control delay. Control delay includes the delays of initial deceleration, move-up time in the queue, stops, and reacceleration. In this chapter, control delay may also be referred to as signal delay. Specifically, LOS criteria for traffic signals are stated in terms of the average control delay per vehicle, typically for a peak 15-minute analysis period. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the volume/capacity (v/c) ratio for the lane group in question.

LOS A describes operations with very low control delay, up to 10 seconds per vehicle. This level of services occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

LOS B describes operations with control delay greater than 10 and up to 20 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both.

LOS C describes operations with control delay greater than 20 and up to 35 seconds per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both.

LOS D describes operations with control delay greater than 35 and up to 55 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines.

LOS E describes operations with control delay greater than 55 and up to 80 seconds per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with control delay in excess of 80 seconds per vehicle and/or the arrival flow rates exceed the capacity of the intersection. It will also occur at high v/c ratios below 1.0 with many individual cycle failures. If the volume-to-capacity (v/c) is greater than 1.0, the LOS is considered an F, even if the delays are lower than 80 seconds.

The LOS criteria for signalized intersections are presented below.

Signalized Level of Service Criteria		
Control Delay (Seconds/Vehicle)	LOS by Volume-to-Capacity Ratio	
	$v/c \leq 1.0$	$v/c > 1.0$
≤ 10	A	F
> 10 and ≤ 20	B	F
> 20 and ≤ 35	C	F
> 35 and ≤ 55	D	F
> 55 and ≤ 80	E	F
> 80	F	F

For approach-based and intersectionwide assessments, LOS is defined solely by control delay.

2. Level of Service for Unsignalized Intersections

The Levels of Service (LOS) for Two Way Stop Control (TWSC) and All Way Stop Control (AWSC) intersections and Roundabouts are determined by the computed or measured control delay and are defined for each minor movement. LOS is not defined for the intersection as a whole for TWSC intersections. LOS criteria are presented below.

<i>Unsignalized Level of Service Criteria</i>		
Control Delay (Seconds/Vehicle)	LOS by Volume-to-Capacity Ratio	
	$v/c \leq 1.0$	$v/c > 1.0$
≤ 10	A	F
> 10 and ≤ 15	B	F
> 15 and ≤ 25	C	F
> 25 and ≤ 35	D	F
> 35 and ≤ 50	E	F
> 50	F	F

For TWSC intersections, the LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or the intersection as a whole at TWSC intersections. For approach-based and intersectionwide assessments at AWSC intersections and roundabouts, LOS is defined solely by control delay.

Average control delay less than 10 seconds/vehicle are defined as LOS A. Follow-up times of less than 5 seconds/vehicle have been measured when there is no conflicting traffic, so control delays of less than 10 seconds/vehicle are appropriate for low flow conditions. If the volume-to-capacity (v/c) is greater than 1.0, the LOS is considered an F, even if the delays are lower than 50 seconds.

The LOS criteria for unsignalized intersections are somewhat different than the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. A number of driver behavior considerations combine to make delays at signalized intersections less onerous than delays at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, whereas drivers on the minor approaches to unsignalized intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at an unsignalized intersections versus that at signalized intersections. For these reasons, it is considered that the control delay threshold for any given LOS would be less for an unsignalized intersection than it would be for a signalized intersection.

D. Base Operations

The intersection capacity analyses based on base volumes and conditions are shown on Tables 3 thru 5. The specific volume/capacity ratios, delay for average vehicle in seconds and the associated levels of service are summarized for each lane group, the approach as well as the overall intersection as applicable are depicted on Tables 3 thru 5. All tables are included in Appendix A.

During the peak weekday morning hour, the intersection of NY 22 and Maple Avenue with Business Park Drive operates at a level of service C. The NY 22 left turn lanes, Business Park Drive approach and lanes as well as the Maple Avenue left turn lane and approach operate at a level of service D. All other movements at the studied intersections operate at a level of service C or better during the peak weekday AM hour.

During the peak weekday afternoon hour, the overall intersection of NY 22 & Maple Avenue with Business Park Drive operates at a level of service E. The Business Park Drive approach and right turn lane operate at a level of service F. The NY 22 left turn lanes, eastbound approach and thru/right lane, Business Park Drive left/thru lane, Maple Avenue

approach and left turn lane operate at a level of service E. All other movements at the studied intersections operate at a level of service C or better during the peak weekday PM hour.

During the peak Saturday midday hour, the overall intersection of NY 22 & Maple Avenue with Business Park Drive operates at a level of service C. All other movements at the studied intersections operate at a level of service C or better during the peak Saturday midday hour.

Based on comments from the Town's Traffic Consultant, JMC requested and reviewed accident reports for all the studied intersections and roadway segments between them during a three year period from 01/2016 to 12/2018. The data from the accident reports have been provided in tabular format. Tables AR1 thru AR7 are included within Appendix A.

There were 14 reported accidents at the intersection of NY 22 and Maple Avenue with Business Park Drive. Six of the accidents were rearend accidents which are common among signalized intersections. One of these rearend accidents occurred due to slippery road conditions while the other rearend accidents occurred due to driver inattention. Driver inattention/distraction represents 43% of the contributing factors for the reported accidents at the intersection. One accident occurred when there was a power outage and the traffic signal was not operating. Another accident occurred when a driver disregarded a red arrow indication and attempted to complete a left turn from NY 22 while the thru movements along NY 22 were given the green indication.

There were 21 reported accidents at the intersection of NY 128 and Bedford Road with Kent Place. Ten of the accidents were sideswipe accidents reported. Driver inattention/distraction represents 48% of the contributing factors for the reported accidents. The majority of the accidents are related to vehicles entering or exiting on-street parking spaces along NY 128.

III. PROJECTED CONDITIONS

A. No-Build Volumes

In order to project future traffic increases to the 2021 design year, the base volumes were increased by a general growth rate of 1% per year compounded annually. The average percentage population growth in the Town of North Castle from 2010 to 2016 is 0.50% per year based on 2017 American Community Survey data. The growth rate utilized in this traffic study provides a conservative analysis based on the Town's population growth.

Based on discussions with Town staff, this study incorporates the traffic volumes associated with the 14 proposed apartments located at 470 Main Street, 36 proposed apartments located at the end of Bedford Road near the Interstate 684 southbound exit ramp, Brynwood Golf and Country Club development, and the Eagle Ridge development. Based on comments from the Town's Traffic Consultant, this revised traffic study incorporates the traffic volumes associated with the reoccupancy of the 113 King Street property (formerly MBIA). The other development traffic volumes are shown on Figures 7 thru 11 contained within Appendix B. The proposed age-restricted development located at 125 Old Mt. Kisco Road is not anticipated to generate significant traffic volumes in the study area and are considered to be part of the general growth volumes. The traffic volumes associated with the Wampus Mill development are considered to be part of the general growth volumes.

Based on a comparison of the 2018 existing volumes from the Eagle Ridge traffic study to the projected full occupancy traffic volumes from the traffic study associated with the relocation of IBM employees, it was determined that the 2018 existing volumes are representative of IBM for fully occupancy of the employee relocation. Due to this determination, the traffic volumes associated with IBM employee relocation are no longer incorporated as other development volumes in this revised study.

The general growth volumes plus the other development volumes result in the 2021 no-build volumes. These volumes represent traffic operations in 2021 without the redevelopment of the site.

The Town and the NYSDOT modified the traffic signal phasing of the NY 22 and Maple Avenue intersection by changing the Maple Avenue and Business Park Drive approaches from a common phase to split phases. This means that Maple Avenue and Business Park Drive approaches are processed through the intersection separated under a protected phase rather than both approaches being processed during the same phase. This improvement was applied to the peak Saturday hour analysis as the 2018 base condition for the peak weekday AM and PM hour already incorporates this improvement.

Additionally, the Town implemented traffic signal improvements at the intersection of Maple Avenue and Bedford Road. The improvements included providing vehicular detection on all approaches, providing a leading left turn phase for vehicles making a northbound left turn from Maple Avenue, and providing split phasing for the Bedford Road approaches. The Town also restriped the section of Maple Avenue between NY 22 and Bedford Road in late August of 2018. The restriped section of Maple Avenue provides a shared thru/right turn lane at its intersections with Bedford Road and NY 22. At its intersection with NY 22, Maple Avenue provides a 300 foot long left turn lane. At its intersection with Bedford, the restriped section of Maple Avenue provides a 120 foot long left turn lane. This improvement was applied to the peak Saturday hour analysis as the 2018 base condition for the peak weekday AM and PM hour already incorporates this improvement. The intersection capacity analyses based on no-build volumes and conditions are shown on Tables 3 thru 5.

At the intersection of NY 22 & Maple Avenue with Business Park Drive, the Maple Avenue thru/right lane is projected to increase in delay to operate at a level of service D under no-build conditions during the peak weekday AM hour. All other movements at the studied intersections under no-build conditions are projected to operate at the same levels of service as experienced under base conditions during the peak weekday AM hour.

During the peak weekday PM hour, NY 22 eastbound approach and thru/right lane as well as the Business Park Avenue left/thru lane at the NY 22 & Maple Avenue with Business Park Drive intersection are projected to increase in delay to operate at a level of service F under no-build conditions. At the intersection of NY 22 & Maple Avenue with Business Park Drive, the NY 22 westbound approach is projected to increase in delay to operate at a level of service E under no-build conditions. At the intersection of NY 128 and Bedford Road with Kent Place, the Bedford Road approach is projected to increase in delay to operate at a level of service D under no-build conditions. All other movements at the studied intersections under no-build conditions are projected to operate at the same levels of service as experienced under base conditions during the peak weekday PM hour.

During the peak Saturday midday hour, the NY 22 left turn lanes, northbound approach and northbound lanes at the intersection of NY 22 & Maple Avenue with Business Park Drive are projected to increase in delay to operate at a level of service D under no-build conditions. The westbound thru lanes, southbound approach and southbound thru/right lane to the intersection of NY 22 & Maple Avenue with Business Park Drive are projected to increase in delay to operate at a level of service C. At the intersection of Maple Avenue & Bedford Road, the eastbound approach is projected to increase in delay to operate at a level of service C while the westbound approach is projected to increase in delay to operate at a level of service B. The Maple Avenue northbound thru/right lane and approach to its intersection with Bedford Road are projected to operate at a level of service A while the northbound left turn lane is projected to operate at a level of service B. The Kent Place and Bedford Road approaches to their intersection with NY 128 are projected to increase in delay to operate at a level of service C. All other turning movements under the no-build conditions are projected to operate at the same levels of service as experienced under base conditions for the peak Saturday midday hour.

B. Build Volumes

To provide a conservative analysis, this study analyzes the proposed townhouses (Type A and Type B units) as depicted in the site development plan as single-family homes from a traffic perspective instead of multi-family housing due to their unit size and number of bedrooms. The other proposed unit types as part of the redevelopment were analyzed as multifamily housing.

The projected traffic associated with the proposed redevelopment is based on information published by ITE in its publication “Trip Generation Manual, 10th Edition.” Table I shows the traffic volumes associated with the proposed redevelopment compared to the current and reoccupancy of former property land uses. As shown in the table, the proposed development results in 6 net additional trips during the peak weekday AM hour and a reduction of 46 and 117 trips during the peak weekday PM and Saturday hours, respectively, compared to all the existing and reoccupied uses on the property.

To provide a conservative analysis, the volumes associated with the existing garden center, retail garden market and wine bar/cafe uses were not considered as part of this study. Table 2, contained in Appendix A, compares the traffic volumes associated with the proposed residential redevelopment to the existing office use. The table depicts that the proposed redevelopment results in approximately 24, 29, and 34 net additional trips during the peak weekday AM, weekday PM, and Saturday hours, respectively, compared to the existing office use. The net additional trips shown in Table 2 were utilized for this study. As mentioned above, this traffic study conservatively analyzed the proposed townhouses (Type A and Type B units) as single-family homes instead of the multifamily housing which it would be classified as based on ITE.

The net additional driveway volumes were routed through the studied intersections based on traffic volume data and consideration of the area roadways. Adding the net additional driveway volumes results in 2021 Build Volumes which reflect projected volumes after the completion and occupancy of the development.

IV. FINDINGS & CONCLUSION

Intersection capacity analysis computed based on the Build Volumes indicate that the intersections will operate at the same levels of service as projected for the No-Build Volumes except for two turning movements during the peak Saturday midday hour. Projected operations with the proposed redevelopment are shown on Tables 3 thru 5.

During the peak Saturday midday hour, the westbound approach to the intersection of Maple Avenue and Bedford Road is projected to increase in delay by 0.5 seconds to operate at a level of service C under the build conditions. At the intersection of Maple Avenue and Bedford Road, the northbound approach is projected to increase in delay by 0.4 seconds to operate at a level of service B under the build conditions. The changes in levels of service related to the proposed redevelopment represent small changes in the delay; however, since the delay under no-build conditions is near the upper limit of the previous level of service, the minor increase in delay pushes it into the lower limit of the next level of service.

Additionally, a queuing analysis was performed at the studied intersections. Tables 6 thru 8 are included in Appendix A and depict the queuing for the three studied conditions (Base, No-Build, Build). The storage lengths depicted in the tables are measured to the nearest intersection of two streets except for the distances from the studied signalized intersection to the studied driveway intersections. Based on the queuing analysis, the available storage length can accommodate the majority of the projected queue lengths for all approaches at the studied intersections. The few movements whose queue lengths exceed the available storage length under the build conditions also exceed the available storage length under the no-build condition except for one movement. During the peak weekday AM hour, the 95th percentile queue for the eastbound approach at the intersection of Maple Avenue and Bedford Road exceeds the available queue by 11 feet. There is not a significant increase in the queue lengths under the build condition compared to the no-build condition.

We reviewed the queuing from the intersection of Maple Avenue and Bedford Road as it relates to access to the site driveway. The 50th and 95th percentiles queues from the eastbound approach of the Maple Avenue & Bedford Road intersection can be accommodated during all three peak hours except for the 95th percentile queue during the peak weekday AM hour. Under no-build condition, the eastbound approach 95th percentile queue is projected to be 96 feet. Under build conditions, the 95th percentile queue for the same approach is projected to be 113 feet which exceeds the available queue length by 11 feet which is less than a single vehicle length. The 95th percentile queue is projected to occur only 5% of the time which does not occur very often. The average (50th percentile) queue occurs half of the time which can be accommodated for all studied peak hours.

It is the professional opinion of JMC that the redevelopment of the site will not have a significant impact on traffic operations in the study area.

Respectfully submitted,

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APPENDIX A

TABLES

TABLE 1**PROPOSED OVERALL DEVELOPMENT VOLUMES⁽¹⁾**

DESCRIPTION	PEAK WEEKDAY AM HOUR			PEAK WEEKDAY PM HOUR			PEAK SATURDAY HOUR		
	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
a. Existing 6,600 S.F. Office Space Driveway Volumes (ITE Code 710) ⁽²⁾	7	1	8	1	8	9	2	1	3
b. Existing 4.21 Acre Garden Center Driveway Volumes (ITE Code 817) ⁽³⁾	6	6	12	17	17	34	49	49	98
c. Existing 3,610 S.F. Retail Garden Market Driveway Volumes (ITE Code 820) ⁽⁴⁾	2	1	3	7	7	14	8	8	16
d. Existing 3,500 S.F. Wine Bar/Cafe Driveway Volumes (ITE Code 931) ⁽⁵⁾	2	1	3	18	9	27	22	15	37
e. Total Existing Driveway Volumes (Row e = Row a + b + c + d)	17	9	26	43	41	84	81	73	154
f. Total Proposed Development Driveway Volumes (See Table 2 Row d)	7	25	32	24	14	38	19	18	37
g. Net Driveway Volumes (Row g = Row f - Row e)	(10)	16	6	(19)	(27)	(46)	(62)	(55)	(117)

Notes:

(1) Trip Generation based on ITE (Institute of Transportation Engineers) Trip Generation Manual, 10th Edition.

(2) General Office Building (ITE Code 710) is defined by ITE as a location where affairs of businesses, commercial or industrial organizations, or professional persons or firms are conducted.

(3) Nursery (Garden Center) (ITE Code 817) is defined by ITE as a free-standing building with an outside storage area for planting or landscape stock which primarily serves the general public.

(4) Shopping Center (ITE Code 820) is defined by ITE as an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit.

(5) Quality Restaurant (ITE Code 931) is defined by ITE as a high quality, full-service establishments with a typical duration of stay of at least one hour.

TABLE 2**PROPOSED DEVELOPMENT VOLUMES UTILIZED IN STUDY⁽¹⁾**

DESCRIPTION	PEAK WEEKDAY AM HOUR			PEAK WEEKDAY PM HOUR			PEAK SATURDAY HOUR		
	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
a. Existing 6,600 S.F. Office Space Driveway Volumes (ITE Code 710) ⁽²⁾	7	1	8	1	8	9	2	1	3
b. Proposed 11 Single-Family Detached Housing Driveway Volumes (ITE Code 210) ⁽³⁾	3	10	13	8	4	12	5	5	10
c. Proposed 39 Units Multifamily Low-Rise Housing Driveway Volumes (ITE Code 220) ⁽⁴⁾	4	15	19	16	10	26	14	13	27
d. Total Proposed Development Driveway Volumes (Row d = Row b + Row c)	7	25	32	24	14	38	19	18	37
e. Net Driveway Volumes (Row c = Row d - Row a)	0	24	24	23	6	29	17	17	34

Notes:

(1) Trip Generation based on ITE (Institute of Transportation Engineers) Trip Generation Manual, 10th Edition.

(2) General Office Building (ITE Code 710) is defined by ITE as a location where affairs of businesses, commercial or industrial organizations, or professional persons or firms are conducted.

(3) Single-Family Detach Housing (ITE Code 210) is defined by ITE as single-family detached homes on individual lots.

(4) Multifamily Housing (Low-Rise) (ITE Code 220) is defined by ITE as multifamily housing including apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and having one or two levels.

TABLE 3**INTERSECTION OPERATIONS-PEAK WEEKDAY AM HOUR**

INTERSECTION	APPROACH	LANE GROUP	2018 BASE			2021 NO BUILD			2021 BUILD			
			V/C ₍₁₎	DELAY ₍₂₎	LOS ₍₃₎	V/C ₍₁₎	DELAY ₍₂₎	LOS ₍₃₎	V/C ₍₁₎	DELAY ₍₂₎	LOS ₍₃₎	
1. NY 22 & Maple Avenue / Business Park Drive (Signalized)	EASTBOUND (NY 22)	LEFT	0.57	48.6	D	0.60	53.5	D	0.61	54.7	D	
		THRU/RIGHT	0.58	25.2	C	0.62	27.0	C	0.63	27.9	C	
		COMPOSITE	-	26.8	C	-	28.7	C	-	29.6	C	
	WESTBOUND (NY 22)	LEFT	0.80	45.6	D	0.82	50.2	D	0.82	51.8	D	
		THRU	0.82	25.5	C	0.86	29.4	C	0.87	30.6	C	
		RIGHT	0.59	21.3	C	0.59	22.2	C	0.60	23.0	C	
	COMPOSITE	-	26.7	C	-	29.9	C	-	31.1	C		
		NORTHBOUND (Business Park Drive)	LEFT/THRU	0.71	46.1	D	0.73	50.5	D	0.74	51.6	D
			RIGHT	0.49	42.4	D	0.51	46.3	D	0.51	47.3	D
	COMPOSITE		-	44.7	D	-	49.0	D	-	50.1	D	
	SOUTHBOUND (Maple Avenue)	LEFT	0.81	41.6	D	0.83	45.3	D	0.81	45.8	D	
		THRU/RIGHT	0.45	34.7	C	0.46	37.6	D	0.46	37.6	D	
		COMPOSITE	-	39.1	D	-	42.5	D	-	42.9	D	
INTERSECTION		COMPOSITE	-	29.4	C	-	32.3	C	-	33.4	C	
2. Maple Avenue & Bedford Road (Signalized)	EASTBOUND (Bedford Road)	LEFT/THRU/RIGHT	0.82	24.8	C	0.82	25.0	C	0.83	26.8	C	
	WESTBOUND (Bedford Road)	LEFT/THRU/RIGHT	0.56	20.2	C	0.64	21.1	C	0.66	21.9	C	
	NORTHBOUND (Maple Avenue)	LEFT	0.25	12.6	B	0.26	12.9	B	0.26	13.5	B	
		THRU/RIGHT	0.63	14.5	B	0.65	15.1	B	0.67	16.0	B	
		COMPOSITE	-	14.0	B	-	14.5	B	-	15.3	B	
	SOUTHBOUND (Maple Avenue)	LEFT/THRU/RIGHT	0.40	18.5	B	0.42	19.0	B	0.43	19.9	B	
	INTERSECTION		COMPOSITE	-	17.7	B	-	18.3	B	-	19.5	B
3. Bedford Road & Site Driveway (Unsignalized)	EASTBOUND (Bedford Road)	THRU/RIGHT	-	-	-	-	-	-	-	-	-	
	WESTBOUND (Bedford Road)	LEFT/THRU	0.00	7.6	A	0.00	7.6	A	0.00	7.6	A	
	NORTHBOUND (Site Driveway)	LEFT/RIGHT	0.00	9.3	A	0.00	9.3	A	0.04	9.5	A	
4. NY 128 (Main Street) & Bedford Road / Kent Place (Unsignalized)	EASTBOUND (Kent Place)	LEFT/THRU/RIGHT	0.04	14.1	B	0.05	14.8	B	0.05	14.8	B	
	WESTBOUND (Bedford Road)	LEFT/THRU/RIGHT	0.31	19.0	C	0.35	20.7	C	0.35	20.7	C	
	NORTHBOUND (NY 128)	LEFT/THRU/RIGHT	0.03	8.2	A	0.03	8.3	A	0.03	8.3	A	
	SOUTHBOUND (NY 128)	LEFT/THRU/RIGHT	0.05	8.0	A	0.06	8.1	A	0.06	8.1	A	

Notes:

- (1) V/C represents volume/capacity ratio
(2) Delay is average seconds delay per vehicle
(3) LOS represents level of service

TABLE 4**INTERSECTION OPERATIONS-PEAK WEEKDAY PM HOUR**

INTERSECTION	APPROACH	LANE GROUP	2018 BASE			2021 NO BUILD			2021 BUILD			
			V/C ₍₁₎	DELAY ₍₂₎	LOS ₍₃₎	V/C ₍₁₎	DELAY ₍₂₎	LOS ₍₃₎	V/C ₍₁₎	DELAY ₍₂₎	LOS ₍₃₎	
1. NY 22 & Maple Avenue / Business Park Drive (Signalized)	EASTBOUND (NY 22)	LEFT	0.56	70.9	E	0.60	74.2	E	0.60	74.4	E	
		THRU/RIGHT	0.93	60.0	E	1.02	83.7	F	1.02	84.9	F	
		COMPOSITE	-	60.2	E	-	83.4	F	-	84.6	F	
	WESTBOUND (NY 22)	LEFT	0.83	70.2	E	0.84	75.6	E	0.84	76.0	E	
		THRU	0.47	28.5	C	0.53	30.3	C	0.54	30.5	C	
		RIGHT	0.55	30.5	C	0.57	31.8	C	0.60	32.8	C	
	COMPOSITE	-	33.9	C	-	35.7	D	-	36.1	D		
		NORTHBOUND (Business Park Drive)	LEFT/THRU	0.82	72.5	E	0.89	86.2	F	0.89	87.1	F
			RIGHT	1.17	167.9	F	1.25	203.1	F	1.26	205.1	F
	COMPOSITE		-	125.3	F	-	150.7	F	-	152.2	F	
	SOUTHBOUND (Maple Avenue)	LEFT	0.91	70.7	E	0.92	76.1	E	0.93	76.8	E	
		THRU/RIGHT	0.25	43.2	D	0.26	44.5	D	0.26	44.4	D	
		COMPOSITE	-	65.0	E	-	69.4	E	-	70.1	E	
INTERSECTION		COMPOSITE	-	61.3	E	-	74.1	E	-	74.8	E	
2. Maple Avenue & Bedford Road (Signalized)	EASTBOUND (Bedford Road)	LEFT/THRU/RIGHT	0.77	26.2	C	0.77	26.3	C	0.77	26.5	C	
	WESTBOUND (Bedford Road)	LEFT/THRU/RIGHT	0.43	19.0	B	0.47	19.5	B	0.47	19.9	B	
	NORTHBOUND (Maple Avenue)	LEFT	0.23	11.1	B	0.25	11.5	B	0.27	11.7	B	
		THRU/RIGHT	0.44	11.0	B	0.47	11.6	B	0.47	11.7	B	
		COMPOSITE	-	11.0	B	-	11.6	B	-	11.7	B	
	SOUTHBOUND (Maple Avenue)	LEFT/THRU/RIGHT	0.39	16.6	B	0.42	17.3	B	0.44	17.9	B	
	INTERSECTION		COMPOSITE	-	16.1	B	-	16.6	B	-	16.9	B
3. Bedford Road & Site Driveway (Unsignalized)	EASTBOUND (Bedford Road)	THRU/RIGHT	-	-	-	-	-	-	-	-	-	
	WESTBOUND (Bedford Road)	LEFT/THRU	0.00	7.5	A	0.00	7.6	A	0.00	7.6	A	
	NORTHBOUND (Site Driveway)	LEFT/RIGHT	0.01	9.5	A	0.01	9.5	A	0.02	9.5	A	
4. NY 128 (Main Street) & Bedford Road / Kent Place (Unsignalized)	EASTBOUND (Kent Place)	LEFT/THRU/RIGHT	0.14	16.6	C	0.16	17.9	C	0.16	17.9	C	
	WESTBOUND (Bedford Road)	LEFT/THRU/RIGHT	0.40	24.1	C	0.46	28.2	D	0.46	28.5	D	
	NORTHBOUND (NY 128)	LEFT/THRU/RIGHT	0.04	8.1	A	0.05	8.1	A	0.05	8.1	A	
	SOUTHBOUND (NY 128)	LEFT/THRU/RIGHT	0.04	8.3	A	0.04	8.4	A	0.05	8.4	A	

Notes:

- (1) V/C represents volume/capacity ratio
(2) Delay is average seconds delay per vehicle
(3) LOS represents level of service

TABLE 5**INTERSECTION OPERATIONS-PEAK SATURDAY MIDDAY HOUR**

INTERSECTION	APPROACH	LANE GROUP	2017 BASE			2021 NO BUILD			2021 BUILD		
			V/C ₍₁₎	DELAY ₍₂₎	LOS ₍₃₎	V/C ₍₁₎	DELAY ₍₂₎	LOS ₍₃₎	V/C ₍₁₎	DELAY ₍₂₎	LOS ₍₃₎
1. NY 22 & Maple Avenue / Business Park Drive (Signalized)	EASTBOUND (NY 22)	LEFT	0.37	31.9	C	0.47	41.3	D	0.48	43.0	D
		THRU/RIGHT	0.40	20.9	C	0.50	26.7	C	0.49	27.1	C
		COMPOSITE	-	21.8	C	-	27.9	C	-	28.4	C
	WESTBOUND (NY 22)	LEFT	0.57	32.0	C	0.64	41.3	D	0.64	42.9	D
		THRU	0.24	18.4	B	0.35	23.6	C	0.34	24.0	C
		RIGHT	0.79	24.8	C	0.81	30.8	C	0.82	31.8	C
		COMPOSITE	-	23.4	C	-	28.8	C	-	29.6	C
	NORTHBOUND (Business Park Drive)	LEFT/THRU	0.23	12.3	B	0.74	37.9	D	0.75	39.5	D
		RIGHT	0.21	12.2	B	0.69	37.3	D	0.70	38.8	D
		COMPOSITE	-	12.3	B	-	37.6	D	-	39.2	D
	SOUTHBOUND (Maple Avenue)	LEFT	0.69	21.2	C	0.84	33.1	C	0.85	34.0	C
		THRU/RIGHT	0.10	11.5	B	0.18	24.2	C	0.19	24.7	C
		COMPOSITE	-	19.5	B	-	31.5	C	-	32.3	C
	INTERSECTION	COMPOSITE	-	20.2	C	-	30.5	C	-	31.4	C
2. Maple Avenue & Bedford Road (Signalized)	EASTBOUND (Bedford Road)	LEFT/THRU/RIGHT	0.21	10.2	B						
	WESTBOUND (Bedford Road)	LEFT/THRU/RIGHT	0.08	9.1	A						
	NORTHBOUND (Maple Avenue)	LEFT/THRU/RIGHT	0.57	16.0	B		N/A			N/A	
	SOUTHBOUND (Maple Avenue)	LEFT/THRU/RIGHT	0.26	11.8	B						
	INTERSECTION	COMPOSITE	-	13.3	B						
2a. Maple Avenue & Bedford Road (Signalized with Improvements by Others)	EASTBOUND (Bedford Road)	LEFT/THRU/RIGHT				0.79	23.2	C	0.80	23.3	C
	WESTBOUND (Bedford Road)	LEFT/THRU/RIGHT				0.32	20.0	B	0.32	20.5	C
	NORTHBOUND (Maple Avenue)	LEFT		N/A		0.32	10.5	B	0.34	11.0	B
		THRU/RIGHT				0.27	9.3	A	0.27	9.6	A
		COMPOSITE				-	9.9	A	-	10.3	B
	SOUTHBOUND (Maple Avenue)	LEFT/THRU/RIGHT				0.41	16.8	B	0.43	17.5	B
	INTERSECTION	COMPOSITE				-	15.2	B	-	15.7	B
3. Bedford Road & Site Driveway (Unsignalized)	EASTBOUND (Bedford Road)	THRU/RIGHT	-	-	-	-	-	-	-	-	-
	WESTBOUND (Bedford Road)	LEFT/THRU	0.00	7.6	A	0.00	7.6	A	0.10	7.6	A
	NORTHBOUND (Site Driveway)	LEFT/RIGHT	0.00	9.1	A	0.00	9.2	A	0.02	9.3	A
4. NY 128 (Main Street) & Bedford Road / Kent Place (Unsignalized)	EASTBOUND (Kent Place)	LEFT/THRU/RIGHT	0.12	14.7	B	0.13	15.6	C	0.13	15.6	C
	WESTBOUND (Bedford Road)	LEFT/THRU/RIGHT	0.30	14.7	B	0.35	16.0	C	0.35	16.1	C
	NORTHBOUND (NY 128)	LEFT/THRU/RIGHT	0.02	7.9	A	0.02	7.9	A	0.02	7.9	A
	SOUTHBOUND (NY 128)	LEFT/THRU/RIGHT	0.04	7.8	A	0.04	7.9	A	0.04	7.9	A

Notes:

- (1) V/C represents volume/capacity ratio
(2) Delay is average seconds delay per vehicle
(3) LOS represents level of service

TABLE 6**QUEUEING ANALYSIS-PEAK WEEKDAY AM HOUR**

INTERSECTION	APPROACH	LANE GROUP	STORAGE LENGTH	2018 BASE		2021 NO BUILD		2021 BUILD	
				50%	95%	50%	95%	50%	95%
1. NY 22 & Maple Avenue / Business Park Drive (Signalized)	EASTBOUND (NY 22)	LEFT	585	35	84	37	88	38	88
		THRU/RIGHT	1,300	201	316	247	370	252	370
	WESTBOUND (NY 22)	LEFT	265	134	274	140	298	143	298
		THRU	725	451	767	538	886	553	886
		RIGHT	225	86	229	108	258	111	258
	NORTHBOUND (Business Park Drive)	LEFT/THRU	440	89	170	92	178	94	178
		RIGHT	60	0	8	0	10	0	10
	SOUTHBOUND (Maple Avenue)	LEFT	475	180	297	193	322	208	344
		THRU/RIGHT	60	68	140	74	152	76	157
2. Maple Avenue & Bedford Road (Signalized)	EASTBOUND (Bedford Road)	LEFT/THRU/RIGHT	102	23	90	27	96	34	113
	WESTBOUND (Bedford Road)	LEFT/THRU/RIGHT	700	53	129	64	153	66	153
	NORTHBOUND (Maple Avenue)	LEFT	120	28	84	31	87	32	87
		THRU/RIGHT	475	76	208	86	221	89	221
	SOUTHBOUND (Maple Avenue)	LEFT/THRU/RIGHT	1,190	54	135	59	140	61	140
3. Bedford Road & Site Driveway (Unsignalized)	EASTBOUND (Bedford Road)	THRU/RIGHT	648	-	-	-	-	-	-
	WESTBOUND (Bedford Road)	LEFT/THRU	102	-	0	-	0	-	0
	NORTHBOUND (Site Driveway)	LEFT/RIGHT	128	-	0	-	0	-	3
4. NY 128 (Main Street) & Bedford Road / Kent Place (Unsignalized)	EASTBOUND (Kent Place)	LEFT/THRU/RIGHT	110	-	3	-	3	-	3
	WESTBOUND (Bedford Road)	LEFT/THRU/RIGHT	648	-	33	-	38	-	38
	NORTHBOUND (NY 128)	LEFT/THRU/RIGHT	750	-	3	-	3	-	3
	SOUTHBOUND (NY 128)	LEFT/THRU/RIGHT	510	-	5	-	5	-	5

Notes:

(1) Vehicle length is equal to 25 feet.

TABLE 7**QUEUEING ANALYSIS-PEAK WEEKDAY PM HOUR**

INTERSECTION	APPROACH	LANE GROUP	STORAGE LENGTH	2018 BASE		2021 NO BUILD		2021 BUILD	
				50%	95%	50%	95%	50%	95%
1. NY 22 & Maple Avenue / Business Park Drive (Signalized)	EASTBOUND (NY 22)	LEFT	585	32	69	37	75	37	75
		THRU/RIGHT	1,300	631	777	777	920	777	920
	WESTBOUND (NY 22)	LEFT	265	128	201	133	208	133	208
		THRU	725	257	325	308	385	308	385
		RIGHT	225	0	61	27	106	28	109
	NORTHBOUND (Business Park Drive)	LEFT/THRU	440	215	387	225	405	225	405
		RIGHT	60	157	326	167	345	167	345
	SOUTHBOUND (Maple Avenue)	LEFT	475	328	513	345	539	351	551
		THRU/RIGHT	60	43	94	45	98	45	97
2. Maple Avenue & Bedford Road (Signalized)	EASTBOUND (Bedford Road)	LEFT/THRU/RIGHT	102	5	54	7	59	8	60
	WESTBOUND (Bedford Road)	LEFT/THRU/RIGHT	700	36	90	40	101	41	102
	NORTHBOUND (Maple Avenue)	LEFT	120	25	64	26	69	29	77
		THRU/RIGHT	475	66	148	72	165	72	166
	SOUTHBOUND (Maple Avenue)	LEFT/THRU/RIGHT	1,190	59	127	62	138	63	140
3. Bedford Road & Site Driveway (Unsignalized)	EASTBOUND (Bedford Road)	THRU/RIGHT	648	-	-	-	-	-	-
	WESTBOUND (Bedford Road)	LEFT/THRU	102	-	0	-	0	-	0
	NORTHBOUND (Site Driveway)	LEFT/RIGHT	128	-	0	-	0	-	3
4. NY 128 (Main Street) & Bedford Road / Kent Place (Unsignalized)	EASTBOUND (Kent Place)	LEFT/THRU/RIGHT	110	-	13	-	15	-	15
	WESTBOUND (Bedford Road)	LEFT/THRU/RIGHT	648	-	48	-	58	-	58
	NORTHBOUND (NY 128)	LEFT/THRU/RIGHT	750	-	3	-	3	-	3
	SOUTHBOUND (NY 128)	LEFT/THRU/RIGHT	510	-	3	-	3	-	3

Notes:

(1) Vehicle length is equal to 25 feet.

TABLE 8**QUEUEING ANALYSIS-PEAK SATURDAY MIDDAY HOUR**

INTERSECTION	APPROACH	LANE GROUP	STORAGE LENGTH	2017 BASE		2021 NO BUILD		2021 BUILD	
				50%	95%	50%	95%	50%	95%
1. NY 22 & Maple Avenue / Business Park Drive (Signalized)	EASTBOUND (NY 22)	LEFT	585	17	40	26	63	26	64
		THRU/RIGHT	1,300	83	113	145	211	147	214
	WESTBOUND (NY 22)	LEFT	265	39	72	53	108	54	109
		THRU	725	55	78	105	156	107	159
		RIGHT	225	0	37	0	35	0	35
	NORTHBOUND (Business Park Drive)	LEFT/THRU	440	49	85	109	200	111	203
		RIGHT	60	7	30	27	79	27	80
	SOUTHBOUND (Maple Avenue)	LEFT	475	127	200	228	331	240	343
		THRU/RIGHT	60	14	35	32	67	33	69
2. Maple Avenue & Bedford Road (Signalized)	EASTBOUND (Bedford Road)	LEFT/THRU/RIGHT	102	5	33				
	WESTBOUND (Bedford Road)	LEFT/THRU/RIGHT	700	10	27		N/A		N/A
	NORTHBOUND (Maple Avenue)	LEFT/THRU/RIGHT	475	94	173				
	SOUTHBOUND (Maple Avenue)	LEFT/THRU/RIGHT	1,190	41	80				
2a. Maple Avenue & Bedford Road (Signalized With Improvements by Others)	EASTBOUND (Bedford Road)	LEFT/THRU/RIGHT	102			11	60	12	64
	WESTBOUND (Bedford Road)	LEFT/THRU/RIGHT	700		N/A	20	58	20	59
	NORTHBOUND (Maple Avenue)	LEFT	120			39	87	42	93
		THRU/RIGHT	475			38	85	38	86
	SOUTHBOUND (Maple Avenue)	LEFT/THRU/RIGHT	1,190			59	123	60	125
3. Bedford Road & Site Driveway (Unsignalized)	EASTBOUND (Bedford Road)	THRU/RIGHT	648	-	-	-	-	-	-
	WESTBOUND (Bedford Road)	LEFT/THRU	102	-	0	-	0	-	0
	NORTHBOUND (Site Driveway)	LEFT/RIGHT	128	-	0	-	0	-	3
4. NY 128 (Main Street) & Bedford Road / Kent Place (Unsignalized)	EASTBOUND (Kent Place)	LEFT/THRU/RIGHT	110	-	10	-	10	-	10
	WESTBOUND (Bedford Road)	LEFT/THRU/RIGHT	648	-	33	-	38	-	38
	NORTHBOUND (NY 128)	LEFT/THRU/RIGHT	750	-	3	-	3	-	3
	SOUTHBOUND (NY 128)	LEFT/THRU/RIGHT	510	-	3	-	3	-	3

Notes:

(1) Vehicle length is equal to 25 feet.

TABLE AR1

INTERSECTION NAME: NY 22 and Maple Avenue with
Business Park Drive

TOTAL ACCIDENTS: 14

INTERSECTION NUMBER: 1

TIME PERIOD: 1/1/2016-12/31/2018

Day of Week	Number	%
Sunday	2	14
Monday	1	7
Tuesday	2	14
Wednesday		
Thursday		
Friday	4	29
Saturday	5	36
Time of Day	Number	%
6 am-10 am	2	14
10 am-4 pm	8	57
4 pm-7 pm	2	14
7 pm-12 Mid	2	14
12 Mid-6 am		
Weather	Number	%
Clear	7	50
Cloudy	6	43
Fog		
Rain		
Sleet/Snow	1	7
Pavement	Number	%
Dry	12	86
Snow/Ice	1	7
Wet	1	7
Light Conditions	Number	%
Day	12	86
Night	2	14
Dawn/Dusk		

Accident Type	Number	%
Rear End	6	43
Sideswipe	2	14
Left Turn	3	21
Right Turn	1	7
Right Angle	1	7
Fixed Object	1	7
Severity	Number	%
Fatal Injury		
Non-Fatal Injury	3	21
Property-Damage Only	11	79
Time of Year	Number	%
Winter (Dec-Feb)	2	14
Spring (Mar-May)	8	57
Summer (June-Aug)	3	21
Fall (Sep-Nov)	1	7
Contributing Factors	Number	%
Driver Inexperience	0.50	4
Driver Inattention/Distracted	6.00	43
Following Too Closely	0.50	4
Traffic Control Disregard	1.00	7
Fatigued/Drowsy	0.50	4
Pavement Slippery	1.00	7
Passing or Lane Usage Improper	1.00	7
Turning Improperly	1.00	7
Unsafe Lane Changing	1.00	7
Traffic control Device Improper	1.00	7
View Limited/Obstructed	0.50	4

Accident Rate Calculations

Total Volume:	26,500	vehicles per day (AADT Source: JMC base counts)
	9.67	Million Vehicles per Year
	4.7	Average number of accidents per year
	0.48	Accident Rate in accidents per Million Entering Vehicles (MEV)
	0.25	NYSDOT Mean collision rate (Urban 4-leg signalized intersection)

Specific Collisions Types

Rear End	2.0 Average number of Rear End accidents per year
	0.21 Accident Rate in Accidents per Million Entering Vehicles
	0.11 NYSDOT Mean Accident Rate
Left Turn	1.0 Average number of Left Turn accidents per year
	0.10 Accident Rate in Accidents per Million Entering Vehicles
	0.01 NYSDOT Mean Accident Rate
Right Turn	0.3 Average number of Right Turn accidents per year
	0.03 Accident Rate in Accidents per Million Entering Vehicles
	0.01 NYSDOT Mean Accident Rate
Wet Pavement	0.7 Average number of Wet Pavement accidents per year
	0.07 Accident Rate in Accidents per Million Entering Vehicles
	0.04 NYSDOT Mean Accident Rate

TABLE AR2

ROADWAY NAME: Maple Avenue

BETWEEN: Intersections 1 and 2

SEGMENT LENGTH: 0.11 miles

TOTAL ACCIDENTS: 0

TIME PERIOD: 1/1/2016-12/31/2018

Day of Week	Number	%
Sunday		
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		
Time of Day	Number	%
6 am-10 am		
10 am-4 pm		
4 pm-7 pm		
7 pm-12 Mid		
12 Mid-6 am		
Weather	Number	%
Clear		
Cloudy		
Fog		
Rain		
Sleet/Snow		
Pavement	Number	%
Dry		
Snow/Ice		
Wet		
Light Conditions	Number	%
Day		
Night		
Dawn/Dusk		

Accident Type	Number	%
Rear End		
Sideswipe		
Left Turn		
Right Turn		
Right Angle		
Head On		
Bicyclist		
Pedestrian		
Fixed Object		
Unknown		
Severity	Number	%
Fatal Injury		
Non-Fatal Injury		
Property-Damage Only		
Time of Year	Number	%
Winter (Dec-Feb)		
Spring (Mar-May)		
Summer (June-Aug)		
Fall (Sep-Nov)		
Contributing Factors	Number	%
Driver Inexperience		
Failure to Yield ROW		
Following Too Closely		
Traffic Control Disregard		
Unsafe Speed		
Pavement Slippery		
Unknown		

Accident Rate Calculations

Total Volume:	8,950	vehicles per day (AADT Source: JMC base counts)
	3.27	Million Vehicles per Year
	0.0	Average number of accidents per year
	0.00	Accident Rate in accidents per Million Vehicle Miles (MVM)
	3.52	NYSDOT Mean collision rate (Urban Mainline & Juncture 2-Lanes Undivided)

Specific Collisions Types**Wet Pavement**

0.0	Average number of Wet Pavement accidents per year
0.00	Accident Rate in Accidents per Million Vehicle Miles
0.57	NYSDOT Mean Accident Rate

Fixed Object

0.0	Average number of Fixed Object accidents per year
0.00	Accident Rate in Accidents per Million Vehicle Miles
0.49	NYSDOT Mean Accident Rate

TABLE AR3

INTERSECTION NAME: Maple Avenue and Bedford Road

TOTAL ACCIDENTS: 0

INTERSECTION NUMBER: 2

TIME PERIOD: 1/1/2016-12/31/2018

Day of Week	Number	%
Sunday		
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		
Time of Day	Number	%
6 am-10 am		
10 am-4 pm		
4 pm-7 pm		
7 pm-12 Mid		
12 Mid-6 am		
Weather	Number	%
Clear		
Cloudy		
Fog		
Rain		
Sleet/Snow		
Pavement	Number	%
Dry		
Snow/Ice		
Wet		
Light Conditions	Number	%
Day		
Night		
Dawn/Dusk		

Accident Type	Number	%
Rear End		
Sideswipe		
Left Turn		
Right Turn		
Right Angle		
Head On		
Bicyclist		
Pedestrian		
Fixed Object		
Unknown		
Severity	Number	%
Fatal Injury		
Non-Fatal Injury		
Property-Damage Only		
Time of Year	Number	%
Winter (Dec-Feb)		
Spring (Mar-May)		
Summer (June-Aug)		
Fall (Sep-Nov)		
Contributing Factors	Number	%
Driver Inexperience		
Failure to Yield ROW		
Following Too Closely		
Traffic Control Disregard		
Unsafe Speed		
Pavement Slippery		
Unknown		

Accident Rate Calculations

Total Volume:	10,320	vehicles per day (AADT Source: JMC base counts)
	3.77	Million Vehicles per Year
	0.0	Average number of accidents per year
	0.00	Accident Rate in accidents per Million Entering Vehicles (MEV)
	0.52	NYSDOT Mean collision rate (Urban 4-leg signalized intersection)

Specific Collisions Types

Rear End	0.0 Average number of Rear End accidents per year
	0.00 Accident Rate in Accidents per Million Entering Vehicles
	0.21 NYSDOT Mean Accident Rate
Left Turn	0.0 Average number of Left Turn accidents per year
	0.00 Accident Rate in Accidents per Million Entering Vehicles
	0.05 NYSDOT Mean Accident Rate
Right Turn	0.0 Average number of Right Turn accidents per year
	0.00 Accident Rate in Accidents per Million Entering Vehicles
	0.02 NYSDOT Mean Accident Rate
Wet Pavement	0.0 Average number of Wet Pavement accidents per year
	0.00 Accident Rate in Accidents per Million Entering Vehicles
	0.08 NYSDOT Mean Accident Rate

TABLE AR4

ROADWAY NAME: Bedford Road

BETWEEN: Intersections 2 and 3

SEGMENT LENGTH: 0.06 miles

TOTAL ACCIDENTS: 0

TIME PERIOD: 1/1/2016-12/31/2018

Day of Week	Number	%
Sunday		
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		
Time of Day	Number	%
6 am-10 am		
10 am-4 pm		
4 pm-7 pm		
7 pm-12 Mid		
12 Mid-6 am		
Weather	Number	%
Clear		
Cloudy		
Fog		
Rain		
Sleet/Snow		
Pavement	Number	%
Dry		
Snow/Ice		
Wet		
Light Conditions	Number	%
Day		
Night		
Dawn/Dusk		

Accident Type	Number	%
Rear End		
Sideswipe		
Left Turn		
Right Turn		
Right Angle		
Head On		
Bicyclist		
Pedestrian		
Fixed Object		
Unknown		
Severity	Number	%
Fatal Injury		
Non-Fatal Injury		
Property-Damage Only		
Time of Year	Number	%
Winter (Dec-Feb)		
Spring (Mar-May)		
Summer (June-Aug)		
Fall (Sep-Nov)		
Contributing Factors	Number	%
Driver Inexperience		
Failure to Yield ROW		
Following Too Closely		
Traffic Control Disregard		
Unsafe Speed		
Pavement Slippery		
Unknown		

Accident Rate Calculations

Total Volume:	4,100	vehicles per day (AADT Source: JMC base counts)
	1.50	Million Vehicles per Year
	0.0	Average number of accidents per year
	0.00	Accident Rate in accidents per Million Vehicle Miles (MVM)
	3.52	NYSDOT Mean collision rate (Urban Mainline & Juncture 2-Lanes Undivided)

Specific Collisions Types**Wet Pavement**

0.0	Average number of Wet Pavement accidents per year
0.00	Accident Rate in Accidents per Million Vehicle Miles
0.52	NYSDOT Mean Accident Rate

Fixed Object

0.0	Average number of Fixed Object accidents per year
0.00	Accident Rate in Accidents per Million Vehicle Miles
0.45	NYSDOT Mean Accident Rate

TABLE AR5

INTERSECTION NAME: Bedford Road & Site Driveway

TOTAL ACCIDENTS: 0

INTERSECTION NUMBER: 3

TIME PERIOD: 1/1/2016-12/31/2018

Day of Week	Number	%
Sunday		
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		
Time of Day	Number	%
6 am-10 am		
10 am-4 pm		
4 pm-7 pm		
7 pm-12 Mid		
12 Mid-6 am		
Weather	Number	%
Clear		
Cloudy		
Fog		
Rain		
Sleet/Snow		
Pavement	Number	%
Dry		
Snow/Ice		
Wet		
Light Conditions	Number	%
Day		
Night		
Dawn/Dusk		

Accident Type	Number	%
Rear End		
Sideswipe		
Left Turn		
Right Turn		
Right Angle		
Head On		
Bicyclist		
Pedestrian		
Fixed Object		
Unknown		
Severity	Number	%
Fatal Injury		
Non-Fatal Injury		
Property-Damage Only		
Time of Year	Number	%
Winter (Dec-Feb)		
Spring (Mar-May)		
Summer (June-Aug)		
Fall (Sep-Nov)		
Contributing Factors	Number	%
Driver Inexperience		
Failure to Yield ROW		
Following Too Closely		
Traffic Control Disregard		
Unsafe Speed		
Pavement Slippery		
Unknown		

Accident Rate Calculations

Total Volume:	4,120	vehicles per day (AADT Source: JMC base counts)
	1.50	Million Vehicles per Year
	0.0	Average number of accidents per year
	0.00	Accident Rate in accidents per Million Entering Vehicles (MEV)
	0.18	NYSDOT Mean collision rate (Urban 3-leg signalized intersection)

Specific Collisions Types

Rear End	0.0 Average number of Rear End accidents per year
	0.00 Accident Rate in Accidents per Million Entering Vehicles
	0.06 NYSDOT Mean Accident Rate
Left Turn	0.0 Average number of Left Turn accidents per year
	0.00 Accident Rate in Accidents per Million Entering Vehicles
	0.02 NYSDOT Mean Accident Rate
Right Turn	0.0 Average number of Right Turn accidents per year
	0.00 Accident Rate in Accidents per Million Entering Vehicles
	0.00 NYSDOT Mean Accident Rate
Wet Pavement	0.0 Average number of Wet Pavement accidents per year
	0.00 Accident Rate in Accidents per Million Entering Vehicles
	0.03 NYSDOT Mean Accident Rate

TABLE AR6

ROADWAY NAME: Bedford Road

BETWEEN: Intersections 3 and 4

SEGMENT LENGTH: 0.11 miles

TOTAL ACCIDENTS: 0

TIME PERIOD: 1/1/2016-12/31/2018

Day of Week	Number	%
Sunday		
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		
Time of Day	Number	%
6 am-10 am		
10 am-4 pm		
4 pm-7 pm		
7 pm-12 Mid		
12 Mid-6 am		
Weather	Number	%
Clear		
Cloudy		
Fog		
Rain		
Sleet/Snow		
Pavement	Number	%
Dry		
Snow/Ice		
Wet		
Light Conditions	Number	%
Day		
Night		
Dawn/Dusk		

Accident Type	Number	%
Rear End		
Sideswipe		
Left Turn		
Right Turn		
Right Angle		
Head On		
Bicyclist		
Pedestrian		
Fixed Object		
Unknown		
Severity	Number	%
Fatal Injury		
Non-Fatal Injury		
Property-Damage Only		
Time of Year	Number	%
Winter (Dec-Feb)		
Spring (Mar-May)		
Summer (June-Aug)		
Fall (Sep-Nov)		
Contributing Factors	Number	%
Driver Inexperience		
Failure to Yield ROW		
Following Too Closely		
Traffic Control Disregard		
Unsafe Speed		
Pavement Slippery		
Unknown		

Accident Rate Calculations

Total Volume:	3,360	vehicles per day (AADT Source: JMC base counts)
	1.23	Million Vehicles per Year
	0.0	Average number of accidents per year
	0.00	Accident Rate in accidents per Million Vehicle Miles (MVM)
	3.52	NYSDOT Mean collision rate (Urban Mainline & Juncture 2-Lanes Undivided)

Specific Collisions Types**Wet Pavement**

0.0	Average number of Wet Pavement accidents per year
0.00	Accident Rate in Accidents per Million Vehicle Miles
0.57	NYSDOT Mean Accident Rate

Fixed Object

0.0	Average number of Fixed Object accidents per year
0.00	Accident Rate in Accidents per Million Vehicle Miles
0.49	NYSDOT Mean Accident Rate

TABLE AR7

INTERSECTION NAME: NY 128 and Bedford Road with Kent Place

TOTAL ACCIDENTS: 21

INTERSECTION NUMBER: 4

TIME PERIOD: 1/1/2016-12/31/2018

Day of Week	Number	%
Sunday	1	5
Monday	5	24
Tuesday	2	10
Wednesday	4	19
Thursday	2	10
Friday	4	19
Saturday	3	14
Time of Day	Number	%
6 am-10 am	1	5
10 am-4 pm	14	67
4 pm-7 pm	3	14
7 pm-12 Mid	3	14
Weather	Number	%
Clear	12	57
Cloudy	5	24
Rain	3	14
Sleet/Snow	1	5
Pavement	Number	%
Dry	16	76
Snow/Ice	2	10
Wet	3	14
Light Conditions	Number	%
Day	16	76
Night	4	19
Dawn/Dusk	1	5

Accident Type	Number	%
Rear End	4	19
Sideswipe	10	48
Right Turn	4	19
Right Angle	3	14
Severity	Number	%
Fatal Injury		
Non-Fatal Injury	1	5
Property-Damage Only	20	95
Time of Year	Number	%
Winter (Dec-Feb)	6	29
Spring (Mar-May)	5	24
Summer (June-Aug)	4	19
Fall (Sep-Nov)	6	29
Contributing Factors	Number	%
Driver Inexperience	2.00	10
Failure to Yield ROW	1.50	7
Reaction to Uninvolved Vehicle	0.5	2
Driver Inattention/Distracted	10	48
Glare	0.50	2
View Obstructed	1.33	6
Failure to Keep Right	0.50	2
Improper Turning	1.83	9
Unknown	2.00	10
Backing Unsafely	0.50	2
Passing or Lane Use Improper	0.33	2

Accident Rate Calculations

Total Volume:	8,800	vehicles per day (AADT Source: JMC base counts)
	3.21	Million Vehicles per Year
	7.0	Average number of accidents per year
	2.18	Accident Rate in accidents per Million Entering Vehicles (MEV)
	0.16	NYSDOT Mean collision rate (Urban 4-leg signalized intersection)

Specific Collisions Types**Rear End**

1.3	Average number of Rear End accidents per year
0.42	Accident Rate in Accidents per Million Entering Vehicles
0.05	NYSDOT Mean Accident Rate

Left Turn

3.3	Average number of Left Turn accidents per year
1.04	Accident Rate in Accidents per Million Entering Vehicles
0.01	NYSDOT Mean Accident Rate

Right Turn

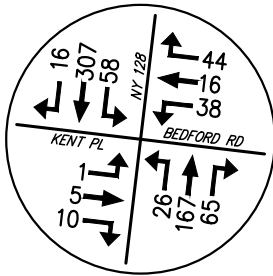
1.3	Average number of Right Turn accidents per year
0.42	Accident Rate in Accidents per Million Entering Vehicles
0.00	NYSDOT Mean Accident Rate

Wet Pavement

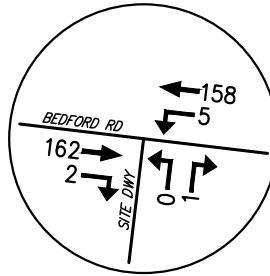
1.3	Average number of Wet Pavement accidents per year
0.42	Accident Rate in Accidents per Million Entering Vehicles
0.02	NYSDOT Mean Accident Rate

APPENDIX B

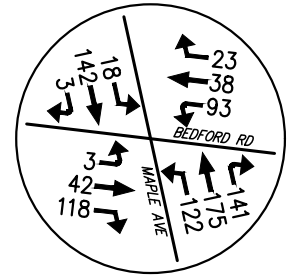
FIGURES



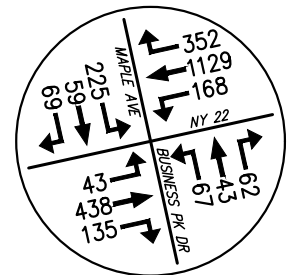
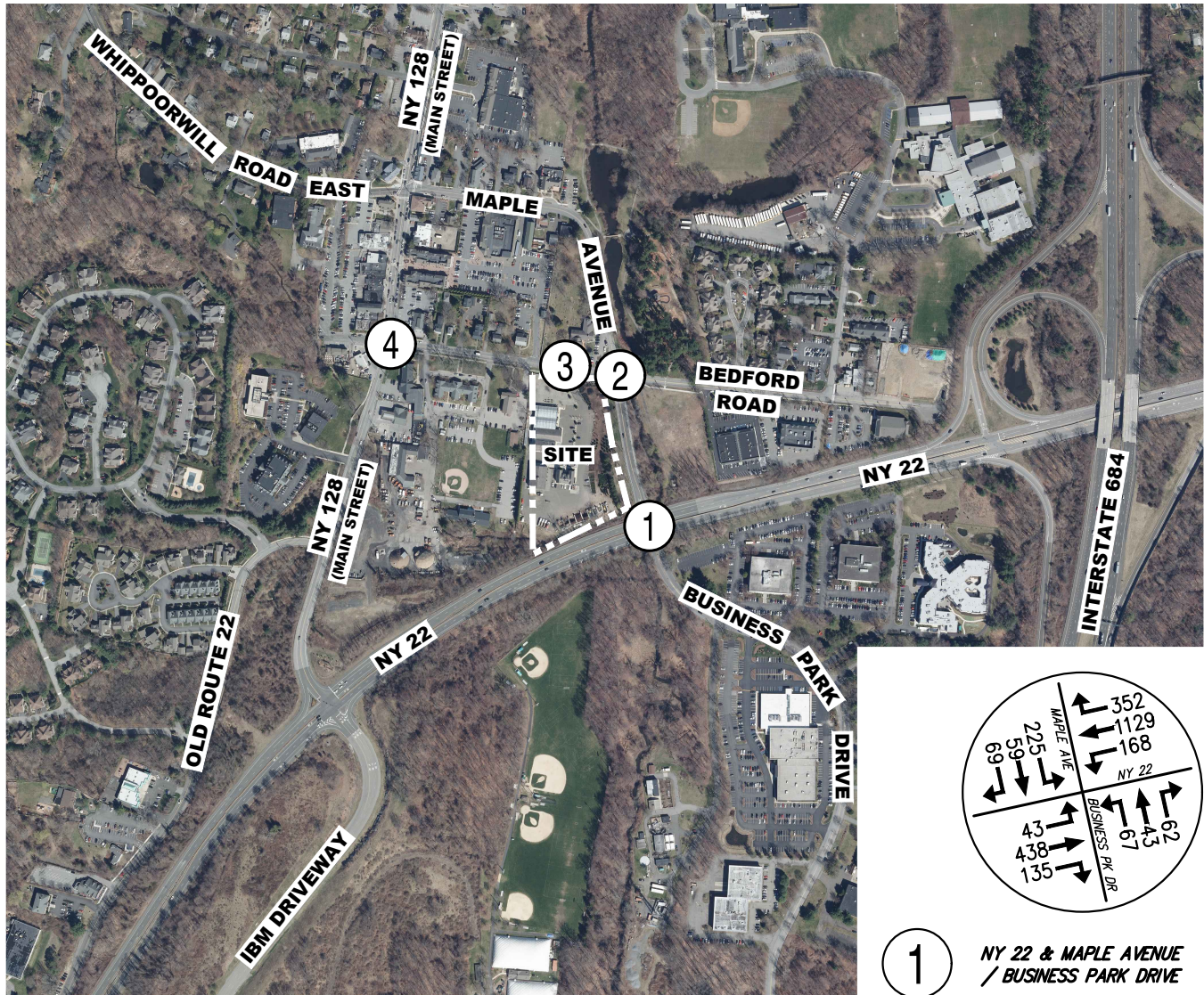
4 NY 128 (MAIN STREET)
& BEDFORD ROAD
/ KENT PLACE



3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

2018 BASE VOLUMES

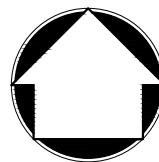
REVISED: 02/21/2019
DATE: 12/17/2018

PEAK WEEKDAY AM HOUR (8:00 - 9:00)

JMC PROJECT: 18053

FIGURE: 01

SCALE: 1" = 650'



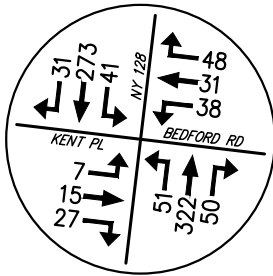
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NY 10504

(914) 273-5225
fax 273-2102

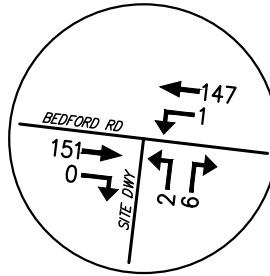
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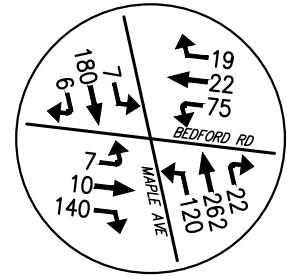
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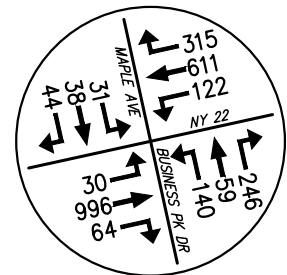
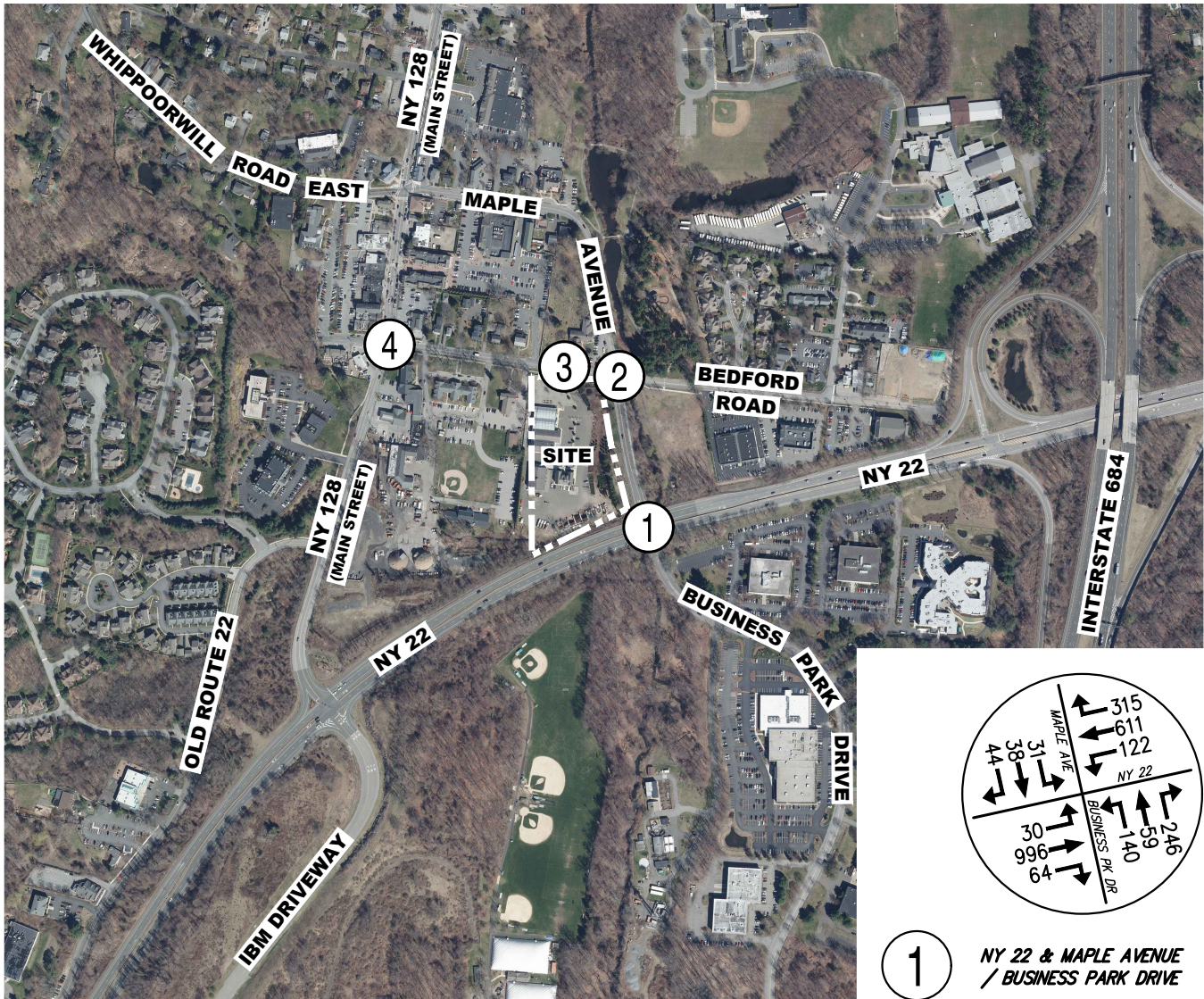
4 NY 128 (MAIN STREET)
& BEDFORD ROAD
/ KENT PLACE



3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

2018 BASE VOLUMES

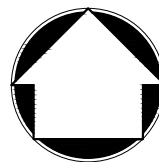
REVISED: 02/21/2019
DATE: 12/17/2018

PEAK WEEKDAY PM HOUR (4:30 - 5:30)

JMC PROJECT: 18053

FIGURE: 02

SCALE: 1" = 650'



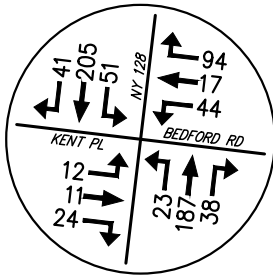
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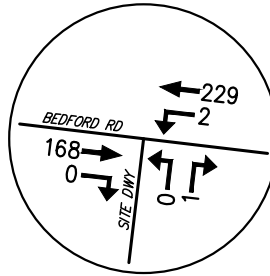
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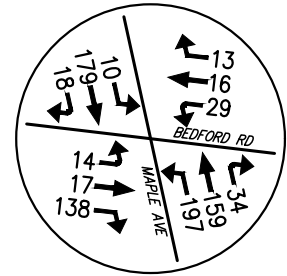
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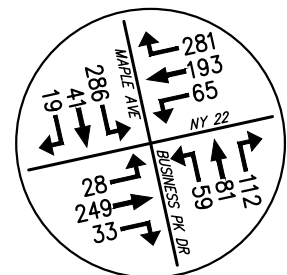
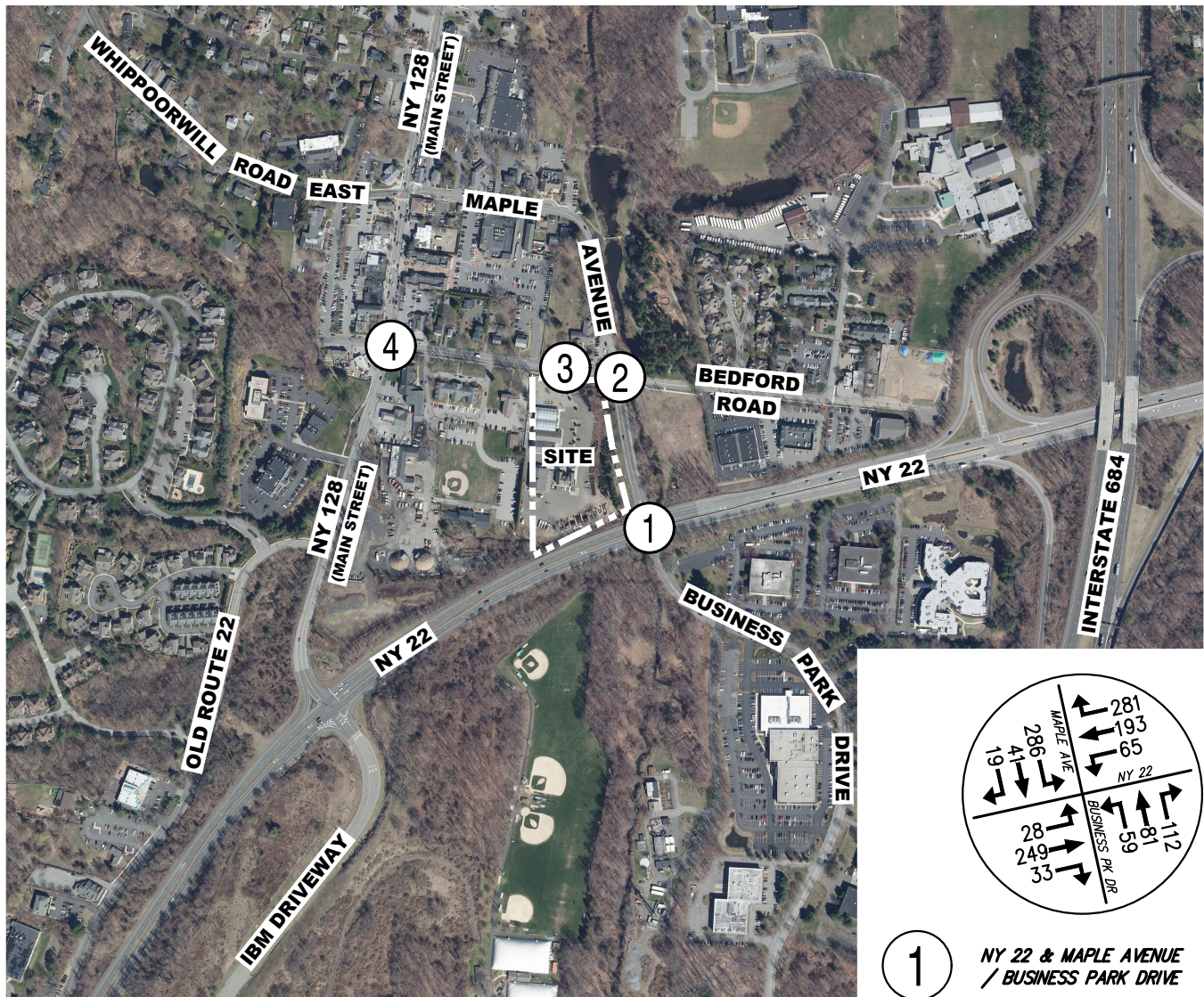
4 NY 128 (MAIN STREET)
& BEDFORD ROAD
/ KENT PLACE



3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

2017 BASE VOLUMES

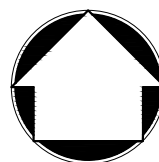
PEAK SATURDAY MIDDAY HOUR (11:30 - 12:30)

REVISED: 02/21/2019
DATE: 12/17/2018

JMC PROJECT: 18053

FIGURE: 03

SCALE: 1" = 650'



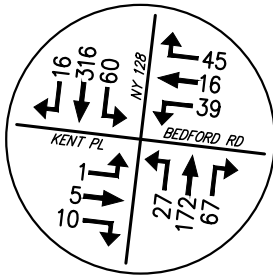
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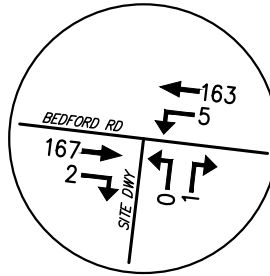
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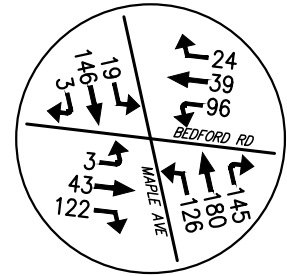
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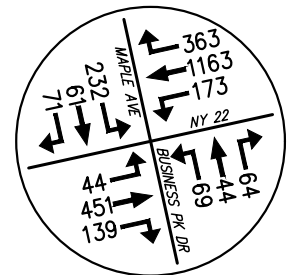
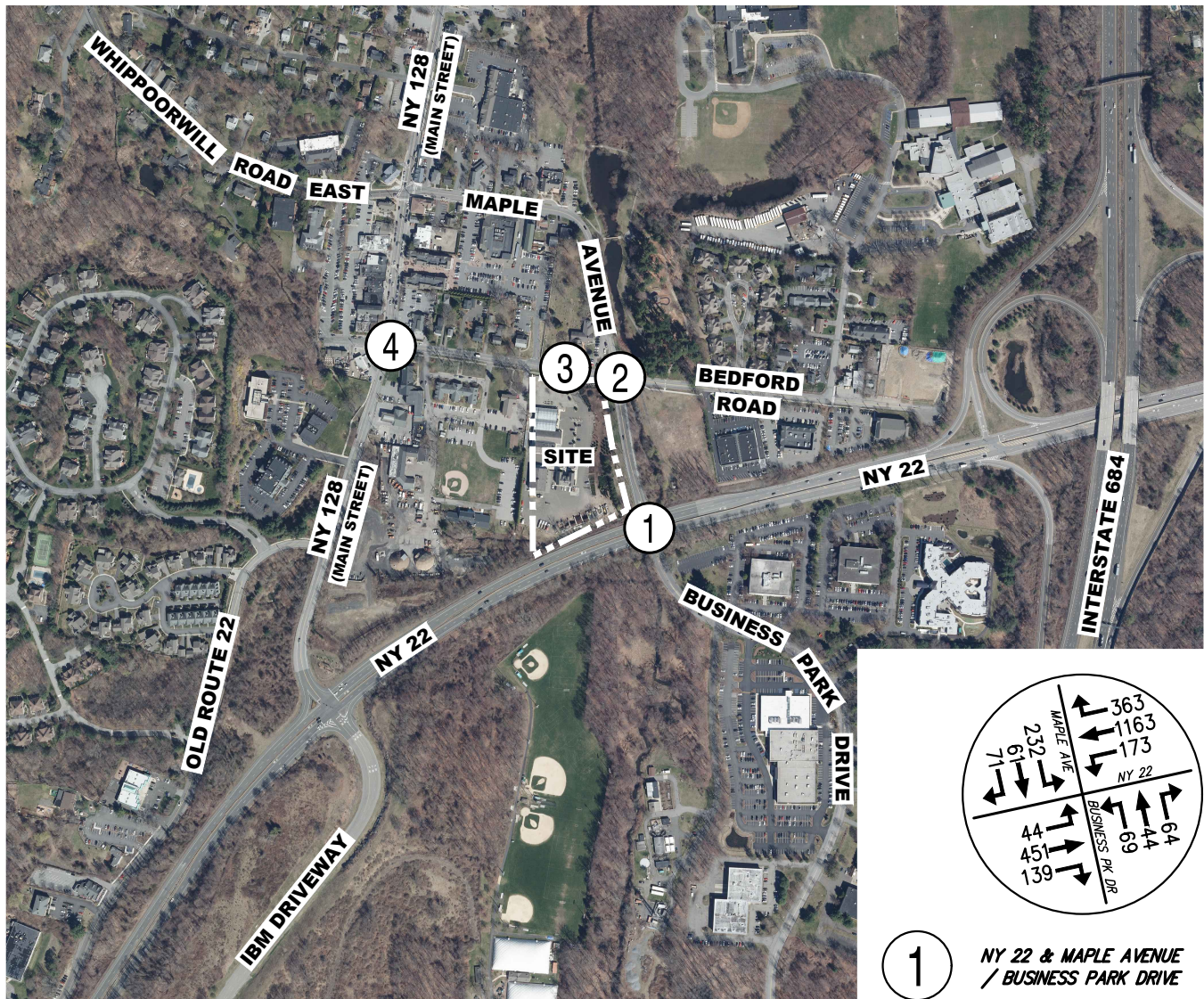
4 NY 128 (MAIN STREET)
& BEDFORD ROAD
/ KENT PLACE



3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

2021 GENERAL GROWTH VOLUMES

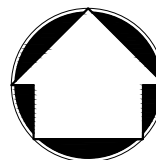
REVISED: 02/21/2019
DATE: 12/17/2018

PEAK WEEKDAY AM HOUR

JMC PROJECT: 18053

FIGURE: 04

SCALE: 1" = 650'



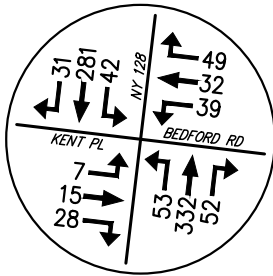
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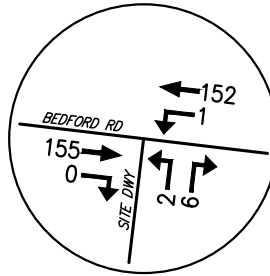
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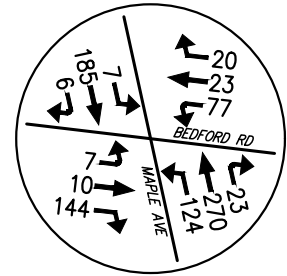
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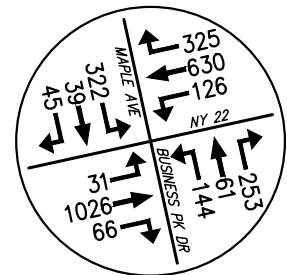
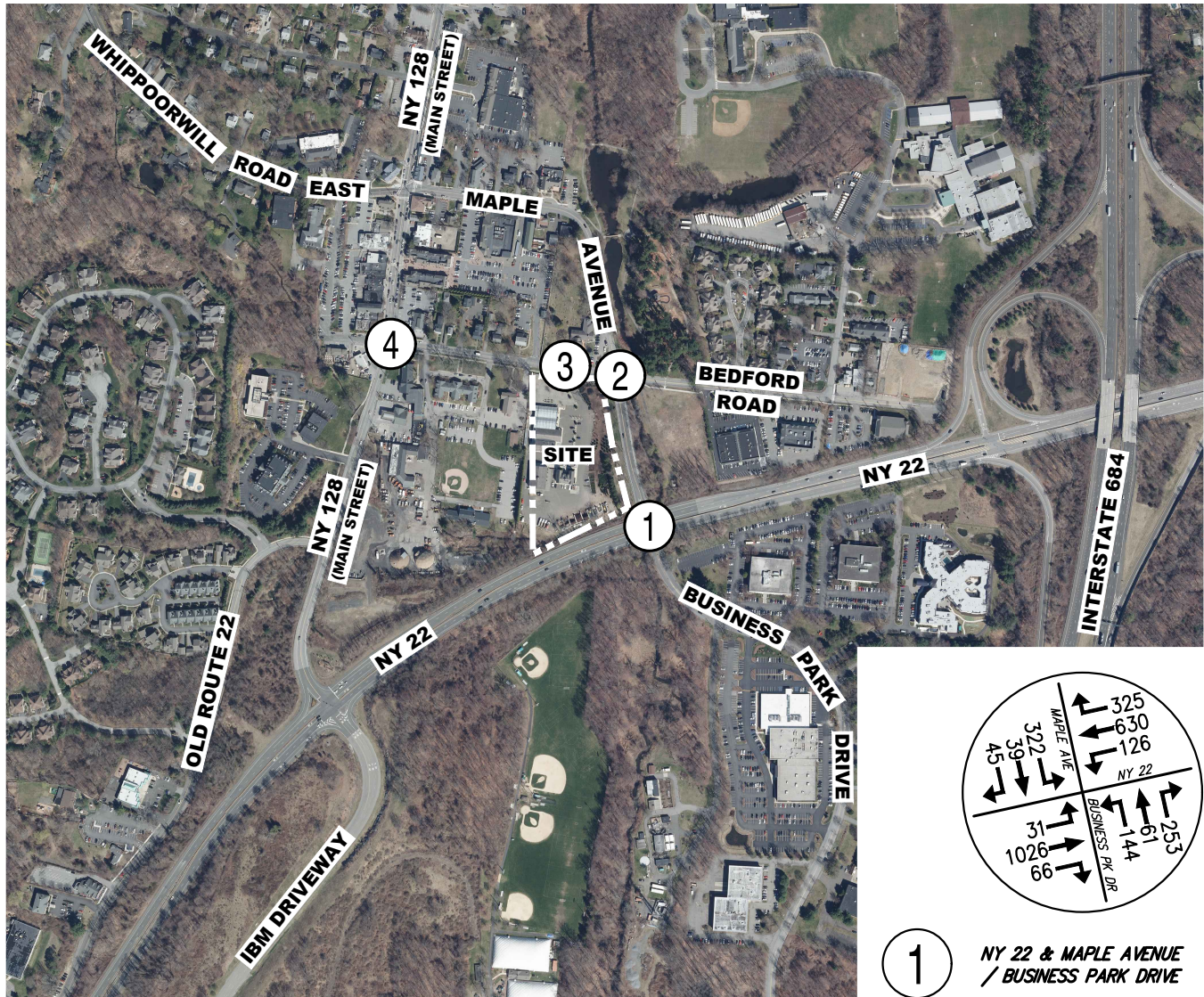
4 NY 128 (MAIN STREET)
& BEDFORD ROAD
/ KENT PLACE



3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

2021 GENERAL GROWTH VOLUMES

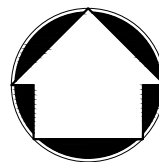
REVISED: 02/21/2019
DATE: 12/17/2018

PEAK WEEKDAY PM HOUR

JMC PROJECT: 18053

FIGURE: 05

SCALE: 1" = 650'



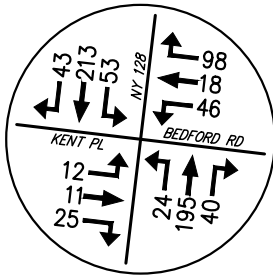
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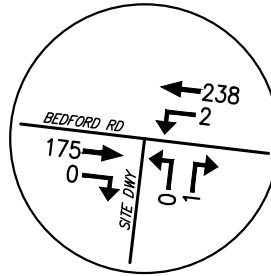
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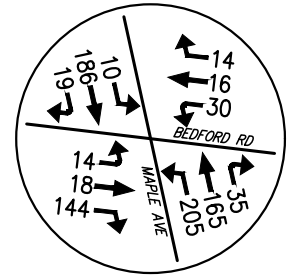
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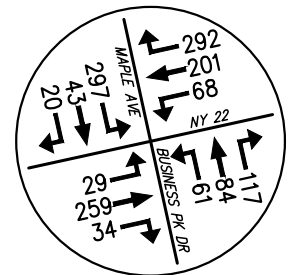
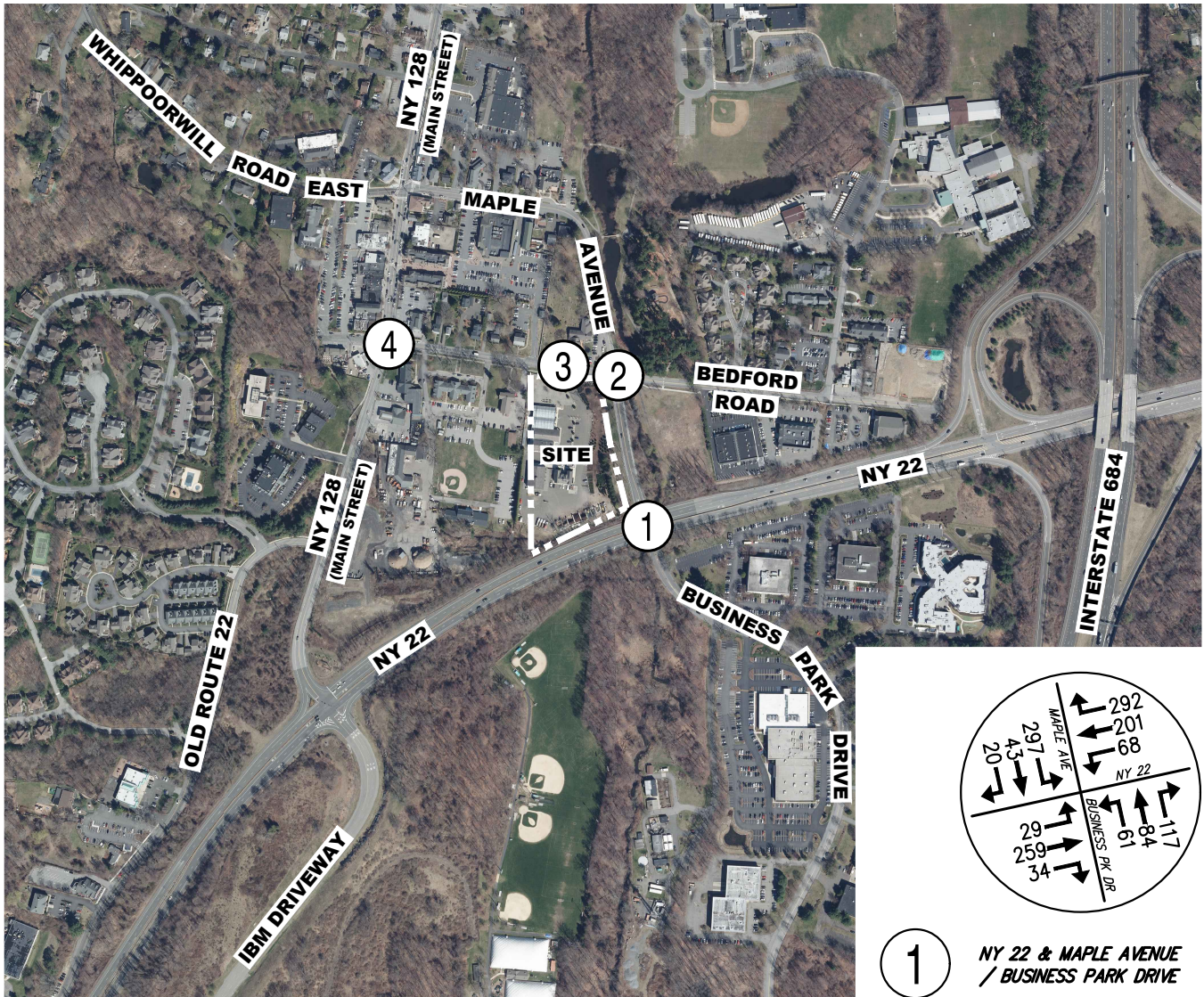
4 NY 128 (MAIN STREET)
& BEDFORD ROAD
/ KENT PLACE



3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

2021 GENERAL GROWTH VOLUMES

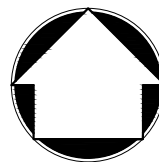
PEAK SATURDAY MIDDAY HOUR

REVISED: 02/21/2019
DATE: 12/17/2018

JMC PROJECT: 18053

FIGURE: 06

SCALE: 1" = 650'



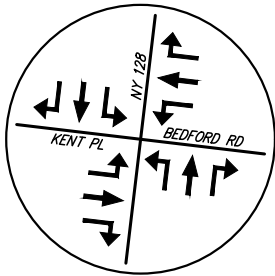
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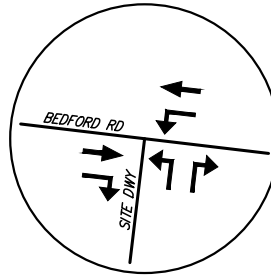
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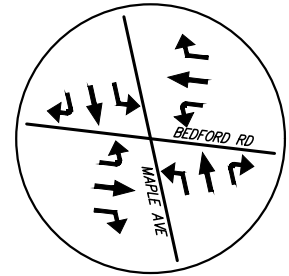
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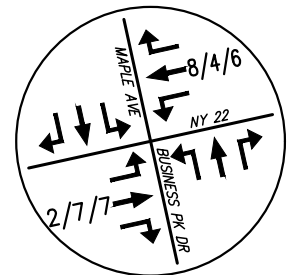
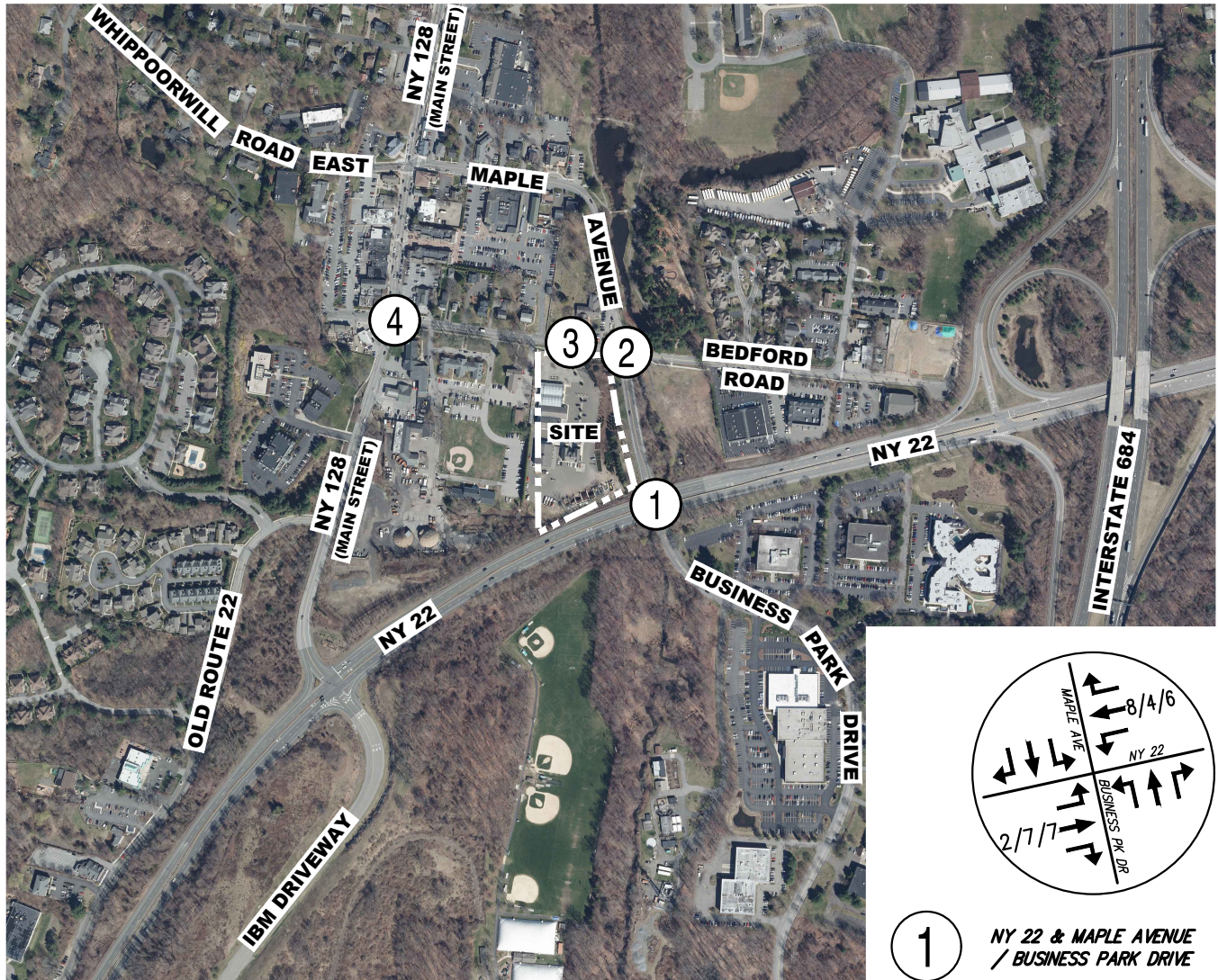


3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD

LEGEND: PEAK WEEKDAY AM HOUR / PEAK WEEKDAY PM HOUR / PEAK SATURDAY MIDDAY HOUR



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

OTHER DEVELOPMENT VOLUMES

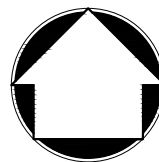
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BRYNWOOD

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FIGURE: 07

SCALE: 1" = 650'



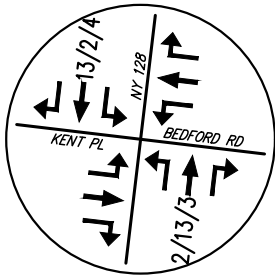
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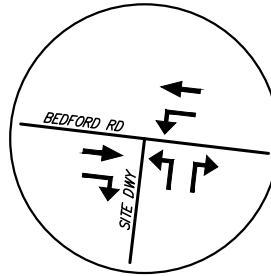
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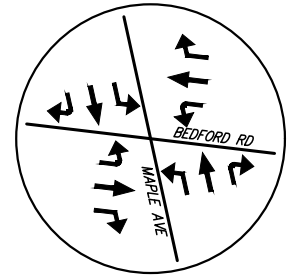
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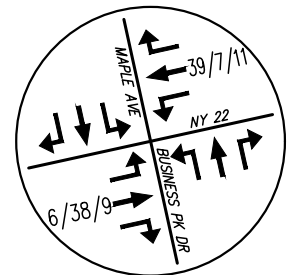
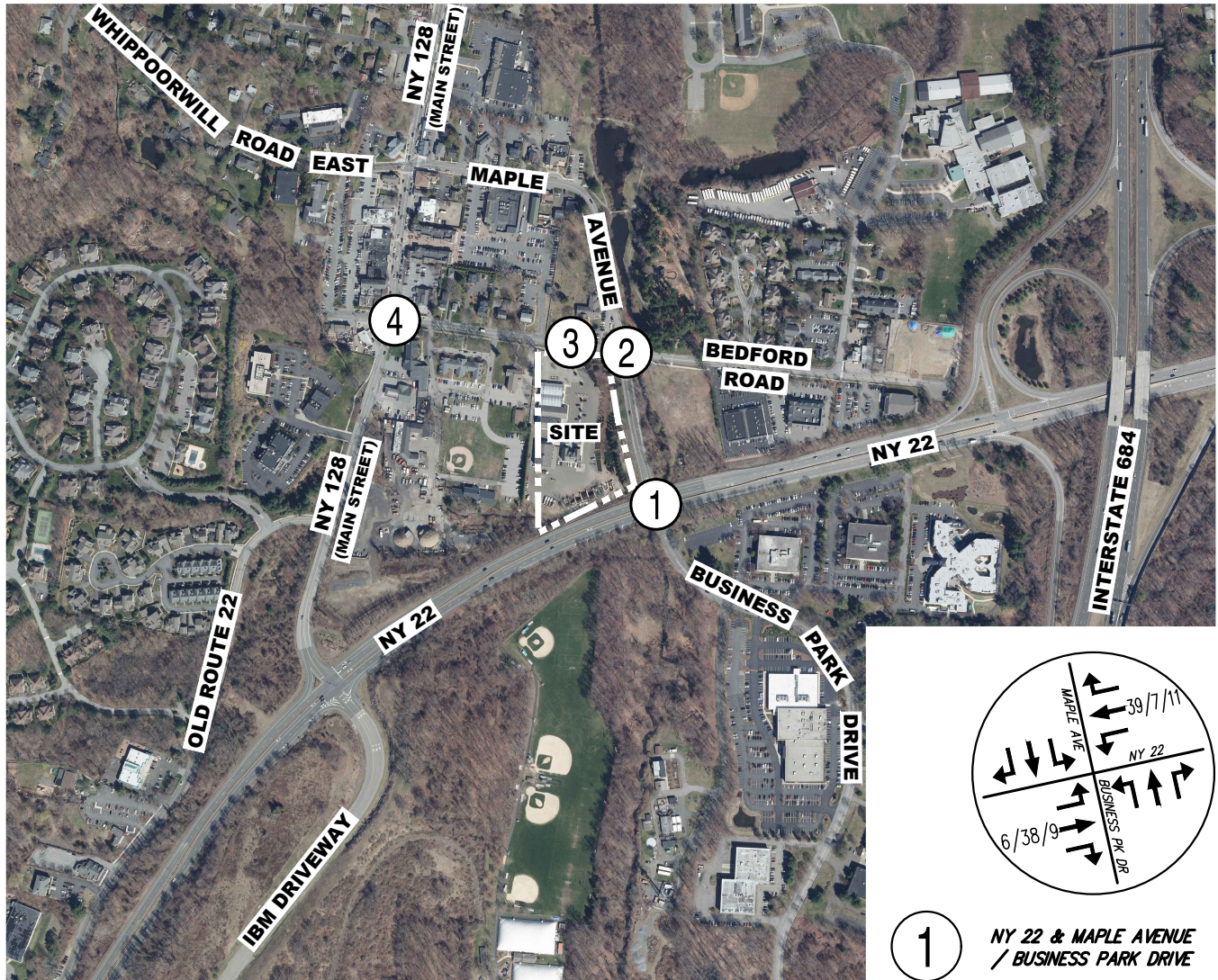


3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD

LEGEND: PEAK WEEKDAY AM HOUR / PEAK WEEKDAY PM HOUR / PEAK SATURDAY MIDDAY HOUR



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

OTHER DEVELOPMENT VOLUMES

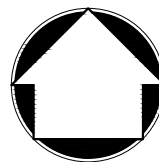
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113 KING STREET

JMC PROJECT: 18053

FIGURE: 08

SCALE: 1" = 650'



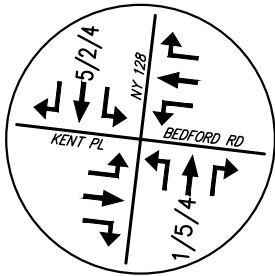
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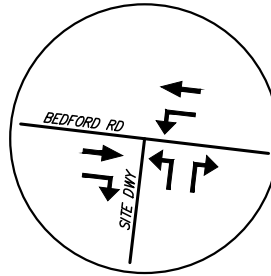
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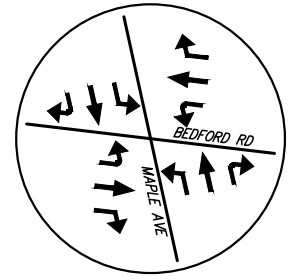
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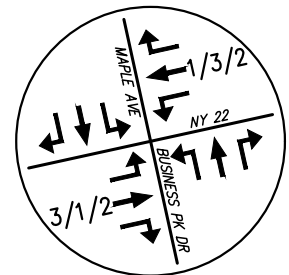
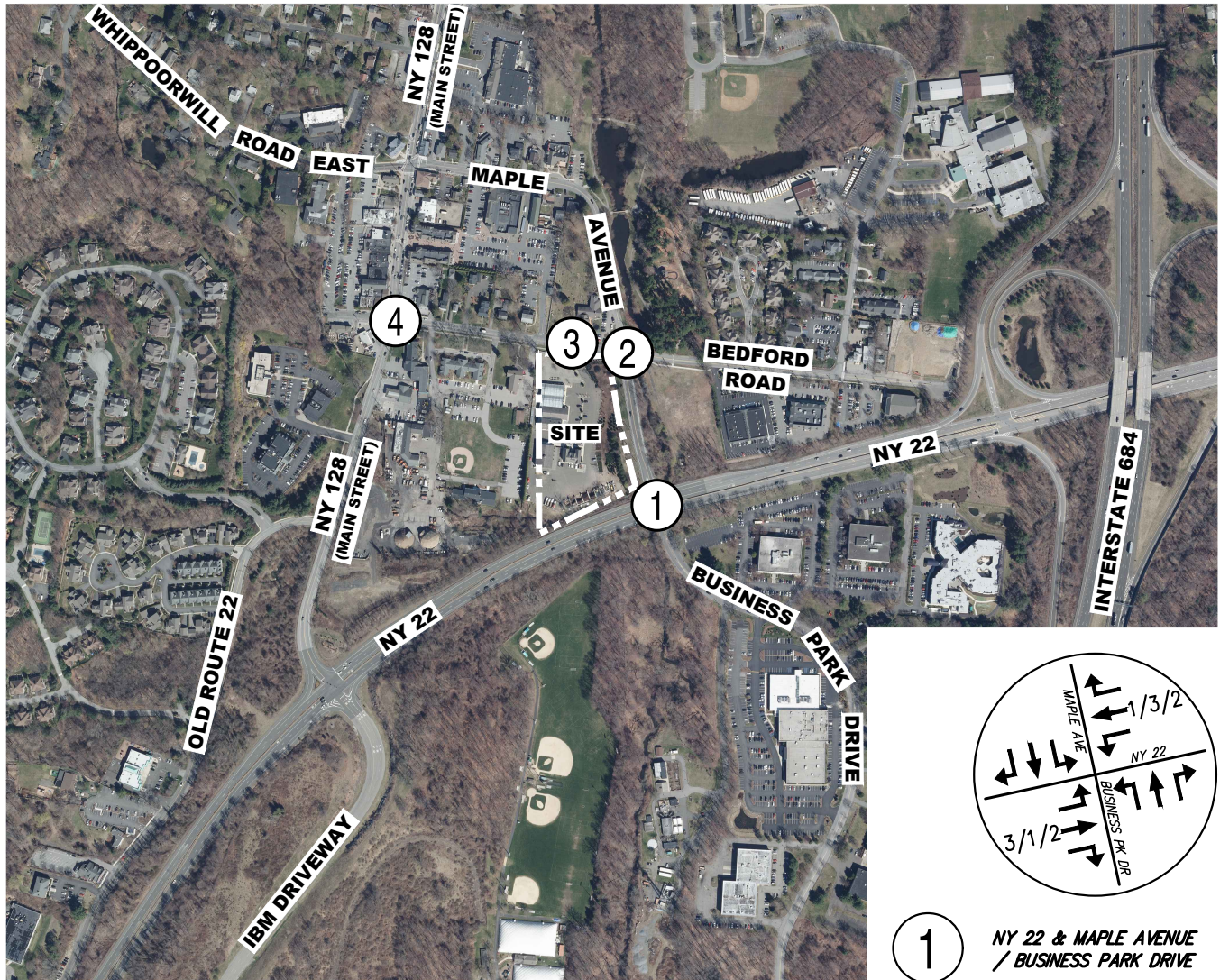


3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD

LEGEND: PEAK WEEKDAY AM HOUR / PEAK WEEKDAY PM HOUR / PEAK SATURDAY MIDDAY HOUR



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

OTHER DEVELOPMENT VOLUMES

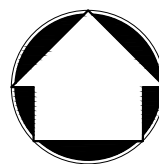
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470 MAIN STREET APARTMENTS

JMC PROJECT: 18053

FIGURE: 09

SCALE: 1" = 650'



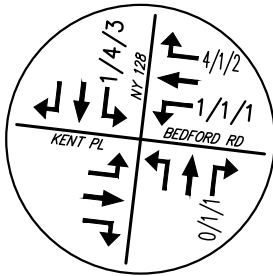
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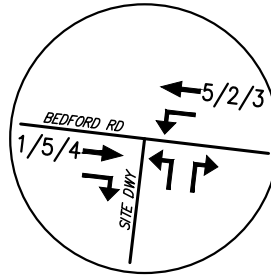
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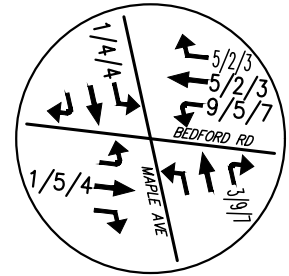
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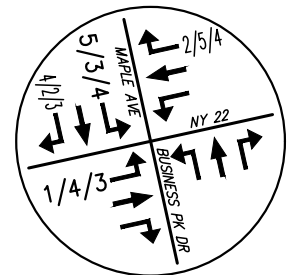
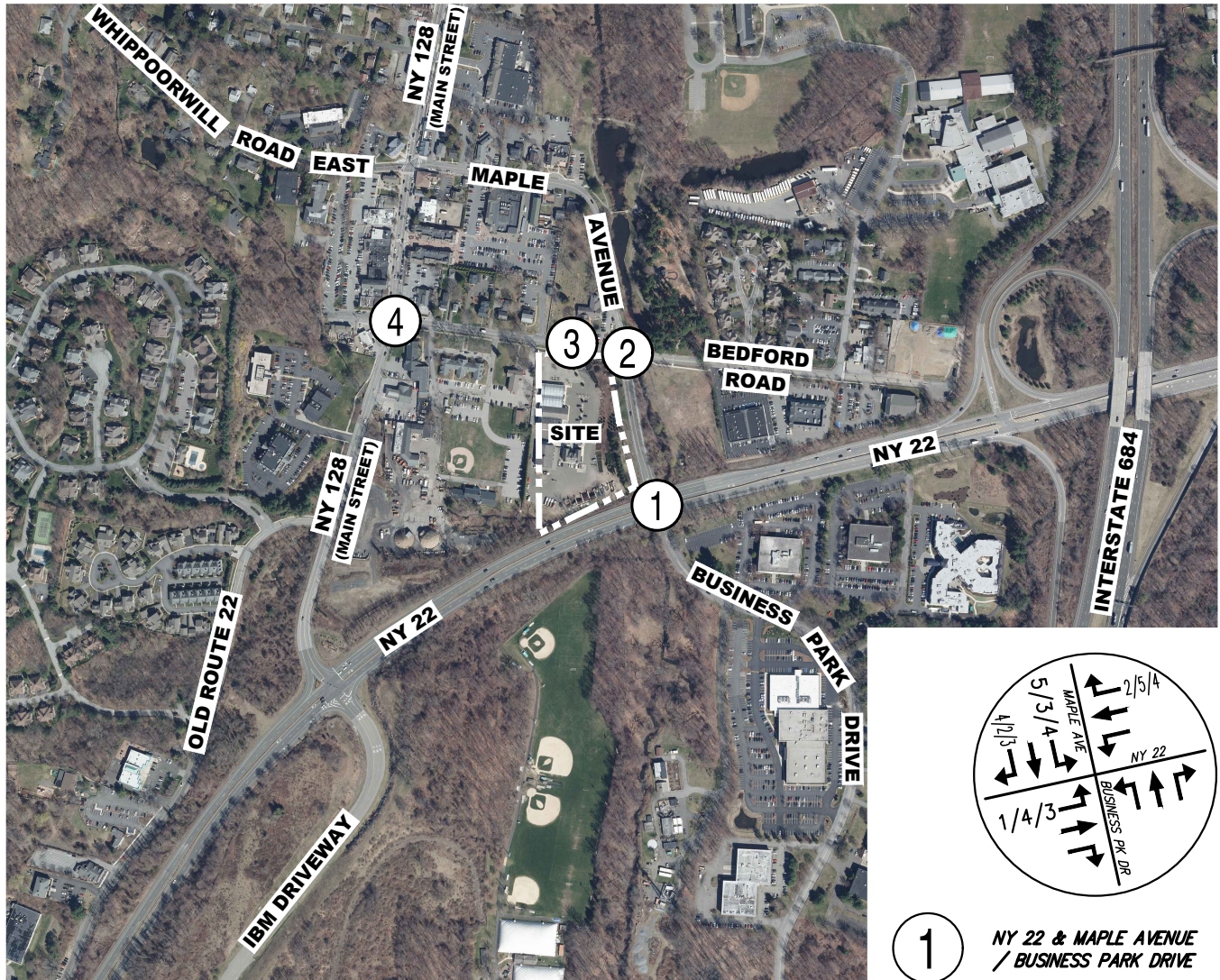


3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD

LEGEND: PEAK WEEKDAY AM HOUR / PEAK WEEKDAY PM HOUR / PEAK SATURDAY MIDDAY HOUR



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

OTHER DEVELOPMENT VOLUMES

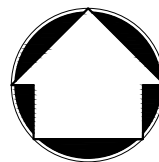
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BEDFORD ROAD APARTMENTS

JMC PROJECT: 18053

FIGURE: 10

SCALE: 1" = 650'



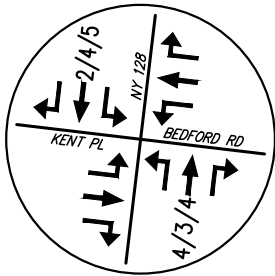
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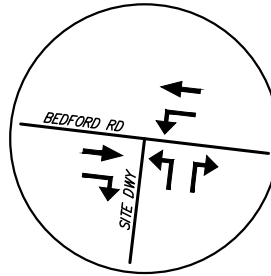
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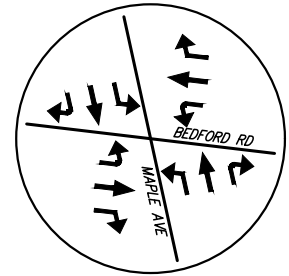
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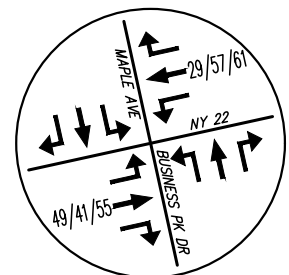
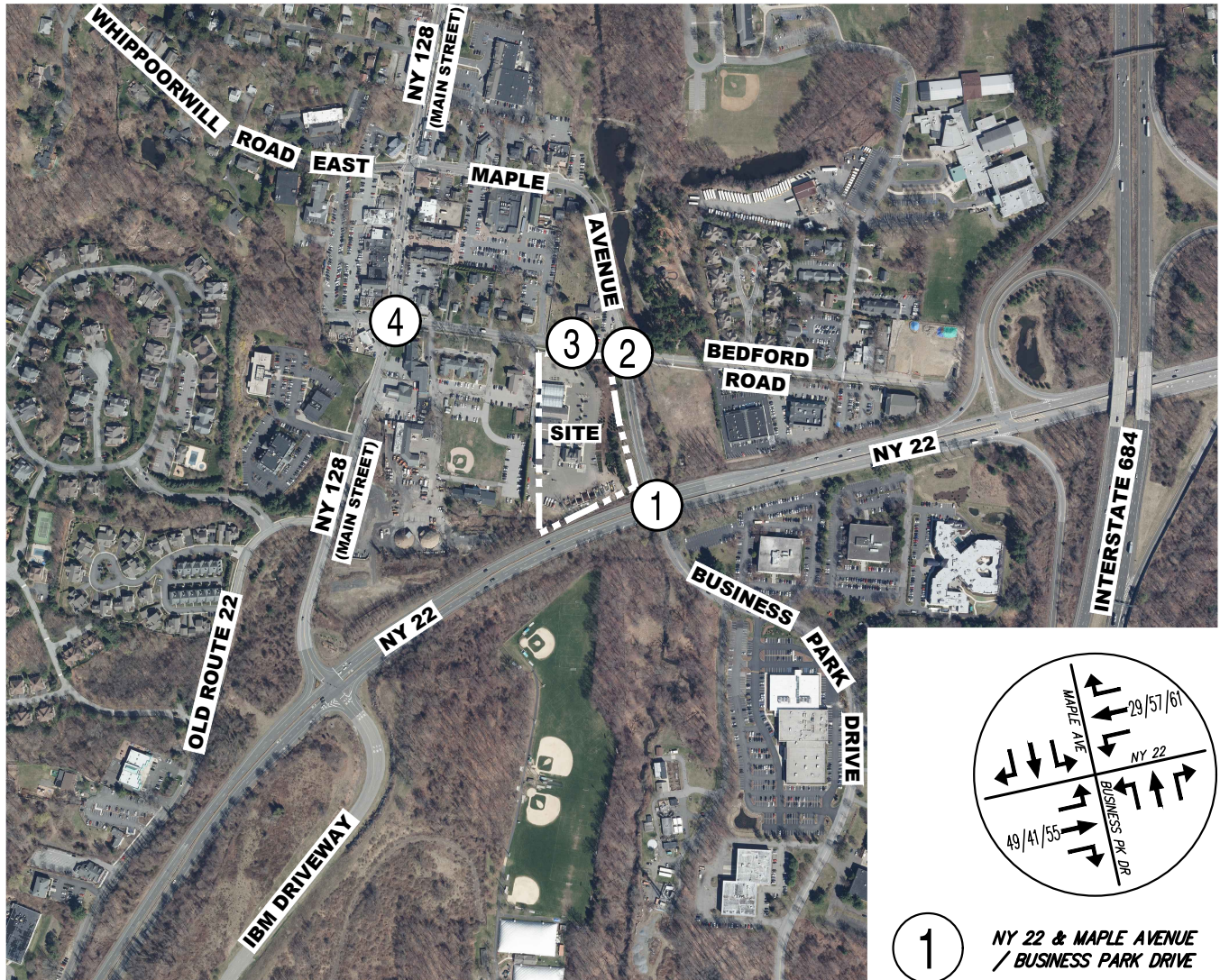


3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD

LEGEND: PEAK WEEKDAY AM HOUR / PEAK WEEKDAY PM HOUR / PEAK SATURDAY MIDDAY HOUR



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

OTHER DEVELOPMENT VOLUMES

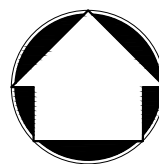
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EAGLE RIDGE

JMC PROJECT: 18053

FIGURE: 11

SCALE: 1" = 650'



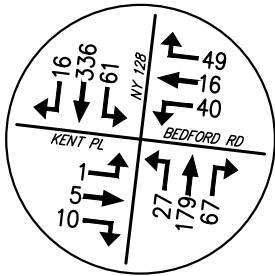
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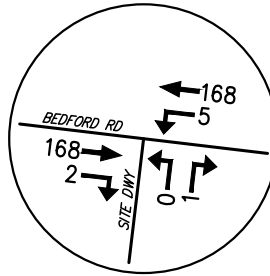
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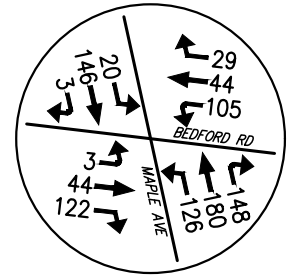
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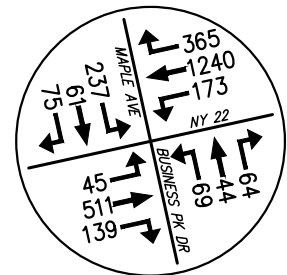
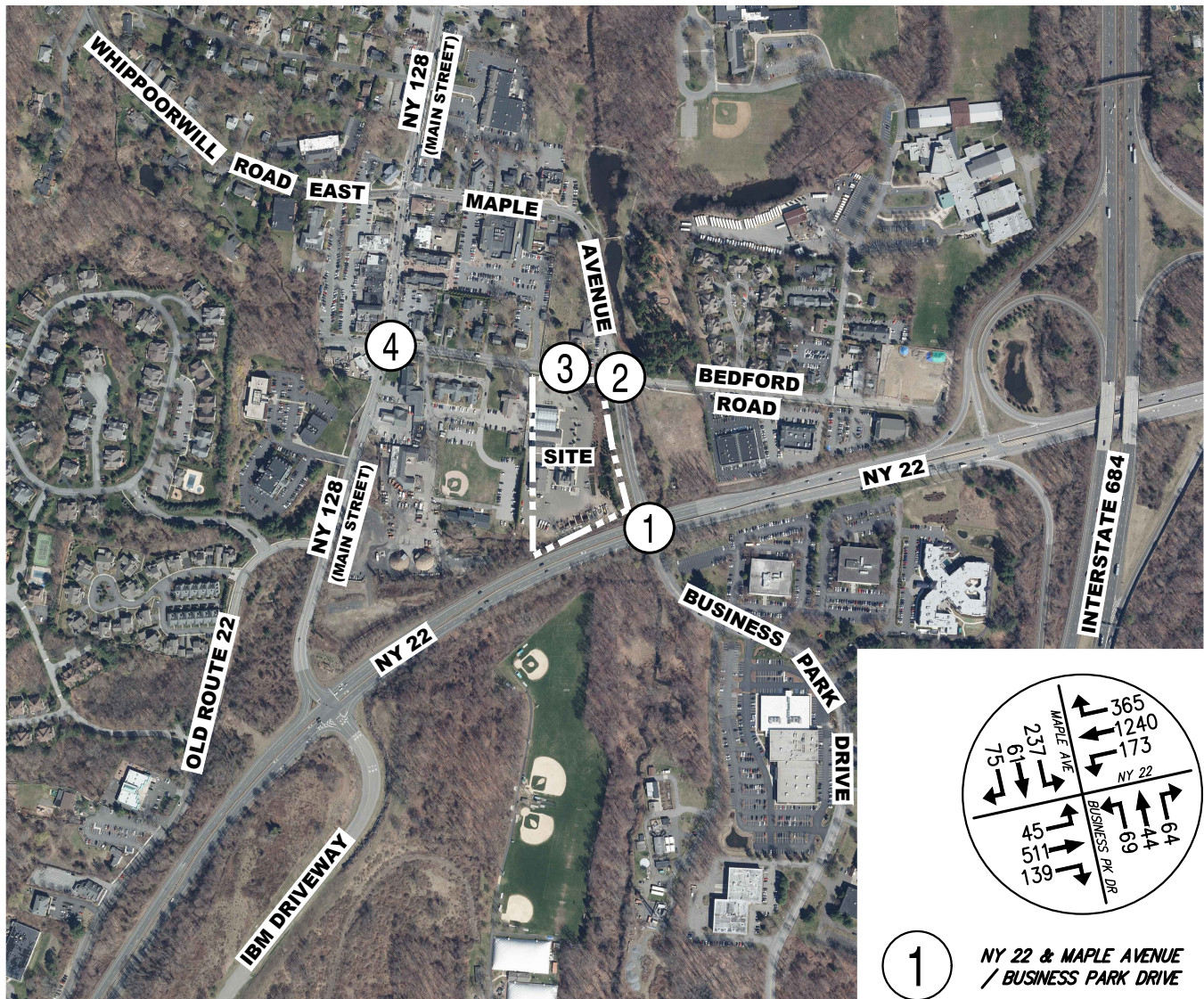
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3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

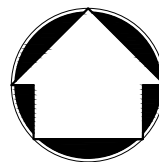
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DATE: 12/17/2018

JMC PROJECT: 18053

FIGURE: 12

SCALE: 1" = 650'



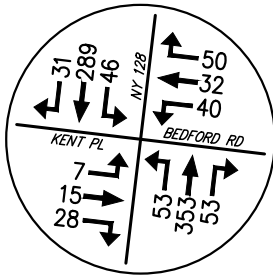
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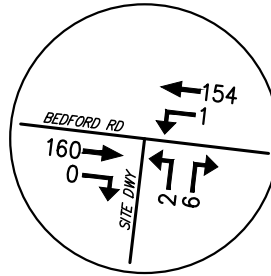
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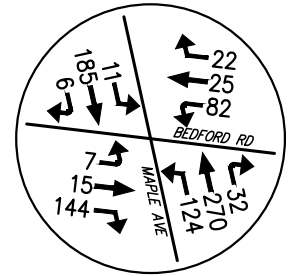
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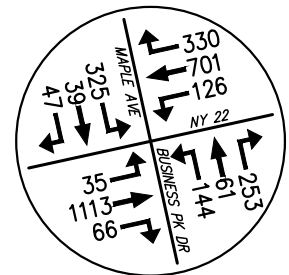
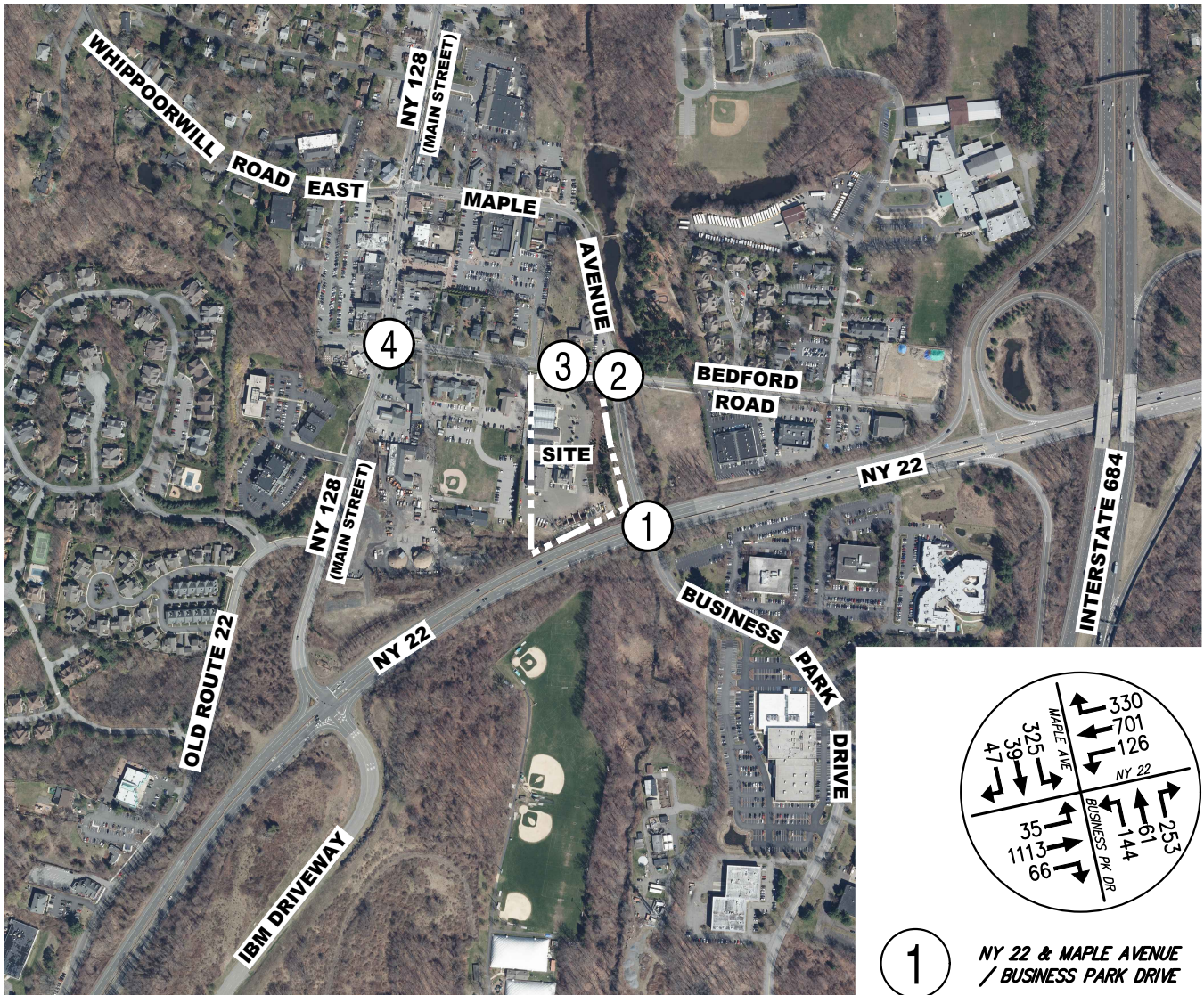
3

BEDFORD ROAD
& SITE DRIVEWAY



2

MAPLE AVENUE
& BEDFORD ROAD



1

NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

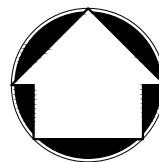
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FIGURE: 13

SCALE: 1" = 650'



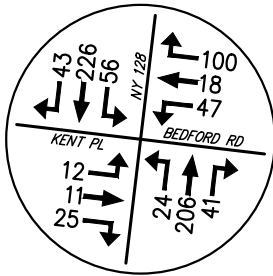
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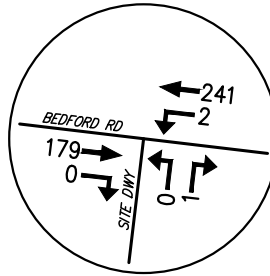
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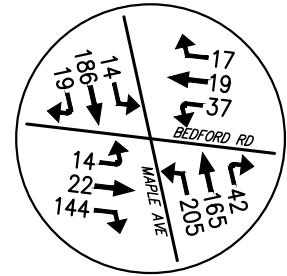
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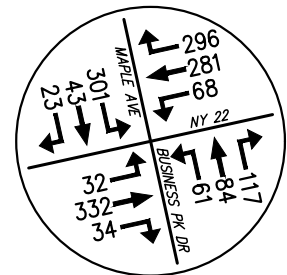
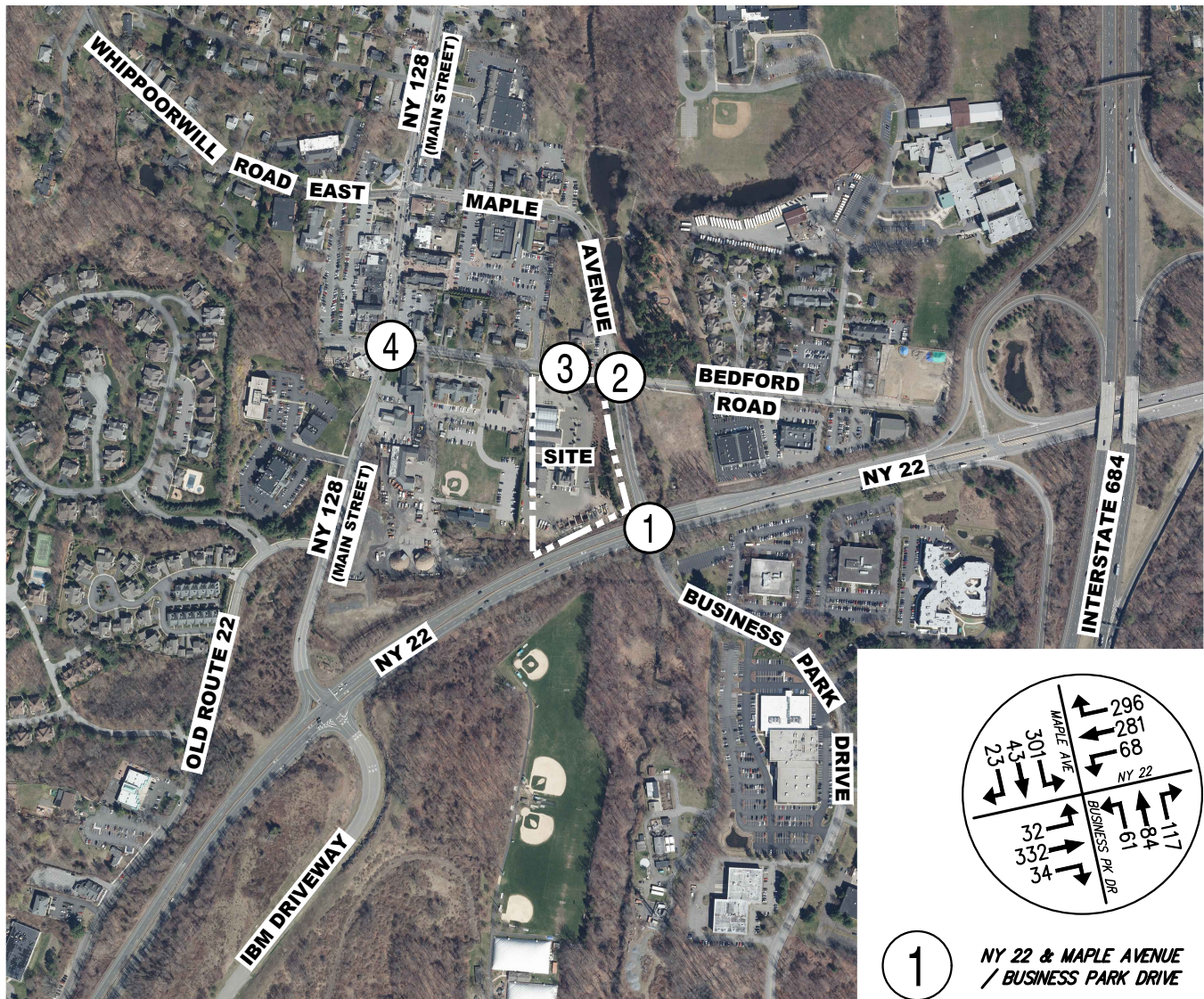
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& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD



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/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

2021 NO BUILD VOLUMES

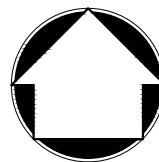
PEAK SATURDAY MIDDAY HOUR (11:30 - 12:30)

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FIGURE: 14

SCALE: 1" = 650'



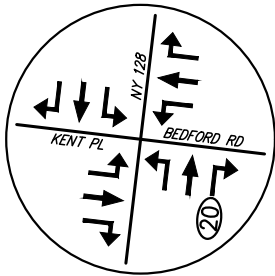
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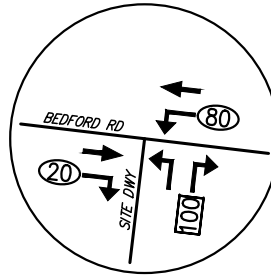
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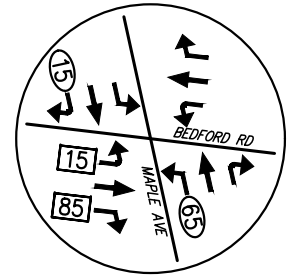
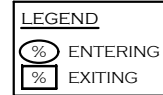
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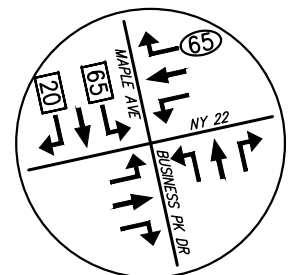
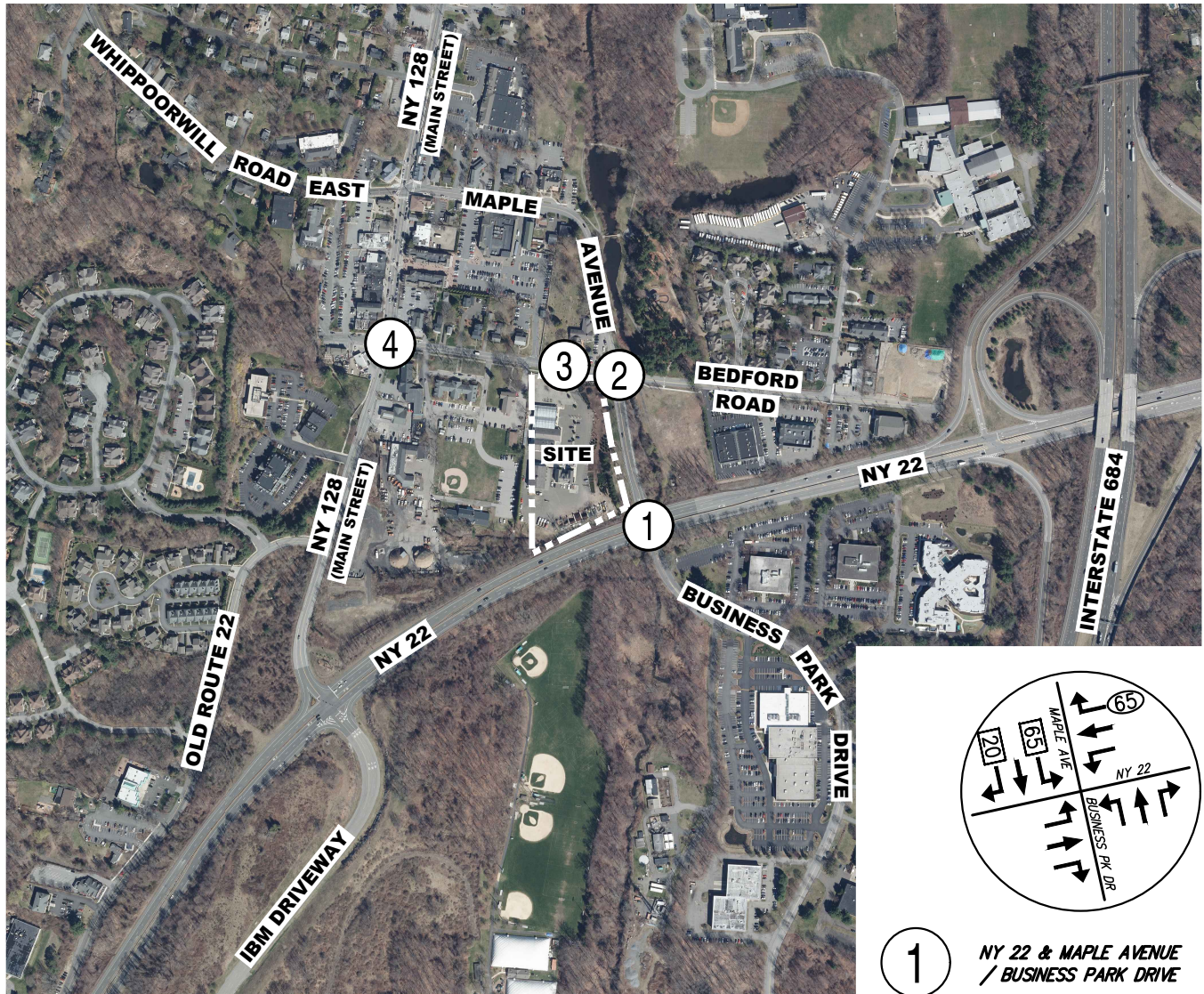
4 NY 128 (MAIN STREET)
& BEDFORD ROAD
/ KENT PLACE



3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

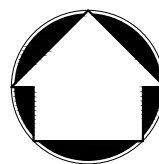
NET DRIVEWAY TRIP DISTRIBUTIONS

REVISED: 02/21/2019
DATE: 12/17/2018

JMC PROJECT: 18053

FIGURE: 15

SCALE: 1" = 650'



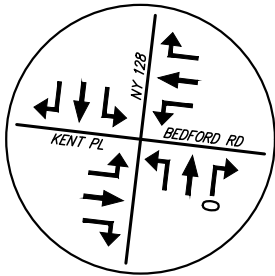
120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

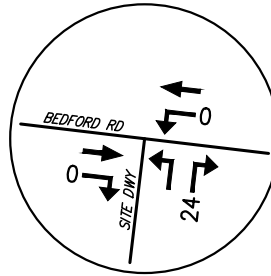
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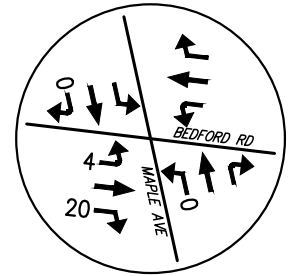
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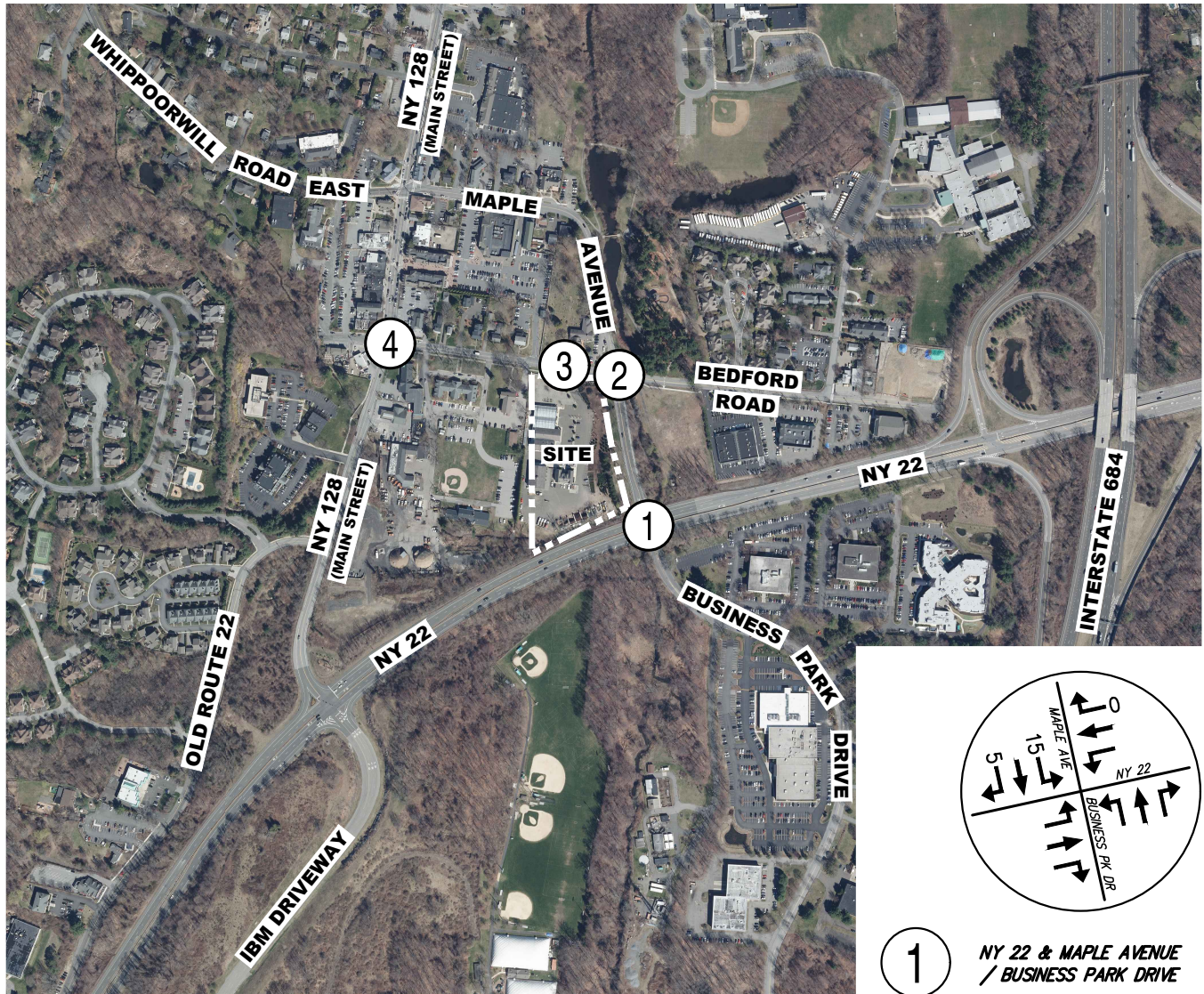
4 NY 128 (MAIN STREET)
& BEDFORD ROAD
/ KENT PLACE



3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

NET DRIVEWAY VOLUMES

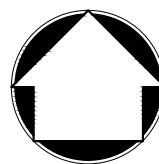
REVISED: 02/21/2019
DATE: 12/17/2018

PEAK WEEKDAY AM HOUR

JMC PROJECT: 18053

FIGURE: 16

SCALE: 1" = 650'



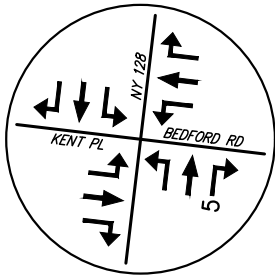
120 BEDFORD RD
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NY 10504

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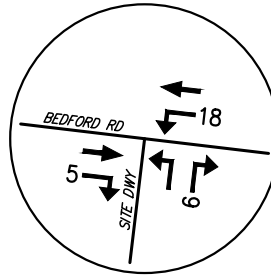
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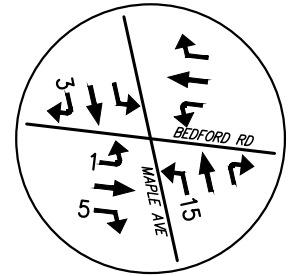
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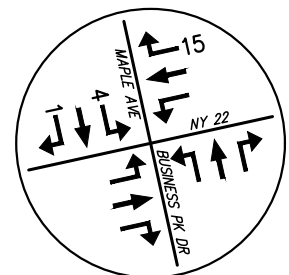
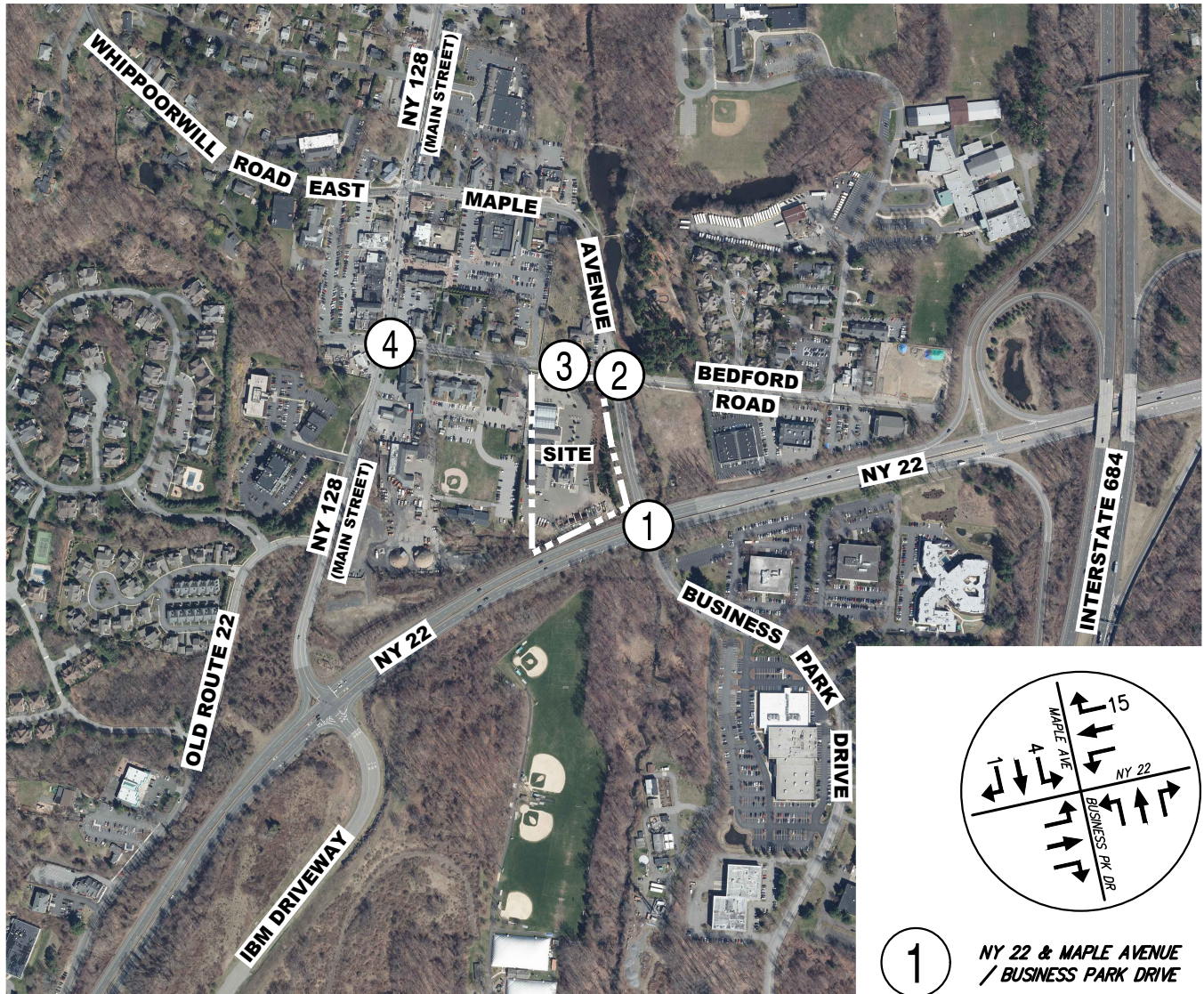
4 NY 128 (MAIN STREET)
& BEDFORD ROAD
/ KENT PLACE



3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

NET DRIVEWAY VOLUMES

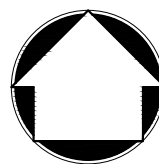
REVISED: 02/21/2019
DATE: 12/17/2018

PEAK WEEKDAY PM HOUR

JMC PROJECT: 18053

FIGURE: 17

SCALE: 1" = 650'



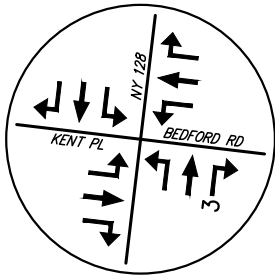
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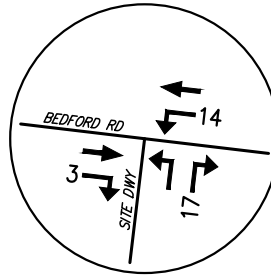
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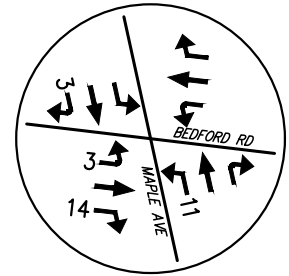
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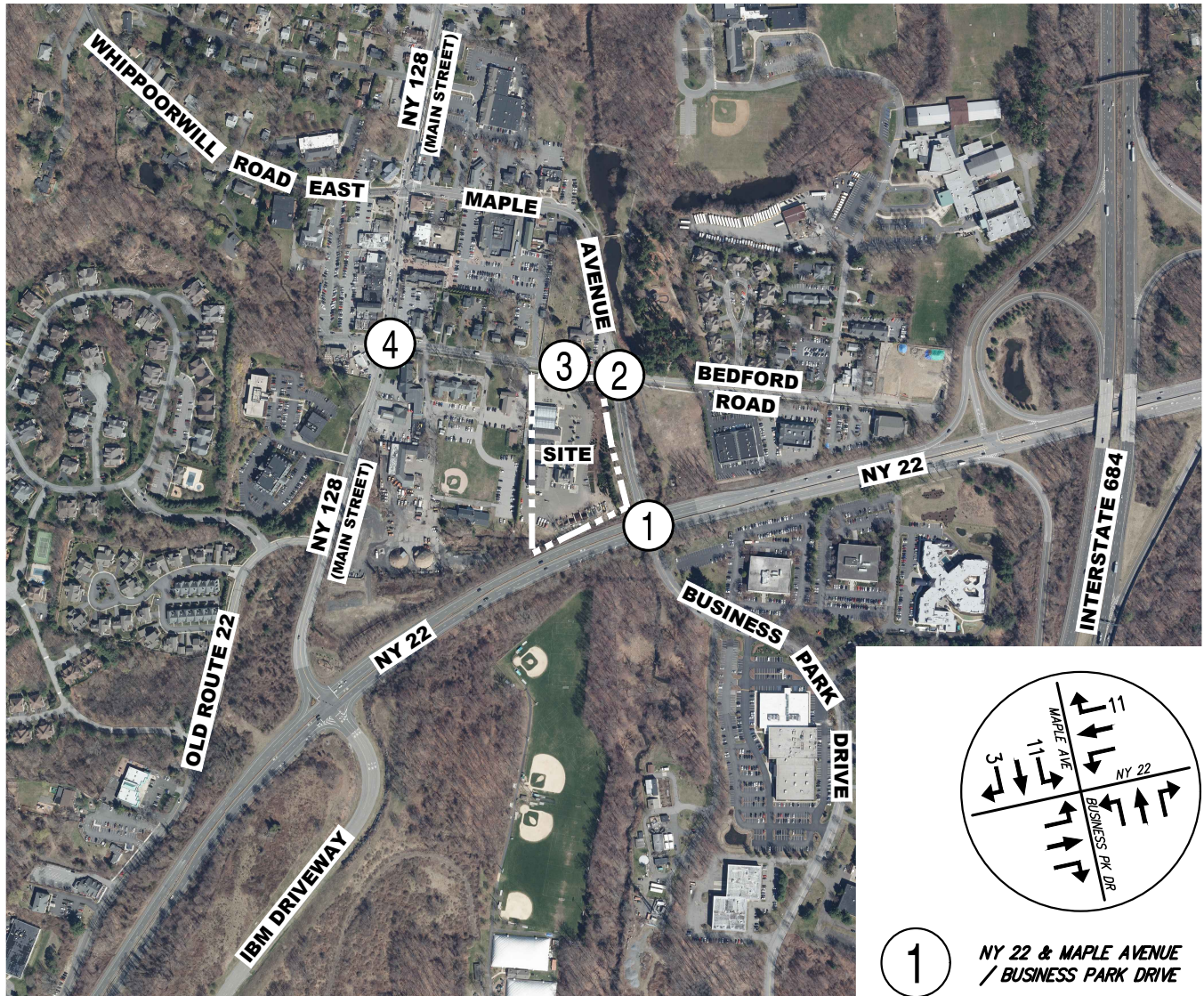
4 NY 128 (MAIN STREET)
& BEDFORD ROAD
/ KENT PLACE



3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

NET DRIVEWAY VOLUMES

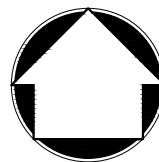
REVISED: 02/21/2019
DATE: 12/17/2018

PEAK SATURDAY MIDDAY HOUR

JMC PROJECT: 18053

FIGURE: 18

SCALE: 1" = 650'



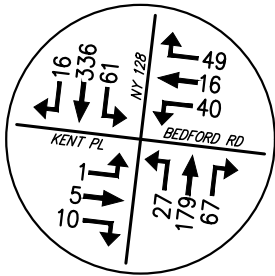
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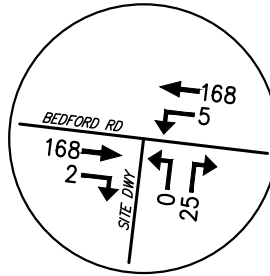
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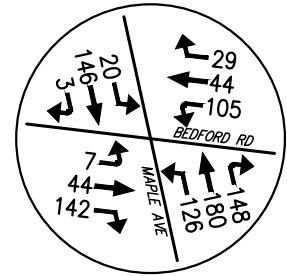
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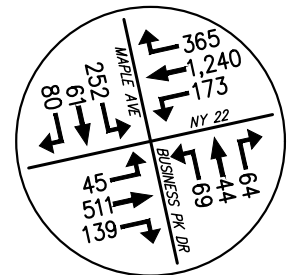
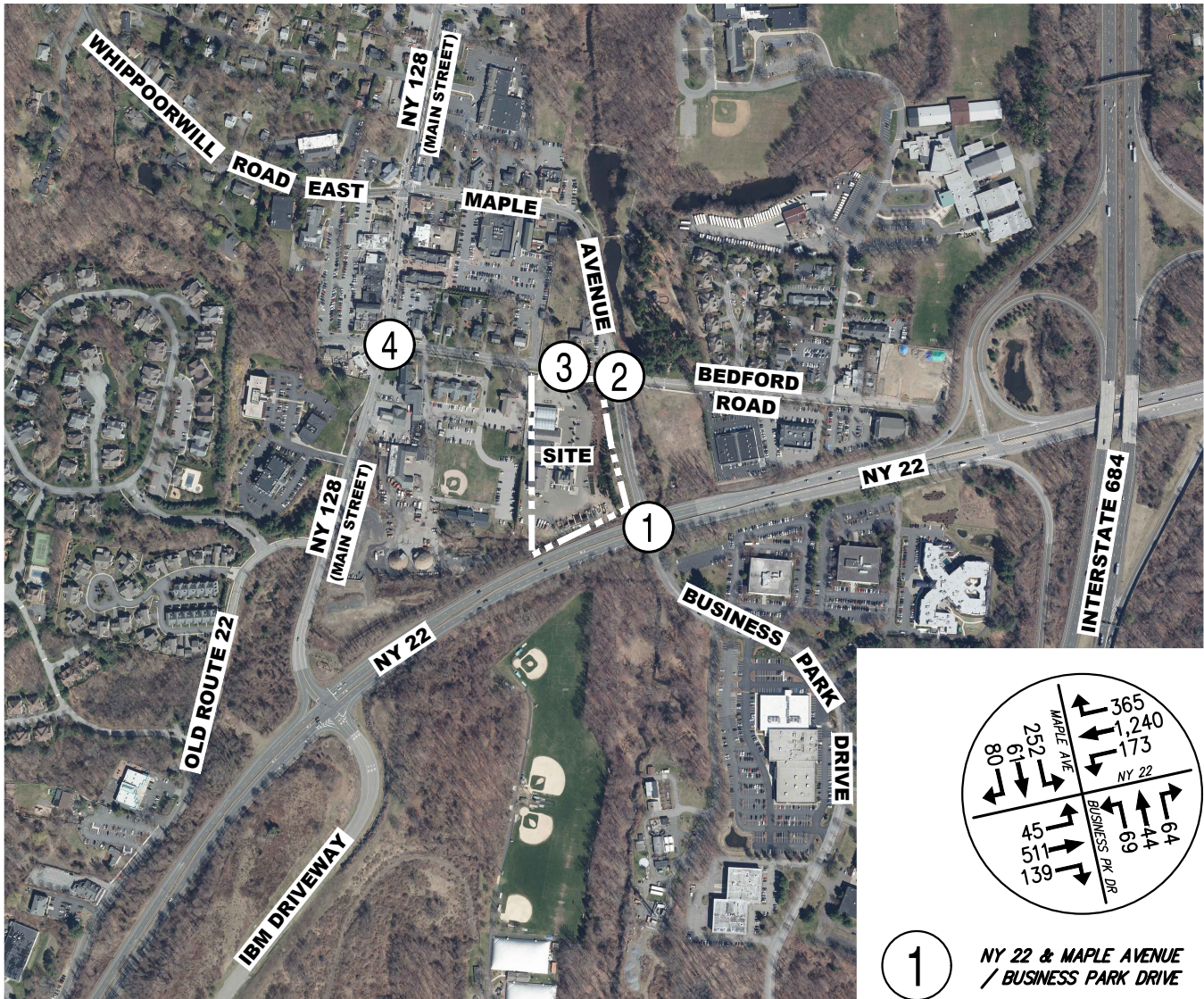
4 NY 128 (MAIN STREET)
& BEDFORD ROAD
/ KENT PLACE



3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

2021 BUILD VOLUMES

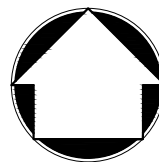
REVISED: 02/21/2019
DATE: 12/17/2018

PEAK WEEKDAY AM HOUR (8:00 - 9:00)

JMC PROJECT: 18053

FIGURE: 19

SCALE: 1" = 650'



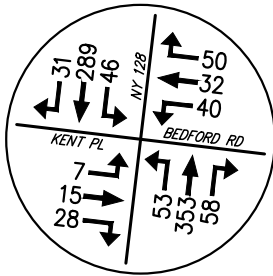
120 BEDFORD RD
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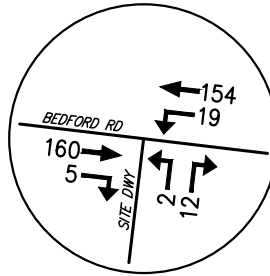
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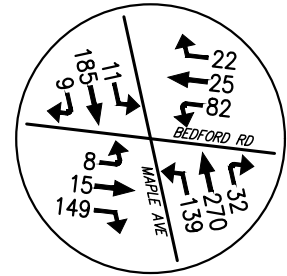
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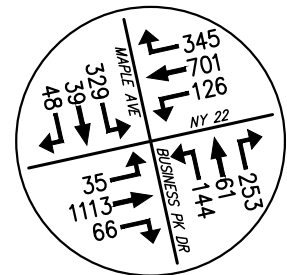
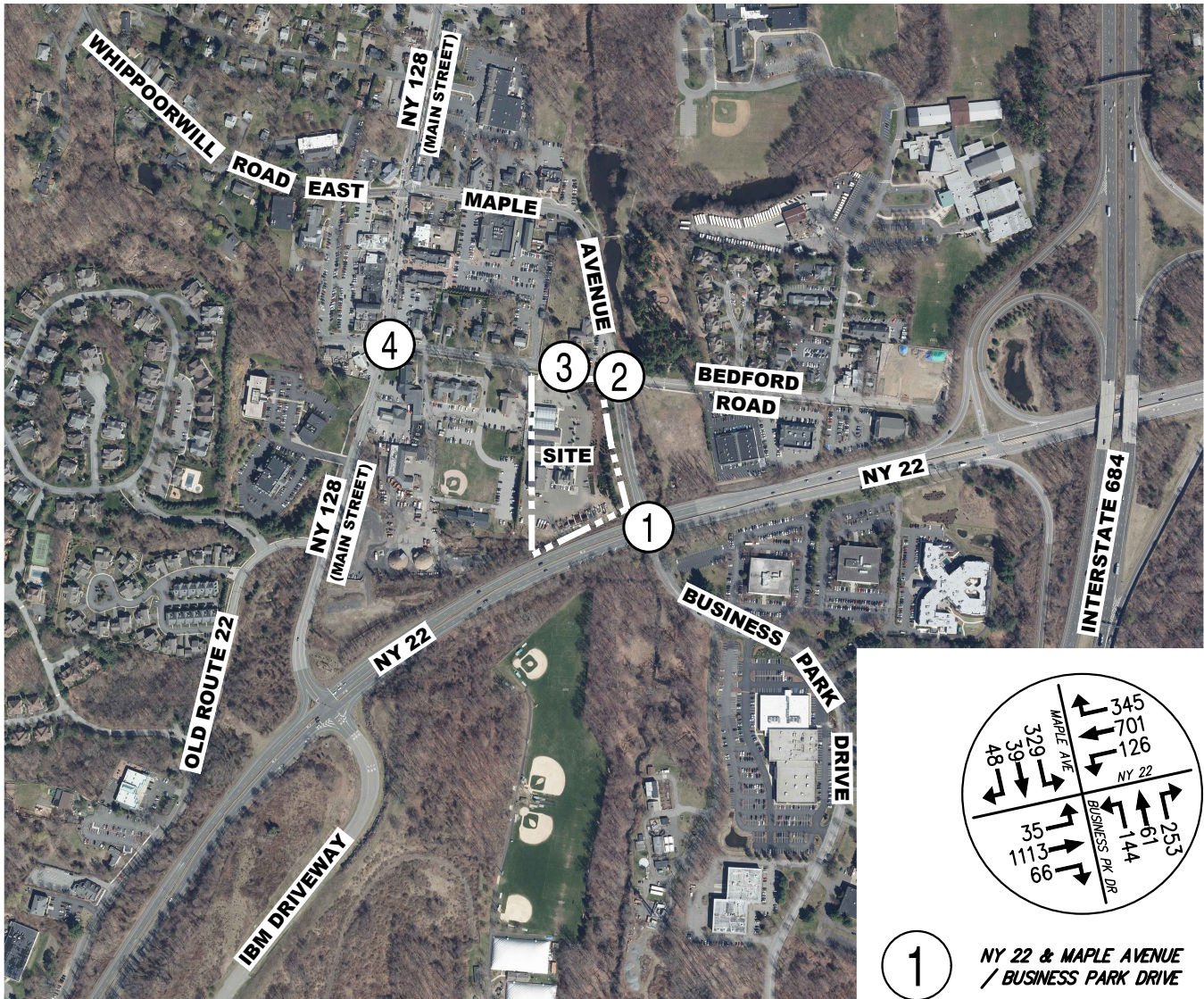
4 NY 128 (MAIN STREET)
& BEDFORD ROAD
/ KENT PLACE



3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

2021 BUILD VOLUMES

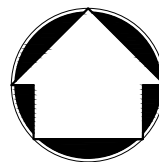
REVISED: 02/21/2019
DATE: 12/17/2018

PEAK WEEKDAY PM HOUR (4:30 - 5:30)

JMC PROJECT: 18053

FIGURE: 20

SCALE: 1" = 650'



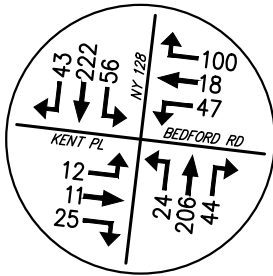
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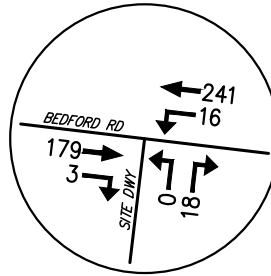
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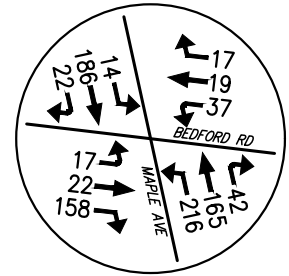
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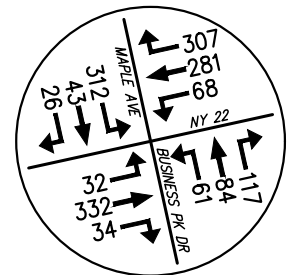
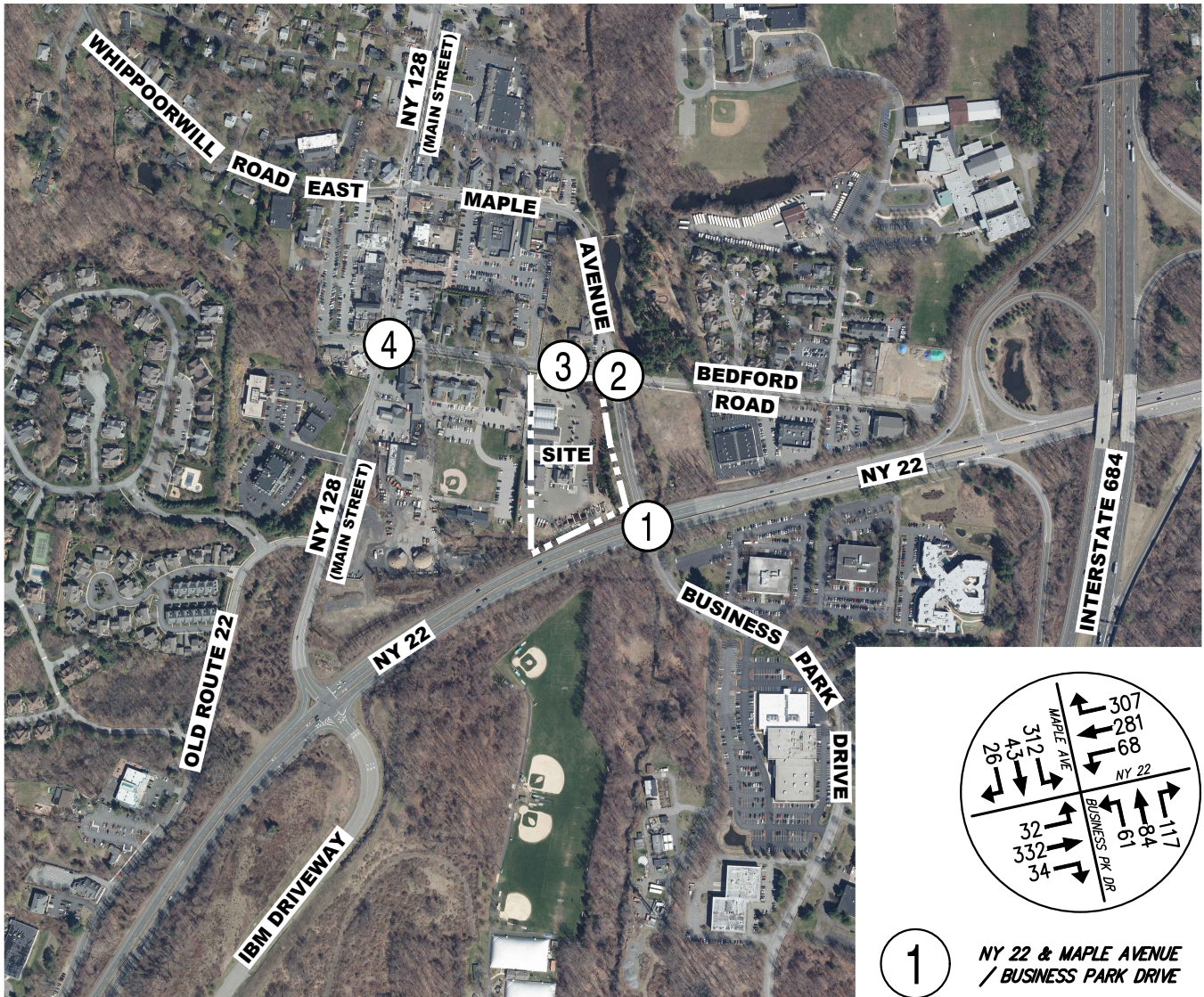
4 NY 128 (MAIN STREET)
& BEDFORD ROAD
/ KENT PLACE



3 BEDFORD ROAD
& SITE DRIVEWAY



2 MAPLE AVENUE
& BEDFORD ROAD



1 NY 22 & MAPLE AVENUE
/ BUSINESS PARK DRIVE

MARIANI GARDENS REDEVELOPMENT

45 BEDFORD ROAD

TOWN OF NORTH CASTLE, NEW YORK

2021 BUILD VOLUMES

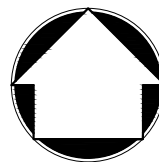
PEAK SATURDAY MIDDAY HOUR (11:30 - 12:30)

REVISED: 02/21/2019
DATE: 12/17/2018

JMC PROJECT: 18053

FIGURE: 21

SCALE: 1" = 650'



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APPENDIX C

TURNING MOVEMENT COUNTS

DATE:	1/7/2017
PERIOD:	11-1 PM
LOCATION:	NY 22 & Maple Avenue

ENTER COUNT DATA ON THIS PAGE

JOB NO:	16121
NAME:	BD
INT #:	1

TIME	CLASS	VEHICLE MOVEMENT												TOTAL VEHICLES	PEDESTRIAN MOVEMENT				TOTAL PEDS	INT. PHF
		1	2	3	4	5	6	7	8	9	10	11	12		A	B	C	D		
11:00 - 11:15 AM	TOTAL	14	5	64	46	65	11	14	49	12	8	20	28							
	TRUCK					1			2											
11:15 - 11:30 AM	TOTAL	19	8	102	89	105	24	18	97	17	15	41	42							
	TRUCK				1	1														
11:30 - 11:45 AM	TOTAL	24	20	189	167	141	44	26	160	23	27	61	63							
	TRUCK				1	2			1											
11:45 - 12:00 PM	TOTAL	30	31	248	206	169	56	29	227	35	35	76	78							
	TRUCK					1														
12:00 - 12:15 PM	TOTAL	34	34	301	269	216	74	37	278	45	59	90	122							
	TRUCK				1	1			1											
12:15 - 12:30 PM	TOTAL	36	45	360	341	298	89	43	346	50	74	114	154							
	TRUCK					2														
12:30 - 12:45 PM	TOTAL	38	57	435	393	358	105	49	413	59	88	129	183							
	TRUCK					1														
12:45 - 1:00 PM	TOTAL	44	65	482	439	417	120	55	468	72	98	135	197							
	TRUCK																			

- 1: Maple Ave - SB Right
- 2: Maple Ave - SB Thru
- 3: Maple Ave - SB Left
- 4: NY 22 - WB Right
- 5: NY 22 - WB Thru
- 6: NY 22 - WB Left

- 7: NY 22 - EB Left
- 8: NY 22 - EB Thru
- 9: NY 22 - EB Right
- 10: Business Park - NB Left
- 11: Business Park - NB Thru
- 12: Business Park - NB Right

- A: No Pedestrians
- B:
- C:
- D:

DATE:	1/7/2017
PERIOD:	11-1 PM
LOCATION:	NY 22 & Maple Avenue

CALCULATIONS - DO NOT EDIT THIS SHEET

JOB NO:	16121
NAME:	BD
INT #:	1

TIME	CLASS	VEHICLE MOVEMENT												TOTAL VEHICLES	PEDESTRIAN MOVEMENT				TOTAL PEDS	INT. PHF
		1	2	3	4	5	6	7	8	9	10	11	12		A	B	C	D		
11:00 - 11:15 AM	TOTAL	14	5	64	46	65	11	14	49	12	8	20	28	336						
	TRUCK	0	0	0	0	1	0	0	2	0	0	0	0		0	0	0	0	0	
11:15 - 11:30 AM	TOTAL	5	3	38	43	40	13	4	48	5	7	21	14	241						
	TRUCK	0	0	0	1	1	0	0	0	0	0	0	0		0	0	0	0	0	
11:30 - 11:45 AM	TOTAL	5	12	87	78	36	20	8	63	6	12	20	21	368						
	TRUCK	0	0	0	1	2	0	0	1	0	0	0	0		0	0	0	0	0	
11:45 - 12:00 PM	TOTAL	6	11	59	39	28	12	3	67	12	8	15	15	275						
	TRUCK	0	0	0	0	1	0	0	0	0	0	0	0		0	0	0	0	0	
12:00 - 12:15 PM	TOTAL	4	3	53	63	47	18	8	51	10	24	14	44	339						
	TRUCK	0	0	0	1	1	0	0	1	0	0	0	0		0	0	0	0	0	
12:15 - 12:30 PM	TOTAL	2	11	59	72	82	15	6	68	5	15	24	32	391						
	TRUCK	0	0	0	0	2	0	0	0	0	0	0	0		0	0	0	0	0	
12:30 - 12:45 PM	TOTAL	2	12	75	52	60	16	6	67	9	14	15	29	357						
	TRUCK	0	0	0	0	1	0	0	0	0	0	0	0		0	0	0	0	0	
12:45 - 1:00 PM	TOTAL	6	8	47	46	59	15	6	55	13	10	6	14	285						
	TRUCK	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	

- 1: Maple Ave - SB Right
- 2: Maple Ave - SB Thru
- 3: Maple Ave - SB Left
- 4: NY 22 - WB Right
- 5: NY 22 - WB Thru
- 6: NY 22 - WB Left

- 7: NY 22 - EB Left
- 8: NY 22 - EB Thru
- 9: NY 22 - EB Right
- 10: Business Park - NB Left
- 11: Business Park - NB Thru
- 12: Business Park - NB Right

- A: No Pedestrians
- B:
- C:
- D:

DATE:	1/7/2017
PERIOD:	11-1 PM
LOCATION:	NY 22 & Maple Avenue

PEAK HOUR MOVEMENTS & % HEAVY VEHICLES - DO NOT EDIT THIS SHEET

JOB NO:	16121
NAME:	BD
INT #:	1

TIME	CLASS	VEHICLE MOVEMENT												TOTAL VEHICLES	PEDESTRIAN MOVEMENT				TOTAL PEDS	INT. PHF
		1	2	3	4	5	6	7	8	9	10	11	12		A	B	C	D		
11:00 - 12:00 AM	TOTAL	30	31	248	206	169	56	29	227	35	35	76	78	1,220						
	TRUCK	0%	0%	0%	1%	3%	0%	0%	1%	0%	0%	0%	0%		0	0	0	0	0	0.83
11:15 - 12:15 AM	TOTAL	20	29	237	223	151	63	23	229	33	51	70	94	1,223						
	TRUCK	0%	0%	0%	1%	3%	0%	0%	1%	0%	0%	0%	0%		0	0	0	0	0	0.83
11:30 - 12:30 AM	TOTAL	17	37	258	252	193	65	25	249	33	59	73	112	1,373						
	TRUCK	0%	0%	0%	1%	3%	0%	0%	1%	0%	0%	0%	0%		0	0	0	0	0	0.88
11:45 - 12:45 PM	TOTAL	14	37	246	226	217	61	23	253	36	61	68	120	1,362						
	TRUCK	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%		0	0	0	0	0	0.87
12:00 - 1:00 PM	TOTAL	14	34	234	233	248	64	26	241	37	63	59	119	1,372						
	TRUCK	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%		0	0	0	0	0	0.88

- 1: Maple Ave - SB Right
- 2: Maple Ave - SB Thru
- 3: Maple Ave - SB Left
- 4: NY 22 - WB Right
- 5: NY 22 - WB Thru
- 6: NY 22 - WB Left

- 7: NY 22 - EB Left
- 8: NY 22 - EB Thru
- 9: NY 22 - EB Right
- 10: Business Park - NB Left
- 11: Business Park - NB Thru
- 12: Business Park - NB Right

- A: No Pedestrians
- B:
- C:
- D:

DATE:	1/7/2017
PERIOD:	11-1 PM
LOCATION:	Maple Avenue & Bedford Road

ENTER COUNT DATA ON THIS PAGE

JOB NO:	16121
NAME:	MTP
INT #:	2

TIME	CLASS	VEHICLE MOVEMENT												TOTAL VEHICLES	PEDESTRIAN MOVEMENT				TOTAL PEDS	INT. PHF
		1	2	3	4	5	6	7	8	9	10	11	12		A	B	C	D		
11:00 - 11:15 AM	TOTAL	44	45	7	2	5	35	12	8	4	6	29	4			1				
	TRUCK		1																	
11:15 - 11:30 AM	TOTAL	81	80	14	3	9	67	18	14	10	7	61	6							
	TRUCK					1	7	1				1								
11:30 - 11:45 AM	TOTAL	125	118	21	7	13	101	21	19	14	11	116	10			1				
	TRUCK		1		2		1		1			1								
11:45 - 12:00 PM	TOTAL	164	161	24	9	16	136	32	24	16	15	168	16							
	TRUCK	2					1		1											
12:00 - 12:15 PM	TOTAL	208	197	38	14	20	172	37	29	20	16	200	19							
	TRUCK	1					2													
12:15 - 12:30 PM	TOTAL	260	239	48	17	26	205	47	30	23	17	240	24							
	TRUCK	2	1	1			1						1							
12:30 - 12:45 PM	TOTAL	283	278	56	20	31	234	56	33	27	20	276	28							
	TRUCK	1	1			1	1						1							
12:45 - 1:00 PM	TOTAL	305	310	65	24	33	262	62	40	30	21	309	28							
	TRUCK		1	1			2		1			1								

- 1: Maple Ave - NB Left
- 2: Maple Ave - NB Thru
- 3: Maple Ave - NB Right
- 4: Bedford Rd - EB Left
- 5: Bedford Rd - EB Thru
- 6: Bedford Rd - EB Right

- 7: Bedford Rd - WB Left
- 8: Bedford Rd - WB Thru
- 9: Bedford Rd - WB Right
- 10: Maple Ave - SB Left
- 11: Maple Ave - SB Thru
- 12: Maple Ave - SB Right

- A: Cross Maple Ave - North of Int
- B: Cross Bedford Rd - West of Int
- C: Cross Maple Ave - South of Int
- D: Cross Bedford Rd - East of Int

DATE:	1/7/2017
PERIOD:	11-1 PM
LOCATION:	Maple Avenue & Bedford Road

CALCULATIONS - DO NOT EDIT THIS SHEET

JOB NO:	16121
NAME:	MTP
INT #:	2

TIME	CLASS	VEHICLE MOVEMENT												TOTAL VEHICLES	PEDESTRIAN MOVEMENT				TOTAL PEDS	INT. PHF
		1	2	3	4	5	6	7	8	9	10	11	12		A	B	C	D		
11:00 - 11:15 AM	TOTAL	44	45	7	2	5	35	12	8	4	6	29	4	201						
	TRUCK	0	1	0	0	0	0	0	0	0	0	0	0		0	0	1	0	1	
11:15 - 11:30 AM	TOTAL	37	35	7	1	4	32	6	6	6	1	32	2	169						
	TRUCK	0	0	0	0	1	7	1	0	0	0	1	0		0	0	0	0	0	
11:30 - 11:45 AM	TOTAL	44	38	7	4	4	34	3	5	4	4	55	4	206						
	TRUCK	0	1	0	2	0	1	0	1	0	0	1	0		0	0	1	0	1	
11:45 - 12:00 PM	TOTAL	39	43	3	2	3	35	11	5	2	4	52	6	205						
	TRUCK	2	0	0	0	0	1	0	1	0	0	0	0		0	0	0	0	0	
12:00 - 12:15 PM	TOTAL	44	36	14	5	4	36	5	5	4	1	32	3	189						
	TRUCK	1	0	0	0	0	2	0	0	0	0	0	0		0	0	0	0	0	
12:15 - 12:30 PM	TOTAL	52	42	10	3	6	33	10	1	3	1	40	5	206						
	TRUCK	2	1	1	0	0	1	0	0	0	0	0	1		0	0	0	0	0	
12:30 - 12:45 PM	TOTAL	23	39	8	3	5	29	9	3	4	3	36	4	166						
	TRUCK	1	1	0	0	1	1	0	0	0	0	0	1		0	0	0	0	0	
12:45 - 1:00 PM	TOTAL	22	32	9	4	2	28	6	7	3	1	33	0	147						
	TRUCK	0	1	1	0	0	2	0	1	0	0	1	0		0	0	0	0	0	

- 1: Maple Ave - NB Left
- 2: Maple Ave - NB Thru
- 3: Maple Ave - NB Right
- 4: Bedford Rd - EB Left
- 5: Bedford Rd - EB Thru
- 6: Bedford Rd - EB Right

- 7: Bedford Rd - WB Left
- 8: Bedford Rd - WB Thru
- 9: Bedford Rd - WB Right
- 10: Maple Ave - SB Left
- 11: Maple Ave - SB Thru
- 12: Maple Ave - SB Right

- A: Cross Maple Ave - North of Int
- B: Cross Bedford Rd - West of Int
- C: Cross Maple Ave - South of Int
- D: Cross Bedford Rd - East of Int

DATE:	1/7/2017
PERIOD:	11-1 PM
LOCATION:	Maple Avenue & Bedford Road

PEAK HOUR MOVEMENTS & % HEAVY VEHICLES - DO NOT EDIT THIS SHEET

JOB NO:	16121
NAME:	MTP
INT #:	2

TIME	CLASS	VEHICLE MOVEMENT												TOTAL VEHICLES	PEDESTRIAN MOVEMENT				TOTAL PEDS	INT. PHF
		1	2	3	4	5	6	7	8	9	10	11	12		A	B	C	D		
11:00 - 12:00 AM	TOTAL	164	161	24	9	16	136	32	24	16	15	168	16	781						
	TRUCK	1%	1%	0%	22%	6%	7%	3%	8%	0%	0%	1%	0%		0	0	2	0	2	0.95
11:15 - 12:15 AM	TOTAL	164	152	31	12	15	137	25	21	16	10	171	15	769						
	TRUCK	2%	1%	0%	17%	7%	8%	4%	10%	0%	0%	1%	0%		0	0	1	0	1	0.93
11:30 - 12:30 AM	TOTAL	179	159	34	14	17	138	29	16	13	10	179	18	806						
	TRUCK	3%	1%	3%	14%	0%	4%	0%	13%	0%	0%	1%	6%		0	0	1	0	1	0.98
11:45 - 12:45 PM	TOTAL	158	160	35	13	18	133	35	14	13	9	160	18	766						
	TRUCK	4%	1%	3%	0%	6%	4%	0%	7%	0%	0%	0%	11%		0	0	0	0	0	0.93
12:00 - 1:00 PM	TOTAL	141	149	41	15	17	126	30	16	14	6	141	12	708						
	TRUCK	3%	2%	5%	0%	6%	5%	0%	6%	0%	0%	1%	17%		0	0	0	0	0	0.86

- 1: Maple Ave - NB Left
- 2: Maple Ave - NB Thru
- 3: Maple Ave - NB Right
- 4: Bedford Rd - EB Left
- 5: Bedford Rd - EB Thru
- 6: Bedford Rd - EB Right

- 7: Bedford Rd - WB Left
- 8: Bedford Rd - WB Thru
- 9: Bedford Rd - WB Right
- 10: Maple Ave - SB Left
- 11: Maple Ave - SB Thru
- 12: Maple Ave - SB Right

- A: Cross Maple Ave - North of Int
- B: Cross Bedford Rd - West of Int
- C: Cross Maple Ave - South of Int
- D: Cross Bedford Rd - East of Int

DATE:	1/7/2017
PERIOD:	11-1 PM
LOCATION:	Main Street (NY 128) & Bedford Road/Kent Place

ENTER COUNT DATA ON THIS PAGE

JOB NO:	16121
NAME:	JA
INT #:	4

TIME	CLASS	VEHICLE MOVEMENT												TOTAL VEHICLES	PEDESTRIAN MOVEMENT				TOTAL PEDS	INT. PHF
		1	2	3	4	5	6	7	8	9	10	11	12		A	B	C	D		
11:00 - 11:15 AM	TOTAL	17	3	24	9	41	16	7	4	2	5	38	21			1	1			
	TRUCK			1		2														
11:15 - 11:30 AM	TOTAL	28	7	46	11	84	33	10	7	3	12	86	38		1	3				
	TRUCK	3				1			1				1							
11:30 - 11:45 AM	TOTAL	38	13	75	19	142	42	16	11	5	18	129	43			2	2			
	TRUCK	2	1	2		2						2								
11:45 - 12:00 PM	TOTAL	53	15	96	31	187	57	20	12	8	22	173	58		1	1	2			
	TRUCK	2				1						1								
12:00 - 12:15 PM	TOTAL	62	20	115	40	234	69	30	17	11	29	221	67		1	3	1			
	TRUCK	1																		
12:15 - 12:30 PM	TOTAL	72	24	140	52	289	84	34	18	15	35	273	76		1		2			
	TRUCK					2					1	1								
12:30 - 12:45 PM	TOTAL	82	24	156	59	347	95	42	23	18	38	323	89		2			1		
	TRUCK	1											2							
12:45 - 1:00 PM	TOTAL	89	33	168	65	391	110	45	25	20	42	374	101				3			
	TRUCK	1		2		2	1					1	1							

- 1: Bedford Rd - WB Left
- 2: Bedford Rd - WB Thru
- 3: Bedford Rd - WB Right
- 4: Main St - SB Right
- 5: Main St - SB Thru
- 6: Main St - SB Left

- 7: Kent PI - EB Right
- 8: Kent PI - EB Thru
- 9: Kent PI - EB Left
- 10: Main St - NB Left
- 11: Main St - NB Thru
- 12: Main St - NB Right

- A: Cross Kent PI - West of Int
- B: Cross Main St - North of Int
- C: Cross Bedford Rd - East of Int
- D: Cross Main St - South of Int

DATE:	1/7/2017
PERIOD:	11-1 PM
LOCATION:	Main Street (NY 128) & Bedford Road/Kent Place

CALCULATIONS - DO NOT EDIT THIS SHEET

JOB NO:	16121
NAME:	JA
INT #:	4

TIME	CLASS	VEHICLE MOVEMENT												TOTAL VEHICLES	PEDESTRIAN MOVEMENT				TOTAL PEDS	INT. PHF
		1	2	3	4	5	6	7	8	9	10	11	12		A	B	C	D		
11:00 - 11:15 AM	TOTAL	17	3	24	9	41	16	7	4	2	5	38	21	187						
	TRUCK	0	0	1	0	2	0	0	0	0	0	0	0		0	1	1	0	2	
11:15 - 11:30 AM	TOTAL	11	4	22	2	43	17	3	3	1	7	48	17	178						
	TRUCK	3	0	0	0	1	0	0	1	0	0	0	1		1	3	0	0	4	
11:30 - 11:45 AM	TOTAL	10	6	29	8	58	9	6	4	2	6	43	5	186						
	TRUCK	2	1	2	0	2	0	0	0	0	0	2	0		0	2	2	0	4	
11:45 - 12:00 PM	TOTAL	15	2	21	12	45	15	4	1	3	4	44	15	181						
	TRUCK	2	0	0	0	1	0	0	0	0	0	1	0		1	1	2	0	4	
12:00 - 12:15 PM	TOTAL	9	5	19	9	47	12	10	5	3	7	48	9	183						
	TRUCK	1	0	0	0	0	0	0	0	0	0	0	0		1	3	1	0	5	
12:15 - 12:30 PM	TOTAL	10	4	25	12	55	15	4	1	4	6	52	9	197						
	TRUCK	0	0	0	0	2	0	0	0	0	1	1	0		1	0	2	0	3	
12:30 - 12:45 PM	TOTAL	10	0	16	7	58	11	8	5	3	3	50	13	184						
	TRUCK	1	0	0	0	0	0	0	0	0	0	0	2		2	0	0	1	3	
12:45 - 1:00 PM	TOTAL	7	9	12	6	44	15	3	2	2	4	51	12	167						
	TRUCK	1	0	2	0	2	1	0	0	0	0	1	1		0	0	3	0	3	

- 1: Bedford Rd - WB Left
- 2: Bedford Rd - WB Thru
- 3: Bedford Rd - WB Right
- 4: Main St - SB Right
- 5: Main St - SB Thru
- 6: Main St - SB Left

- 7: Kent Pl - EB Right
- 8: Kent Pl - EB Thru
- 9: Kent Pl - EB Left
- 10: Main St - NB Left
- 11: Main St - NB Thru
- 12: Main St - NB Right

- A: Cross Kent Pl - West of Int
- B: Cross Main St - North of Int
- C: Cross Bedford Rd - East of Int
- D: Cross Main St - South of Int

DATE:	1/7/2017
PERIOD:	11-1 PM
LOCATION:	Main Street (NY 128) & Bedford Road/Kent Place

PEAK HOUR MOVEMENTS & % HEAVY VEHICLES - DO NOT EDIT THIS SHEET

JOB NO:	16121
NAME:	JA
INT #:	4

TIME	CLASS	VEHICLE MOVEMENT												TOTAL VEHICLES	PEDESTRIAN MOVEMENT				TOTAL PEDS	INT. PHF
		1	2	3	4	5	6	7	8	9	10	11	12		A	B	C	D		
11:00 - 12:00 AM	TOTAL	53	15	96	31	187	57	20	12	8	22	173	58	732						
	TRUCK	13%	7%	3%	0%	3%	0%	0%	8%	0%	0%	2%	2%		2	7	5	0	14	0.98
11:15 - 12:15 AM	TOTAL	45	17	91	31	193	53	23	13	9	24	183	46	728						
	TRUCK	18%	6%	2%	0%	2%	0%	0%	8%	0%	0%	2%	2%		3	9	5	0	17	0.98
11:30 - 12:30 AM	TOTAL	44	17	94	41	205	51	24	11	12	23	187	38	747						
	TRUCK	11%	6%	2%	0%	2%	0%	0%	0%	0%	4%	2%	0%		3	6	7	0	16	0.95
11:45 - 12:45 PM	TOTAL	44	11	81	40	205	53	26	12	13	20	194	46	745						
	TRUCK	9%	0%	0%	0%	1%	0%	0%	0%	0%	5%	1%	4%		5	4	5	1	15	0.95
12:00 - 1:00 PM	TOTAL	36	18	72	34	204	53	25	13	12	20	201	43	731						
	TRUCK	8%	0%	3%	0%	2%	2%	0%	0%	0%	5%	1%	7%		4	3	6	1	14	0.93

- 1: Bedford Rd - WB Left
- 2: Bedford Rd - WB Thru
- 3: Bedford Rd - WB Right
- 4: Main St - SB Right
- 5: Main St - SB Thru
- 6: Main St - SB Left

- 7: Kent PI - EB Right
- 8: Kent PI - EB Thru
- 9: Kent PI - EB Left
- 10: Main St - NB Left
- 11: Main St - NB Thru
- 12: Main St - NB Right

- A: Cross Kent PI - West of Int
- B: Cross Main St - North of Int
- C: Cross Bedford Rd - East of Int
- D: Cross Main St - South of Int

APPENDIX D

CAPACITY ANALYSES

Lanes, Volumes, Timings
1: Business Park Drive/Maple Avenue & NY 22

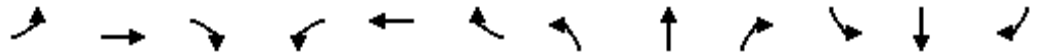
2018-BASE-AM
02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	438	135	168	1129	352	67	43	62	225	59	69
Future Volume (vph)	43	438	135	168	1129	352	67	43	62	225	59	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	11	11	11	11	11	11
Grade (%)		-1%			-2%			1%			-1%	
Storage Length (ft)	585		0	265		225	0		60	300		0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (ft)	125			150			25			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.99	
Frt		0.965				0.850			0.850		0.919	
Flt Protected	0.950			0.950				0.971		0.950		
Satd. Flow (prot)	1449	2975	0	1695	3345	1431	0	1645	1452	1566	1515	0
Flt Permitted	0.950			0.950				0.971		0.950		
Satd. Flow (perm)	1449	2975	0	1695	3345	1431	0	1641	1452	1566	1515	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30				215			110		37	
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		874			668			319			593	
Travel Time (s)		10.8			8.3			7.3			13.5	
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	21%	21%	7%	4%	9%	14%	13%	0%	7%	12%	2%	19%
Adj. Flow (vph)	46	466	144	179	1201	374	71	46	66	239	63	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	610	0	179	1201	374	0	117	66	239	136	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	0.99	0.99	1.03	0.99	0.99	1.05	1.05	1.05	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	1	1	2	2	1	1	
Detector Template							Left					
Leading Detector (ft)	83	83		83	83	35	20	68	68	50	55	
Trailing Detector (ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Position(ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Size(ft)	40	40		40	40	40	20	40	40	60	60	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	3.0	3.0		3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	43	43		43	43			38	38			
Detector 2 Size(ft)	40	40		40	40			30	30			
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex			

Lanes, Volumes, Timings
1: Business Park Drive/Maple Avenue & NY 22

2018-BASE-AM

02/15/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)	3.0	3.0		3.0	3.0			3.0	3.0			
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2			8			
Detector Phase	1	6		5	2	2	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	11.0	11.0	11.0	11.0	11.0	
Total Split (s)	26.0	56.0		26.0	56.0	56.0	26.0	26.0	26.0	41.0	41.0	
Total Split (%)	17.4%	37.6%		17.4%	37.6%	37.6%	17.4%	17.4%	17.4%	27.5%	27.5%	
Maximum Green (s)	20.0	50.0		20.0	50.0	50.0	20.0	20.0	20.0	35.0	35.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	
Act Effect Green (s)	9.5	40.5		17.2	51.3	51.3		14.1	14.1	23.7	23.7	
Actuated g/C Ratio	0.08	0.34		0.14	0.43	0.43		0.12	0.12	0.20	0.20	
v/c Ratio	0.40	0.60		0.74	0.84	0.51		0.61	0.25	0.78	0.41	
Control Delay	67.9	36.1		70.5	40.3	15.3		67.1	3.5	64.4	35.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	67.9	36.1		70.5	40.3	15.3		67.1	3.5	64.4	35.4	
LOS	E	D		E	D	B		E	A	E	D	
Approach Delay		38.4			38.0			44.2			53.8	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	35	201		134	451	86		89	0	180	68	
Queue Length 95th (ft)	84	316		#274	#767	229		170	8	297	140	
Internal Link Dist (ft)		794			588			239			513	
Turn Bay Length (ft)	585			265		225			60	300		
Base Capacity (vph)	247	1288		289	1429	734		281	339	468	478	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.19	0.47		0.62	0.84	0.51		0.42	0.19	0.51	0.28	

Intersection Summary

Area Type: Other

Cycle Length: 149

Actuated Cycle Length: 120

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 40.5

Intersection LOS: D

Intersection Capacity Utilization 73.0%

ICU Level of Service C

Analysis Period (min) 15

1: Business Park Drive/Maple Avenue & NY 22

02/15/2019

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Business Park Drive/Maple Avenue & NY 22

 Ø1	 Ø2	 Ø4	 Ø8
26 s	56 s	41 s	26 s
 Ø5	 Ø6		
26 s	56 s		

HCM 6th Signalized Intersection Summary
1: Business Park Drive/Maple Avenue & NY 22

2018-BASE-AM
02/15/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	438	135	168	1129	352	67	43	62	225	59	69
Future Volume (veh/h)	43	438	135	168	1129	352	67	43	62	225	59	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1624	1624	1624	1919	1844	1769	1894	1894	1790	1759	1909	1909
Adj Flow Rate, veh/h	46	466	144	179	1201	374	71	46	66	239	63	73
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	21	21	21	4	9	14	0	0	7	12	2	2
Cap, veh/h	80	814	250	223	1473	630	100	65	135	294	141	164
Arrive On Green	0.05	0.35	0.35	0.12	0.42	0.42	0.09	0.09	0.09	0.18	0.18	0.18
Sat Flow, veh/h	1547	2325	713	1827	3503	1499	1116	723	1507	1675	805	933
Grp Volume(v), veh/h	46	308	302	179	1201	374	117	0	66	239	0	136
Grp Sat Flow(s),veh/h/ln	1547	1543	1496	1827	1751	1499	1838	0	1507	1675	0	1738
Q Serve(g_s), s	2.7	14.8	15.0	8.7	27.6	17.6	5.7	0.0	3.8	12.5	0.0	6.4
Cycle Q Clear(g_c), s	2.7	14.8	15.0	8.7	27.6	17.6	5.7	0.0	3.8	12.5	0.0	6.4
Prop In Lane	1.00		0.48	1.00		1.00	0.61		1.00	1.00		0.54
Lane Grp Cap(c), veh/h	80	540	524	223	1473	630	164	0	135	294	0	305
V/C Ratio(X)	0.57	0.57	0.58	0.80	0.82	0.59	0.71	0.00	0.49	0.81	0.00	0.45
Avail Cap(c_a), veh/h	339	844	818	400	1917	820	402	0	330	642	0	666
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.3	24.1	24.2	39.0	23.4	20.5	40.5	0.0	39.6	36.2	0.0	33.7
Incr Delay (d2), s/veh	6.3	0.9	1.0	6.6	2.2	0.9	5.6	0.0	2.7	5.4	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(50%),veh/ln	1.1	4.9	4.9	4.0	10.2	5.5	2.8	0.0	1.5	5.5	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.6	25.1	25.2	45.6	25.5	21.3	46.1	0.0	42.4	41.6	0.0	34.7
LnGrp LOS	D	C	C	D	C	C	D	A	D	D	A	C
Approach Vol, veh/h		656			1754			183			375	
Approach Delay, s/veh		26.8			26.7			44.7			39.1	
Approach LOS		C			C			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.7	44.4		22.0	17.2	38.0		14.2				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	20.0	50.0		35.0	20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s	4.7	29.6		14.5	10.7	17.0		7.7				
Green Ext Time (p_c), s	0.1	8.8		1.5	0.5	3.1		0.6				
Intersection Summary												
HCM 6th Ctrl Delay				29.4								
HCM 6th LOS				C								

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2018-BASE-AM

02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	42	118	93	38	23	122	175	141	18	142	3
Future Volume (vph)	3	42	118	93	38	23	122	175	141	18	142	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	14	12	12	12	10	11	11	14	14	14
Grade (%)		-1%			-1%			0%			-2%	
Storage Length (ft)	0		0	0		0	120		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	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 Factor		0.96			0.99		0.99					
Frt		0.902			0.980			0.933			0.998	
Flt Protected		0.999			0.971		0.950				0.994	
Satd. Flow (prot)	0	1638	0	0	1651	0	1636	1472	0	0	1801	0
Flt Permitted		0.999			0.971		0.502				0.929	
Satd. Flow (perm)	0	1638	0	0	1635	0	859	1472	0	0	1683	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)		112						48			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		155			662			593			513	
Travel Time (s)		3.5			15.0			13.5			11.7	
Confl. Peds. (#/hr)	1		9	9		1	8					
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	67%	13%	5%	12%	10%	0%	3%	16%	17%	17%	12%	25%
Adj. Flow (vph)	3	49	137	108	44	27	142	203	164	21	165	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	189	0	0	179	0	142	367	0	0	189	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.91	0.91	0.91	0.99	0.99	0.99	1.09	1.04	1.04	0.91	0.91	0.91
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left						Left		
Leading Detector (ft)	20	35		20	35		35	35		20	35	
Trailing Detector (ft)	0	-5		0	-5		-5	-5		0	-5	
Detector 1 Position(ft)	0	-5		0	-5		-5	-5		0	-5	
Detector 1 Size(ft)	20	40		20	40		40	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	1.5		0.0	2.0		2.0	3.0		0.0	3.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	8	8		4	4		1	6			2	
Permitted Phases							6			2		

Peak Weekday AM Hour (8:00 - 9:00)
JMC 18053

Synchro 10 Report
Page 5

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2018-BASE-AM
02/15/2019

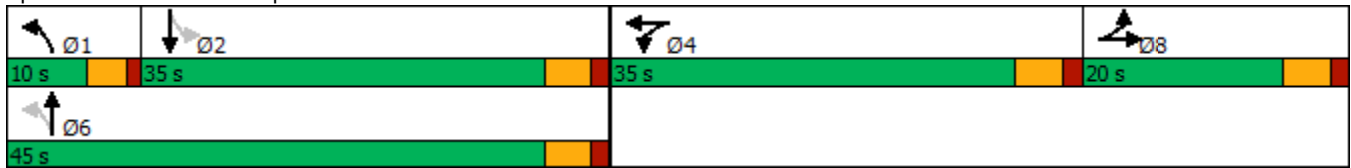
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	8	8		4	4		1	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		10.0	10.0		3.0	12.0		12.0	12.0	
Minimum Split (s)	8.0	8.0		15.0	15.0		7.0	17.0		17.0	17.0	
Total Split (s)	20.0	20.0		35.0	35.0		10.0	45.0		35.0	35.0	
Total Split (%)	20.0%	20.0%		35.0%	35.0%		10.0%	45.0%		35.0%	35.0%	
Maximum Green (s)	15.0	15.0		30.0	30.0		6.0	40.0		30.0	30.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		4.0	5.0			5.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	1.5	1.5		2.0	2.0		2.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		Min	Min	
Walk Time (s)				7.0	7.0							
Flash Dont Walk (s)				15.0	15.0							
Pedestrian Calls (#/hr)				2	2							
Act Effct Green (s)		7.6			13.0		23.3	22.2			14.5	
Actuated g/C Ratio		0.13			0.22		0.40	0.38			0.25	
v/c Ratio		0.61			0.49		0.34	0.63			0.45	
Control Delay		21.7			27.3		15.6	19.3			25.4	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		21.7			27.3		15.6	19.3			25.4	
LOS		C			C		B	B			C	
Approach Delay		21.7			27.3			18.3			25.4	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)		23			53		28	76			54	
Queue Length 95th (ft)		90			129		84	208			135	
Internal Link Dist (ft)		75			582			513			433	
Turn Bay Length (ft)							120					
Base Capacity (vph)		523			890		424	1072			908	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.36			0.20		0.33	0.34			0.21	
Intersection Summary												
Area Type:	Other											
Cycle Length: 100												
Actuated Cycle Length: 58.7												
Natural Cycle: 55												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.63												
Intersection Signal Delay: 21.7						Intersection LOS: C						
Intersection Capacity Utilization 63.7%						ICU Level of Service B						
Analysis Period (min) 15												

Lanes, Volumes, Timings
 2: Maple Avenue & Bedford Road

2018-BASE-AM

02/15/2019

Splits and Phases: 2: Maple Avenue & Bedford Road



HCM 6th Signalized Intersection Summary

2: Maple Avenue & Bedford Road

2018-BASE-AM

02/15/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	42	118	93	38	23	122	175	141	18	142	3
Future Volume (veh/h)	3	42	118	93	38	23	122	175	141	18	142	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.99	0.99		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	1814	1814	1814	1789	1789	1789	1856	1663	1663	1870	1870	1870
Adj Flow Rate, veh/h	3	49	137	108	44	27	142	203	164	21	165	3
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	13	13	13	10	10	10	3	16	16	12	12	12
Cap, veh/h	4	60	168	193	78	48	578	324	262	96	372	6
Arrive On Green	0.15	0.15	0.15	0.19	0.19	0.19	0.08	0.38	0.38	0.22	0.22	0.22
Sat Flow, veh/h	25	406	1135	1017	414	254	1767	847	684	96	1659	28
Grp Volume(v), veh/h	189	0	0	179	0	0	142	0	367	189	0	0
Grp Sat Flow(s),veh/h/ln	1566	0	0	1685	0	0	1767	0	1531	1783	0	0
Q Serve(g_s), s	6.3	0.0	0.0	5.2	0.0	0.0	3.1	0.0	10.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.3	0.0	0.0	5.2	0.0	0.0	3.1	0.0	10.4	4.7	0.0	0.0
Prop In Lane	0.02		0.72	0.60		0.15	1.00		0.45	0.11		0.02
Lane Grp Cap(c), veh/h	231	0	0	319	0	0	578	0	586	475	0	0
V/C Ratio(X)	0.82	0.00	0.00	0.56	0.00	0.00	0.25	0.00	0.63	0.40	0.00	0.00
Avail Cap(c_a), veh/h	439	0	0	945	0	0	629	0	1145	1047	0	0
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	0.00
Uniform Delay (d), s/veh	22.1	0.0	0.0	19.7	0.0	0.0	12.5	0.0	13.4	17.9	0.0	0.0
Incr Delay (d2), s/veh	2.7	0.0	0.0	0.6	0.0	0.0	0.1	0.0	1.1	0.5	0.0	0.0
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(50%),veh/ln	2.3	0.0	0.0	1.9	0.0	0.0	1.1	0.0	3.2	1.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.8	0.0	0.0	20.2	0.0	0.0	12.6	0.0	14.5	18.5	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	B	A	B	B	A	A
Approach Vol, veh/h	189				179				509			
Approach Delay, s/veh	24.8				20.2				14.0			
Approach LOS	C				C				B			
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.5	17.0		15.1		25.5		12.9				
Change Period (Y+Rc), s	4.0	5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s	6.0	30.0		30.0		40.0		15.0				
Max Q Clear Time (g_c+I1), s	5.1	6.7		7.2		12.4		8.3				
Green Ext Time (p_c), s	0.0	0.6		0.3		1.4		0.1				
Intersection Summary												
HCM 6th Ctrl Delay	17.7											
HCM 6th LOS	B											

Lanes, Volumes, Timings
3: Site Driveway & Bedford Road

2018-BASE-AM

02/15/2019

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	162	2	5	158	0	1
Future Volume (vph)	162	2	5	158	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-1%			1%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.999				0.865	
Flt Protected				0.998		
Satd. Flow (prot)	1752	0	0	1575	1644	0
Flt Permitted				0.998		
Satd. Flow (perm)	1752	0	0	1575	1644	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	711			155	153	
Travel Time (s)	16.2			3.5	3.5	
Confl. Peds. (#/hr)		9				
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	9%	0%	0%	5%	0%	0%
Parking (#/hr)			5	5		
Adj. Flow (vph)	188	2	6	184	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	190	0	0	190	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	1.01	1.19	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	22.4%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	162	2	5	158	0	1
Future Vol, veh/h	162	2	5	158	0	1
Conflicting Peds, #/hr	0	9	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, %	-1	-	-	1	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	9	0	0	5	0	0
Mvmt Flow	188	2	6	184	0	1
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	199	0	394	198
Stage 1	-	-	-	-	198	-
Stage 2	-	-	-	-	196	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
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	-	-	1385	-	615	848
Stage 1	-	-	-	-	840	-
Stage 2	-	-	-	-	842	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1373	-	606	841
Mov Cap-2 Maneuver	-	-	-	-	606	-
Stage 1	-	-	-	-	828	-
Stage 2	-	-	-	-	842	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.2		9.3	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	841	-	-	1373	-	
HCM Lane V/C Ratio	0.001	-	-	0.004	-	
HCM Control Delay (s)	9.3	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Lanes, Volumes, Timings
4: NY 128 & Kent Place/Bedford Road

2018-BASE-AM

02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	5	10	38	16	44	26	167	65	58	307	16
Future Volume (vph)	1	5	10	38	16	44	26	167	65	58	307	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	11	11	11	14	14	14	11	11	11
Grade (%)		0%			0%			1%			0%	
Lane Util. Factor	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 Factor												
Frt		0.917			0.939			0.966			0.994	
Flt Protected		0.997			0.981			0.995			0.992	
Satd. Flow (prot)	0	1782	0	0	1282	0	0	1684	0	0	1363	0
Flt Permitted		0.997			0.981			0.995			0.992	
Satd. Flow (perm)	0	1782	0	0	1282	0	0	1684	0	0	1363	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		228			711			372			366	
Travel Time (s)		5.2			16.2			8.5			8.3	
Confl. Peds. (#/hr)			2	2		6			2	2		3
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	17%	14%	8%	12%	31%	13%	8%	17%	13%	7%	14%	14%
Parking (#/hr)				5	5	5				10	10	10
Adj. Flow (vph)	1	6	11	44	18	51	30	192	75	67	353	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	18	0	0	113	0	0	297	0	0	438	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.85	0.85	0.85	1.04	1.24	1.04	0.92	0.92	0.92	1.04	1.28	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	50.3%											
Analysis Period (min)	15											
ICU Level of Service A												

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	5	10	38	16	44	26	167	65	58	307	16
Future Vol, veh/h	1	5	10	38	16	44	26	167	65	58	307	16
Conflicting Peds, #/hr	0	0	2	2	0	6	0	0	2	2	0	3
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, %	-	0	-	-	0	-	-	1	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	17	14	8	12	31	13	8	17	13	7	14	14
Mvmt Flow	1	6	11	44	18	51	30	192	75	67	353	18
Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	829	828	367	799	800	238	374	0	0	269	0	0
Stage 1	499	499	-	292	292	-	-	-	-	-	-	-
Stage 2	330	329	-	507	508	-	-	-	-	-	-	-
Critical Hdwy	7.27	6.64	6.28	7.22	6.81	6.33	4.18	-	-	4.17	-	-
Critical Hdwy Stg 1	6.27	5.64	-	6.22	5.81	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.27	5.64	-	6.22	5.81	-	-	-	-	-	-	-
Follow-up Hdwy	3.653	4.126	3.372	3.608	4.279	3.417	2.272	-	-	2.263	-	-
Pot Cap-1 Maneuver	273	293	665	292	287	775	1152	-	-	1266	-	-
Stage 1	527	524	-	695	622	-	-	-	-	-	-	-
Stage 2	653	626	-	530	494	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	222	263	661	260	258	770	1148	-	-	1264	-	-
Mov Cap-2 Maneuver	222	263	-	260	258	-	-	-	-	-	-	-
Stage 1	509	487	-	672	601	-	-	-	-	-	-	-
Stage 2	570	605	-	479	459	-	-	-	-	-	-	-
Approach	EB		WB		NB			SB				
HCM Control Delay, s	14.1		19		0.8			1.2				
HCM LOS	B		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1148	-	-	414	369	1264	-	-				
HCM Lane V/C Ratio	0.026	-	-	0.044	0.305	0.053	-	-				
HCM Control Delay (s)	8.2	0	-	14.1	19	8	0	-				
HCM Lane LOS	A	A	-	B	C	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.1	1.3	0.2	-	-				

Lanes, Volumes, Timings
1: Business Park Drive/Maple Avenue & NY 22

2018-BASE-PM
02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	996	64	122	611	315	140	59	246	313	38	44
Future Volume (vph)	30	996	64	122	611	315	140	59	246	313	38	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	11	11	11	11	11	11
Grade (%)		-1%			-2%			1%			-1%	
Storage Length (ft)	585		0	265		225	0		60	300		0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (ft)	125			150			25			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991				0.850			0.850		0.920	
Flt Protected	0.950			0.950				0.966		0.950		
Satd. Flow (prot)	1654	3418	0	1632	3345	1470	0	1696	1508	1654	1619	0
Flt Permitted	0.950			0.950				0.966		0.950		
Satd. Flow (perm)	1654	3418	0	1632	3345	1470	0	1696	1508	1654	1619	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				354			117		36	
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		874			668			319			593	
Travel Time (s)		10.8			8.3			7.3			13.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	6%	5%	8%	8%	9%	11%	5%	2%	3%	6%	7%	3%
Adj. Flow (vph)	34	1119	72	137	687	354	157	66	276	352	43	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	1191	0	137	687	354	0	223	276	352	92	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	0.99	0.99	1.03	0.99	0.99	1.05	1.05	1.05	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	1	1	2	2	1	1	
Detector Template							Left					
Leading Detector (ft)	83	83		83	83	35	20	68	68	50	55	
Trailing Detector (ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Position(ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Size(ft)	40	40		40	40	40	20	40	40	60	60	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	3.0	3.0		3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	43	43		43	43			38	38			
Detector 2 Size(ft)	40	40		40	40			30	30			
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)	3.0	3.0		3.0	3.0			3.0	3.0			

Lanes, Volumes, Timings
1: Business Park Drive/Maple Avenue & NY 22

2018-BASE-PM

02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2			8			
Detector Phase	1	6		5	2	2	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	11.0	11.0	11.0	11.0	11.0	
Total Split (s)	26.0	56.0		26.0	56.0	56.0	26.0	26.0	26.0	41.0	41.0	
Total Split (%)	17.4%	37.6%		17.4%	37.6%	37.6%	17.4%	17.4%	17.4%	27.5%	27.5%	
Maximum Green (s)	20.0	50.0		20.0	50.0	50.0	20.0	20.0	20.0	35.0	35.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	
Act Effct Green (s)	8.5	50.1		16.4	60.6	60.6		20.0	20.0	33.0	33.0	
Actuated g/C Ratio	0.06	0.35		0.11	0.42	0.42		0.14	0.14	0.23	0.23	
v/c Ratio	0.35	1.00		0.74	0.49	0.43		0.94	0.89	0.93	0.23	
Control Delay	75.8	71.7		84.7	33.0	4.5		107.1	64.5	85.3	29.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	75.8	71.7		84.7	33.0	4.5		107.1	64.5	85.3	29.7	
LOS	E	E		F	C	A		F	E	F	C	
Approach Delay		71.8			30.5			83.6			73.8	
Approach LOS		E			C			F			E	
Queue Length 50th (ft)	32	~631		128	257	0		215	157	328	43	
Queue Length 95th (ft)	69	#777		201	325	61		#387	#326	#513	94	
Internal Link Dist (ft)		794			588			239			513	
Turn Bay Length (ft)	585			265		225			60	300		
Base Capacity (vph)	230	1195		227	1410	824		236	310	403	422	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.15	1.00		0.60	0.49	0.43		0.94	0.89	0.87	0.22	
Intersection Summary												
Area Type:	Other											
Cycle Length: 149												
Actuated Cycle Length: 143.7												
Natural Cycle: 110												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 1.00												
Intersection Signal Delay: 59.3						Intersection LOS: E						
Intersection Capacity Utilization 77.1%						ICU Level of Service D						
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Business Park Drive/Maple Avenue & NY 22

 Ø1	 Ø2	 Ø4	 Ø8
26 s	56 s	41 s	26 s
 Ø5	 Ø6		
26 s	56 s		

HCM 6th Signalized Intersection Summary
1: Business Park Drive/Maple Avenue & NY 22

2018-BASE-PM
02/15/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	996	64	122	611	315	140	59	246	313	38	44
Future Volume (veh/h)	30	996	64	122	611	315	140	59	246	313	38	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1849	1864	1864	1859	1844	1814	1864	1864	1850	1849	1834	1834
Adj Flow Rate, veh/h	34	1119	72	137	687	354	157	66	276	352	43	49
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	6	5	5	8	9	11	2	2	3	6	7	7
Cap, veh/h	61	1204	77	165	1454	638	191	80	236	385	171	195
Arrive On Green	0.03	0.36	0.36	0.09	0.42	0.42	0.15	0.15	0.15	0.22	0.22	0.22
Sat Flow, veh/h	1761	3379	217	1770	3503	1537	1268	533	1568	1761	782	891
Grp Volume(v), veh/h	34	586	605	137	687	354	223	0	276	352	0	92
Grp Sat Flow(s),veh/h/ln	1761	1771	1825	1770	1751	1537	1801	0	1568	1761	0	1674
Q Serve(g_s), s	2.5	42.3	42.3	10.1	18.9	23.2	15.9	0.0	20.0	25.9	0.0	6.0
Cycle Q Clear(g_c), s	2.5	42.3	42.3	10.1	18.9	23.2	15.9	0.0	20.0	25.9	0.0	6.0
Prop In Lane	1.00		0.12	1.00		1.00	0.70		1.00	1.00		0.53
Lane Grp Cap(c), veh/h	61	631	650	165	1454	638	271	0	236	385	0	366
V/C Ratio(X)	0.56	0.93	0.93	0.83	0.47	0.55	0.82	0.00	1.17	0.91	0.00	0.25
Avail Cap(c_a), veh/h	265	667	688	267	1454	638	271	0	236	465	0	442
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	63.1	41.1	41.1	59.1	28.2	29.5	54.6	0.0	56.3	50.6	0.0	42.8
Incr Delay (d2), s/veh	7.8	18.9	18.7	11.0	0.2	1.1	17.9	0.0	111.5	20.2	0.0	0.4
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(50%),veh/ln	1.2	20.6	21.2	4.9	7.5	8.3	8.6	0.0	15.2	13.6	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.9	60.0	59.8	70.2	28.5	30.5	72.5	0.0	167.9	70.7	0.0	43.2
LnGrp LOS	E	E	E	E	C	C	E	A	F	E	A	D
Approach Vol, veh/h	1225			1178			499			444		
Approach Delay, s/veh	60.2			33.9			125.3			65.0		
Approach LOS	E			C			F			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.6	61.1		35.0	18.4	53.3		26.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	20.0	50.0		35.0	20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s	4.5	25.2		27.9	12.1	44.3		22.0				
Green Ext Time (p_c), s	0.1	5.3		1.1	0.3	3.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	61.3											
HCM 6th LOS	E											

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2018-BASE-PM

02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	10	140	75	22	19	120	262	22	7	180	6
Future Volume (vph)	7	10	140	75	22	19	120	262	22	7	180	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	14	12	12	12	10	11	11	14	14	14
Grade (%)		-1%			-1%			0%			-2%	
Storage Length (ft)	0		0	0		0	120		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.880			0.978			0.989			0.996	
Flt Protected		0.998			0.969		0.950				0.998	
Satd. Flow (prot)	0	1705	0	0	1749	0	1546	1715	0	0	1955	0
Flt Permitted		0.998			0.969		0.482				0.982	
Satd. Flow (perm)	0	1705	0	0	1749	0	784	1715	0	0	1923	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)		156						5			2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		155			662			593			513	
Travel Time (s)		3.5			15.0			13.5			11.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	10%	0%	5%	4%	2%	3%	9%	5%	17%	10%	4%	0%
Adj. Flow (vph)	8	11	156	83	24	21	133	291	24	8	200	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	175	0	0	128	0	133	315	0	0	215	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.91	0.91	0.91	0.99	0.99	0.99	1.09	1.04	1.04	0.91	0.91	0.91
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left						Left		
Leading Detector (ft)	20	35		20	35		35	35		20	35	
Trailing Detector (ft)	0	-5		0	-5		-5	-5		0	-5	
Detector 1 Position(ft)	0	-5		0	-5		-5	-5		0	-5	
Detector 1 Size(ft)	20	40		20	40		40	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	1.5		0.0	2.0		2.0	3.0		0.0	3.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	8	8		4	4		1	6			2	
Permitted Phases							6			2		
Detector Phase	8	8		4	4		1	6		2	2	
Switch Phase												

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2018-BASE-PM

02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	3.0		10.0	10.0		3.0	12.0		12.0	12.0	
Minimum Split (s)	8.0	8.0		15.0	15.0		7.0	17.0		17.0	17.0	
Total Split (s)	20.0	20.0		35.0	35.0		10.0	45.0		35.0	35.0	
Total Split (%)	20.0%	20.0%		35.0%	35.0%		10.0%	45.0%		35.0%	35.0%	
Maximum Green (s)	15.0	15.0		30.0	30.0		6.0	40.0		30.0	30.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		4.0	5.0			5.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		1.5	1.5		2.0	2.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		Min	Min	
Walk Time (s)				7.0	7.0							
Flash Dont Walk (s)				15.0	15.0							
Pedestrian Calls (#/hr)				0	0							
Act Effect Green (s)		7.4			11.3		22.4	21.3			14.0	
Actuated g/C Ratio		0.15			0.22		0.44	0.42			0.28	
v/c Ratio		0.46			0.33		0.30	0.44			0.40	
Control Delay		10.7			23.7		12.6	14.1			21.2	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		10.7			23.7		12.6	14.1			21.2	
LOS		B			C		B	B			C	
Approach Delay		10.7			23.7			13.7			21.2	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)		5			36		25	66			59	
Queue Length 95th (ft)		54			90		64	148			127	
Internal Link Dist (ft)		75			582			513			433	
Turn Bay Length (ft)							120					
Base Capacity (vph)		654			1095		442	1319			1205	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.27			0.12		0.30	0.24			0.18	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 50.9

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.46

Intersection Signal Delay: 16.1

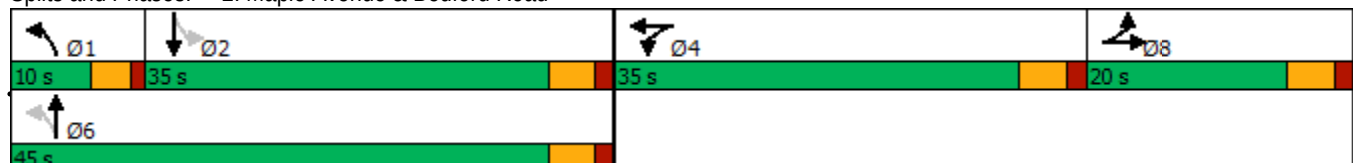
Intersection LOS: B

Intersection Capacity Utilization 59.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 2: Maple Avenue & Bedford Road



HCM 6th Signalized Intersection Summary

2: Maple Avenue & Bedford Road

2018-BASE-PM

02/15/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	10	140	75	22	19	120	262	22	7	180	6
Future Volume (veh/h)	7	10	140	75	22	19	120	262	22	7	180	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	2017	2017	2017	1909	1909	1909	1767	1826	1826	1995	1995	1995
Adj Flow Rate, veh/h	8	11	156	83	24	21	133	291	24	8	200	7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	2	2	2	9	5	5	4	4	4
Cap, veh/h	10	14	204	194	56	49	573	667	55	81	451	15
Arrive On Green	0.13	0.13	0.13	0.17	0.17	0.17	0.08	0.40	0.40	0.24	0.24	0.24
Sat Flow, veh/h	79	109	1546	1166	337	295	1682	1664	137	26	1874	64
Grp Volume(v), veh/h	175	0	0	128	0	0	133	0	315	215	0	0
Grp Sat Flow(s),veh/h/ln	1735	0	0	1798	0	0	1682	0	1801	1964	0	0
Q Serve(g_s), s	4.9	0.0	0.0	3.2	0.0	0.0	2.7	0.0	6.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.9	0.0	0.0	3.2	0.0	0.0	2.7	0.0	6.3	4.6	0.0	0.0
Prop In Lane	0.05		0.89	0.65		0.16	1.00		0.08	0.04		0.03
Lane Grp Cap(c), veh/h	229	0	0	299	0	0	573	0	722	547	0	0
V/C Ratio(X)	0.77	0.00	0.00	0.43	0.00	0.00	0.23	0.00	0.44	0.39	0.00	0.00
Avail Cap(c_a), veh/h	522	0	0	1081	0	0	641	0	1444	1244	0	0
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	0.00
Uniform Delay (d), s/veh	20.9	0.0	0.0	18.7	0.0	0.0	11.1	0.0	10.8	16.1	0.0	0.0
Incr Delay (d2), s/veh	5.3	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.2	0.5	0.0	0.0
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(50%),veh/ln	2.1	0.0	0.0	1.2	0.0	0.0	0.9	0.0	2.1	1.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.2	0.0	0.0	19.0	0.0	0.0	11.1	0.0	11.0	16.6	0.0	0.0
LnGrp LOS	C	A	A	B	A	A	B	A	B	B	A	A
Approach Vol, veh/h	175			128			448			215		
Approach Delay, s/veh	26.2			19.0			11.0			16.6		
Approach LOS	C			B			B			B		
Timer - Assigned Phs	1	2	4			6	8					
Phs Duration (G+Y+Rc), s	8.0	17.0	13.3			25.0	11.6					
Change Period (Y+Rc), s	4.0	5.0	5.0			5.0	5.0					
Max Green Setting (Gmax), s	6.0	30.0	30.0			40.0	15.0					
Max Q Clear Time (g_c+I1), s	4.7	6.6	5.2			8.3	6.9					
Green Ext Time (p_c), s	0.0	0.7	0.1			0.6	0.4					
Intersection Summary												
HCM 6th Ctrl Delay	16.1											
HCM 6th LOS	B											

Lanes, Volumes, Timings
3: Site Driveway & Bedford Road

2018-BASE-PM

02/15/2019

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	151	0	1	147	2	6
Future Volume (vph)	151	0	1	147	2	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-1%			1%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.895	
Flt Protected					0.989	
Satd. Flow (prot)	1819	0	0	1547	1682	0
Flt Permitted					0.989	
Satd. Flow (perm)	1819	0	0	1547	1682	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	711			155	153	
Travel Time (s)	16.2			3.5	3.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	0%	0%	7%	0%	0%
Parking (#/hr)			5	5		
Adj. Flow (vph)	168	0	1	163	2	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	168	0	0	164	9	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	1.01	1.19	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	18.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 6th TWSC
3: Site Driveway & Bedford Road

2018-BASE-PM

02/15/2019

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	151	0	1	147	2	6
Future Vol, veh/h	151	0	1	147	2	6
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, %	-1	-	-	1	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	0	0	7	0	0
Mvmt Flow	168	0	1	163	2	7
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	168	0	333	168
Stage 1	-	-	-	-	168	-
Stage 2	-	-	-	-	165	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
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	-	-	1422	-	666	881
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	869	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1422	-	665	881
Mov Cap-2 Maneuver	-	-	-	-	665	-
Stage 1	-	-	-	-	866	-
Stage 2	-	-	-	-	869	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		9.5	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	815	-	-	1422	-	
HCM Lane V/C Ratio	0.011	-	-	0.001	-	
HCM Control Delay (s)	9.5	-	-	7.5	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile O(veh)	0	-	-	0	-	

Lanes, Volumes, Timings
4: NY 128 & Kent Place/Bedford Road

2018-BASE-PM

02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	15	27	38	31	48	51	322	50	41	273	31
Future Volume (vph)	7	15	27	38	31	48	51	322	50	41	273	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	11	11	11	14	14	14	11	11	11
Grade (%)		0%			0%			1%			0%	
Lane Util. Factor	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 Factor												
Frt		0.925			0.944			0.984			0.988	
Flt Protected		0.993			0.984			0.994			0.994	
Satd. Flow (prot)	0	1935	0	0	1418	0	0	1874	0	0	1476	0
Flt Permitted		0.993			0.984			0.994			0.994	
Satd. Flow (perm)	0	1935	0	0	1418	0	0	1874	0	0	1476	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		228			711			372			366	
Travel Time (s)		5.2			16.2			8.5			8.3	
Confl. Peds. (#/hr)	27		1	1		27	2		1	1		2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	4%	0%	12%	5%	2%	5%	10%	6%	4%	0%
Parking (#/hr)				5	5	5				10	10	10
Adj. Flow (vph)	7	16	29	40	33	51	54	343	53	44	290	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	52	0	0	124	0	0	450	0	0	367	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.85	0.85	0.85	1.04	1.24	1.04	0.92	0.92	0.92	1.04	1.28	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	51.1%											
Analysis Period (min)	15											
ICU Level of Service A												

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	15	27	38	31	48	51	322	50	41	273	31
Future Vol, veh/h	7	15	27	38	31	48	51	322	50	41	273	31
Conflicting Peds, #/hr	27	0	1	1	0	27	2	0	1	1	0	2
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, %	-	0	-	-	0	-	-	1	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	4	0	12	5	2	5	10	6	4	0
Mvmt Flow	7	16	29	40	33	51	54	343	53	44	290	33
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	944	902	310	897	892	398	325	0	0	397	0	0
Stage 1	397	397	-	479	479	-	-	-	-	-	-	-
Stage 2	547	505	-	418	413	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.1	6.62	6.25	4.12	-	-	4.16	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.62	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.62	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.5	4.108	3.345	2.218	-	-	2.254	-	-
Pot Cap-1 Maneuver	244	280	725	263	271	645	1235	-	-	1140	-	-
Stage 1	633	607	-	571	539	-	-	-	-	-	-	-
Stage 2	525	544	-	616	577	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	181	251	722	221	243	629	1232	-	-	1139	-	-
Mov Cap-2 Maneuver	181	251	-	221	243	-	-	-	-	-	-	-
Stage 1	596	577	-	538	508	-	-	-	-	-	-	-
Stage 2	415	512	-	547	548	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	16.6		24.1			1			1			
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL		NBT	NBR		EBLn1WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1232		-	-	361	311	1139	-	-			
HCM Lane V/C Ratio	0.044		-	-	0.144	0.4	0.038	-	-			
HCM Control Delay (s)	8.1		0	-	16.6	24.1	8.3	0	-			
HCM Lane LOS	A		A	-	C	C	A	A	-			
HCM 95th %tile Q(veh)	0.1		-	-	0.5	1.9	0.1	-	-			

Lanes, Volumes, Timings
1: Business Park Drive/Maple Avenue & NY 22

2017-BASE-SAT

02/14/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	249	33	65	193	281	59	81	112	286	41	19
Future Volume (vph)	28	249	33	65	193	281	59	81	112	286	41	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	11	11	11	11	11	11
Grade (%)		-1%			-2%			1%			-1%	
Storage Length (ft)	585		0	265		225	0		60	0		60
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	125			150			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982				0.850			0.850		0.953	
Flt Protected	0.950			0.950				0.979		0.950		
Satd. Flow (prot)	1754	3563	0	1762	3610	1631	0	1789	1553	1754	1759	0
Flt Permitted	0.950			0.950				0.859		0.645		
Satd. Flow (perm)	1754	3563	0	1762	3610	1631	0	1570	1553	1191	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				356			112		19	
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		874			668			319			593	
Travel Time (s)		10.8			8.3			7.3			13.5	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	35	315	42	82	244	356	75	103	142	362	52	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	357	0	82	244	356	0	178	142	362	76	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	0.99	0.99	1.03	0.99	0.99	1.05	1.05	1.05	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	1	1	2	2	1	1	
Detector Template							Left					
Leading Detector (ft)	83	83		83	83	35	20	68	68	50	55	
Trailing Detector (ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Position(ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Size(ft)	40	40		40	40	40	20	40	40	60	60	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	3.0	3.0		3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	43	43		43	43			38	38			
Detector 2 Size(ft)	40	40		40	40			30	30			
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)	3.0	3.0		3.0	3.0			3.0	3.0			

Peak Saturday Midday Hour (11:30 - 12:30)
JMC 18053

Synchro 10 Report
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	1	6		5	2			8			4	
Permitted Phases						2	8		8	4		
Detector Phase	1	6		5	2	2	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	9.0	21.0		9.0	21.0	21.0	15.0	15.0	15.0	15.0	15.0	
Total Split (s)	26.0	56.0		26.0	56.0	56.0	45.0	45.0	45.0	45.0	45.0	
Total Split (%)	20.5%	44.1%		20.5%	44.1%	44.1%	35.4%	35.4%	35.4%	35.4%	35.4%	
Maximum Green (s)	20.0	50.0		20.0	50.0	50.0	40.0	40.0	40.0	40.0	40.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	
Act Effect Green (s)	7.2	15.5		9.2	19.7	19.7		40.3	40.3	40.3	40.3	
Actuated g/C Ratio	0.09	0.20		0.12	0.25	0.25		0.51	0.51	0.51	0.51	
v/c Ratio	0.22	0.50		0.40	0.27	0.53		0.22	0.17	0.60	0.08	
Control Delay	38.4	31.3		39.8	26.3	6.5		13.3	4.6	20.6	9.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	38.4	31.3		39.8	26.3	6.5		13.3	4.6	20.6	9.8	
LOS	D	C		D	C	A		B	A	C	A	
Approach Delay		31.9			17.6			9.4			18.8	
Approach LOS		C			B			A			B	
Queue Length 50th (ft)	17	83		39	55	0		49	7	127	14	
Queue Length 95th (ft)	40	113		72	78	37		85	30	200	35	
Internal Link Dist (ft)		794			588			239			513	
Turn Bay Length (ft)	585			265		225			60			
Base Capacity (vph)	446	2273		448	2298	1167		799	846	606	905	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.08	0.16		0.18	0.11	0.31		0.22	0.17	0.60	0.08	

Intersection Summary

Area Type: Other

Cycle Length: 127

Actuated Cycle Length: 79.2

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 19.5

Intersection LOS: B

Intersection Capacity Utilization 52.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Business Park Drive/Maple Avenue & NY 22

 Ø1 26 s	 Ø2 56 s	 Ø4 45 s
 Ø5 26 s	 Ø6 56 s	 Ø8 45 s

HCM 6th Signalized Intersection Summary
1: Business Park Drive/Maple Avenue & NY 22

2017-BASE-SAT

02/14/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	249	33	65	193	281	59	81	112	286	41	19
Future Volume (veh/h)	28	249	33	65	193	281	59	81	112	286	41	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1939	1939	1939	1979	1964	1979	1894	1894	1894	1939	1939	1939
Adj Flow Rate, veh/h	35	315	42	82	244	356	75	103	142	362	52	24
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	0	0	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	93	797	105	144	1005	452	332	428	665	525	520	240
Arrive On Green	0.05	0.24	0.24	0.08	0.27	0.27	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	1847	3272	432	1884	3731	1677	609	1033	1605	1177	1256	579
Grp Volume(v), veh/h	35	176	181	82	244	356	178	0	142	362	0	76
Grp Sat Flow(s),veh/h/ln	1847	1842	1862	1884	1865	1677	1642	0	1605	1177	0	1835
Q Serve(g_s), s	1.2	5.1	5.2	2.7	3.3	12.6	1.4	0.0	3.6	18.5	0.0	1.6
Cycle Q Clear(g_c), s	1.2	5.1	5.2	2.7	3.3	12.6	4.1	0.0	3.6	22.6	0.0	1.6
Prop In Lane	1.00		0.23	1.00		1.00	0.42		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	93	449	453	144	1005	452	760	0	665	525	0	760
V/C Ratio(X)	0.37	0.39	0.40	0.57	0.24	0.79	0.23	0.00	0.21	0.69	0.00	0.10
Avail Cap(c_a), veh/h	577	1439	1454	589	2914	1310	1100	0	1003	772	0	1147
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.4	20.3	20.3	28.5	18.3	21.7	12.1	0.0	12.0	19.5	0.0	11.5
Incr Delay (d2), s/veh	2.5	0.6	0.6	3.5	0.1	3.1	0.2	0.0	0.2	1.6	0.0	0.1
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(50%),veh/ln	0.5	1.9	2.0	1.2	1.2	4.4	1.5	0.0	1.2	4.8	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.9	20.8	20.9	32.0	18.4	24.8	12.3	0.0	12.2	21.2	0.0	11.5
LnGrp LOS	C	C	C	C	B	C	B	A	B	C	A	B
Approach Vol, veh/h		392			682			320			438	
Approach Delay, s/veh		21.8			23.4			12.3			19.5	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	23.3		31.5	10.9	21.6		31.5				
Change Period (Y+Rc), s	6.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	20.0	50.0		40.0	20.0	50.0		40.0				
Max Q Clear Time (g_c+I1), s	3.2	14.6		24.6	4.7	7.2		6.1				
Green Ext Time (p_c), s	0.1	2.6		1.9	0.2	1.6		1.6				
Intersection Summary												
HCM 6th Ctrl Delay			20.2									
HCM 6th LOS			C									

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2017-BASE-SAT

02/14/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	17	138	29	16	13	197	159	34	10	179	18
Future Volume (vph)	14	17	138	29	16	13	197	159	34	10	179	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	14	12	12	12	16	16	16	14	14	14
Grade (%)		-1%			-1%			0%			-2%	
Lane Util. Factor	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 Factor		0.98			1.00							
Frt		0.890			0.970			0.988			0.988	
Flt Protected		0.996			0.975			0.975			0.998	
Satd. Flow (prot)	0	1744	0	0	1797	0	0	2056	0	0	2001	0
Flt Permitted		0.982			0.844			0.760			0.977	
Satd. Flow (perm)	0	1719	0	0	1556	0	0	1602	0	0	1959	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)		142						11			11	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		155			662			593			513	
Travel Time (s)		3.5			15.0			13.5			11.7	
Confl. Peds. (#/hr)			2			1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	1%	1%	0%	0%	1%	0%
Adj. Flow (vph)	14	18	142	30	16	13	203	164	35	10	185	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	174	0	0	59	0	0	402	0	0	214	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.91	0.91	0.91	0.99	0.99	0.99	0.85	0.85	0.85	0.91	0.91	0.91
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Minimum Split (s)	27.0	27.0		27.0	27.0		25.0	25.0		25.0	25.0	
Total Split (s)	27.0	27.0		27.0	27.0		25.0	25.0		25.0	25.0	
Total Split (%)	51.9%	51.9%		51.9%	51.9%		48.1%	48.1%		48.1%	48.1%	
Maximum Green (s)	22.0	22.0		22.0	22.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0							
Flash Dont Walk (s)	14.0	14.0		14.0	14.0							
Pedestrian Calls (#/hr)	2	2		2	2							
Act Effect Green (s)		22.0			22.0			20.0			20.0	

Peak Saturday Midday Hour (11:30 - 12:30)
JMC 18053

Synchro 10 Report
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Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2017-BASE-SAT

02/14/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.42			0.42			0.38			0.38	
v/c Ratio		0.22			0.09			0.65			0.28	
Control Delay		3.8			9.5			18.6			11.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		3.8			9.5			18.6			11.7	
LOS		A			A			B			B	
Approach Delay		3.8			9.5			18.6			11.7	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)		5			10			94			41	
Queue Length 95th (ft)		33			27			173			80	
Internal Link Dist (ft)		75			582			513			433	
Turn Bay Length (ft)												
Base Capacity (vph)		809			658			622			760	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.22			0.09			0.65			0.28	

Intersection Summary

Area Type: Other

Cycle Length: 52

Actuated Cycle Length: 52

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 55

Control Type: Pretimed

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 13.2

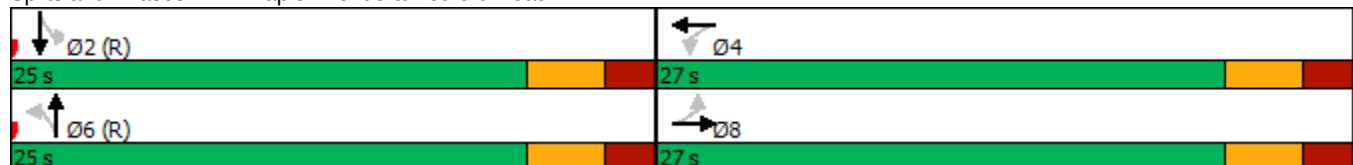
Intersection LOS: B

Intersection Capacity Utilization 68.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Maple Avenue & Bedford Road



HCM 6th Signalized Intersection Summary

2: Maple Avenue & Bedford Road

2017-BASE-SAT

02/14/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	17	138	29	16	13	197	159	34	10	179	18
Future Volume (veh/h)	14	17	138	29	16	13	197	159	34	10	179	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	2017	2017	2017	1939	1939	1939	1961	1961	1961	2042	2042	2042
Adj Flow Rate, veh/h	14	18	142	30	16	13	203	164	35	10	185	19
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	1	1	1	1	1	1
Cap, veh/h	97	114	600	401	212	144	379	279	53	84	687	68
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.42	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	52	268	1419	700	501	340	713	725	137	30	1786	177
Grp Volume(v), veh/h	174	0	0	59	0	0	402	0	0	214	0	0
Grp Sat Flow(s),veh/h/ln	1739	0	0	1541	0	0	1575	0	0	1993	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	6.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.3	0.0	0.0	1.0	0.0	0.0	10.3	0.0	0.0	3.8	0.0	0.0
Prop In Lane	0.08		0.82	0.51		0.22	0.50		0.09	0.05		0.09
Lane Grp Cap(c), veh/h	811	0	0	756	0	0	710	0	0	839	0	0
V/C Ratio(X)	0.21	0.00	0.00	0.08	0.00	0.00	0.57	0.00	0.00	0.26	0.00	0.00
Avail Cap(c_a), veh/h	811	0	0	756	0	0	710	0	0	839	0	0
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	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.6	0.0	0.0	8.9	0.0	0.0	12.8	0.0	0.0	11.0	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.2	0.0	0.0	3.3	0.0	0.0	0.7	0.0	0.0
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(50%),veh/ln	1.2	0.0	0.0	0.4	0.0	0.0	3.8	0.0	0.0	1.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.2	0.0	0.0	9.1	0.0	0.0	16.0	0.0	0.0	11.8	0.0	0.0
LnGrp LOS	B	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		174			59			402			214	
Approach Delay, s/veh		10.2			9.1			16.0			11.8	
Approach LOS		B			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		25.0		27.0		25.0		27.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		20.0		22.0		20.0		22.0				
Max Q Clear Time (g_c+I1), s		5.8		0.0		12.3		0.0				
Green Ext Time (p_c), s		0.6		0.0		1.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				13.3								
HCM 6th LOS				B								

Lanes, Volumes, Timings
3: Site Driveway & Bedford Road

2017-BASE-SAT

02/14/2019

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	168	0	2	229	0	1
Future Volume (vph)	168	0	2	229	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-1%			1%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.865	
Flt Protected						
Satd. Flow (prot)	1872	0	0	1638	1644	0
Flt Permitted						
Satd. Flow (perm)	1872	0	0	1638	1644	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	711			155	153	
Travel Time (s)	16.2			3.5	3.5	
Confl. Peds. (#/hr)		2				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Parking (#/hr)			5	5		
Adj. Flow (vph)	173	0	2	236	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	173	0	0	238	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	1.01	1.19	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	23.6%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	168	0	2	229	0	1
Future Vol, veh/h	168	0	2	229	0	1
Conflicting Peds, #/hr	0	2	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, %	-1	-	-	1	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	173	0	2	236	0	1
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	175	0	415	175
Stage 1	-	-	-	-	175	-
Stage 2	-	-	-	-	240	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
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	-	-	1414	-	598	874
Stage 1	-	-	-	-	860	-
Stage 2	-	-	-	-	805	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1411	-	596	872
Mov Cap-2 Maneuver	-	-	-	-	596	-
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	805	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		9.1	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	872	-	-	1411	-	
HCM Lane V/C Ratio	0.001	-	-	0.001	-	
HCM Control Delay (s)	9.1	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Lanes, Volumes, Timings
4: NY 128 & Kent Place/Bedford Road

2017-BASE-SAT

02/14/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	11	24	44	17	94	23	187	38	51	205	41
Future Volume (vph)	12	11	24	44	17	94	23	187	38	51	205	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	11	11	11	14	14	14	11	11	11
Grade (%)		0%			0%			1%			0%	
Lane Util. Factor	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 Factor												
Frt		0.931			0.918			0.979			0.981	
Flt Protected		0.987			0.986			0.995			0.992	
Satd. Flow (prot)	0	1501	0	0	1380	0	0	1768	0	0	1425	0
Flt Permitted		0.987			0.986			0.995			0.992	
Satd. Flow (perm)	0	1501	0	0	1380	0	0	1768	0	0	1425	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		228			711			372			366	
Travel Time (s)		5.2			16.2			8.5			8.3	
Confl. Peds. (#/hr)						12			1			6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	33%	14%	39%	7%	9%	4%	4%	13%	6%	0%	9%	3%
Parking (#/hr)				5	5	5				10	10	10
Adj. Flow (vph)	13	11	25	46	18	98	24	195	40	53	214	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	49	0	0	162	0	0	259	0	0	310	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.85	0.85	0.85	1.04	1.24	1.04	0.92	0.92	0.92	1.04	1.28	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	46.6%											
Analysis Period (min)	15											
ICU Level of Service A												

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	12	11	24	44	17	94	23	187	38	51	205	41
Future Vol, veh/h	12	11	24	44	17	94	23	187	38	51	205	41
Conflicting Peds, #/hr	0	0	0	0	0	12	0	0	1	0	0	6
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, %	-	0	-	-	0	-	-	1	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	33	14	39	7	9	4	4	13	6	0	9	3
Mvmt Flow	13	11	25	46	18	98	24	195	40	53	214	43

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	681	632	242	624	633	228	263	0	0	236	0	0
Stage 1	348	348	-	264	264	-	-	-	-	-	-	-
Stage 2	333	284	-	360	369	-	-	-	-	-	-	-
Critical Hdwy	7.43	6.64	6.59	7.17	6.59	6.24	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.43	5.64	-	6.17	5.59	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.43	5.64	-	6.17	5.59	-	-	-	-	-	-	-
Follow-up Hdwy	3.797	4.126	3.651	3.563	4.081	3.336	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	326	382	714	391	388	806	1290	-	-	1343	-	-
Stage 1	608	613	-	730	677	-	-	-	-	-	-	-
Stage 2	620	655	-	648	609	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	257	353	709	349	359	797	1280	-	-	1342	-	-
Mov Cap-2 Maneuver	257	353	-	349	359	-	-	-	-	-	-	-
Stage 1	590	580	-	713	661	-	-	-	-	-	-	-
Stage 2	512	640	-	585	576	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.7		14.7		0.7		1.3	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1280	-	-	421 532	1342	-	-
HCM Lane V/C Ratio	0.019	-	-	0.116 0.303	0.04	-	-
HCM Control Delay (s)	7.9	0	-	14.7 14.7	7.8	0	-
HCM Lane LOS	A	A	-	B B	A A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4 1.3	0.1	-	-

Lanes, Volumes, Timings
1: Business Park Drive/Maple Avenue & NY 22

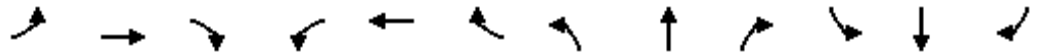
2021-NB-AM
02/14/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	511	139	173	1240	365	69	44	64	237	61	75
Future Volume (vph)	45	511	139	173	1240	365	69	44	64	237	61	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	11	11	11	11	11	11
Grade (%)		-1%			-2%			1%			-1%	
Storage Length (ft)	585		0	265		225	0		60	300		0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (ft)	125			150			25			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.99	
Frt		0.968				0.850			0.850		0.917	
Flt Protected	0.950			0.950				0.970		0.950		
Satd. Flow (prot)	1449	2976	0	1695	3345	1431	0	1643	1452	1566	1508	0
Flt Permitted	0.950			0.950				0.970		0.950		
Satd. Flow (perm)	1449	2976	0	1695	3345	1431	0	1639	1452	1566	1508	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25				203			110		39	
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		874			668			319			593	
Travel Time (s)		10.8			8.3			7.3			13.5	
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	21%	21%	7%	4%	9%	14%	13%	0%	7%	12%	2%	19%
Adj. Flow (vph)	48	544	148	184	1319	388	73	47	68	252	65	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	692	0	184	1319	388	0	120	68	252	145	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	0.99	0.99	1.03	0.99	0.99	1.05	1.05	1.05	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	1	1	2	2	1	1	
Detector Template							Left					
Leading Detector (ft)	83	83		83	83	35	20	68	68	50	55	
Trailing Detector (ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Position(ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Size(ft)	40	40		40	40	40	20	40	40	60	60	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	3.0	3.0		3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	43	43		43	43			38	38			
Detector 2 Size(ft)	40	40		40	40			30	30			
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex			

Lanes, Volumes, Timings
1: Business Park Drive/Maple Avenue & NY 22

2021-NB-AM

02/14/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)	3.0	3.0		3.0	3.0			3.0	3.0			
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2			8			
Detector Phase	1	6		5	2	2	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	11.0	11.0	11.0	11.0	11.0	
Total Split (s)	26.0	56.0		26.0	56.0	56.0	26.0	26.0	26.0	41.0	41.0	
Total Split (%)	17.4%	37.6%		17.4%	37.6%	37.6%	17.4%	17.4%	17.4%	27.5%	27.5%	
Maximum Green (s)	20.0	50.0		20.0	50.0	50.0	20.0	20.0	20.0	35.0	35.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	
Act Effect Green (s)	9.7	40.8		17.6	51.8	51.8		14.4	14.4	24.5	24.5	
Actuated g/C Ratio	0.08	0.33		0.14	0.42	0.42		0.12	0.12	0.20	0.20	
v/c Ratio	0.42	0.68		0.75	0.93	0.54		0.62	0.25	0.80	0.43	
Control Delay	69.3	39.6		72.4	48.1	17.4		68.8	4.0	66.9	36.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	69.3	39.6		72.4	48.1	17.4		68.8	4.0	66.9	36.3	
LOS	E	D		E	D	B		E	A	E	D	
Approach Delay		41.5			44.2			45.3			55.7	
Approach LOS		D			D			D			E	
Queue Length 50th (ft)	37	247		140	538	108		92	0	193	74	
Queue Length 95th (ft)	88	370		#298	#886	258		178	10	322	152	
Internal Link Dist (ft)		794			588			239			513	
Turn Bay Length (ft)	585			265		225			60	300		
Base Capacity (vph)	244	1267		285	1421	724		276	336	461	471	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.20	0.55		0.65	0.93	0.54		0.43	0.20	0.55	0.31	

Intersection Summary

Area Type: Other

Cycle Length: 149

Actuated Cycle Length: 121.9

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 45.1

Intersection LOS: D

Intersection Capacity Utilization 76.9%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Business Park Drive/Maple Avenue & NY 22

 Ø1	 Ø2	 Ø4	 Ø8
26 s	56 s	41 s	26 s
 Ø5	 Ø6		
26 s	56 s		

HCM 6th Signalized Intersection Summary
1: Business Park Drive/Maple Avenue & NY 22

2021-NB-AM
02/14/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	511	139	173	1240	365	69	44	64	237	61	75
Future Volume (veh/h)	45	511	139	173	1240	365	69	44	64	237	61	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1624	1624	1624	1919	1844	1769	1894	1894	1790	1759	1909	1909
Adj Flow Rate, veh/h	48	544	148	184	1319	388	73	47	68	252	65	80
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	21	21	21	4	9	14	0	0	7	12	2	2
Cap, veh/h	79	881	239	224	1535	657	100	64	134	303	140	173
Arrive On Green	0.05	0.37	0.37	0.12	0.44	0.44	0.09	0.09	0.09	0.18	0.18	0.18
Sat Flow, veh/h	1547	2400	650	1827	3503	1499	1118	720	1507	1675	777	956
Grp Volume(v), veh/h	48	349	343	184	1319	388	120	0	68	252	0	145
Grp Sat Flow(s),veh/h/ln	1547	1543	1507	1827	1751	1499	1838	0	1507	1675	0	1733
Q Serve(g_s), s	3.0	18.5	18.6	9.8	33.9	19.6	6.4	0.0	4.3	14.5	0.0	7.5
Cycle Q Clear(g_c), s	3.0	18.5	18.6	9.8	33.9	19.6	6.4	0.0	4.3	14.5	0.0	7.5
Prop In Lane	1.00		0.43	1.00		1.00	0.61		1.00	1.00		0.55
Lane Grp Cap(c), veh/h	79	566	553	224	1535	657	164	0	134	303	0	313
V/C Ratio(X)	0.60	0.62	0.62	0.82	0.86	0.59	0.73	0.00	0.51	0.83	0.00	0.46
Avail Cap(c_a), veh/h	310	773	755	366	1754	751	368	0	302	587	0	608
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.4	25.8	25.9	42.7	25.3	21.3	44.3	0.0	43.4	39.4	0.0	36.6
Incr Delay (d2), s/veh	7.2	1.1	1.1	7.5	4.1	1.0	6.2	0.0	2.9	5.9	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(50%),veh/ln	1.3	6.3	6.2	4.6	13.1	6.2	3.2	0.0	1.7	6.4	0.0	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.5	26.9	27.0	50.2	29.4	22.2	50.5	0.0	46.3	45.3	0.0	37.6
LnGrp LOS	D	C	C	D	C	C	D	A	D	D	A	D
Approach Vol, veh/h		740			1891			188			397	
Approach Delay, s/veh		28.7			29.9			49.0			42.5	
Approach LOS		C			C			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.1	49.8		24.1	18.2	42.7		14.9				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	20.0	50.0		35.0	20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s	5.0	35.9		16.5	11.8	20.6		8.4				
Green Ext Time (p_c), s	0.1	7.9		1.6	0.4	3.5		0.6				
Intersection Summary												
HCM 6th Ctrl Delay				32.3								
HCM 6th LOS				C								

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2021-NB-AM

02/14/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	44	122	105	44	29	126	180	148	20	146	3
Future Volume (vph)	3	44	122	105	44	29	126	180	148	20	146	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	14	12	12	12	10	11	11	14	14	14
Grade (%)		-1%			-1%			0%			-2%	
Storage Length (ft)	0		0	0		0	120		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	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 Factor		0.96			0.99		0.99					
Frt		0.902			0.978			0.932			0.998	
Flt Protected		0.999			0.971		0.950				0.994	
Satd. Flow (prot)	0	1638	0	0	1649	0	1636	1470	0	0	1800	0
Flt Permitted		0.999			0.971		0.492				0.923	
Satd. Flow (perm)	0	1638	0	0	1634	0	842	1470	0	0	1672	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)		111						49			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		155			662			593			513	
Travel Time (s)		3.5			15.0			13.5			11.7	
Confl. Peds. (#/hr)	1		9	9		1	8					
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	67%	13%	5%	12%	10%	0%	3%	16%	17%	17%	12%	25%
Adj. Flow (vph)	3	51	142	122	51	34	147	209	172	23	170	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	196	0	0	207	0	147	381	0	0	196	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.91	0.91	0.91	0.99	0.99	0.99	1.09	1.04	1.04	0.91	0.91	0.91
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left						Left		
Leading Detector (ft)	20	35		20	35		35	35		20	35	
Trailing Detector (ft)	0	-5		0	-5		-5	-5		0	-5	
Detector 1 Position(ft)	0	-5		0	-5		-5	-5		0	-5	
Detector 1 Size(ft)	20	40		20	40		40	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	1.5		0.0	2.0		2.0	3.0		0.0	3.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	8	8		4	4		1	6			2	
Permitted Phases							6			2		

Peak Weekday AM Hour (8:00 - 9:00)
JMC 18053

Synchro 10 Report
Page 5

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2021-NB-AM

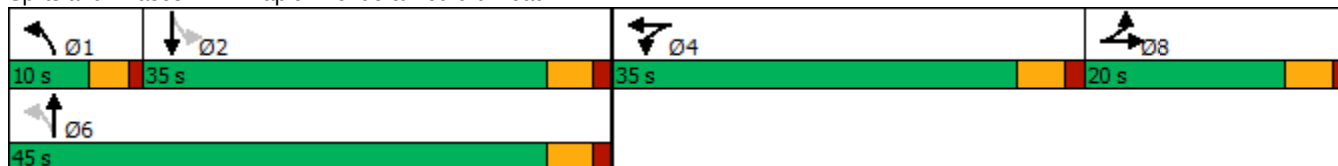
02/14/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	8	8		4	4		1	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		10.0	10.0		3.0	12.0		12.0	12.0	
Minimum Split (s)	8.0	8.0		15.0	15.0		7.0	17.0		17.0	17.0	
Total Split (s)	20.0	20.0		35.0	35.0		10.0	45.0		35.0	35.0	
Total Split (%)	20.0%	20.0%		35.0%	35.0%		10.0%	45.0%		35.0%	35.0%	
Maximum Green (s)	15.0	15.0		30.0	30.0		6.0	40.0		30.0	30.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		4.0	5.0			5.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	1.5	1.5		2.0	2.0		2.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		Min	Min	
Walk Time (s)				7.0	7.0							
Flash Dont Walk (s)				15.0	15.0							
Pedestrian Calls (#/hr)				2	2							
Act Effct Green (s)		8.0			13.7		23.7	22.6			15.0	
Actuated g/C Ratio		0.13			0.23		0.39	0.38			0.25	
v/c Ratio		0.63			0.55		0.36	0.65			0.47	
Control Delay		23.0			29.3		16.4	20.6			26.2	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		23.0			29.3		16.4	20.6			26.2	
LOS		C			C		B	C			C	
Approach Delay		23.0			29.3			19.4			26.2	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)		27			64		31	86			59	
Queue Length 95th (ft)		96			153		87	221			140	
Internal Link Dist (ft)		75			582			513			433	
Turn Bay Length (ft)							120					
Base Capacity (vph)		514			871		415	1049			883	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.38			0.24		0.35	0.36			0.22	
Intersection Summary												
Area Type:	Other											
Cycle Length: 100												
Actuated Cycle Length: 60.2												
Natural Cycle: 55												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.65												
Intersection Signal Delay: 23.0						Intersection LOS: C						
Intersection Capacity Utilization 66.0%						ICU Level of Service C						
Analysis Period (min) 15												

Lanes, Volumes, Timings
 2: Maple Avenue & Bedford Road

2021-NB-AM
 02/14/2019

Splits and Phases: 2: Maple Avenue & Bedford Road



HCM 6th Signalized Intersection Summary

2: Maple Avenue & Bedford Road

2021-NB-AM
02/14/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	44	122	105	44	29	126	180	148	20	146	3
Future Volume (veh/h)	3	44	122	105	44	29	126	180	148	20	146	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.99	0.99		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	1814	1814	1814	1789	1789	1789	1856	1663	1663	1870	1870	1870
Adj Flow Rate, veh/h	3	51	142	122	51	34	147	209	172	23	170	3
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	13	13	13	10	10	10	3	16	16	12	12	12
Cap, veh/h	4	62	173	190	79	53	570	319	263	97	363	6
Arrive On Green	0.15	0.15	0.15	0.19	0.19	0.19	0.09	0.38	0.38	0.22	0.22	0.22
Sat Flow, veh/h	24	408	1136	991	414	276	1767	839	691	104	1643	27
Grp Volume(v), veh/h	196	0	0	207	0	0	147	0	381	196	0	0
Grp Sat Flow(s),veh/h/ln	1568	0	0	1682	0	0	1767	0	1530	1774	0	0
Q Serve(g_s), s	6.6	0.0	0.0	6.2	0.0	0.0	3.2	0.0	11.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.6	0.0	0.0	6.2	0.0	0.0	3.2	0.0	11.2	5.0	0.0	0.0
Prop In Lane	0.02		0.72	0.59		0.16	1.00		0.45	0.12		0.02
Lane Grp Cap(c), veh/h	239	0	0	322	0	0	570	0	582	466	0	0
V/C Ratio(X)	0.82	0.00	0.00	0.64	0.00	0.00	0.26	0.00	0.65	0.42	0.00	0.00
Avail Cap(c_a), veh/h	433	0	0	928	0	0	613	0	1126	1025	0	0
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	0.00
Uniform Delay (d), s/veh	22.3	0.0	0.0	20.3	0.0	0.0	12.8	0.0	13.9	18.4	0.0	0.0
Incr Delay (d2), s/veh	2.7	0.0	0.0	0.8	0.0	0.0	0.1	0.0	1.3	0.6	0.0	0.0
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(50%),veh/ln	2.4	0.0	0.0	2.3	0.0	0.0	1.1	0.0	3.5	2.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.0	0.0	0.0	21.1	0.0	0.0	12.9	0.0	15.1	19.0	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	B	A	B	B	A	A
Approach Vol, veh/h		196			207			528			196	
Approach Delay, s/veh		25.0			21.1			14.5			19.0	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.7	17.0		15.4		25.7		13.3				
Change Period (Y+Rc), s	4.0	5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s	6.0	30.0		30.0		40.0		15.0				
Max Q Clear Time (g_c+I1), s	5.2	7.0		8.2		13.2		8.6				
Green Ext Time (p_c), s	0.0	0.6		0.4		1.5		0.2				
Intersection Summary												
HCM 6th Ctrl Delay				18.3								
HCM 6th LOS				B								

Lanes, Volumes, Timings
3: Site Driveway & Bedford Road

2021-NB-AM
02/14/2019

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	168	2	5	168	0	1
Future Volume (vph)	168	2	5	168	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-1%			1%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.999				0.865	
Flt Protected				0.999		
Satd. Flow (prot)	1752	0	0	1576	1644	0
Flt Permitted				0.999		
Satd. Flow (perm)	1752	0	0	1576	1644	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	711			155	153	
Travel Time (s)	16.2			3.5	3.5	
Confl. Peds. (#/hr)		9				
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	9%	0%	0%	5%	0%	0%
Parking (#/hr)			5	5		
Adj. Flow (vph)	195	2	6	195	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	197	0	0	201	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	1.01	1.19	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	22.9%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	168	2	5	168	0	1
Future Vol, veh/h	168	2	5	168	0	1
Conflicting Peds, #/hr	0	9	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, %	-1	-	-	1	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	9	0	0	5	0	0
Mvmt Flow	195	2	6	195	0	1
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	206	0	412	205
Stage 1	-	-	-	-	205	-
Stage 2	-	-	-	-	207	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
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	-	-	1377	-	600	841
Stage 1	-	-	-	-	834	-
Stage 2	-	-	-	-	832	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1365	-	592	834
Mov Cap-2 Maneuver	-	-	-	-	592	-
Stage 1	-	-	-	-	822	-
Stage 2	-	-	-	-	832	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.2		9.3	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	834	-	-	1365	-	
HCM Lane V/C Ratio	0.001	-	-	0.004	-	
HCM Control Delay (s)	9.3	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Lanes, Volumes, Timings
4: NY 128 & Kent Place/Bedford Road

2021-NB-AM

02/14/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	5	10	40	16	49	27	179	67	61	336	16
Future Volume (vph)	1	5	10	40	16	49	27	179	67	61	336	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	11	11	11	14	14	14	11	11	11
Grade (%)		0%			0%			1%			0%	
Lane Util. Factor	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 Factor												
Frt		0.917			0.937			0.967			0.995	
Flt Protected		0.997			0.981			0.995			0.993	
Satd. Flow (prot)	0	1782	0	0	1281	0	0	1685	0	0	1365	0
Flt Permitted		0.997			0.981			0.995			0.993	
Satd. Flow (perm)	0	1782	0	0	1281	0	0	1685	0	0	1365	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		228			711			372			366	
Travel Time (s)		5.2			16.2			8.5			8.3	
Confl. Peds. (#/hr)			2	2		6			2	2		3
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	17%	14%	8%	12%	31%	13%	8%	17%	13%	7%	14%	14%
Parking (#/hr)				5	5	5				10	10	10
Adj. Flow (vph)	1	6	11	46	18	56	31	206	77	70	386	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	18	0	0	120	0	0	314	0	0	474	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.85	0.85	0.85	1.04	1.24	1.04	0.92	0.92	0.92	1.04	1.28	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	53.0%											
Analysis Period (min)	15											
ICU Level of Service A												

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	5	10	40	16	49	27	179	67	61	336	16
Future Vol, veh/h	1	5	10	40	16	49	27	179	67	61	336	16
Conflicting Peds, #/hr	0	0	2	2	0	6	0	0	2	2	0	3
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, %	-	0	-	-	0	-	-	1	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	17	14	8	12	31	13	8	17	13	7	14	14
Mvmt Flow	1	6	11	46	18	56	31	206	77	70	386	18
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	888	885	400	855	856	253	407	0	0	285	0	0
Stage 1	538	538	-	309	309	-	-	-	-	-	-	-
Stage 2	350	347	-	546	547	-	-	-	-	-	-	-
Critical Hdwy	7.27	6.64	6.28	7.22	6.81	6.33	4.18	-	-	4.17	-	-
Critical Hdwy Stg 1	6.27	5.64	-	6.22	5.81	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.27	5.64	-	6.22	5.81	-	-	-	-	-	-	-
Follow-up Hdwy	3.653	4.126	3.372	3.608	4.279	3.417	2.272	-	-	2.263	-	-
Pot Cap-1 Maneuver	249	271	637	267	266	760	1120	-	-	1249	-	-
Stage 1	501	503	-	680	611	-	-	-	-	-	-	-
Stage 2	636	614	-	504	473	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	198	241	633	236	237	755	1116	-	-	1247	-	-
Mov Cap-2 Maneuver	198	241	-	236	237	-	-	-	-	-	-	-
Stage 1	482	464	-	656	590	-	-	-	-	-	-	-
Stage 2	549	593	-	452	437	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	14.8		20.7		0.8		1.2					
HCM LOS	B		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1116	-	-	385	348	1247	-	-				
HCM Lane V/C Ratio	0.028	-	-	0.048	0.347	0.056	-	-				
HCM Control Delay (s)	8.3	0	-	14.8	20.7	8.1	0	-				
HCM Lane LOS	A	A	-	B	C	A	A	-				
HCM 95th %tile O(veh)	0.1	-	-	0.1	1.5	0.2	-	-				

Lanes, Volumes, Timings
1: Business Park Drive/Maple Avenue & NY 22

2021-NB-PM
02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	1113	66	126	701	330	144	61	253	325	39	47
Future Volume (vph)	35	1113	66	126	701	330	144	61	253	325	39	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	11	11	11	11	11	11
Grade (%)		-1%			-2%			1%			-1%	
Storage Length (ft)	585		0	265		225	0		60	300		0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (ft)	125			150			25			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992				0.850			0.850		0.918	
Flt Protected	0.950			0.950				0.966		0.950		
Satd. Flow (prot)	1654	3422	0	1632	3345	1470	0	1696	1508	1654	1617	0
Flt Permitted	0.950			0.950				0.966		0.950		
Satd. Flow (perm)	1654	3422	0	1632	3345	1470	0	1696	1508	1654	1617	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				325			117		38	
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		874			668			319			593	
Travel Time (s)		10.8			8.3			7.3			13.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	6%	5%	8%	8%	9%	11%	5%	2%	3%	6%	7%	3%
Adj. Flow (vph)	39	1251	74	142	788	371	162	69	284	365	44	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	1325	0	142	788	371	0	231	284	365	97	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	0.99	0.99	1.03	0.99	0.99	1.05	1.05	1.05	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	1	1	2	2	1	1	
Detector Template							Left					
Leading Detector (ft)	83	83		83	83	35	20	68	68	50	55	
Trailing Detector (ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Position(ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Size(ft)	40	40		40	40	40	20	40	40	60	60	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	3.0	3.0		3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	43	43		43	43			38	38			
Detector 2 Size(ft)	40	40		40	40			30	30			
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)	3.0	3.0		3.0	3.0			3.0	3.0			

Peak Weekday PM Hour (5:00 - 6:00)
JMC 18053

Synchro 10 Report
Page 1

Lanes, Volumes, Timings
1: Business Park Drive/Maple Avenue & NY 22

2021-NB-PM
02/15/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2			8			
Detector Phase	1	6		5	2	2	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	11.0	11.0	11.0	11.0	11.0	
Total Split (s)	26.0	56.0		26.0	56.0	56.0	26.0	26.0	26.0	41.0	41.0	
Total Split (%)	17.4%	37.6%		17.4%	37.6%	37.6%	17.4%	17.4%	17.4%	27.5%	27.5%	
Maximum Green (s)	20.0	50.0		20.0	50.0	50.0	20.0	20.0	20.0	35.0	35.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	
Act Effect Green (s)	8.9	50.1		16.7	60.4	60.4		20.0	20.0	33.9	33.9	
Actuated g/C Ratio	0.06	0.35		0.12	0.42	0.42		0.14	0.14	0.23	0.23	
v/c Ratio	0.39	1.12		0.76	0.56	0.46		0.99	0.92	0.94	0.24	
Control Delay	76.8	108.1		86.6	35.3	7.1		117.1	70.3	88.1	29.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	76.8	108.1		86.6	35.3	7.1		117.1	70.3	88.1	29.6	
LOS	E	F		F	D	A		F	E	F	C	
Approach Delay		107.2			32.8			91.3			75.9	
Approach LOS		F			C			F			E	
Queue Length 50th (ft)	37	~777		133	308	27		~225	167	345	45	
Queue Length 95th (ft)	75	#920		208	385	106		#405	#345	#539	98	
Internal Link Dist (ft)		794			588			239			513	
Turn Bay Length (ft)	585			265		225			60	300		
Base Capacity (vph)	228	1185		225	1395	802		234	309	400	420	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.17	1.12		0.63	0.56	0.46		0.99	0.92	0.91	0.23	

Intersection Summary

Area Type: Other

Cycle Length: 149

Actuated Cycle Length: 144.8

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.12

Intersection Signal Delay: 74.4

Intersection LOS: E

Intersection Capacity Utilization 81.5%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Business Park Drive/Maple Avenue & NY 22

 Ø1	 Ø2	 Ø4	 Ø8
26 s	56 s	41 s	26 s
 Ø5	 Ø6		
26 s	56 s		

HCM 6th Signalized Intersection Summary
1: Business Park Drive/Maple Avenue & NY 22

2021-NB-PM
02/15/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	1113	66	126	701	330	144	61	253	325	39	47
Future Volume (veh/h)	35	1113	66	126	701	330	144	61	253	325	39	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1849	1864	1864	1859	1844	1814	1864	1864	1850	1849	1834	1834
Adj Flow Rate, veh/h	39	1251	74	142	788	371	162	69	284	365	44	53
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	6	5	5	8	9	11	2	2	3	6	7	7
Cap, veh/h	65	1230	73	169	1473	646	183	78	227	395	170	204
Arrive On Green	0.04	0.36	0.36	0.10	0.42	0.42	0.14	0.14	0.14	0.22	0.22	0.22
Sat Flow, veh/h	1761	3398	201	1770	3503	1537	1263	538	1568	1761	758	912
Grp Volume(v), veh/h	39	651	674	142	788	371	231	0	284	365	0	97
Grp Sat Flow(s),veh/h/ln	1761	1771	1828	1770	1751	1537	1801	0	1568	1761	0	1670
Q Serve(g_s), s	3.0	50.0	50.0	10.9	23.2	25.5	17.4	0.0	20.0	28.0	0.0	6.6
Cycle Q Clear(g_c), s	3.0	50.0	50.0	10.9	23.2	25.5	17.4	0.0	20.0	28.0	0.0	6.6
Prop In Lane	1.00		0.11	1.00		1.00	0.70		1.00	1.00		0.55
Lane Grp Cap(c), veh/h	65	641	662	169	1473	646	261	0	227	395	0	374
V/C Ratio(X)	0.60	1.02	1.02	0.84	0.53	0.57	0.89	0.00	1.25	0.92	0.00	0.26
Avail Cap(c_a), veh/h	255	641	662	256	1473	646	261	0	227	446	0	423
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	65.5	44.1	44.1	61.4	29.9	30.6	57.9	0.0	59.1	52.4	0.0	44.1
Incr Delay (d2), s/veh	8.7	39.5	39.6	14.2	0.4	1.2	28.3	0.0	144.1	23.6	0.0	0.4
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(50%),veh/ln	1.5	27.6	28.5	5.4	9.3	9.1	10.0	0.0	17.0	15.0	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.2	83.6	83.7	75.6	30.3	31.8	86.2	0.0	203.1	76.1	0.0	44.5
LnGrp LOS	E	F	F	E	C	C	F	A	F	E	A	D
Approach Vol, veh/h	1364			1301			515			462		
Approach Delay, s/veh	83.4			35.7			150.7			69.4		
Approach LOS	F			D			F			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.1	64.1		37.0	19.2	56.0		26.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	20.0	50.0		35.0	20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s	5.0	27.5		30.0	12.9	52.0		22.0				
Green Ext Time (p_c), s	0.1	6.0		0.9	0.3	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	74.1											
HCM 6th LOS	E											

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2021-NB-PM
02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	15	144	82	25	22	124	270	32	11	185	6
Future Volume (vph)	7	15	144	82	25	22	124	270	32	11	185	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	14	12	12	12	10	11	11	14	14	14
Grade (%)		-1%			-1%			0%			-2%	
Storage Length (ft)	0		0	0		0	120		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.883			0.977			0.984			0.996	
Flt Protected		0.998			0.969		0.950				0.997	
Satd. Flow (prot)	0	1713	0	0	1748	0	1546	1700	0	0	1951	0
Flt Permitted		0.998			0.969		0.472				0.971	
Satd. Flow (perm)	0	1713	0	0	1748	0	768	1700	0	0	1900	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)		160						7			2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		155			662			593			513	
Travel Time (s)		3.5			15.0			13.5			11.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	10%	0%	5%	4%	2%	3%	9%	5%	17%	10%	4%	0%
Adj. Flow (vph)	8	17	160	91	28	24	138	300	36	12	206	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	185	0	0	143	0	138	336	0	0	225	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.91	0.91	0.91	0.99	0.99	0.99	1.09	1.04	1.04	0.91	0.91	0.91
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left						Left		
Leading Detector (ft)	20	35		20	35		35	35		20	35	
Trailing Detector (ft)	0	-5		0	-5		-5	-5		0	-5	
Detector 1 Position(ft)	0	-5		0	-5		-5	-5		0	-5	
Detector 1 Size(ft)	20	40		20	40		40	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	1.5		0.0	2.0		2.0	3.0		0.0	3.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	8	8		4	4		1	6			2	
Permitted Phases							6			2		
Detector Phase	8	8		4	4		1	6		2	2	
Switch Phase												

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2021-NB-PM

02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	3.0		10.0	10.0		3.0	12.0		12.0	12.0	
Minimum Split (s)	8.0	8.0		15.0	15.0		7.0	17.0		17.0	17.0	
Total Split (s)	20.0	20.0		35.0	35.0		10.0	45.0		35.0	35.0	
Total Split (%)	20.0%	20.0%		35.0%	35.0%		10.0%	45.0%		35.0%	35.0%	
Maximum Green (s)	15.0	15.0		30.0	30.0		6.0	40.0		30.0	30.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		4.0	5.0			5.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		1.5	1.5		2.0	2.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		Min	Min	
Walk Time (s)				7.0	7.0							
Flash Dont Walk (s)				15.0	15.0							
Pedestrian Calls (#/hr)				0	0							
Act Effect Green (s)		7.7			11.6		22.7	21.6			14.3	
Actuated g/C Ratio		0.15			0.22		0.44	0.42			0.28	
v/c Ratio		0.47			0.36		0.32	0.47			0.43	
Control Delay		11.2			24.6		13.2	14.9			21.8	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		11.2			24.6		13.2	14.9			21.8	
LOS		B			C		B	B			C	
Approach Delay		11.2			24.6			14.4			21.8	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)		7			40		26	72			62	
Queue Length 95th (ft)		59			101		69	165			138	
Internal Link Dist (ft)		75			582			513			433	
Turn Bay Length (ft)							120					
Base Capacity (vph)		654			1083		435	1292			1178	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.28			0.13		0.32	0.26			0.19	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 51.7

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 16.8

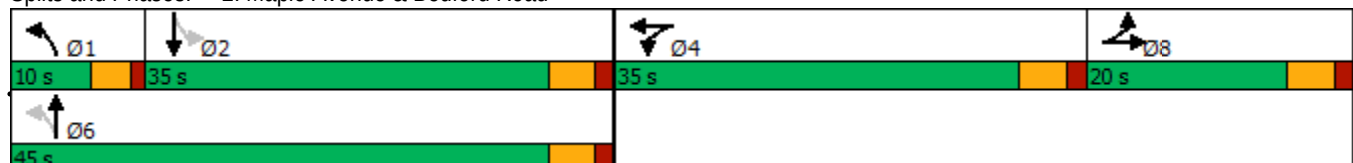
Intersection LOS: B

Intersection Capacity Utilization 61.9%

ICU Level of Service B

Analysis Period (min) 15

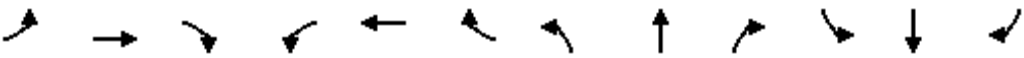
Splits and Phases: 2: Maple Avenue & Bedford Road



HCM 6th Signalized Intersection Summary

2: Maple Avenue & Bedford Road

2021-NB-PM
02/15/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔			↔	
Traffic Volume (veh/h)	7	15	144	82	25	22	124	270	32	11	185	6
Future Volume (veh/h)	7	15	144	82	25	22	124	270	32	11	185	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	2017	2017	2017	1909	1909	1909	1767	1826	1826	1995	1995	1995
Adj Flow Rate, veh/h	8	17	160	91	28	24	138	300	36	12	206	7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	2	2	2	9	5	5	4	4	4
Cap, veh/h	10	22	208	195	60	51	561	635	76	84	435	14
Arrive On Green	0.14	0.14	0.14	0.17	0.17	0.17	0.08	0.40	0.40	0.24	0.24	0.24
Sat Flow, veh/h	75	160	1507	1144	352	302	1682	1599	192	42	1849	61
Grp Volume(v), veh/h	185	0	0	143	0	0	138	0	336	225	0	0
Grp Sat Flow(s),veh/h/ln	1742	0	0	1798	0	0	1682	0	1791	1951	0	0
Q Serve(g_s), s	5.2	0.0	0.0	3.7	0.0	0.0	2.9	0.0	7.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.2	0.0	0.0	3.7	0.0	0.0	2.9	0.0	7.1	5.0	0.0	0.0
Prop In Lane	0.04		0.86	0.64		0.17	1.00		0.11	0.05		0.03
Lane Grp Cap(c), veh/h	240	0	0	306	0	0	561	0	712	534	0	0
V/C Ratio(X)	0.77	0.00	0.00	0.47	0.00	0.00	0.25	0.00	0.47	0.42	0.00	0.00
Avail Cap(c_a), veh/h	513	0	0	1058	0	0	619	0	1406	1207	0	0
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	0.00
Uniform Delay (d), s/veh	21.2	0.0	0.0	19.1	0.0	0.0	11.4	0.0	11.4	16.8	0.0	0.0
Incr Delay (d2), s/veh	5.1	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.2	0.5	0.0	0.0
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(50%),veh/ln	2.3	0.0	0.0	1.4	0.0	0.0	0.9	0.0	2.4	2.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.3	0.0	0.0	19.5	0.0	0.0	11.5	0.0	11.6	17.3	0.0	0.0
LnGrp LOS	C	A	A	B	A	A	B	A	B	B	A	A
Approach Vol, veh/h	185			143			474			225		
Approach Delay, s/veh	26.3			19.5			11.6			17.3		
Approach LOS	C			B			B			B		
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.2	17.0		13.7		25.2		12.0				
Change Period (Y+Rc), s	4.0	5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s	6.0	30.0		30.0		40.0		15.0				
Max Q Clear Time (g_c+I1), s	4.9	7.0		5.7		9.1		7.2				
Green Ext Time (p_c), s	0.0	0.7		0.2		0.6		0.4				
Intersection Summary												
HCM 6th Ctrl Delay	16.6											
HCM 6th LOS	B											

Lanes, Volumes, Timings
3: Site Driveway & Bedford Road

2021-NB-PM

02/15/2019

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	160	0	1	154	2	6
Future Volume (vph)	160	0	1	154	2	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-1%			1%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.895	
Flt Protected					0.989	
Satd. Flow (prot)	1819	0	0	1547	1682	0
Flt Permitted					0.989	
Satd. Flow (perm)	1819	0	0	1547	1682	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	711			155	153	
Travel Time (s)	16.2			3.5	3.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	0%	0%	7%	0%	0%
Parking (#/hr)			5	5		
Adj. Flow (vph)	178	0	1	171	2	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	178	0	0	172	9	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	1.01	1.19	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	18.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 6th TWSC
3: Site Driveway & Bedford Road

2021-NB-PM
02/15/2019

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	160	0	1	154	2	6
Future Vol, veh/h	160	0	1	154	2	6
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, %	-1	-	-	1	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	0	0	7	0	0
Mvmt Flow	178	0	1	171	2	7
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	178	0	351	178
Stage 1	-	-	-	-	178	-
Stage 2	-	-	-	-	173	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
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	-	-	1410	-	650	870
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	862	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1410	-	649	870
Mov Cap-2 Maneuver	-	-	-	-	649	-
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	862	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0		9.5		
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	802	-	-	1410	-	
HCM Lane V/C Ratio	0.011	-	-	0.001	-	
HCM Control Delay (s)	9.5	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Lanes, Volumes, Timings
4: NY 128 & Kent Place/Bedford Road

2021-NB-PM

02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	15	28	40	32	50	53	353	53	46	289	31
Future Volume (vph)	7	15	28	40	32	50	53	353	53	46	289	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	11	11	11	14	14	14	11	11	11
Grade (%)		0%			0%			1%			0%	
Lane Util. Factor	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 Factor												
Frt		0.924			0.945			0.985			0.989	
Flt Protected		0.993			0.984			0.994			0.994	
Satd. Flow (prot)	0	1932	0	0	1421	0	0	1876	0	0	1477	0
Flt Permitted		0.993			0.984			0.994			0.994	
Satd. Flow (perm)	0	1932	0	0	1421	0	0	1876	0	0	1477	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		228			711			372			366	
Travel Time (s)		5.2			16.2			8.5			8.3	
Confl. Peds. (#/hr)	27		1	1		27	2		1	1		2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	4%	0%	12%	5%	2%	5%	10%	6%	4%	0%
Parking (#/hr)				5	5	5				10	10	10
Adj. Flow (vph)	7	16	30	43	34	53	56	376	56	49	307	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	53	0	0	130	0	0	488	0	0	389	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.85	0.85	0.85	1.04	1.24	1.04	0.92	0.92	0.92	1.04	1.28	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	53.5%											
Analysis Period (min)	15											
ICU Level of Service A												

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	15	28	40	32	50	53	353	53	46	289	31
Future Vol, veh/h	7	15	28	40	32	50	53	353	53	46	289	31
Conflicting Peds, #/hr	27	0	1	1	0	27	2	0	1	1	0	2
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, %	-	0	-	-	0	-	-	1	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	4	0	12	5	2	5	10	6	4	0
Mvmt Flow	7	16	30	43	34	53	56	376	56	49	307	33
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1011	969	327	963	957	432	342	0	0	433	0	0
Stage 1	424	424	-	517	517	-	-	-	-	-	-	-
Stage 2	587	545	-	446	440	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.1	6.62	6.25	4.12	-	-	4.16	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.62	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.62	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.5	4.108	3.345	2.218	-	-	2.254	-	-
Pot Cap-1 Maneuver	220	256	710	237	248	617	1217	-	-	1106	-	-
Stage 1	612	590	-	545	518	-	-	-	-	-	-	-
Stage 2	499	522	-	595	561	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	158	226	707	196	219	602	1214	-	-	1105	-	-
Mov Cap-2 Maneuver	158	226	-	196	219	-	-	-	-	-	-	-
Stage 1	573	556	-	511	486	-	-	-	-	-	-	-
Stage 2	388	490	-	523	528	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	17.9		28.2		0.9		1.1					
HCM LOS	C		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1214	-	-	333	282	1105	-	-				
HCM Lane V/C Ratio	0.046	-	-	0.16	0.46	0.044	-	-				
HCM Control Delay (s)	8.1	0	-	17.9	28.2	8.4	0	-				
HCM Lane LOS	A	A	-	C	D	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.6	2.3	0.1	-	-				

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	332	34	68	281	296	61	84	117	301	43	23
Future Volume (vph)	32	332	34	68	281	296	61	84	117	301	43	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	11	11	11	11	11	11
Grade (%)		-1%			-2%			1%			-1%	
Storage Length (ft)	585		0	265		225	0		60	300		0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (ft)	125			150			25			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986				0.850			0.850		0.948	
Flt Protected	0.950			0.950				0.979		0.950		
Satd. Flow (prot)	1754	3577	0	1762	3610	1631	0	1789	1553	1754	1750	0
Flt Permitted	0.950			0.950				0.979		0.950		
Satd. Flow (perm)	1754	3577	0	1762	3610	1631	0	1789	1553	1754	1750	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				375			100		17	
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		874			668			319			593	
Travel Time (s)		10.8			8.3			7.3			13.5	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	41	420	43	86	356	375	77	106	148	381	54	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	463	0	86	356	375	0	183	148	381	83	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	0.99	0.99	1.03	0.99	0.99	1.05	1.05	1.05	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	1	1	2	2	1	1	
Detector Template							Left					
Leading Detector (ft)	83	83		83	83	35	20	68	68	50	55	
Trailing Detector (ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Position(ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Size(ft)	40	40		40	40	40	20	40	40	60	60	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	3.0	3.0		3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	43	43		43	43			38	38			
Detector 2 Size(ft)	40	40		40	40			30	30			
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)	3.0	3.0		3.0	3.0			3.0	3.0			

Lanes, Volumes, Timings
1: Business Park Drive/Maple Avenue & NY 22

2021-NB-SAT

02/14/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2			8			
Detector Phase	1	6		5	2	2	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	11.0	11.0	11.0	11.0	11.0	
Total Split (s)	26.0	56.0		26.0	56.0	56.0	26.0	26.0	26.0	56.0	56.0	
Total Split (%)	15.9%	34.1%		15.9%	34.1%	34.1%	15.9%	15.9%	15.9%	34.1%	34.1%	
Maximum Green (s)	20.0	50.0		20.0	50.0	50.0	20.0	20.0	20.0	50.0	50.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	
Act Effct Green (s)	8.4	20.0		11.2	26.1	26.1		17.3	17.3	28.8	28.8	
Actuated g/C Ratio	0.08	0.20		0.11	0.26	0.26		0.17	0.17	0.28	0.28	
v/c Ratio	0.29	0.66		0.45	0.39	0.54		0.61	0.43	0.77	0.16	
Control Delay	55.6	43.9		55.1	36.0	7.0		52.4	21.0	46.3	25.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	55.6	43.9		55.1	36.0	7.0		52.4	21.0	46.3	25.1	
LOS	E	D		E	D	A		D	C	D	C	
Approach Delay		44.8			24.7			38.3			42.6	
Approach LOS		D			C			D			D	
Queue Length 50th (ft)	26	145		53	105	0		109	27	228	32	
Queue Length 95th (ft)	63	211		108	156	35		200	79	331	67	
Internal Link Dist (ft)		794			588			239			513	
Turn Bay Length (ft)	585			265		225			60	300		
Base Capacity (vph)	357	1823		358	1836	1014		363	395	892	898	
Starvation Cap Reductn	0	0		0	0	0		0	0	8	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.11	0.25		0.24	0.19	0.37		0.50	0.37	0.43	0.09	
Intersection Summary												
Area Type:	Other											
Cycle Length: 164												
Actuated Cycle Length: 102.2												
Natural Cycle: 60												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.77												
Intersection Signal Delay: 35.6						Intersection LOS: D						
Intersection Capacity Utilization 52.4%						ICU Level of Service A						
Analysis Period (min) 15												

Splits and Phases: 1: Business Park Drive/Maple Avenue & NY 22

 Ø1 26 s	 Ø2 56 s	 Ø4 56 s	 Ø8 26 s
 Ø5 26 s	 Ø6 56 s		

HCM 6th Signalized Intersection Summary
1: Business Park Drive/Maple Avenue & NY 22

2021-NB-SAT
02/14/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	332	34	68	281	296	61	84	117	301	43	23
Future Volume (veh/h)	32	332	34	68	281	296	61	84	117	301	43	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1939	1939	1939	1979	1964	1979	1894	1894	1894	1939	1939	1939
Adj Flow Rate, veh/h	41	420	43	86	356	375	77	106	148	381	54	29
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	0	0	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	88	847	86	135	1027	462	104	143	214	455	292	157
Arrive On Green	0.05	0.25	0.25	0.07	0.28	0.28	0.13	0.13	0.13	0.25	0.25	0.25
Sat Flow, veh/h	1847	3376	344	1884	3731	1677	781	1075	1605	1847	1187	638
Grp Volume(v), veh/h	41	228	235	86	356	375	183	0	148	381	0	83
Grp Sat Flow(s),veh/h/ln	1847	1842	1877	1884	1865	1677	1855	0	1605	1847	0	1825
Q Serve(g_s), s	1.7	8.5	8.6	3.6	6.2	16.8	7.6	0.0	7.1	15.8	0.0	2.9
Cycle Q Clear(g_c), s	1.7	8.5	8.6	3.6	6.2	16.8	7.6	0.0	7.1	15.8	0.0	2.9
Prop In Lane	1.00		0.18	1.00		1.00	0.42		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	88	462	471	135	1027	462	248	0	214	455	0	449
V/C Ratio(X)	0.47	0.49	0.50	0.64	0.35	0.81	0.74	0.00	0.69	0.84	0.00	0.18
Avail Cap(c_a), veh/h	458	1142	1164	467	2313	1040	460	0	398	1145	0	1131
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.4	25.8	25.9	36.4	23.4	27.3	33.6	0.0	33.4	28.9	0.0	24.0
Incr Delay (d2), s/veh	3.8	0.8	0.8	4.9	0.2	3.5	4.3	0.0	3.9	4.2	0.0	0.2
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(50%),veh/ln	0.8	3.4	3.5	1.7	2.4	6.4	3.6	0.0	2.9	7.3	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.3	26.7	26.7	41.3	23.6	30.8	37.9	0.0	37.3	33.1	0.0	24.2
LnGrp LOS	D	C	C	D	C	C	D	A	D	C	A	C
Approach Vol, veh/h	504			817			331			464		
Approach Delay, s/veh	27.9			28.8			37.6			31.5		
Approach LOS	C			C			D			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.8	28.2		25.9	11.8	26.2		16.8				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	20.0	50.0		50.0	20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s	3.7	18.8		17.8	5.6	10.6		9.6				
Green Ext Time (p_c), s	0.1	3.4		2.1	0.2	2.1		1.1				
Intersection Summary												
HCM 6th Ctrl Delay				30.5								
HCM 6th LOS				C								

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2021-NB-SAT

02/14/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	22	144	37	19	17	205	165	42	14	186	19
Future Volume (vph)	14	22	144	37	19	17	205	165	42	14	186	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	14	12	12	12	10	11	11	14	14	14
Grade (%)		-1%			-1%			0%			-2%	
Storage Length (ft)	0		0	0		0	120		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	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 Factor		0.98			0.99							
Frt		0.892			0.968			0.970			0.988	
Flt Protected		0.996			0.976		0.950				0.997	
Satd. Flow (prot)	0	1743	0	0	1795	0	1668	1767	0	0	1999	0
Flt Permitted		0.996			0.976		0.482				0.973	
Satd. Flow (perm)	0	1743	0	0	1795	0	846	1767	0	0	1951	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)		148						15			5	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		155			662			593			513	
Travel Time (s)		3.5			15.0			13.5			11.7	
Confl. Peds. (#/hr)			2			1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	1%	1%	0%	0%	1%	0%
Adj. Flow (vph)	14	23	148	38	20	18	211	170	43	14	192	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	185	0	0	76	0	211	213	0	0	226	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.91	0.91	0.91	0.99	0.99	0.99	1.09	1.04	1.04	0.91	0.91	0.91
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left						Left		
Leading Detector (ft)	20	35		20	35		35	35		20	35	
Trailing Detector (ft)	0	-5		0	-5		-5	-5		0	-5	
Detector 1 Position(ft)	0	-5		0	-5		-5	-5		0	-5	
Detector 1 Size(ft)	20	40		20	40		40	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	1.5		0.0	2.0		2.0	3.0		0.0	3.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	8	8		4	4		1	6			2	
Permitted Phases							6			2		

Peak Saturday Midday Hour (11:30 - 12:30)
JMC 18053

Synchro 10 Report
Page 5

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2021-NB-SAT

02/14/2019

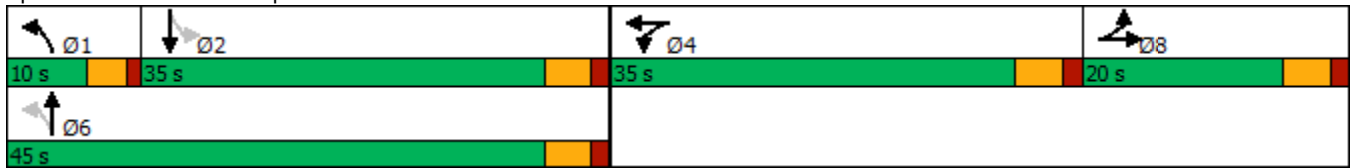
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	8	8		4	4		1	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		10.0	10.0		3.0	12.0		12.0	12.0	
Minimum Split (s)	8.0	8.0		15.0	15.0		7.0	17.0		17.0	17.0	
Total Split (s)	20.0	20.0		35.0	35.0		10.0	45.0		35.0	35.0	
Total Split (%)	20.0%	20.0%		35.0%	35.0%		10.0%	45.0%		35.0%	35.0%	
Maximum Green (s)	15.0	15.0		30.0	30.0		6.0	40.0		30.0	30.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		4.0	5.0			5.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	1.5	1.5		2.0	2.0		2.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		Min	Min	
Walk Time (s)				7.0	7.0							
Flash Dont Walk (s)				15.0	15.0							
Pedestrian Calls (#/hr)				0	0							
Act Effct Green (s)		5.9			10.5		24.8	23.8			13.4	
Actuated g/C Ratio		0.12			0.22		0.52	0.50			0.28	
v/c Ratio		0.54			0.19		0.39	0.24			0.41	
Control Delay		13.8			21.1		11.6	9.9			19.1	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		13.8			21.1		11.6	9.9			19.1	
LOS		B			C		B	A			B	
Approach Delay		13.8			21.1			10.8			19.1	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		11			20		39	38			59	
Queue Length 95th (ft)		60			58		87	85			123	
Internal Link Dist (ft)		75			582			513			433	
Turn Bay Length (ft)							120					
Base Capacity (vph)		672			1180		546	1469			1285	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.28			0.06		0.39	0.14			0.18	
Intersection Summary												
Area Type:	Other											
Cycle Length: 100												
Actuated Cycle Length: 47.9												
Natural Cycle: 50												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.54												
Intersection Signal Delay: 14.3				Intersection LOS: B								
Intersection Capacity Utilization 51.1%				ICU Level of Service A								
Analysis Period (min) 15												

Lanes, Volumes, Timings
 2: Maple Avenue & Bedford Road

2021-NB-SAT

02/14/2019

Splits and Phases: 2: Maple Avenue & Bedford Road



HCM 6th Signalized Intersection Summary

2: Maple Avenue & Bedford Road

2021-NB-SAT
02/14/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	22	144	37	19	17	205	165	42	14	186	19
Future Volume (veh/h)	14	22	144	37	19	17	205	165	42	14	186	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	2017	2017	2017	1939	1939	1939	1885	1885	1885	2042	2042	2042
Adj Flow Rate, veh/h	14	23	148	38	20	18	211	170	43	14	192	20
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	1	1	1	1	1	1
Cap, veh/h	18	29	188	120	63	57	657	630	159	89	420	42
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.11	0.43	0.43	0.24	0.24	0.24
Sat Flow, veh/h	132	217	1397	908	478	430	1795	1452	367	52	1753	175
Grp Volume(v), veh/h	185	0	0	76	0	0	211	0	213	226	0	0
Grp Sat Flow(s),veh/h/ln	1746	0	0	1815	0	0	1795	0	1819	1980	0	0
Q Serve(g_s), s	5.1	0.0	0.0	1.9	0.0	0.0	4.0	0.0	3.8	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.1	0.0	0.0	1.9	0.0	0.0	4.0	0.0	3.8	4.8	0.0	0.0
Prop In Lane	0.08		0.80	0.50		0.24	1.00		0.20	0.06		0.09
Lane Grp Cap(c), veh/h	235	0	0	240	0	0	657	0	789	551	0	0
V/C Ratio(X)	0.79	0.00	0.00	0.32	0.00	0.00	0.32	0.00	0.27	0.41	0.00	0.00
Avail Cap(c_a), veh/h	523	0	0	1087	0	0	667	0	1453	1247	0	0
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	0.00
Uniform Delay (d), s/veh	21.0	0.0	0.0	19.7	0.0	0.0	10.4	0.0	9.1	16.3	0.0	0.0
Incr Delay (d2), s/veh	2.2	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.2	0.5	0.0	0.0
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(50%),veh/ln	2.0	0.0	0.0	0.7	0.0	0.0	1.3	0.0	1.2	2.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.2	0.0	0.0	20.0	0.0	0.0	10.5	0.0	9.3	16.8	0.0	0.0
LnGrp LOS	C	A	A	B	A	A	B	A	A	B	A	A
Approach Vol, veh/h	185			76			424			226		
Approach Delay, s/veh	23.2			20.0			9.9			16.8		
Approach LOS	C			B			A			B		
Timer - Assigned Phs	1	2	4			6		8				
Phs Duration (G+Y+Rc), s	9.7	17.0	11.6			26.7		11.7				
Change Period (Y+Rc), s	4.0	5.0	5.0			5.0		5.0				
Max Green Setting (Gmax), s	6.0	30.0	30.0			40.0		15.0				
Max Q Clear Time (g_c+I1), s	6.0	6.8	3.9			5.8		7.1				
Green Ext Time (p_c), s	0.0	0.7	0.1			0.7		0.2				
Intersection Summary												
HCM 6th Ctrl Delay	15.2											
HCM 6th LOS	B											

Lanes, Volumes, Timings
3: Site Driveway & Bedford Road

2021-NB-SAT
02/14/2019

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	
Traffic Volume (vph)	179	0	2	241	0	1
Future Volume (vph)	179	0	2	241	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-1%			1%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.865	
Flt Protected						
Satd. Flow (prot)	1872	0	0	1638	1644	0
Flt Permitted						
Satd. Flow (perm)	1872	0	0	1638	1644	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	711			155	153	
Travel Time (s)	16.2			3.5	3.5	
Confl. Peds. (#/hr)		2				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Parking (#/hr)			5	5		
Adj. Flow (vph)	185	0	2	248	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	185	0	0	250	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	1.01	1.19	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	24.3%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	179	0	2	241	0	1
Future Vol, veh/h	179	0	2	241	0	1
Conflicting Peds, #/hr	0	2	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, %	-1	-	-	1	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	185	0	2	248	0	1
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	187	0	439	187
Stage 1	-	-	-	-	187	-
Stage 2	-	-	-	-	252	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
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	-	-	1399	-	579	860
Stage 1	-	-	-	-	850	-
Stage 2	-	-	-	-	795	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1396	-	577	858
Mov Cap-2 Maneuver	-	-	-	-	577	-
Stage 1	-	-	-	-	847	-
Stage 2	-	-	-	-	795	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		9.2	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	858	-	-	1396	-	
HCM Lane V/C Ratio	0.001	-	-	0.001	-	
HCM Control Delay (s)	9.2	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Lanes, Volumes, Timings
4: NY 128 & Kent Place/Bedford Road

2021-NB-SAT

02/14/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	11	25	47	18	100	24	206	41	56	226	43
Future Volume (vph)	12	11	25	47	18	100	24	206	41	56	226	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	11	11	11	14	14	14	11	11	11
Grade (%)		0%			0%			1%			0%	
Lane Util. Factor	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 Factor												
Frt		0.930			0.918			0.979			0.982	
Flt Protected		0.987			0.986			0.996			0.991	
Satd. Flow (prot)	0	1498	0	0	1380	0	0	1769	0	0	1424	0
Flt Permitted		0.987			0.986			0.996			0.991	
Satd. Flow (perm)	0	1498	0	0	1380	0	0	1769	0	0	1424	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		228			711			372			366	
Travel Time (s)		5.2			16.2			8.5			8.3	
Confl. Peds. (#/hr)						12			1			6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	33%	14%	39%	7%	9%	4%	4%	13%	6%	0%	9%	3%
Parking (#/hr)				5	5	5				10	10	10
Adj. Flow (vph)	13	11	26	49	19	104	25	215	43	58	235	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	50	0	0	172	0	0	283	0	0	338	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.85	0.85	0.85	1.04	1.24	1.04	0.92	0.92	0.92	1.04	1.28	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	50.6%											
Analysis Period (min)	15											
ICU Level of Service A												

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	12	11	25	47	18	100	24	206	41	56	226	43
Future Vol, veh/h	12	11	25	47	18	100	24	206	41	56	226	43
Conflicting Peds, #/hr	0	0	0	0	0	12	0	0	1	0	0	6
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, %	-	0	-	-	0	-	-	1	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	33	14	39	7	9	4	4	13	6	0	9	3
Mvmt Flow	13	11	26	49	19	104	25	215	43	58	235	45

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	740	689	264	680	690	250	286	0	0	259	0	0
Stage 1	380	380	-	288	288	-	-	-	-	-	-	-
Stage 2	360	309	-	392	402	-	-	-	-	-	-	-
Critical Hdwy	7.43	6.64	6.59	7.17	6.59	6.24	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.43	5.64	-	6.17	5.59	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.43	5.64	-	6.17	5.59	-	-	-	-	-	-	-
Follow-up Hdwy	3.797	4.126	3.651	3.563	4.081	3.336	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	297	354	693	358	360	784	1265	-	-	1317	-	-
Stage 1	584	593	-	709	661	-	-	-	-	-	-	-
Stage 2	599	639	-	623	588	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	228	325	688	316	330	775	1255	-	-	1316	-	-
Mov Cap-2 Maneuver	228	325	-	316	330	-	-	-	-	-	-	-
Stage 1	566	557	-	692	645	-	-	-	-	-	-	-
Stage 2	487	624	-	556	552	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	15.6		16		0.7		1.4	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1255	-	-	391	497	1316	-
HCM Lane V/C Ratio	0.02	-	-	0.128	0.346	0.044	-
HCM Control Delay (s)	7.9	0	-	15.6	16	7.9	0
HCM Lane LOS	A	A	-	C	C	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.4	1.5	0.1	-

Lanes, Volumes, Timings
1: Business Park Drive/Maple Avenue & NY 22

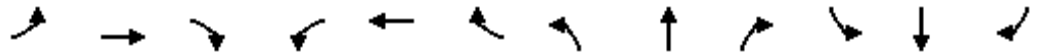
2021-BD-AM
02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	511	139	173	1240	365	69	44	64	252	61	80
Future Volume (vph)	45	511	139	173	1240	365	69	44	64	252	61	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	11	11	11	11	11	11
Grade (%)		-1%			-2%			1%			-1%	
Storage Length (ft)	585		0	265		225	0		60	300		0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (ft)	125			150			25			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.99	
Frt		0.968				0.850			0.850		0.915	
Flt Protected	0.950			0.950				0.970		0.950		
Satd. Flow (prot)	1449	2976	0	1695	3345	1431	0	1643	1452	1566	1501	0
Flt Permitted	0.950			0.950				0.970		0.950		
Satd. Flow (perm)	1449	2976	0	1695	3345	1431	0	1639	1452	1566	1501	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25				203			110		41	
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		874			668			319			593	
Travel Time (s)		10.8			8.3			7.3			13.5	
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	21%	21%	7%	4%	9%	14%	13%	0%	7%	12%	2%	19%
Adj. Flow (vph)	48	544	148	184	1319	388	73	47	68	268	65	85
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	692	0	184	1319	388	0	120	68	268	150	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	0.99	0.99	1.03	0.99	0.99	1.05	1.05	1.05	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	1	1	2	2	1	1	
Detector Template							Left					
Leading Detector (ft)	83	83		83	83	35	20	68	68	50	55	
Trailing Detector (ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Position(ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Size(ft)	40	40		40	40	40	20	40	40	60	60	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	3.0	3.0		3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	43	43		43	43			38	38			
Detector 2 Size(ft)	40	40		40	40			30	30			
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex			

Lanes, Volumes, Timings
1: Business Park Drive/Maple Avenue & NY 22

2021-BD-AM

02/15/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)	3.0	3.0		3.0	3.0			3.0	3.0			
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2			8			
Detector Phase	1	6		5	2	2	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	11.0	11.0	11.0	11.0	11.0	
Total Split (s)	26.0	56.0		26.0	56.0	56.0	26.0	26.0	26.0	41.0	41.0	
Total Split (%)	17.4%	37.6%		17.4%	37.6%	37.6%	17.4%	17.4%	17.4%	27.5%	27.5%	
Maximum Green (s)	20.0	50.0		20.0	50.0	50.0	20.0	20.0	20.0	35.0	35.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	
Act Effect Green (s)	9.8	40.7		17.6	51.8	51.8		14.4	14.4	25.8	25.8	
Actuated g/C Ratio	0.08	0.33		0.14	0.42	0.42		0.12	0.12	0.21	0.21	
v/c Ratio	0.42	0.69		0.76	0.94	0.54		0.62	0.25	0.82	0.43	
Control Delay	70.2	40.5		73.6	50.1	17.8		69.5	4.0	68.3	35.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	70.2	40.5		73.6	50.1	17.8		69.5	4.0	68.3	35.8	
LOS	E	D		E	D	B		E	A	E	D	
Approach Delay		42.4			45.8			45.8			56.6	
Approach LOS		D			D			D			E	
Queue Length 50th (ft)	38	252		143	553	111		94	0	208	76	
Queue Length 95th (ft)	88	370		#298	#886	258		178	10	344	157	
Internal Link Dist (ft)		794			588			239			513	
Turn Bay Length (ft)	585			265		225			60	300		
Base Capacity (vph)	241	1254		282	1405	719		273	333	456	466	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.20	0.55		0.65	0.94	0.54		0.44	0.20	0.59	0.32	

Intersection Summary

Area Type: Other

Cycle Length: 149

Actuated Cycle Length: 123.2

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 46.4

Intersection LOS: D

Intersection Capacity Utilization 77.7%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

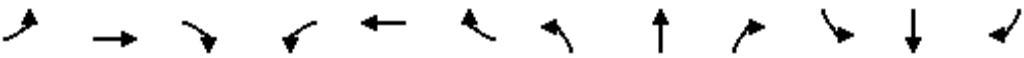
Queue shown is maximum after two cycles.

Splits and Phases: 1: Business Park Drive/Maple Avenue & NY 22

 Ø1	 Ø2	 Ø4	 Ø8
26 s	56 s	41 s	26 s
 Ø5	 Ø6		
26 s	56 s		

HCM 6th Signalized Intersection Summary
1: Business Park Drive/Maple Avenue & NY 22

2021-BD-AM
02/15/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	511	139	173	1240	365	69	44	64	252	61	80
Future Volume (veh/h)	45	511	139	173	1240	365	69	44	64	252	61	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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			
Adj Sat Flow, veh/h/ln	1624	1624	1624	1919	1844	1769	1894	1894	1790	1759	1909	1909
Adj Flow Rate, veh/h	48	544	148	184	1319	388	73	47	68	268	65	85
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	21	21	21	4	9	14	0	0	7	12	2	2
Cap, veh/h	79	873	237	223	1524	652	99	64	134	318	142	186
Arrive On Green	0.05	0.36	0.36	0.12	0.44	0.44	0.09	0.09	0.09	0.19	0.19	0.19
Sat Flow, veh/h	1547	2400	650	1827	3503	1499	1118	720	1507	1675	749	980
Grp Volume(v), veh/h	48	349	343	184	1319	388	120	0	68	268	0	150
Grp Sat Flow(s),veh/h/ln	1547	1543	1507	1827	1751	1499	1838	0	1507	1675	0	1729
Q Serve(g_s), s	3.1	19.0	19.1	10.0	34.8	20.1	6.5	0.0	4.4	15.7	0.0	7.8
Cycle Q Clear(g_c), s	3.1	19.0	19.1	10.0	34.8	20.1	6.5	0.0	4.4	15.7	0.0	7.8
Prop In Lane	1.00		0.43	1.00		1.00	0.61		1.00	1.00		0.57
Lane Grp Cap(c), veh/h	79	562	548	223	1524	652	163	0	134	318	0	328
V/C Ratio(X)	0.61	0.62	0.63	0.82	0.87	0.60	0.74	0.00	0.51	0.84	0.00	0.46
Avail Cap(c_a), veh/h	303	757	739	359	1718	735	361	0	296	575	0	594
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.4	26.6	26.7	43.7	26.1	21.9	45.3	0.0	44.3	39.8	0.0	36.6
Incr Delay (d2), s/veh	7.4	1.1	1.2	8.2	4.5	1.0	6.3	0.0	3.0	6.0	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(50%),veh/ln	1.3	6.5	6.4	4.8	13.6	6.5	3.2	0.0	1.7	6.9	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.7	27.8	27.9	51.8	30.6	23.0	51.6	0.0	47.3	45.8	0.0	37.6
LnGrp LOS	D	C	C	D	C	C	D	A	D	D	A	D
Approach Vol, veh/h	740				1891				188			
Approach Delay, s/veh	29.6				31.1				50.1			
Approach LOS	C				C				D			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.2	50.3		25.4	18.4	43.1		15.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	20.0	50.0		35.0	20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s	5.1	36.8		17.7	12.0	21.1		8.5				
Green Ext Time (p_c), s	0.1	7.6		1.6	0.4	3.5		0.6				
Intersection Summary												
HCM 6th Ctrl Delay	33.4											
HCM 6th LOS	C											

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2021-BD-AM

02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	44	142	105	44	29	126	180	148	20	146	3
Future Volume (vph)	7	44	142	105	44	29	126	180	148	20	146	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	14	12	12	12	10	11	11	14	14	14
Grade (%)		-1%			-1%			0%			-2%	
Storage Length (ft)	0		0	0		0	120		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	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 Factor		0.96			0.99		0.99					
Frt		0.901			0.978			0.932			0.998	
Flt Protected		0.998			0.971		0.950				0.994	
Satd. Flow (prot)	0	1619	0	0	1649	0	1636	1470	0	0	1800	0
Flt Permitted		0.998			0.971		0.490				0.923	
Satd. Flow (perm)	0	1618	0	0	1635	0	838	1470	0	0	1672	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)		118						49			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		155			662			593			513	
Travel Time (s)		3.5			15.0			13.5			11.7	
Confl. Peds. (#/hr)	1		9	9		1	8					
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	67%	13%	5%	12%	10%	0%	3%	16%	17%	17%	12%	25%
Adj. Flow (vph)	8	51	165	122	51	34	147	209	172	23	170	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	224	0	0	207	0	147	381	0	0	196	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.91	0.91	0.91	0.99	0.99	0.99	1.09	1.04	1.04	0.91	0.91	0.91
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left						Left		
Leading Detector (ft)	20	35		20	35		35	35		20	35	
Trailing Detector (ft)	0	-5		0	-5		-5	-5		0	-5	
Detector 1 Position(ft)	0	-5		0	-5		-5	-5		0	-5	
Detector 1 Size(ft)	20	40		20	40		40	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	1.5		0.0	2.0		2.0	3.0		0.0	3.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	8	8		4	4		1	6			2	
Permitted Phases							6			2		

Peak Weekday AM Hour (8:00 - 9:00)
JMC 18053

Synchro 10 Report
Page 5

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2021-BD-AM

02/15/2019

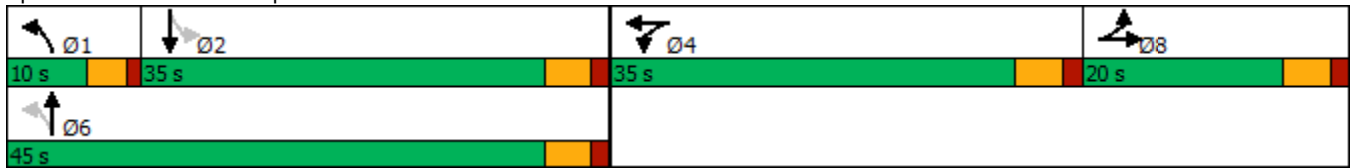
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	8	8		4	4		1	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		10.0	10.0		3.0	12.0		12.0	12.0	
Minimum Split (s)	8.0	8.0		15.0	15.0		7.0	17.0		17.0	17.0	
Total Split (s)	20.0	20.0		35.0	35.0		10.0	45.0		35.0	35.0	
Total Split (%)	20.0%	20.0%		35.0%	35.0%		10.0%	45.0%		35.0%	35.0%	
Maximum Green (s)	15.0	15.0		30.0	30.0		6.0	40.0		30.0	30.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		4.0	5.0			5.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	1.5	1.5		2.0	2.0		2.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		Min	Min	
Walk Time (s)				7.0	7.0							
Flash Dont Walk (s)				15.0	15.0							
Pedestrian Calls (#/hr)				2	2							
Act Effct Green (s)		8.6			13.8		23.8	22.7			15.1	
Actuated g/C Ratio		0.14			0.23		0.39	0.37			0.25	
v/c Ratio		0.68			0.56		0.36	0.66			0.47	
Control Delay		25.4			29.8		16.8	21.2			26.7	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		25.4			29.8		16.8	21.2			26.7	
LOS		C			C		B	C			C	
Approach Delay		25.4			29.8			20.0			26.7	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)		34			66		32	89			61	
Queue Length 95th (ft)		113			153		87	221			140	
Internal Link Dist (ft)		75			582			513			433	
Turn Bay Length (ft)							120					
Base Capacity (vph)		509			859		409	1036			872	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.44			0.24		0.36	0.37			0.22	
Intersection Summary												
Area Type:	Other											
Cycle Length: 100												
Actuated Cycle Length: 61												
Natural Cycle: 50												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.68												
Intersection Signal Delay: 23.9						Intersection LOS: C						
Intersection Capacity Utilization 67.5%						ICU Level of Service C						
Analysis Period (min) 15												

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2021-BD-AM

02/15/2019

Splits and Phases: 2: Maple Avenue & Bedford Road



HCM 6th Signalized Intersection Summary

2: Maple Avenue & Bedford Road

2021-BD-AM
02/15/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	44	142	105	44	29	126	180	148	20	146	3
Future Volume (veh/h)	7	44	142	105	44	29	126	180	148	20	146	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.99	0.99		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	1814	1814	1814	1789	1789	1789	1856	1663	1663	1870	1870	1870
Adj Flow Rate, veh/h	8	51	165	122	51	34	147	209	172	23	170	3
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	13	13	13	10	10	10	3	16	16	12	12	12
Cap, veh/h	10	61	198	185	78	52	556	313	258	95	353	6
Arrive On Green	0.17	0.17	0.17	0.19	0.19	0.19	0.09	0.37	0.37	0.21	0.21	0.21
Sat Flow, veh/h	56	357	1154	991	414	276	1767	839	691	105	1641	27
Grp Volume(v), veh/h	224	0	0	207	0	0	147	0	381	196	0	0
Grp Sat Flow(s),veh/h/ln	1567	0	0	1682	0	0	1767	0	1530	1773	0	0
Q Serve(g_s), s	7.7	0.0	0.0	6.4	0.0	0.0	3.4	0.0	11.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.7	0.0	0.0	6.4	0.0	0.0	3.4	0.0	11.6	5.1	0.0	0.0
Prop In Lane	0.04		0.74	0.59		0.16	1.00		0.45	0.12		0.02
Lane Grp Cap(c), veh/h	269	0	0	315	0	0	556	0	570	453	0	0
V/C Ratio(X)	0.83	0.00	0.00	0.66	0.00	0.00	0.26	0.00	0.67	0.43	0.00	0.00
Avail Cap(c_a), veh/h	421	0	0	903	0	0	593	0	1096	998	0	0
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	0.00
Uniform Delay (d), s/veh	22.4	0.0	0.0	21.0	0.0	0.0	13.4	0.0	14.6	19.2	0.0	0.0
Incr Delay (d2), s/veh	4.4	0.0	0.0	0.9	0.0	0.0	0.1	0.0	1.4	0.7	0.0	0.0
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(50%),veh/ln	2.9	0.0	0.0	2.4	0.0	0.0	1.2	0.0	3.7	2.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.8	0.0	0.0	21.9	0.0	0.0	13.5	0.0	16.0	19.9	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	B	A	B	B	A	A
Approach Vol, veh/h		224			207			528			196	
Approach Delay, s/veh		26.8			21.9			15.3			19.9	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.8	17.0		15.4		25.8		14.6				
Change Period (Y+Rc), s	4.0	5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s	6.0	30.0		30.0		40.0		15.0				
Max Q Clear Time (g_c+I1), s	5.4	7.1		8.4		13.6		9.7				
Green Ext Time (p_c), s	0.0	0.6		0.4		1.5		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			19.5									
HCM 6th LOS			B									

Lanes, Volumes, Timings
3: Site Driveway & Bedford Road

2021-BD-AM

02/15/2019

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	168	2	5	168	0	25
Future Volume (vph)	168	2	5	168	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-1%			1%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.999				0.865	
Flt Protected				0.999		
Satd. Flow (prot)	1752	0	0	1576	1644	0
Flt Permitted				0.999		
Satd. Flow (perm)	1752	0	0	1576	1644	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	711			155	153	
Travel Time (s)	16.2			3.5	3.5	
Confl. Peds. (#/hr)		9				
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	9%	0%	0%	5%	0%	0%
Parking (#/hr)			5	5		
Adj. Flow (vph)	195	2	6	195	0	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	197	0	0	201	29	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	1.01	1.19	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	22.9%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	168	2	5	168	0	25
Future Vol, veh/h	168	2	5	168	0	25
Conflicting Peds, #/hr	0	9	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, %	-1	-	-	1	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	9	0	0	5	0	0
Mvmt Flow	195	2	6	195	0	29
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	206	0	412	205
Stage 1	-	-	-	-	205	-
Stage 2	-	-	-	-	207	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
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	-	-	1377	-	600	841
Stage 1	-	-	-	-	834	-
Stage 2	-	-	-	-	832	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1365	-	592	834
Mov Cap-2 Maneuver	-	-	-	-	592	-
Stage 1	-	-	-	-	822	-
Stage 2	-	-	-	-	832	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.2		9.5	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	834	-	-	1365	-	
HCM Lane V/C Ratio	0.035	-	-	0.004	-	
HCM Control Delay (s)	9.5	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

Lanes, Volumes, Timings
4: NY 128 & Kent Place/Bedford Road

2021-BD-AM

02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	5	10	40	16	49	27	179	67	61	336	16
Future Volume (vph)	1	5	10	40	16	49	27	179	67	61	336	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	11	11	11	14	14	14	11	11	11
Grade (%)		0%			0%			1%			0%	
Lane Util. Factor	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 Factor												
Frt		0.917			0.937			0.967			0.995	
Flt Protected		0.997			0.981			0.995			0.993	
Satd. Flow (prot)	0	1782	0	0	1281	0	0	1685	0	0	1365	0
Flt Permitted		0.997			0.981			0.995			0.993	
Satd. Flow (perm)	0	1782	0	0	1281	0	0	1685	0	0	1365	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		228			711			372			366	
Travel Time (s)		5.2			16.2			8.5			8.3	
Confl. Peds. (#/hr)			2	2		6			2	2		3
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	17%	14%	8%	12%	31%	13%	8%	17%	13%	7%	14%	14%
Parking (#/hr)				5	5	5				10	10	10
Adj. Flow (vph)	1	6	11	46	18	56	31	206	77	70	386	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	18	0	0	120	0	0	314	0	0	474	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.85	0.85	0.85	1.04	1.24	1.04	0.92	0.92	0.92	1.04	1.28	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	53.0%											
Analysis Period (min)	15											
ICU Level of Service A												

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	5	10	40	16	49	27	179	67	61	336	16
Future Vol, veh/h	1	5	10	40	16	49	27	179	67	61	336	16
Conflicting Peds, #/hr	0	0	2	2	0	6	0	0	2	2	0	3
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, %	-	0	-	-	0	-	-	1	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	17	14	8	12	31	13	8	17	13	7	14	14
Mvmt Flow	1	6	11	46	18	56	31	206	77	70	386	18
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	888	885	400	855	856	253	407	0	0	285	0	0
Stage 1	538	538	-	309	309	-	-	-	-	-	-	-
Stage 2	350	347	-	546	547	-	-	-	-	-	-	-
Critical Hdwy	7.27	6.64	6.28	7.22	6.81	6.33	4.18	-	-	4.17	-	-
Critical Hdwy Stg 1	6.27	5.64	-	6.22	5.81	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.27	5.64	-	6.22	5.81	-	-	-	-	-	-	-
Follow-up Hdwy	3.653	4.126	3.372	3.608	4.279	3.417	2.272	-	-	2.263	-	-
Pot Cap-1 Maneuver	249	271	637	267	266	760	1120	-	-	1249	-	-
Stage 1	501	503	-	680	611	-	-	-	-	-	-	-
Stage 2	636	614	-	504	473	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	198	241	633	236	237	755	1116	-	-	1247	-	-
Mov Cap-2 Maneuver	198	241	-	236	237	-	-	-	-	-	-	-
Stage 1	482	464	-	656	590	-	-	-	-	-	-	-
Stage 2	549	593	-	452	437	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	14.8		20.7			0.8			1.2			
HCM LOS	B		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1116	-	-	385	348	1247	-	-				
HCM Lane V/C Ratio	0.028	-	-	0.048	0.347	0.056	-	-				
HCM Control Delay (s)	8.3	0	-	14.8	20.7	8.1	0	-				
HCM Lane LOS	A	A	-	B	C	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.1	1.5	0.2	-	-				

Lanes, Volumes, Timings
1: Business Park Drive/Maple Avenue & NY 22

2021-BD-PM

02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	1113	66	126	701	345	144	61	253	329	39	48
Future Volume (vph)	35	1113	66	126	701	345	144	61	253	329	39	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	11	11	11	11	11	11
Grade (%)		-1%			-2%			1%			-1%	
Storage Length (ft)	585		0	265		225	0		60	300		0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (ft)	125			150			25			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992				0.850			0.850		0.917	
Flt Protected	0.950			0.950				0.966		0.950		
Satd. Flow (prot)	1654	3422	0	1632	3345	1470	0	1696	1508	1654	1615	0
Flt Permitted	0.950			0.950				0.966		0.950		
Satd. Flow (perm)	1654	3422	0	1632	3345	1470	0	1696	1508	1654	1615	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				340			117		39	
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		874			668			319			593	
Travel Time (s)		10.8			8.3			7.3			13.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	6%	5%	8%	8%	9%	11%	5%	2%	3%	6%	7%	3%
Adj. Flow (vph)	39	1251	74	142	788	388	162	69	284	370	44	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	1325	0	142	788	388	0	231	284	370	98	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	0.99	0.99	1.03	0.99	0.99	1.05	1.05	1.05	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	1	1	2	2	1	1	
Detector Template							Left					
Leading Detector (ft)	83	83		83	83	35	20	68	68	50	55	
Trailing Detector (ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Position(ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Size(ft)	40	40		40	40	40	20	40	40	60	60	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	3.0	3.0		3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	43	43		43	43			38	38			
Detector 2 Size(ft)	40	40		40	40			30	30			
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)	3.0	3.0		3.0	3.0			3.0	3.0			

Lanes, Volumes, Timings
1: Business Park Drive/Maple Avenue & NY 22

2021-BD-PM
02/15/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2			8			
Detector Phase	1	6		5	2	2	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	11.0	11.0	11.0	11.0	11.0	
Total Split (s)	26.0	56.0		26.0	56.0	56.0	26.0	26.0	26.0	41.0	41.0	
Total Split (%)	17.4%	37.6%		17.4%	37.6%	37.6%	17.4%	17.4%	17.4%	27.5%	27.5%	
Maximum Green (s)	20.0	50.0		20.0	50.0	50.0	20.0	20.0	20.0	35.0	35.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	
Act Effect Green (s)	8.9	50.1		16.8	60.4	60.4		20.0	20.0	34.1	34.1	
Actuated g/C Ratio	0.06	0.35		0.12	0.42	0.42		0.14	0.14	0.24	0.24	
v/c Ratio	0.39	1.12		0.76	0.57	0.48		0.99	0.92	0.95	0.24	
Control Delay	76.8	109.0		86.6	35.4	7.2		117.9	70.6	89.5	29.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	76.8	109.0		86.6	35.4	7.2		117.9	70.6	89.5	29.4	
LOS	E	F		F	D	A		F	E	F	C	
Approach Delay		108.1			32.6			91.8			76.9	
Approach LOS		F			C			F			E	
Queue Length 50th (ft)	37	~777		133	308	28		~225	167	351	45	
Queue Length 95th (ft)	75	#920		208	385	109		#405	#345	#551	97	
Internal Link Dist (ft)		794			588			239			513	
Turn Bay Length (ft)	585			265		225			60	300		
Base Capacity (vph)	228	1183		225	1392	810		234	309	399	419	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.17	1.12		0.63	0.57	0.48		0.99	0.92	0.93	0.23	

Intersection Summary

Area Type: Other

Cycle Length: 149

Actuated Cycle Length: 145

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.12

Intersection Signal Delay: 74.7

Intersection LOS: E

Intersection Capacity Utilization 81.8%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Business Park Drive/Maple Avenue & NY 22

 Ø1	 Ø2	 Ø4	 Ø8
26 s	56 s	41 s	26 s
 Ø5	 Ø6		
26 s	56 s		

HCM 6th Signalized Intersection Summary
1: Business Park Drive/Maple Avenue & NY 22

2021-BD-PM
02/15/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	1113	66	126	701	345	144	61	253	329	39	48
Future Volume (veh/h)	35	1113	66	126	701	345	144	61	253	329	39	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1849	1864	1864	1859	1844	1814	1864	1864	1850	1849	1834	1834
Adj Flow Rate, veh/h	39	1251	74	142	788	388	162	69	284	370	44	54
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	6	5	5	8	9	11	2	2	3	6	7	7
Cap, veh/h	65	1226	72	169	1469	644	182	78	226	399	170	208
Arrive On Green	0.04	0.36	0.36	0.10	0.42	0.42	0.14	0.14	0.14	0.23	0.23	0.23
Sat Flow, veh/h	1761	3398	201	1770	3503	1537	1263	538	1568	1761	749	920
Grp Volume(v), veh/h	39	651	674	142	788	388	231	0	284	370	0	98
Grp Sat Flow(s),veh/h/ln	1761	1771	1828	1770	1751	1537	1801	0	1568	1761	0	1669
Q Serve(g_s), s	3.0	50.0	50.0	10.9	23.4	27.2	17.4	0.0	20.0	28.5	0.0	6.7
Cycle Q Clear(g_c), s	3.0	50.0	50.0	10.9	23.4	27.2	17.4	0.0	20.0	28.5	0.0	6.7
Prop In Lane	1.00		0.11	1.00		1.00	0.70		1.00	1.00		0.55
Lane Grp Cap(c), veh/h	65	639	660	169	1469	644	260	0	226	399	0	378
V/C Ratio(X)	0.60	1.02	1.02	0.84	0.54	0.60	0.89	0.00	1.26	0.93	0.00	0.26
Avail Cap(c_a), veh/h	254	639	660	255	1469	644	260	0	226	445	0	421
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	65.8	44.3	44.3	61.7	30.2	31.3	58.2	0.0	59.3	52.5	0.0	44.0
Incr Delay (d2), s/veh	8.7	40.5	40.6	14.4	0.4	1.6	28.9	0.0	145.8	24.4	0.0	0.4
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(50%),veh/ln	1.5	27.8	28.7	5.4	9.4	9.8	10.1	0.0	17.1	15.3	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.4	84.8	84.9	76.0	30.5	32.8	87.1	0.0	205.1	76.8	0.0	44.4
LnGrp LOS	E	F	F	E	C	C	F	A	F	E	A	D
Approach Vol, veh/h	1364			1318			515			468		
Approach Delay, s/veh	84.6			36.1			152.2			70.1		
Approach LOS	F			D			F			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.1	64.1		37.4	19.2	56.0		26.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	20.0	50.0		35.0	20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s	5.0	29.2		30.5	12.9	52.0		22.0				
Green Ext Time (p_c), s	0.1	5.9		0.9	0.3	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	74.8											
HCM 6th LOS	E											

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2021-BD-PM

02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	15	149	82	25	22	139	270	32	11	185	9
Future Volume (vph)	8	15	149	82	25	22	139	270	32	11	185	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	14	12	12	12	10	11	11	14	14	14
Grade (%)		-1%			-1%			0%			-2%	
Storage Length (ft)	0		0	0		0	120		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.883			0.977			0.984			0.994	
Flt Protected		0.998			0.969		0.950				0.997	
Satd. Flow (prot)	0	1713	0	0	1748	0	1546	1700	0	0	1948	0
Flt Permitted		0.998			0.969		0.450				0.971	
Satd. Flow (perm)	0	1713	0	0	1748	0	732	1700	0	0	1897	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)		166						7			2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		155			662			593			513	
Travel Time (s)		3.5			15.0			13.5			11.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	10%	0%	5%	4%	2%	3%	9%	5%	17%	10%	4%	0%
Adj. Flow (vph)	9	17	166	91	28	24	154	300	36	12	206	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	192	0	0	143	0	154	336	0	0	228	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.91	0.91	0.91	0.99	0.99	0.99	1.09	1.04	1.04	0.91	0.91	0.91
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left						Left		
Leading Detector (ft)	20	35		20	35		35	35		20	35	
Trailing Detector (ft)	0	-5		0	-5		-5	-5		0	-5	
Detector 1 Position(ft)	0	-5		0	-5		-5	-5		0	-5	
Detector 1 Size(ft)	20	40		20	40		40	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	1.5		0.0	2.0		2.0	3.0		0.0	3.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	8	8		4	4		1	6			2	
Permitted Phases							6			2		
Detector Phase	8	8		4	4		1	6		2	2	
Switch Phase												

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2021-BD-PM

02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	3.0	3.0		10.0	10.0		3.0	12.0		12.0	12.0	
Minimum Split (s)	8.0	8.0		15.0	15.0		7.0	17.0		17.0	17.0	
Total Split (s)	20.0	20.0		35.0	35.0		10.0	45.0		35.0	35.0	
Total Split (%)	20.0%	20.0%		35.0%	35.0%		10.0%	45.0%		35.0%	35.0%	
Maximum Green (s)	15.0	15.0		30.0	30.0		6.0	40.0		30.0	30.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		4.0	5.0			5.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		1.5	1.5		2.0	2.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		Min	Min	
Walk Time (s)				7.0	7.0							
Flash Dont Walk (s)				15.0	15.0							
Pedestrian Calls (#/hr)				0	0							
Act Effect Green (s)		7.5			11.1		25.1	24.1			13.8	
Actuated g/C Ratio		0.14			0.21		0.47	0.45			0.26	
v/c Ratio		0.51			0.40		0.35	0.44			0.47	
Control Delay		11.8			25.4		13.7	14.4			22.7	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		11.8			25.4		13.7	14.4			22.7	
LOS		B			C		B	B			C	
Approach Delay		11.8			25.4			14.2			22.7	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)		8			41		29	72			63	
Queue Length 95th (ft)		60			102		77	166			140	
Internal Link Dist (ft)		75			582			513			433	
Turn Bay Length (ft)							120					
Base Capacity (vph)		613			1011		435	1289			1099	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.31			0.14		0.35	0.26			0.21	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 53.9

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 17.1

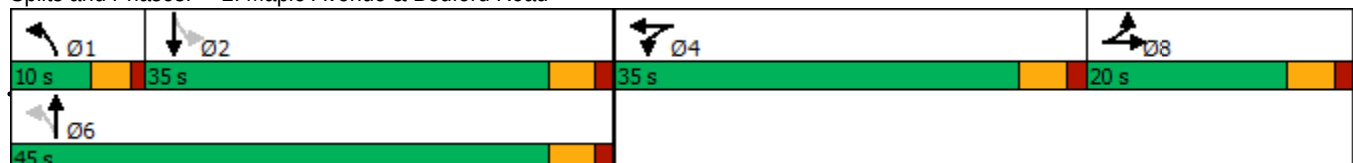
Intersection LOS: B

Intersection Capacity Utilization 62.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 2: Maple Avenue & Bedford Road



HCM 6th Signalized Intersection Summary

2: Maple Avenue & Bedford Road

2021-BD-PM
02/15/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	15	149	82	25	22	139	270	32	11	185	9
Future Volume (veh/h)	8	15	149	82	25	22	139	270	32	11	185	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	2017	2017	2017	1909	1909	1909	1767	1826	1826	1995	1995	1995
Adj Flow Rate, veh/h	9	17	166	91	28	24	154	300	36	12	206	10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	2	2	2	9	5	5	4	4	4
Cap, veh/h	12	22	215	192	59	51	564	640	77	83	421	20
Arrive On Green	0.14	0.14	0.14	0.17	0.17	0.17	0.09	0.40	0.40	0.23	0.23	0.23
Sat Flow, veh/h	82	154	1506	1144	352	302	1682	1599	192	42	1820	85
Grp Volume(v), veh/h	192	0	0	143	0	0	154	0	336	228	0	0
Grp Sat Flow(s),veh/h/ln	1742	0	0	1798	0	0	1682	0	1791	1947	0	0
Q Serve(g_s), s	5.5	0.0	0.0	3.7	0.0	0.0	3.3	0.0	7.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.5	0.0	0.0	3.7	0.0	0.0	3.3	0.0	7.2	5.2	0.0	0.0
Prop In Lane	0.05		0.86	0.64		0.17	1.00		0.11	0.05		0.04
Lane Grp Cap(c), veh/h	248	0	0	302	0	0	564	0	717	523	0	0
V/C Ratio(X)	0.77	0.00	0.00	0.47	0.00	0.00	0.27	0.00	0.47	0.44	0.00	0.00
Avail Cap(c_a), veh/h	503	0	0	1039	0	0	603	0	1381	1183	0	0
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	0.00
Uniform Delay (d), s/veh	21.4	0.0	0.0	19.5	0.0	0.0	11.6	0.0	11.5	17.3	0.0	0.0
Incr Delay (d2), s/veh	5.1	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.2	0.6	0.0	0.0
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(50%),veh/ln	2.4	0.0	0.0	1.4	0.0	0.0	1.1	0.0	2.4	2.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.5	0.0	0.0	19.9	0.0	0.0	11.7	0.0	11.7	17.9	0.0	0.0
LnGrp LOS	C	A	A	B	A	A	B	A	B	B	A	A
Approach Vol, veh/h	192			143			490			228		
Approach Delay, s/veh	26.5			19.9			11.7			17.9		
Approach LOS	C			B			B			B		
Timer - Assigned Phs	1	2	4			6	8					
Phs Duration (G+Y+Rc), s	8.8	17.0	13.7			25.8	12.4					
Change Period (Y+Rc), s	4.0	5.0	5.0			5.0	5.0					
Max Green Setting (Gmax), s	6.0	30.0	30.0			40.0	15.0					
Max Q Clear Time (g_c+I1), s	5.3	7.2	5.7			9.2	7.5					
Green Ext Time (p_c), s	0.0	0.7	0.2			0.6	0.4					
Intersection Summary												
HCM 6th Ctrl Delay	16.9											
HCM 6th LOS	B											

Lanes, Volumes, Timings
3: Site Driveway & Bedford Road

2021-BD-PM

02/15/2019

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	160	5	19	154	2	12
Future Volume (vph)	160	5	19	154	2	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-1%			1%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996				0.883	
Flt Protected				0.995	0.993	
Satd. Flow (prot)	1814	0	0	1549	1666	0
Flt Permitted				0.995	0.993	
Satd. Flow (perm)	1814	0	0	1549	1666	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	711			155	153	
Travel Time (s)	16.2			3.5	3.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	0%	0%	7%	0%	0%
Parking (#/hr)			5	5		
Adj. Flow (vph)	178	6	21	171	2	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	184	0	0	192	15	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	1.01	1.19	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	31.2%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 6th TWSC
3: Site Driveway & Bedford Road

2021-BD-PM
02/15/2019

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	160	5	19	154	2	12
Future Vol, veh/h	160	5	19	154	2	12
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, %	-1	-	-	1	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	0	0	7	0	0
Mvmt Flow	178	6	21	171	2	13
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	184	0	394	181
Stage 1	-	-	-	-	181	-
Stage 2	-	-	-	-	213	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
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	-	-	1403	-	615	867
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	827	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1403	-	605	867
Mov Cap-2 Maneuver	-	-	-	-	605	-
Stage 1	-	-	-	-	840	-
Stage 2	-	-	-	-	827	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.8		9.5	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	816	-	-	1403	-	
HCM Lane V/C Ratio	0.019	-	-	0.015	-	
HCM Control Delay (s)	9.5	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

Lanes, Volumes, Timings
4: NY 128 & Kent Place/Bedford Road

2021-BD-PM

02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	15	28	40	32	50	53	353	58	46	289	31
Future Volume (vph)	7	15	28	40	32	50	53	353	58	46	289	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	11	11	11	14	14	14	11	11	11
Grade (%)		0%			0%			1%			0%	
Lane Util. Factor	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 Factor												
Frt		0.924			0.945			0.983			0.989	
Flt Protected		0.993			0.984			0.994			0.994	
Satd. Flow (prot)	0	1932	0	0	1421	0	0	1871	0	0	1477	0
Flt Permitted		0.993			0.984			0.994			0.994	
Satd. Flow (perm)	0	1932	0	0	1421	0	0	1871	0	0	1477	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		228			711			372			366	
Travel Time (s)		5.2			16.2			8.5			8.3	
Confl. Peds. (#/hr)	27		1	1		27	2		1	1		2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	4%	0%	12%	5%	2%	5%	10%	6%	4%	0%
Parking (#/hr)				5	5	5				10	10	10
Adj. Flow (vph)	7	16	30	43	34	53	56	376	62	49	307	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	53	0	0	130	0	0	494	0	0	389	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.85	0.85	0.85	1.04	1.24	1.04	0.92	0.92	0.92	1.04	1.28	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	53.8%											
Analysis Period (min)	15											
ICU Level of Service A												

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	15	28	40	32	50	53	353	58	46	289	31
Future Vol, veh/h	7	15	28	40	32	50	53	353	58	46	289	31
Conflicting Peds, #/hr	27	0	1	1	0	27	2	0	1	1	0	2
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, %	-	0	-	-	0	-	-	1	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	4	0	12	5	2	5	10	6	4	0
Mvmt Flow	7	16	30	43	34	53	56	376	62	49	307	33
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1014	975	327	966	960	435	342	0	0	439	0	0
Stage 1	424	424	-	520	520	-	-	-	-	-	-	-
Stage 2	590	551	-	446	440	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.1	6.62	6.25	4.12	-	-	4.16	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.62	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.62	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.5	4.108	3.345	2.218	-	-	2.254	-	-
Pot Cap-1 Maneuver	219	253	710	236	247	615	1217	-	-	1100	-	-
Stage 1	612	590	-	543	516	-	-	-	-	-	-	-
Stage 2	497	519	-	595	561	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	157	224	707	195	218	600	1214	-	-	1099	-	-
Mov Cap-2 Maneuver	157	224	-	195	218	-	-	-	-	-	-	-
Stage 1	573	556	-	509	484	-	-	-	-	-	-	-
Stage 2	386	487	-	523	528	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	17.9		28.5		0.9		1.1					
HCM LOS	C		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1214	-	-	331	280	1099	-	-				
HCM Lane V/C Ratio	0.046	-	-	0.161	0.464	0.045	-	-				
HCM Control Delay (s)	8.1	0	-	17.9	28.5	8.4	0	-				
HCM Lane LOS	A	A	-	C	D	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.6	2.3	0.1	-	-				

Lanes, Volumes, Timings
1: Business Park Drive/Maple Avenue & NY 22

2021-BD-SAT
02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	332	34	68	281	307	61	84	117	312	43	26
Future Volume (vph)	32	332	34	68	281	307	61	84	117	312	43	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	11	11	11	11	11	11
Grade (%)		-1%			-2%			1%			-1%	
Storage Length (ft)	585		0	265		225	0		60	300		0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (ft)	125			150			25			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986				0.850			0.850		0.943	
Flt Protected	0.950			0.950				0.979		0.950		
Satd. Flow (prot)	1754	3577	0	1762	3610	1631	0	1789	1553	1754	1741	0
Flt Permitted	0.950			0.950				0.979		0.950		
Satd. Flow (perm)	1754	3577	0	1762	3610	1631	0	1789	1553	1754	1741	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				389			100		19	
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		874			668			319			593	
Travel Time (s)		10.8			8.3			7.3			13.5	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	41	420	43	86	356	389	77	106	148	395	54	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	463	0	86	356	389	0	183	148	395	87	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	0.99	0.99	1.03	0.99	0.99	1.05	1.05	1.05	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	1	1	2	2	1	1	
Detector Template							Left					
Leading Detector (ft)	83	83		83	83	35	20	68	68	50	55	
Trailing Detector (ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Position(ft)	-5	-5		-5	-5	-5	0	-10	-10	-10	-5	
Detector 1 Size(ft)	40	40		40	40	40	20	40	40	60	60	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	3.0	3.0		3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	43	43		43	43			38	38			
Detector 2 Size(ft)	40	40		40	40			30	30			
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)	3.0	3.0		3.0	3.0			3.0	3.0			

Peak Saturday Midday Hour (11:30 - 12:30)
JMC 18053

Synchro 10 Report
Page 1

Lanes, Volumes, Timings
1: Business Park Drive/Maple Avenue & NY 22

2021-BD-SAT

02/15/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2			8			
Detector Phase	1	6		5	2	2	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	11.0	11.0	11.0	11.0	11.0	
Total Split (s)	26.0	56.0		26.0	56.0	56.0	26.0	26.0	26.0	56.0	56.0	
Total Split (%)	15.9%	34.1%		15.9%	34.1%	34.1%	15.9%	15.9%	15.9%	34.1%	34.1%	
Maximum Green (s)	20.0	50.0		20.0	50.0	50.0	20.0	20.0	20.0	50.0	50.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	
Act Effect Green (s)	8.4	20.2		11.2	26.3	26.3		17.3	17.3	29.8	29.8	
Actuated g/C Ratio	0.08	0.19		0.11	0.25	0.25		0.17	0.17	0.29	0.29	
v/c Ratio	0.29	0.66		0.45	0.39	0.55		0.61	0.43	0.78	0.17	
Control Delay	56.5	44.6		56.0	36.6	7.1		53.3	21.3	46.7	24.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	56.5	44.6		56.0	36.6	7.1		53.3	21.3	46.7	24.4	
LOS	E	D		E	D	A		D	C	D	C	
Approach Delay		45.6			24.8			39.0			42.7	
Approach LOS		D			C			D			D	
Queue Length 50th (ft)	26	147		54	107	0		111	27	240	33	
Queue Length 95th (ft)	64	214		109	159	35		203	80	343	69	
Internal Link Dist (ft)		794			588			239			513	
Turn Bay Length (ft)	585			265		225			60	300		
Base Capacity (vph)	352	1799		354	1813	1012		359	392	880	883	
Starvation Cap Reductn	0	0		0	0	0		0	0	13	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.12	0.26		0.24	0.20	0.38		0.51	0.38	0.46	0.10	

Intersection Summary

Area Type: Other

Cycle Length: 164

Actuated Cycle Length: 103.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 35.9

Intersection LOS: D

Intersection Capacity Utilization 53.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Business Park Drive/Maple Avenue & NY 22

 Ø1 26 s	 Ø2 56 s	 Ø4 56 s	 Ø8 26 s
 Ø5 26 s	 Ø6 56 s		

HCM 6th Signalized Intersection Summary
1: Business Park Drive/Maple Avenue & NY 22

2021-BD-SAT
02/15/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	332	34	68	281	307	61	84	117	312	43	26
Future Volume (veh/h)	32	332	34	68	281	307	61	84	117	312	43	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1939	1939	1939	1979	1964	1979	1894	1894	1894	1939	1939	1939
Adj Flow Rate, veh/h	41	420	43	86	356	389	77	106	148	395	54	33
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	0	0	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	86	869	89	134	1051	473	103	142	212	467	285	174
Arrive On Green	0.05	0.26	0.26	0.07	0.28	0.28	0.13	0.13	0.13	0.25	0.25	0.25
Sat Flow, veh/h	1847	3376	344	1884	3731	1677	781	1075	1605	1847	1127	689
Grp Volume(v), veh/h	41	228	235	86	356	389	183	0	148	395	0	87
Grp Sat Flow(s),veh/h/ln	1847	1842	1877	1884	1865	1677	1855	0	1605	1847	0	1815
Q Serve(g_s), s	1.8	8.8	8.9	3.7	6.3	18.2	7.9	0.0	7.4	17.0	0.0	3.1
Cycle Q Clear(g_c), s	1.8	8.8	8.9	3.7	6.3	18.2	7.9	0.0	7.4	17.0	0.0	3.1
Prop In Lane	1.00		0.18	1.00		1.00	0.42		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	86	474	483	134	1051	473	245	0	212	467	0	459
V/C Ratio(X)	0.48	0.48	0.49	0.64	0.34	0.82	0.75	0.00	0.70	0.85	0.00	0.19
Avail Cap(c_a), veh/h	441	1101	1122	450	2230	1002	443	0	384	1104	0	1085
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.9	26.3	26.4	37.8	23.9	28.1	35.0	0.0	34.7	29.7	0.0	24.5
Incr Delay (d2), s/veh	4.1	0.8	0.8	5.1	0.2	3.7	4.5	0.0	4.1	4.3	0.0	0.2
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(50%),veh/ln	0.9	3.5	3.7	1.8	2.5	6.9	3.8	0.0	3.1	7.8	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.0	27.1	27.1	42.9	24.0	31.8	39.5	0.0	38.8	34.0	0.0	24.7
LnGrp LOS	D	C	C	D	C	C	D	A	D	C	A	C
Approach Vol, veh/h	504			831			331			482		
Approach Delay, s/veh	28.4			29.6			39.2			32.3		
Approach LOS	C			C			D			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.9	29.6		27.1	11.9	27.5		17.1				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	20.0	50.0		50.0	20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s	3.8	20.2		19.0	5.7	10.9		9.9				
Green Ext Time (p_c), s	0.1	3.4		2.1	0.2	2.1		1.1				
Intersection Summary												
HCM 6th Ctrl Delay	31.4											
HCM 6th LOS	C											

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2021-BD-SAT
02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	22	158	37	19	17	216	165	42	14	186	22
Future Volume (vph)	17	22	158	37	19	17	216	165	42	14	186	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	14	12	12	12	10	11	11	14	14	14
Grade (%)		-1%			-1%			0%			-2%	
Storage Length (ft)	0		0	0		0	120		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	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 Factor		0.98			0.99							
Frt		0.892			0.968			0.970			0.986	
Flt Protected		0.996			0.976		0.950				0.997	
Satd. Flow (prot)	0	1743	0	0	1795	0	1668	1767	0	0	1995	0
Flt Permitted		0.996			0.976		0.477				0.973	
Satd. Flow (perm)	0	1743	0	0	1795	0	838	1767	0	0	1947	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)		163						15			6	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		155			662			593			513	
Travel Time (s)		3.5			15.0			13.5			11.7	
Confl. Peds. (#/hr)			2			1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	1%	1%	0%	0%	1%	0%
Adj. Flow (vph)	18	23	163	38	20	18	223	170	43	14	192	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	204	0	0	76	0	223	213	0	0	229	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.91	0.91	0.91	0.99	0.99	0.99	1.09	1.04	1.04	0.91	0.91	0.91
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left						Left		
Leading Detector (ft)	20	35		20	35		35	35		20	35	
Trailing Detector (ft)	0	-5		0	-5		-5	-5		0	-5	
Detector 1 Position(ft)	0	-5		0	-5		-5	-5		0	-5	
Detector 1 Size(ft)	20	40		20	40		40	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	1.5		0.0	2.0		2.0	3.0		0.0	3.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	8	8		4	4		1	6			2	
Permitted Phases							6			2		

Peak Saturday Midday Hour (11:30 - 12:30)
JMC 18053

Synchro 10 Report
Page 5

Lanes, Volumes, Timings
2: Maple Avenue & Bedford Road

2021-BD-SAT

02/15/2019

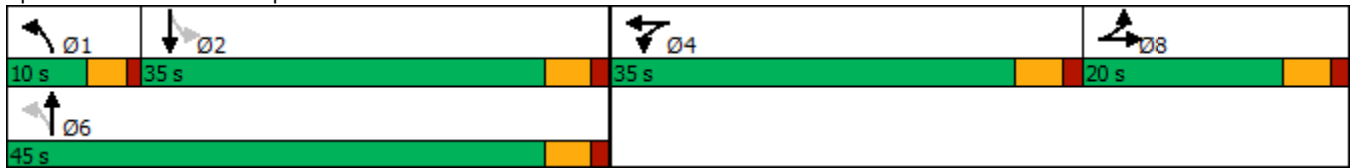
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	8	8		4	4		1	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		10.0	10.0		3.0	12.0		12.0	12.0	
Minimum Split (s)	8.0	8.0		15.0	15.0		7.0	17.0		17.0	17.0	
Total Split (s)	20.0	20.0		35.0	35.0		10.0	45.0		35.0	35.0	
Total Split (%)	20.0%	20.0%		35.0%	35.0%		10.0%	45.0%		35.0%	35.0%	
Maximum Green (s)	15.0	15.0		30.0	30.0		6.0	40.0		30.0	30.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		4.0	5.0			5.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	1.5	1.5		2.0	2.0		2.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		Min	Min	
Walk Time (s)				7.0	7.0							
Flash Dont Walk (s)				15.0	15.0							
Pedestrian Calls (#/hr)				0	0							
Act Effct Green (s)		6.1			10.5		24.9	23.9			13.5	
Actuated g/C Ratio		0.13			0.22		0.52	0.50			0.28	
v/c Ratio		0.57			0.19		0.41	0.24			0.42	
Control Delay		14.0			21.3		12.1	10.0			19.2	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		14.0			21.3		12.1	10.0			19.2	
LOS		B			C		B	A			B	
Approach Delay		14.0			21.3			11.1			19.2	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		12			20		42	38			60	
Queue Length 95th (ft)		64			59		93	86			125	
Internal Link Dist (ft)		75			582			513			433	
Turn Bay Length (ft)							120					
Base Capacity (vph)		680			1175		542	1464			1277	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.30			0.06		0.41	0.15			0.18	
Intersection Summary												
Area Type:	Other											
Cycle Length: 100												
Actuated Cycle Length: 48.2												
Natural Cycle: 55												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.57												
Intersection Signal Delay: 14.5				Intersection LOS: B								
Intersection Capacity Utilization 51.1%				ICU Level of Service A								
Analysis Period (min) 15												

Lanes, Volumes, Timings
 2: Maple Avenue & Bedford Road

2021-BD-SAT

02/15/2019

Splits and Phases: 2: Maple Avenue & Bedford Road



HCM 6th Signalized Intersection Summary

2: Maple Avenue & Bedford Road

2021-BD-SAT
02/15/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	22	158	37	19	17	216	165	42	14	186	22
Future Volume (veh/h)	17	22	158	37	19	17	216	165	42	14	186	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	2017	2017	2017	1939	1939	1939	1885	1885	1885	2042	2042	2042
Adj Flow Rate, veh/h	18	23	163	38	20	18	223	170	43	14	192	23
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	1	1	1	1	1	1
Cap, veh/h	23	29	205	119	63	56	647	623	158	87	404	46
Arrive On Green	0.15	0.15	0.15	0.13	0.13	0.13	0.12	0.43	0.43	0.23	0.23	0.23
Sat Flow, veh/h	154	197	1396	908	478	430	1795	1452	367	51	1726	198
Grp Volume(v), veh/h	204	0	0	76	0	0	223	0	213	229	0	0
Grp Sat Flow(s),veh/h/ln	1747	0	0	1815	0	0	1795	0	1819	1976	0	0
Q Serve(g_s), s	5.8	0.0	0.0	1.9	0.0	0.0	4.4	0.0	3.9	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.8	0.0	0.0	1.9	0.0	0.0	4.4	0.0	3.9	5.1	0.0	0.0
Prop In Lane	0.09		0.80	0.50		0.24	1.00		0.20	0.06		0.10
Lane Grp Cap(c), veh/h	256	0	0	238	0	0	647	0	781	537	0	0
V/C Ratio(X)	0.80	0.00	0.00	0.32	0.00	0.00	0.34	0.00	0.27	0.43	0.00	0.00
Avail Cap(c_a), veh/h	511	0	0	1063	0	0	647	0	1420	1218	0	0
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	0.00
Uniform Delay (d), s/veh	21.1	0.0	0.0	20.2	0.0	0.0	10.9	0.0	9.4	17.0	0.0	0.0
Incr Delay (d2), s/veh	2.2	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.2	0.5	0.0	0.0
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(50%),veh/ln	2.3	0.0	0.0	0.8	0.0	0.0	1.5	0.0	1.3	2.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.3	0.0	0.0	20.5	0.0	0.0	11.0	0.0	9.6	17.5	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	B	A	A	B	A	A
Approach Vol, veh/h		204			76			436			229	
Approach Delay, s/veh		23.3			20.5			10.3			17.5	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.0	17.0		11.7		27.0		12.5				
Change Period (Y+Rc), s	4.0	5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s	6.0	30.0		30.0		40.0		15.0				
Max Q Clear Time (g_c+I1), s	6.4	7.1		3.9		5.9		7.8				
Green Ext Time (p_c), s	0.0	0.7		0.1		0.7		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			15.7									
HCM 6th LOS			B									

Lanes, Volumes, Timings
3: Site Driveway & Bedford Road

2021-BD-SAT
02/15/2019

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	179	3	16	241	0	18
Future Volume (vph)	179	3	16	241	0	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-1%			1%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.998				0.865	
Flt Protected				0.997		
Satd. Flow (prot)	1869	0	0	1634	1644	0
Flt Permitted				0.997		
Satd. Flow (perm)	1869	0	0	1634	1644	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	711			155	153	
Travel Time (s)	16.2			3.5	3.5	
Confl. Peds. (#/hr)		2				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Parking (#/hr)			5	5		
Adj. Flow (vph)	185	3	16	248	0	19
Shared Lane Traffic (%)						
Lane Group Flow (vph)	188	0	0	264	19	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	1.01	1.19	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	35.8%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	179	3	16	241	0	18
Future Vol, veh/h	179	3	16	241	0	18
Conflicting Peds, #/hr	0	2	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, %	-1	-	-	1	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	185	3	16	248	0	19
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	190	0	469	189
Stage 1	-	-	-	-	189	-
Stage 2	-	-	-	-	280	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
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	-	-	1396	-	556	858
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	772	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1393	-	548	856
Mov Cap-2 Maneuver	-	-	-	-	548	-
Stage 1	-	-	-	-	835	-
Stage 2	-	-	-	-	772	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.5		9.3	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	856	-	-	1393	-	
HCM Lane V/C Ratio	0.022	-	-	0.012	-	
HCM Control Delay (s)	9.3	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

Lanes, Volumes, Timings
4: NY 128 & Kent Place/Bedford Road

2021-BD-SAT

02/15/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	11	25	47	18	100	24	206	44	56	226	43
Future Volume (vph)	12	11	25	47	18	100	24	206	44	56	226	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	11	11	11	14	14	14	11	11	11
Grade (%)		0%			0%			1%			0%	
Lane Util. Factor	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 Factor												
Frt		0.930			0.918			0.978			0.982	
Flt Protected		0.987			0.986			0.996			0.991	
Satd. Flow (prot)	0	1498	0	0	1380	0	0	1768	0	0	1424	0
Flt Permitted		0.987			0.986			0.996			0.991	
Satd. Flow (perm)	0	1498	0	0	1380	0	0	1768	0	0	1424	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		228			711			372			366	
Travel Time (s)		5.2			16.2			8.5			8.3	
Confl. Peds. (#/hr)						12			1			6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	33%	14%	39%	7%	9%	4%	4%	13%	6%	0%	9%	3%
Parking (#/hr)				5	5	5				10	10	10
Adj. Flow (vph)	13	11	26	49	19	104	25	215	46	58	235	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	50	0	0	172	0	0	286	0	0	338	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.85	0.85	0.85	1.04	1.24	1.04	0.92	0.92	0.92	1.04	1.28	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 50.7%	ICU Level of Service A											
Analysis Period (min) 15												

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	12	11	25	47	18	100	24	206	44	56	226	43
Future Vol, veh/h	12	11	25	47	18	100	24	206	44	56	226	43
Conflicting Peds, #/hr	0	0	0	0	0	12	0	0	1	0	0	6
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, %	-	0	-	-	0	-	-	1	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	33	14	39	7	9	4	4	13	6	0	9	3
Mvmt Flow	13	11	26	49	19	104	25	215	46	58	235	45
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	742	692	264	681	691	251	286	0	0	262	0	0
Stage 1	380	380	-	289	289	-	-	-	-	-	-	-
Stage 2	362	312	-	392	402	-	-	-	-	-	-	-
Critical Hdwy	7.43	6.64	6.59	7.17	6.59	6.24	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.43	5.64	-	6.17	5.59	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.43	5.64	-	6.17	5.59	-	-	-	-	-	-	-
Follow-up Hdwy	3.797	4.126	3.651	3.563	4.081	3.336	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	296	353	693	358	359	783	1265	-	-	1314	-	-
Stage 1	584	593	-	708	660	-	-	-	-	-	-	-
Stage 2	597	637	-	623	588	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	227	324	688	316	329	774	1255	-	-	1313	-	-
Mov Cap-2 Maneuver	227	324	-	316	329	-	-	-	-	-	-	-
Stage 1	566	557	-	691	644	-	-	-	-	-	-	-
Stage 2	485	622	-	556	552	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	15.6		16.1		0.7		1.4					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1255	-	-	390	496	1313	-	-				
HCM Lane V/C Ratio	0.02	-	-	0.128	0.347	0.044	-	-				
HCM Control Delay (s)	7.9	0	-	15.6	16.1	7.9	0	-				
HCM Lane LOS	A	A	-	C	C	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.4	1.5	0.1	-	-				