

July 24, 2017

Mr. Steven Hart, P.E.
Hart Engineering
1969 Ferndale Road
Castleton, New York 12033

RE: Traffic Evaluation, Town Center Development, US Route 9/20, Town of East Greenbush, Rensselaer County, New York; CM Project No. 116-364

Dear Mr. Hart:

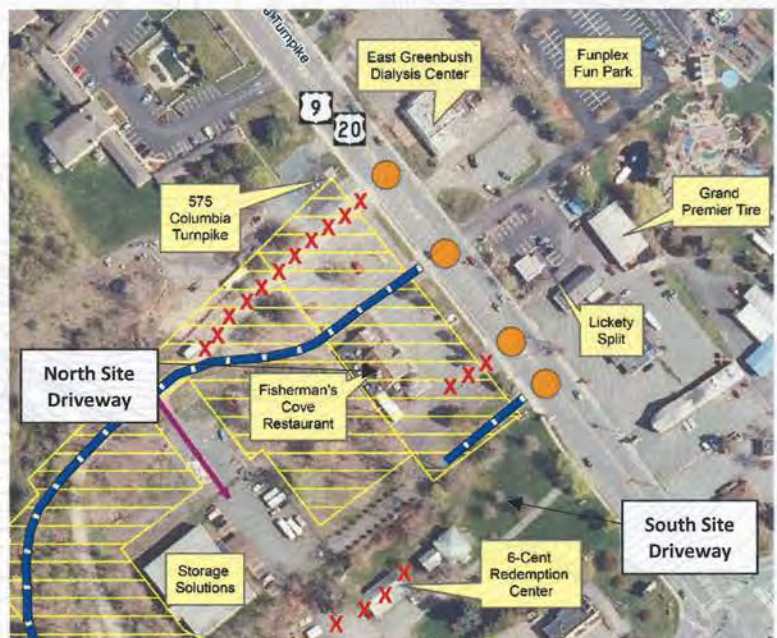
Creighton Manning Engineering, LLP has completed a traffic assessment for the proposed *Town Center Development* on US Route 9/20 in the Town of East Greenbush. This evaluation is based on information provided in the "Preliminary Site Plan," prepared by Hart Engineering dated July 12, 2017 (See Attachment A).

1.0 Project Description

The proposed mixed-use project includes the construction of a maximum of 300 apartment units and 12,000 square feet (SF) of rentable commercial space that could accommodate various land uses. For the purposes of this report, it is assumed that the commercial building will contain a 2,000 SF bank with a drive through window, a 4,000 SF restaurant, and 6,000 SF of general retail space. The project location and existing driveways are shown on Figure 1. The site is currently occupied with the vacant *Fisherman's Cove Restaurant* and undeveloped land currently used to store material for the *6-Cent Redemption Center*. The project is expected to be completed and operational in 2019.

2.0 Proposed Site Access

The project frontage currently consists of four total curb cuts. The most southern full access curb cut on the project frontage provides primary access to the existing *Storage Solutions* parcel. The middle two full access curb cuts are associated with the *Fisherman's Cove Restaurant* parcel (currently vacant). The most northern curb cut on the site frontage provides informal access to a seasonal land use at 575 Columbia Turnpike and to the rear of the *6-Cent Redemption Center* parcel. Two of the four existing curb cuts will be removed as part of the proposed plan and access to the site will be provided via two full access driveways on US Route 9/20. The North Site Driveway will be constructed opposite the existing *FunPlex Fun Park* driveway in the



vicinity the northern *Fisherman's Cove Restaurant* driveway. In addition, the existing *Storage Solutions* driveway will be converted into the South Site Driveway that will provide full access into the proposed project. Access to the *Storage Solutions* parcel will be provided via an internal connection that can be accessed via the North Site Driveway. Access to the rear of the *6-Cent Redemption Center* parcel will no longer be available after completion of the proposed development. The removal of two total curb cuts supports access management along the US Route 9/20 corridor.

3.0 Existing Conditions

Roadways Serving the Site

US Route 9/20 is a primarily north-south roadway through Rensselaer County and is classified as an urban principal arterial. It is noted that US Route 20 overlaps US Route 9 adjacent to the project site. In the project vicinity, US Route 9/20 generally provides a 60-foot roadway with two 11-foot wide travel lanes in each direction, a 12-foot wide center two-way left-turn lane (TWLTL), and 2-foot wide shoulders on both sides of the road. Data published by the New York State Department of Transportation (NYSDOT) in the latest version of the *Pavement Data Report* indicates that the pavement on US Route 9/20 is in fair condition near the project site. Sidewalks are provided on the east and west side of US Route 9/20 in the project vicinity and the posted speed limit is 40-mph. Traffic volume data collected by NYSDOT shows that US Route 9/20 serves approximately 27,500 vehicles per day (vpd) in the project vicinity. Land uses along US Route 9/20 are primarily commercial and residential.

Study Area Intersections

The eastbound and westbound approaches of the unsignalized driveways on US Route 9/20 associated with the *East Greenbush Dialysis Center*, the *Grand Premier Tire* store, the *Fisherman's Cove Restaurant*, and *Storage Solutions* provide a single lane for shared travel movements while the driveway for the *FunPlex Fun Park* provides two lanes exiting for separate left and right turn movements. The northbound and southbound US Route 9/20 approaches provide a TWLTL for exclusive left turn movements, a through travel lane, and a shared through/right turn lane. Sidewalks are provided on both sides of US Route 9/20 at each of these unsignalized driveways; however, there are no marked crosswalks on any of the intersection approaches.

Transit Accommodations

Transit service in the study area is provided by the Capital District Transportation Authority (CDTA). CDTA Route 233 (Albany/Schodack) is a commuter route that travels along US Route 9 from Downtown Albany to the Schodack Park and Ride with weekday service from 5:40 a.m. to 7:45 p.m. The nearest southbound bus stop to the site is located on US Route 9/20 approximately 50 feet south of the *Storage Solutions* Driveway. The nearest northbound bus stop is located 725 feet north of the site at Old Troy Road.

Data Collection

Turning movement counts were conducted in the vicinity of the project site on Tuesday, December 20, 2016 during the morning peak period from 7:30 to 8:30 a.m. and on Wednesday, December 21, 2016 during the afternoon peak period from 4:30 to 5:30 p.m. which coincide with peak operating conditions of adjacent street traffic. The traffic entering and exiting the following driveway intersections on US Route 9/20 were observed during the data collection:

- 6-Cent Redemption Center Rear Access Driveway
- East Greenbush Dialysis Center Driveway
- FunPlex Fun Park Driveway/Fisherman's Cove North Driveway
- Grand Premier Tire Driveway/Fisherman's Cove South Driveway

The turning movement count data is included under Attachment B. It is noted that traffic associated with the seasonal land uses was estimated based on a review of The Institute of Transportation Engineers (ITE) *Trip Generation*, 9th edition. Traffic associated with the *FunPlex Fun Park* and *Lickety Split* ice cream stand were estimated using land use code (LUC) 435 for an approximate five acre multi-purpose recreational facility. Traffic associated with the *Storage Solutions* parcel was also estimated using land use code (LUC) 151 for a 30,000 SF mini-warehouse facility. The existing peak hour traffic volumes are shown on Figure 2 and form the basis for all traffic forecasts.

4.0 Traffic Assessment

Trip Generation

Trip generation determines the quantity of traffic expected to travel to/from a given site. The Institute of Transportation Engineers (ITE) *Trip Generation*, 9th edition, is the industry standard used for estimating trip generation for proposed land uses based on data collected at similar uses. The trip generation for the proposed commercial and residential buildings were estimated using land use code (LUC) 220 for Apartments, LUC 912 for Drive-In Bank, LUC 931 for Quality Restaurant, and LUC 826 for Specialty Retail Center. Table 1 summarizes the trip generation estimate for the AM and PM peak hours.

It can be expected that some trips to the proposed project will originate from traffic that is already passing the site on US Route 9/20. Pass-by trips are vehicles that will stop at the site before continuing on to their primary destination. For example, a southbound trip on US Route 9/20 leaving work may stop at the restaurant and then continue southbound towards home. This type of trip would be considered a pass-by trip. The percentage of pass-by trips applied to the different land uses is based on a review of data provided by ITE. Based upon this information, a pass-by percentage was applied to trips generated by the proposed bank, restaurant, and retail land uses.

It can be expected that there is the potential for interaction among the land uses within the multi-use site. An internal capture rate can generally be defined as a percentage reduction that can be applied to the trip generation estimates for individual land uses to account for trips internal to the site that are not made on the major street system. Based on the *Multi-Use Development Trip Generation and Internal Capture Summary* table provided by ITE, a review of the National Cooperative Highway Research Program (NCHRP) Project 8-51, titled "Improved Estimation Method for Estimating Internal Capture for Mixed-use Developments", and local experience with mixed use developments, an internal capture rate was applied to the proposed land uses as shown on Table 1.

Table 1 – Trip Generation Summary

Land Use		Units or Gross Floor Area (SF)	AM Peak Hour			PM Peak Hour		
			Enter	Exit	Total	Enter	Exit	Total
Total Trips	Apartments	300-units	30	121	151	119	64	183
	Bank with Drive Thru Window	2,000 SF	14	10	24	25	24	49
	Quality Restaurant	4,000 SF	2	1	3	20	10	30
	Specialty Retail Store	6,000 SF	2	2	4	7	9	16
	Total Trips		48	134	182	171	107	278
Total Internal Capture – 3% AM / 17% PM			-3	-3	-6	-23	-23	-46
External Trips	Apartments	300-units	29	120	149	108	58	166
	Bank with Drive Thru Window	2,000 SF	13	8	21	20	16	36
	Quality Restaurant	4,000 SF	2	1	3	16	7	23
	Specialty Retail Store	6,000 SF	1	2	3	4	3	7
	Total External Trips		45	131	176	148	84	232
Pass-By Trips	Bank with Drive Thru Window – 40%	2,000 SF	-4	-4	-8	-7	-7	-14
	Quality Restaurant – 40%	4,000 SF	0	0	0	-5	-5	-10
	Specialty Retail Store – 25%	6,000 SF	0	0	0	-1	-1	-2
	Total Pass-By Trips		-4	-4	-8	-13	-13	-26
Total New Trips			41	127	168	135	71	206

The proposed site is expected to generate 168 new vehicle trips during the AM peak hour and 206 new vehicle trips during the PM peak hour. It is noted that this project will be subject to traffic mitigation fees consistent with the methodologies established in the Town of East Greenbush Generic Environmental Impact Statement (GEIS).

It is noted that the vacant *Fisherman's Cove Restaurant* is located on the parcel of the proposed development. It is estimated that the approximate 3,300 SF restaurant generated approximately 3 AM peak hour trips and 25 PM peak hour trips when it was operational; therefore, US Route 9/20 has previously accommodated some traffic from this parcel.

Future Traffic Volumes

To evaluate the impact of the proposed development, traffic projections were prepared for the expected year of completion. Information provided by the Capital District Transportation Committee (CDTC) indicates that traffic volume growth in the vicinity of the site will increase by approximately ½ percent per year for the next several years based on an evaluation of all known planned development projects in the area; therefore, the Existing 2016 traffic volumes were increased by a ½ percent per year growth rate for three years to represent background traffic growth in the area. In addition to general background traffic growth, vehicle trips associated with other developments in the project area were considered when developing the No-Build traffic volumes. A review of information provided by the Town of East Greenbush identifying all other known projects indicates that the following developments could contribute to future background traffic volumes adjacent to the project site:

- *Regeneron Pharmaceutical at Mill Creek Campus* – 187,000 SF of warehousing [Phase 1] (located on the west side of US Route 4 and south of 3rd Avenue)

- *Regeneron Pharmaceutical expansion* – 70,000 SF of office and research & development space (located on Discovery Drive)
- *Temple Farms* – A mixed-use development with approximately 370,000 SF of retail/restaurant space, a 101 room hotel, and 424 apartment units (located along Temple Lane between NY Route 151 and 3rd Avenue)
- *East Greenbush Tech Park* (completion of Phase 1) – 100,000 SF of research & development space and office space (located on Tech Valley Drive)
- *East Greenbush Tech Park* (completion of Phase 2) – 269,000 SF of research & development space and office space (located on Tech Valley Drive)

The 2019 No-Build traffic volumes are shown on Figure 3 and represent the expected traffic volumes in 2019 prior to the development of the proposed project. It is noted that a combination of the general background growth and other development traffic volumes have conservatively taken into account all expected growth in the corridor that may occur over the next three years prior to the construction of the proposed project. The combined growth scenario detailed above increased 2016 Existing traffic volumes by approximately 6½ to 7½ percent during the AM and PM peak hours at the study area intersections.

Traffic generated by the proposed project was distributed to the adjacent roadways based on existing observed travel patterns in the project area and the probable travel routes for residents, patrons, and employees of the proposed development. It is expected that approximately 60 percent of residential traffic from the proposed development will travel to and from the north on US Route 9/20 while 40 percent will travel to and from the south on US Route 9/20. In comparison, it is expected that approximately 45 percent of traffic from the retail, restaurant, and bank land uses will travel to and from the north on US Route 9/20 while 55 percent will travel to and from the south on US Route 9/20. The primary and pass-by trip distribution patterns for the proposed development are shown on Figure 4 and Figure 5 for the residential and commercial land uses. The associated site generated traffic volumes are shown on Figures 6 through 8. The site generated trips were then added to the 2019 No-Build traffic volumes resulting in the 2019 Build traffic volumes for the weekday PM peak hour (Figure 9). It is noted that traffic associated with the *Storage Solutions* parcel was relocated to the North Site Driveway to account for the proposed change in future access.

A review of the trip assignment indicates that the proposed site will generate a maximum of 78 trips on any one intersection approach during either of the peak hours. This magnitude of traffic is less than the NYSDOT and ITE threshold of 100 site generated vehicles on any one approach for off-site intersection analysis. This guidance was developed as a tool to identify locations where the magnitude of traffic generated has the potential to impact operations at off-site intersections and screen out locations from requiring detailed analysis that do not reach the 100 vehicle threshold; therefore, the detailed traffic evaluation for this project is limited to the site access intersections as the site traffic will be accommodated for by the adjacent roadway network.

Traffic Operations

Intersection Level of Service (LOS) and capacity analysis relate traffic volumes to the physical characteristics of an intersection. Intersection evaluations were made using Synchro software which automates the procedures contained in the *Highway Capacity Manual*. Table 2

summarizes the results of the level of service calculations for the proposed project. The detailed level of service analyses are included in Attachment C.

Table 2 – Level of Service Summary

Intersection	Control	AM Peak Hour			PM Peak Hour		
		2016 Existing	2019 No-Build	2019 Build	2016 Existing	2019 No-Build	2019 Build
US Route 9/20 / 6-Cent Redemption Rear Drwy/ East Greenbush Dialysis Center Drwy	U						
US Route 9/20 NB L		A (8.2)	A (8.3)	--	A (0.0)	A (0.0)	--
US Route 9/20 SB L		A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
6 Cent Redemption Drwy EB LTR		A (0.0)	A (0.0)	--	A (0.0)	A (0.0)	--
Dialysis Center Drwy WB LTR		A (0.0)	A (0.0)	A (0.0)	C (18.3)	C (19.6)	C (18.0)
US Route 9/20 / Fisherman's Cove North Drwy/ (North Site Driveway)/ FunPlex Fun Park Drwy	U						
US Route 9/20 NB L		A (0.0)	A (0.0)	A (8.4)	A (0.0)	A (0.0)	B (12.1)
US Route 9/20 SB L		A (9.3)	A (9.4)	A (9.4)	A (9.6)	A (9.8)	A (9.8)
Fisherman's Cove N. Drwy EB LTR		A (0.0)	A (0.0)	--	A (0.0)	A (0.0)	--
(North Site Driveway) EB LTR		--	--	C (15.2)	--	--	D (32.5)
FunPlex Fun Park Drwy WB LT		C (15.9)	C (16.7)	C (17.6)	C (18.9)	C (20.2)	C (24.7)
	R	B (10.9)	B (11.1)	B (11.1)	B (11.3)	B (11.6)	B (11.6)
US Route 9/20 / Fisherman's Cove South Drwy/ Grand Premier Tire Drwy	U						
US Route 9/20 NB L		A (0.0)	A (0.0)	--	A (0.0)	A (0.0)	--
US Route 9/20 SB L		A (9.3)	A (9.4)	A (9.5)	A (9.5)	A (9.8)	B (10.0)
Fisherman's Cove S. Drwy EB LTR		A (0.0)	A (0.0)	--	A (0.0)	A (0.0)	--
Grand Premier Tire Drwy WB LTR		B (14.3)	B (14.8)	B (13.9)	C (15.0)	C (15.8)	C (15.0)
US Route 9/20 / Storage Solutions Drwy/ (South Site Driveway)	U						
US Route 9/20 NB L		A (8.2)	A (8.3)	A (8.5)	B (10.7)	B (11.0)	B (11.3)
Storage Solutions Drwy EB LR		B (10.9)	B (11.2)	--	C (16.0)	C (16.8)	--
(South Site Driveway) EB LR		--	--	B (11.0)	--	--	C (15.8)

U = Unsignalized intersection control

EB, WB, NB, SB = Eastbound, Westbound, Northbound, and Southbound intersection approaches

L, T, R = Left turn, Through, and/or Right turn movements

X (Y.Y) = Level of service (Average delay in seconds per vehicle)

The following observations are evident from this analysis:

The level of service summary at the 6-Cent Redemption Rear Access Driveway/East Greenbush Dialysis Center Driveway intersection and at the Fisherman's Cove South Driveway/Grand Premier Tire Driveway intersection on US Route 9/20 indicates that during Existing and No-Build conditions, the northbound and southbound left turn movements will operate at LOS A conditions during both peak hours while the eastbound and westbound approaches will operate at LOS C or better with less than 20 seconds of delay during both peak hours. The eastbound 6-Cent Redemption Center Rear Access Driveway and the Fisherman's Cove South Driveway will be removed as part of the proposed project. After build-out of the site, these intersections will continue to operate at LOS C or better on all movements during both peak hours. No mitigation beyond the removal of existing driveways is recommended.

The level of service summary at the US Route 9/20/Fisherman's Cove North Driveway/FunPlex Fun Park Driveway intersection indicates that during Existing through Build conditions, the southbound left turn movement will operate at LOS A during both peak hours while the westbound FunPlex Fun Park Driveway approach will operate at LOS C or better during both peak hours. The North Site Driveway will replace the eastbound Fisherman's Cove North Driveway which does not experience any existing traffic. It is recommended that the North Site Driveway operate under stop sign control and provide a single lane entering and exiting for shared travel movements. The North Site Driveway will operate at LOS C/D after full build-out of the proposed development which are acceptable operating conditions for an unsignalized driveway on a busy arterial. No additional improvements are recommended beyond reconstruction of the site access.

The level of service summary at the US Route 9/20/Storage Solutions Driveway intersection indicates that during Existing and No-Build conditions, the northbound left turn movement will operate at LOS A during both peak hours while the eastbound Storage Solutions Driveway approach will operate at LOS C or better during both peak hours. The eastbound Storage Solutions Driveway will be converted into the South Site Driveway and all traffic from this existing development will be shifted to the North Site Driveway. It is recommended that the South Site Driveway operate under stop sign control and provide a single lane entering and exiting for shared travel movements. The South Site Driveway will operate at LOS C after full build-out of the proposed development which is an acceptable operating condition for an unsignalized driveway on a busy arterial. No additional improvements are recommended beyond reconstruction of the site access.

It is noted that the southbound queue that extends back from the US Route 4/US Route 9/20 intersection was observed during the data collection effort. The southbound queue reached the existing Storage Solutions Driveway (South Site Driveway) zero times during the AM peak hour and two times during the PM peak hour. A review of existing traffic conditions indicates that the southbound queue dissipated quickly during the north/south green phase of the US Route 4/US Route 9/20 traffic signal and did not block the driveway for an extended period of time. It is not anticipated that queuing will have a significant impact on operations of the South Site Driveway after build-out of the site.

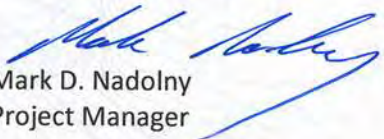
5.0 Conclusions

The proposed mixed-use project includes the construction of a maximum of 300 apartment units and 12,000 square feet (SF) of rentable commercial space that could accommodate various land uses. For the purposes of this report, it was assumed that the commercial building will contain a 2,000 SF bank with a drive through window, a 4,000 SF restaurant, and 6,000 SF of general retail space. The project frontage currently consists of four total curb cuts. The most southern full access curb cut on the project frontage provides primary access to the existing *Storage Solutions* parcel. The middle two full access curb cuts are associated with the *Fisherman's Cove Restaurant* parcel. The most northern curb cut on the site frontage provides informal access to a seasonal use at 575 Columbia Turnpike and to the rear of the *6-Cent Redemption Center* parcel. The project is expected to be completed and operational in 2019. The following access recommendations and conclusions are noted:

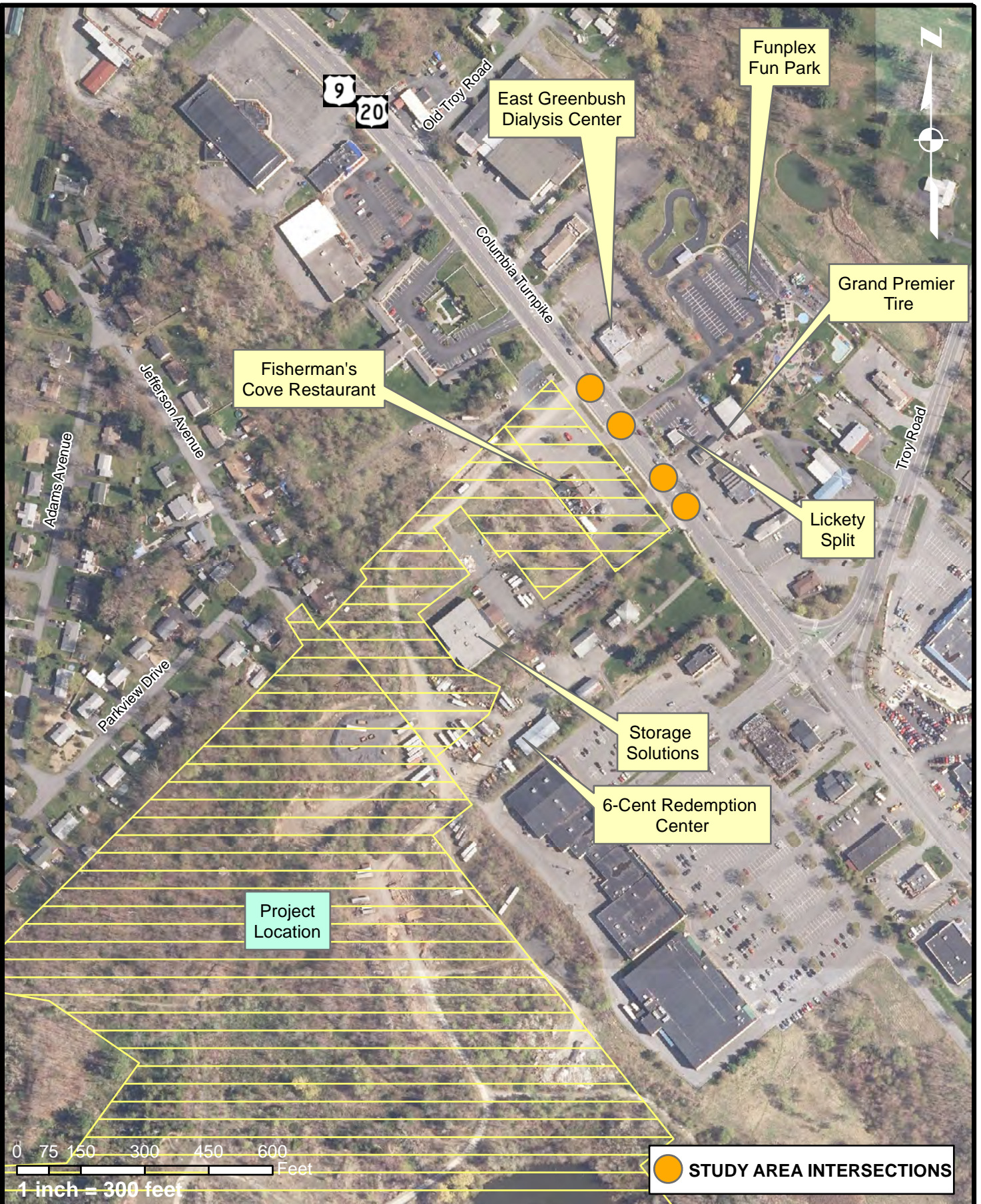
- The eastbound 6-Cent Redemption Center Rear Access Driveway and the eastbound Fisherman's Cove South Driveway will be removed as part of the proposed project.
- The eastbound Fisherman's Cove North Driveway will be replaced by the North Site Driveway opposite the FunPlex Fun Park Driveway. The North Site Driveway will operate under stop sign control and provide a single lane entering and exiting for shared travel movements.
- The eastbound Storage Solutions Driveway will be converted into the South Site Driveway and all traffic from this existing development will be shifted to the North Site Driveway. The South Site Driveway will operate under stop sign control and provide a single lane entering and exiting for shared travel movements. Access to the *Storage Solutions* parcel will be provided via an internal connection that can be accessed via the North Site Driveway
- The level of service summary indicates that all study area intersections will operate at adequate levels of service after full build out of the proposed development. No mitigation beyond the reconfiguration of the existing driveways is recommended.
- A qualitative queuing evaluation indicates that the southbound queue that extends back from the US Route 4/US Route 9/20 intersection reached the existing Storage Solutions Driveway (South Site Driveway) zero times during the AM peak hour and two times during the PM peak hour. A review of existing traffic conditions indicates that the southbound queue dissipated quickly during the north/south green phase of the US Route 4/US Route 9/20 traffic signal and did not block the driveway for an extended period of time. It is not anticipated that queuing will have a significant impact on operations of the South Site Driveway after build-out of the site.

Please call our office if you have any questions or comments regarding the above analysis.

Respectfully submitted,
Creighton Manning Engineering, LLP


Mark D. Nadolny
Project Manager


Kenneth W. Wersted, P.E., PTOE
Associate/Project Manager



PROJECT LOCATION

TOWN CENTER DEVELOPMENT
TOWN OF EAST GREENBUSH, NEW YORK

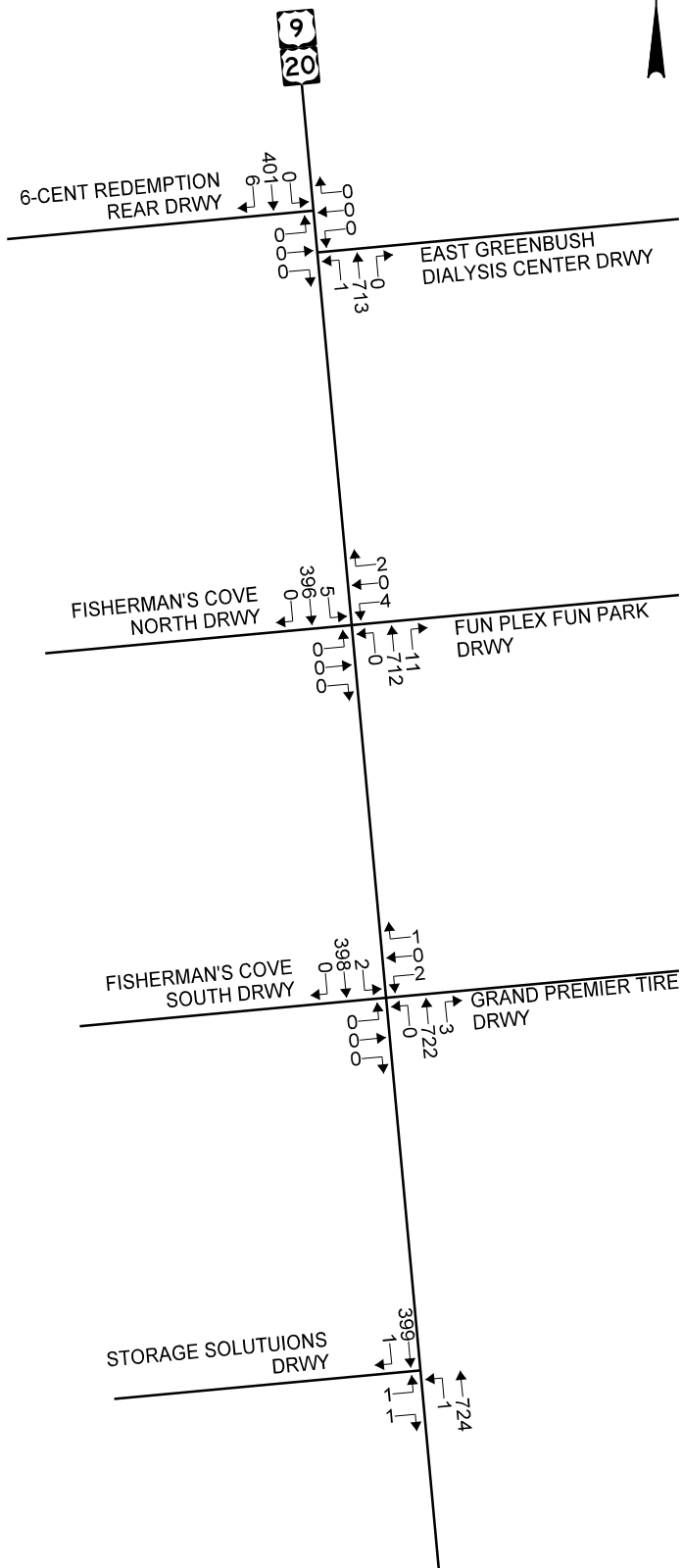


PROJECT: 116-364

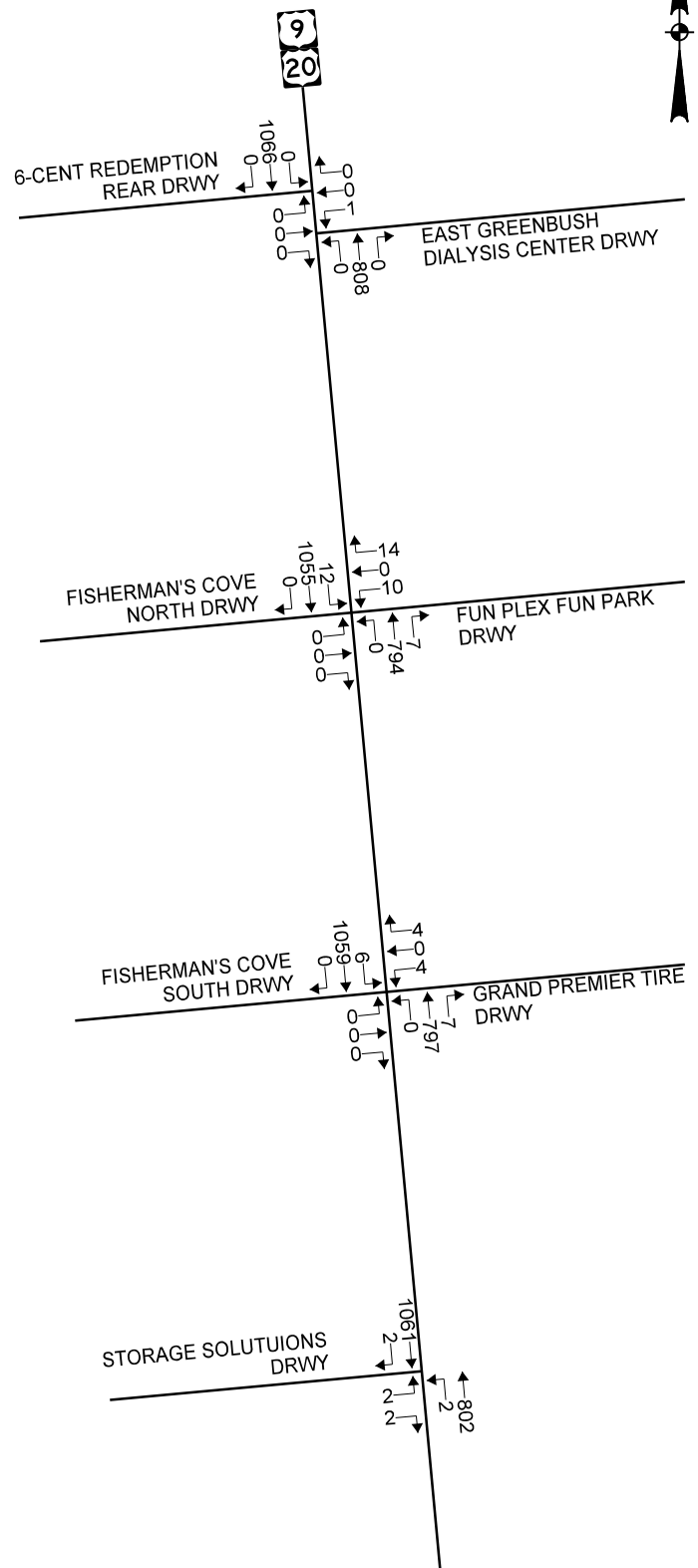
DATE: 01/2017

FIGURE: 1

AM PEAK HOUR



PM PEAK HOUR



2016 EXISTING
TRAFFIC FIGURES

TOWN CENTER DEVELOPMENT
TOWN OF EAST GREENBUSH, NEW YORK

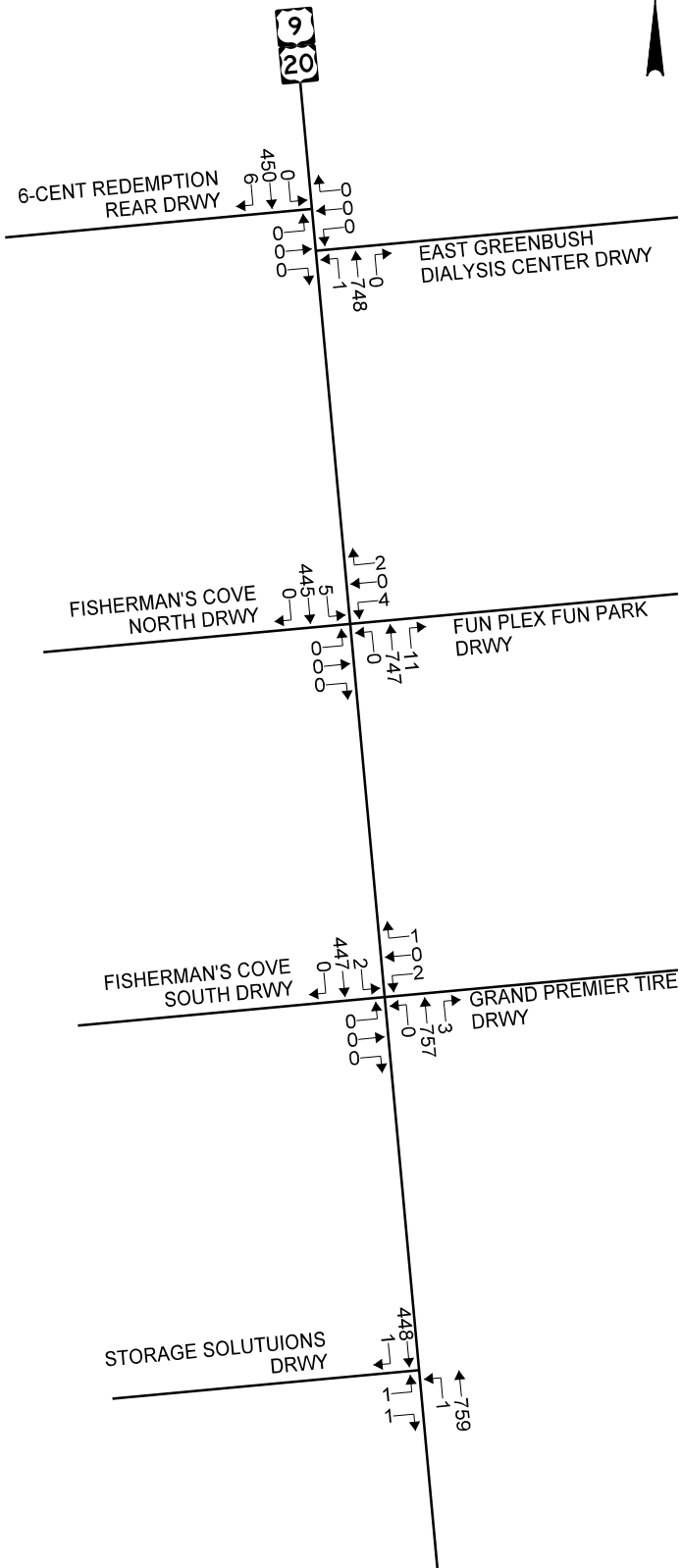


PROJECT: 116-364

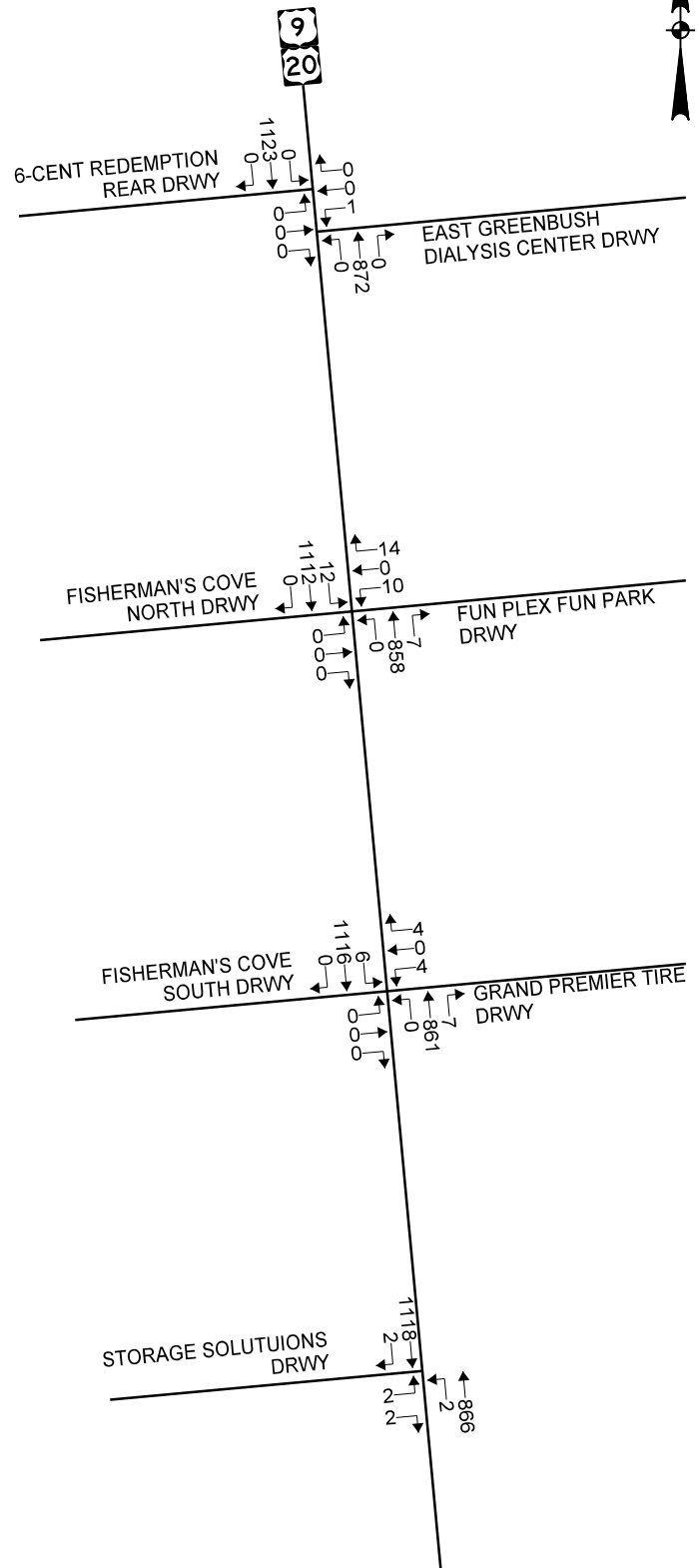
DATE: 01/2017

FIGURE: 2

AM PEAK HOUR



PM PEAK HOUR



2019 NO-BUILD
TRAFFIC VOLUMES

TOWN CENTER DEVELOPMENT
TOWN OF EAST GREENBUSH, NEW YORK

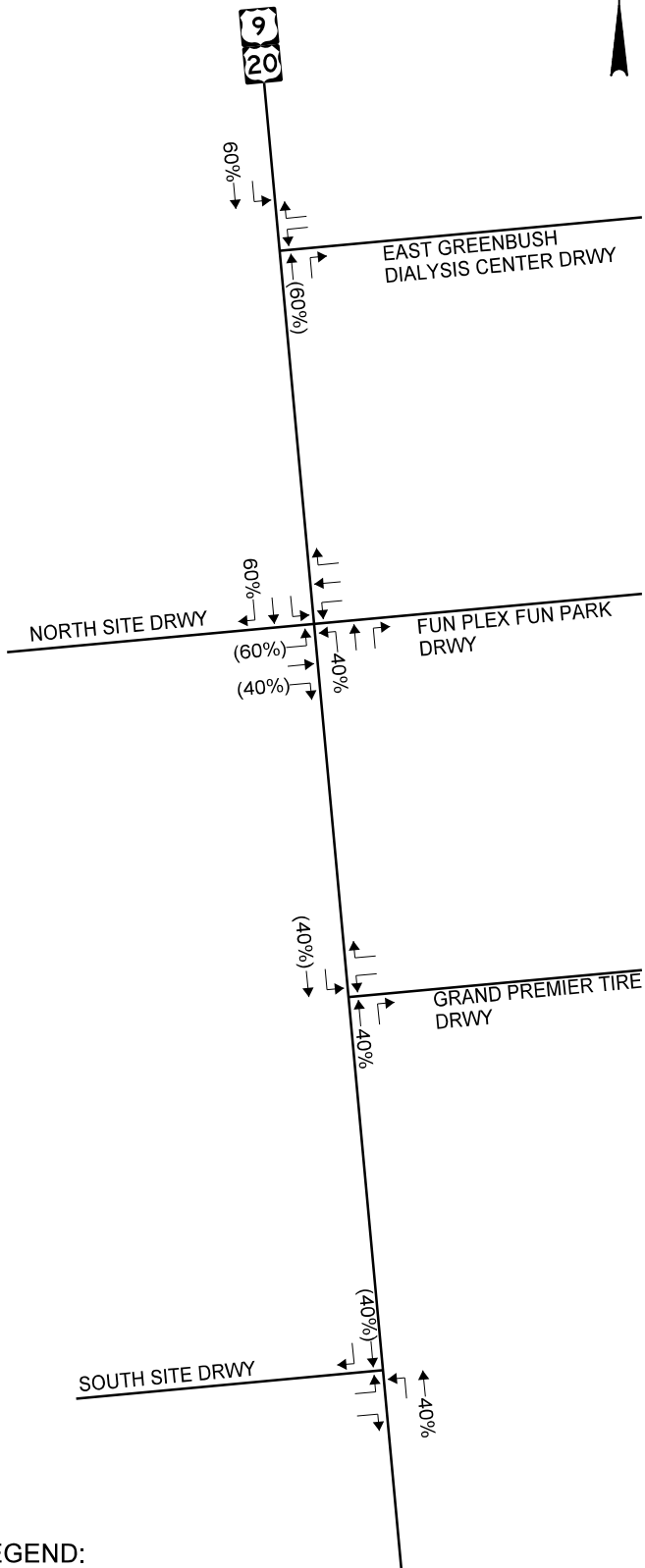


PROJECT: 116-364

DATE: 01/2017

FIGURE: 3

RESIDENTIAL LAND USES AM + PM PEAK HOURS

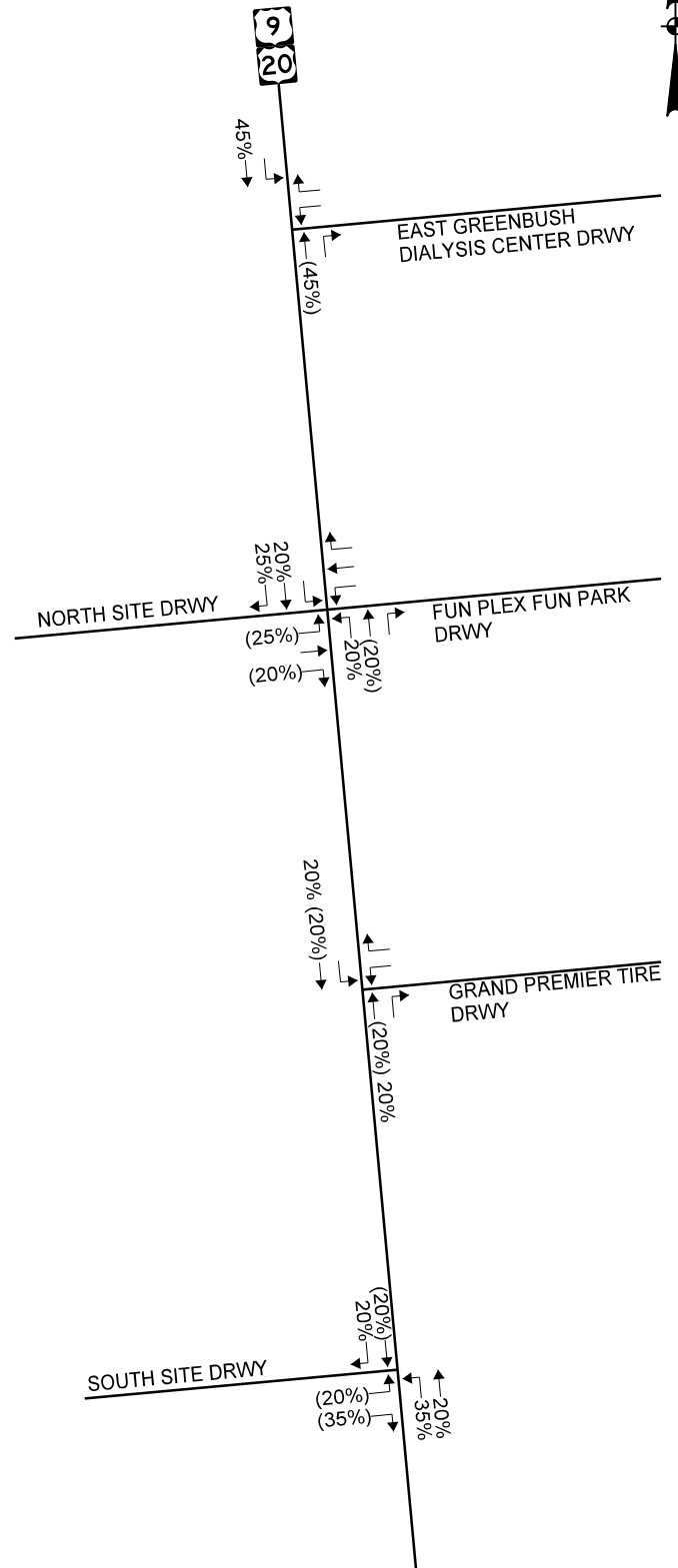


LEGEND:
ENTERING (EXITING)

PRIMARY
TRIP DISTRIBUTION

TOWN CENTER DEVELOPMENT
TOWN OF EAST GREENBUSH, NEW YORK

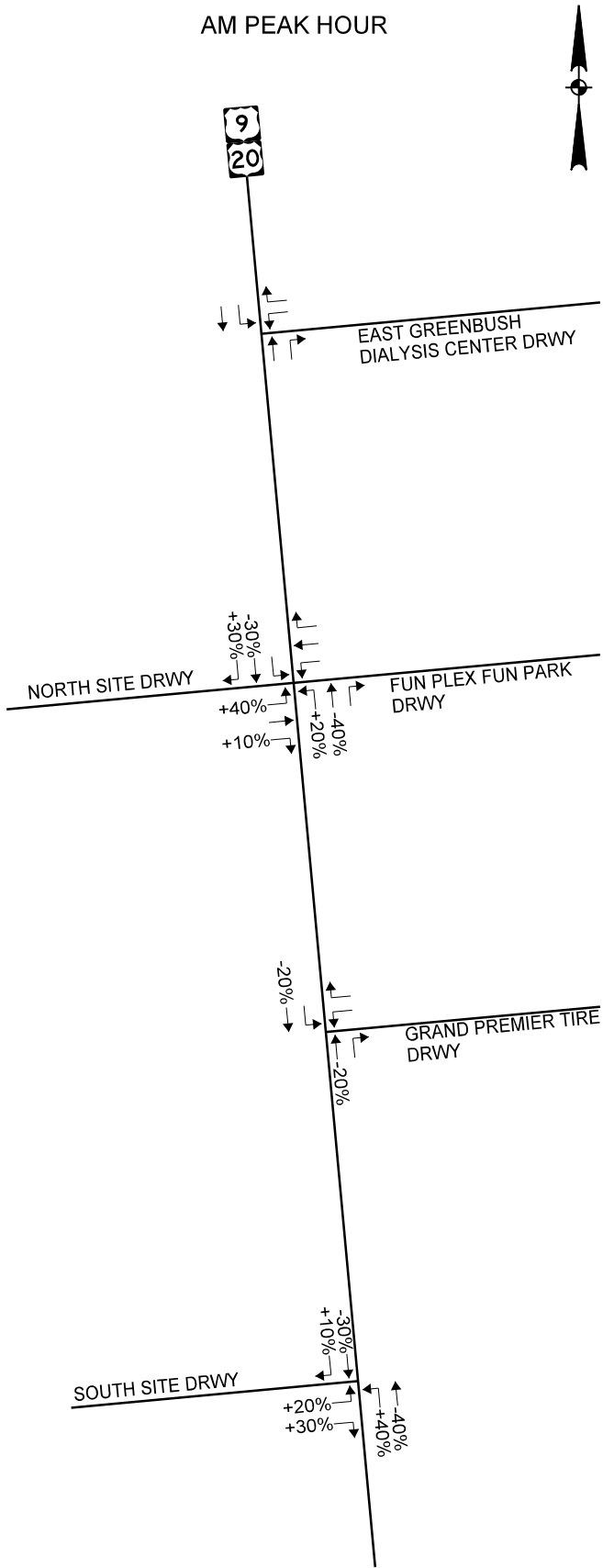
COMMERCIAL LAND USES AM + PM PEAK HOURS



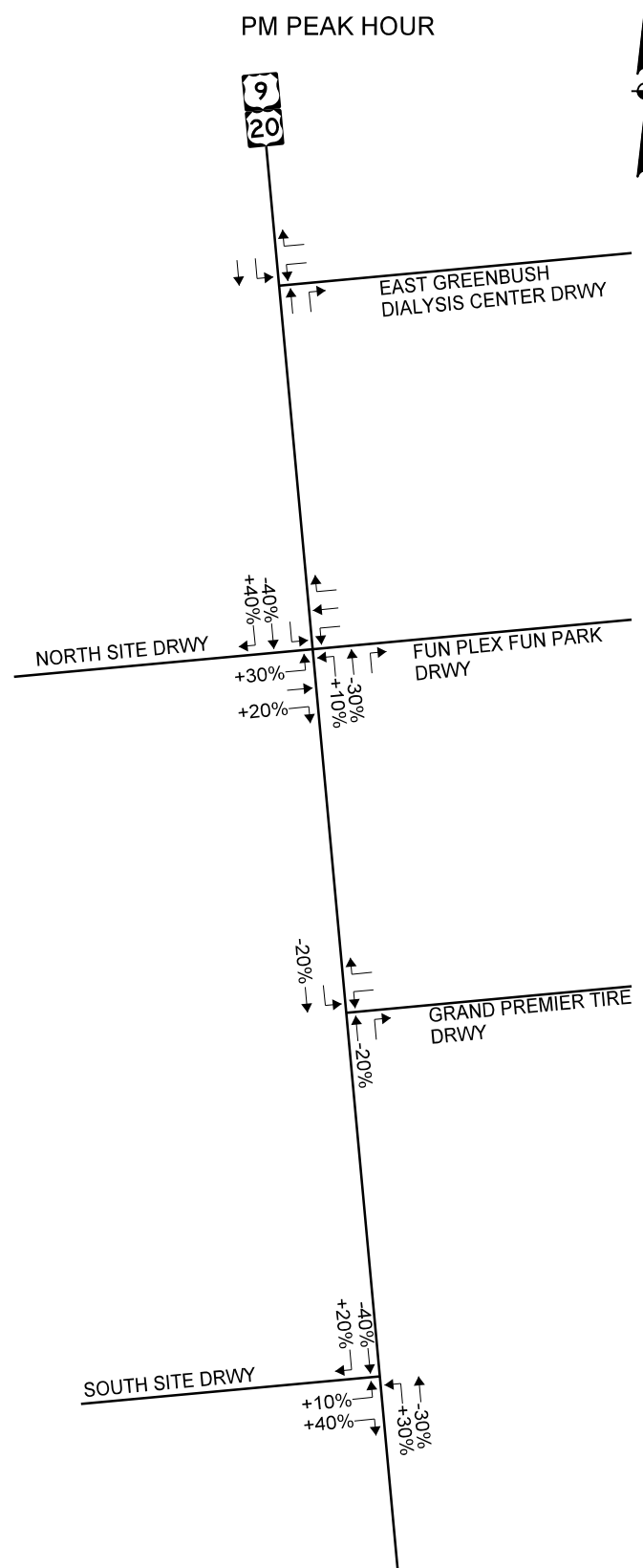
LEGEND:
ENTERING (EXITING)



AM PEAK HOUR



PM PEAK HOUR

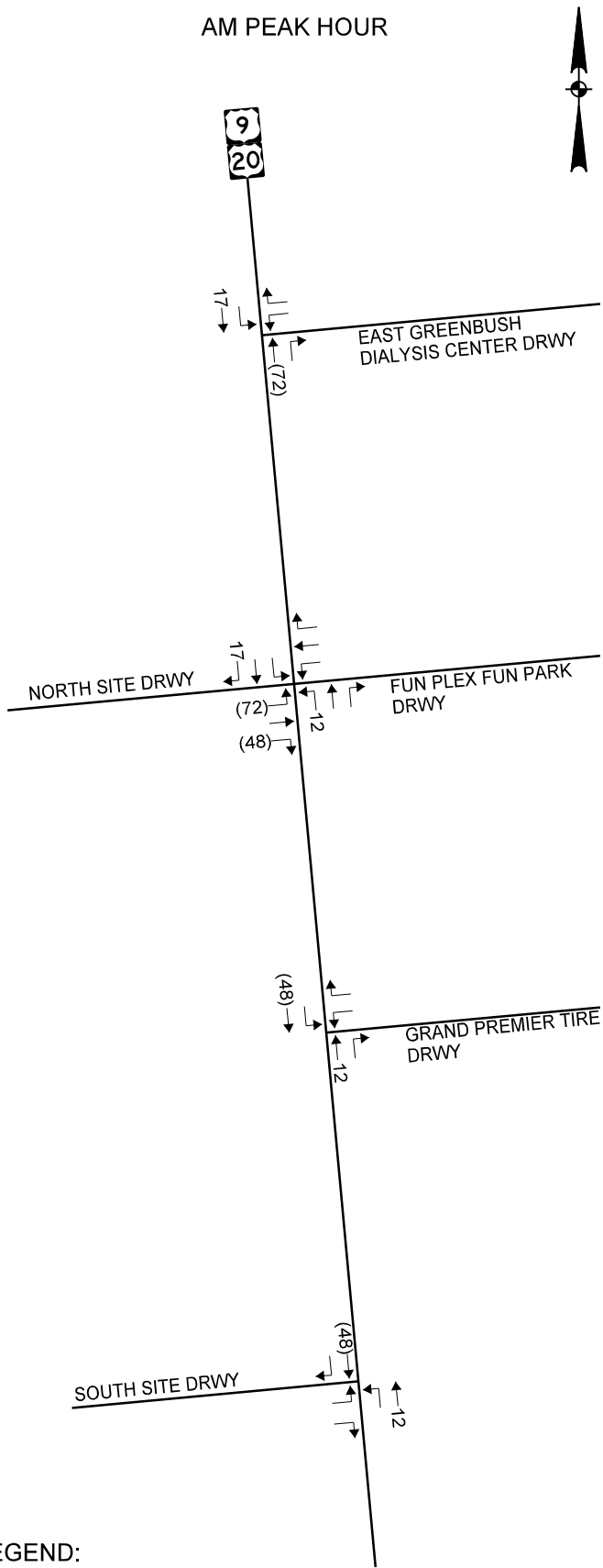


PASS-BY
TRIP DISTRIBUTION
COMMERCIAL LAND USES

TOWN CENTER DEVELOPMENT
TOWN OF EAST GREENBUSH, NEW YORK



AM PEAK HOUR

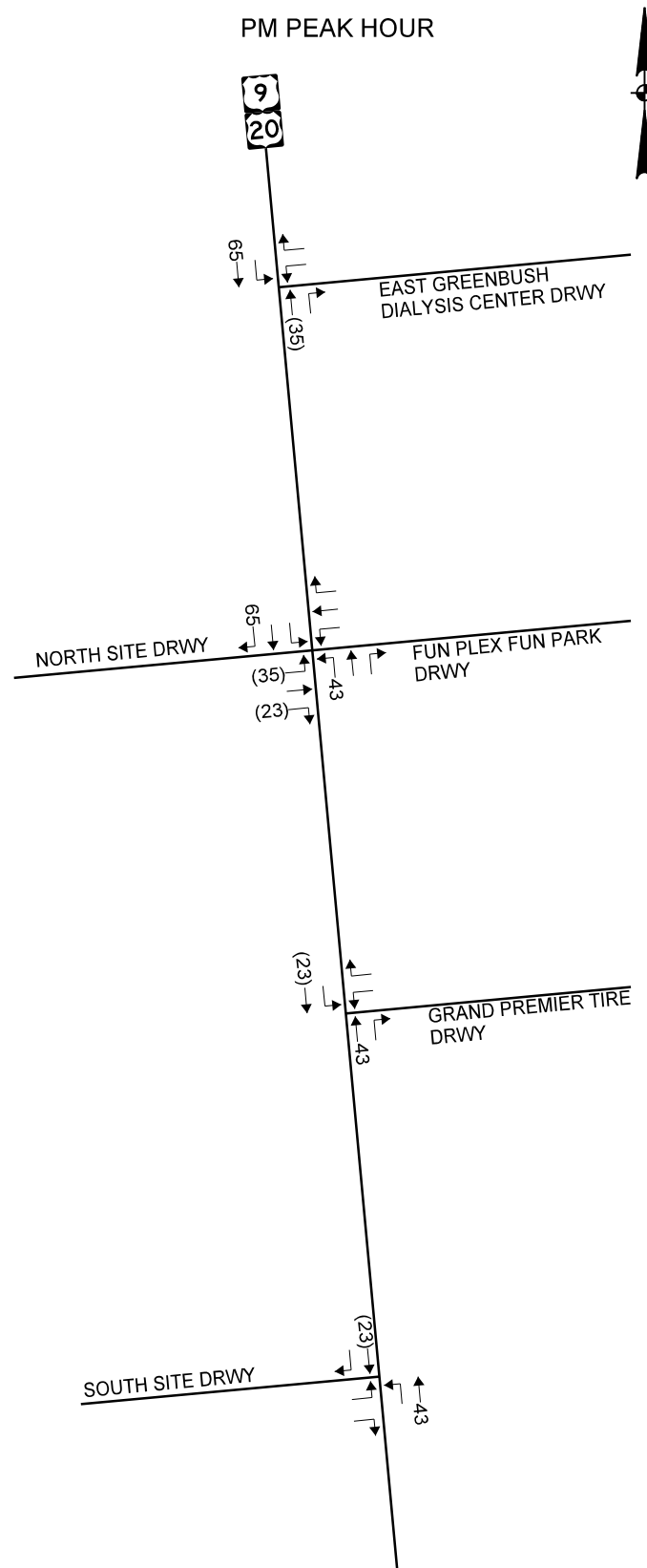


LEGEND:
ENTERING (EXITING)

PRIMARY TRIP ASSIGNMENT
RESIDENTIAL LAND USE

TOWN CENTER DEVELOPMENT
TOWN OF EAST GREENBUSH, NEW YORK

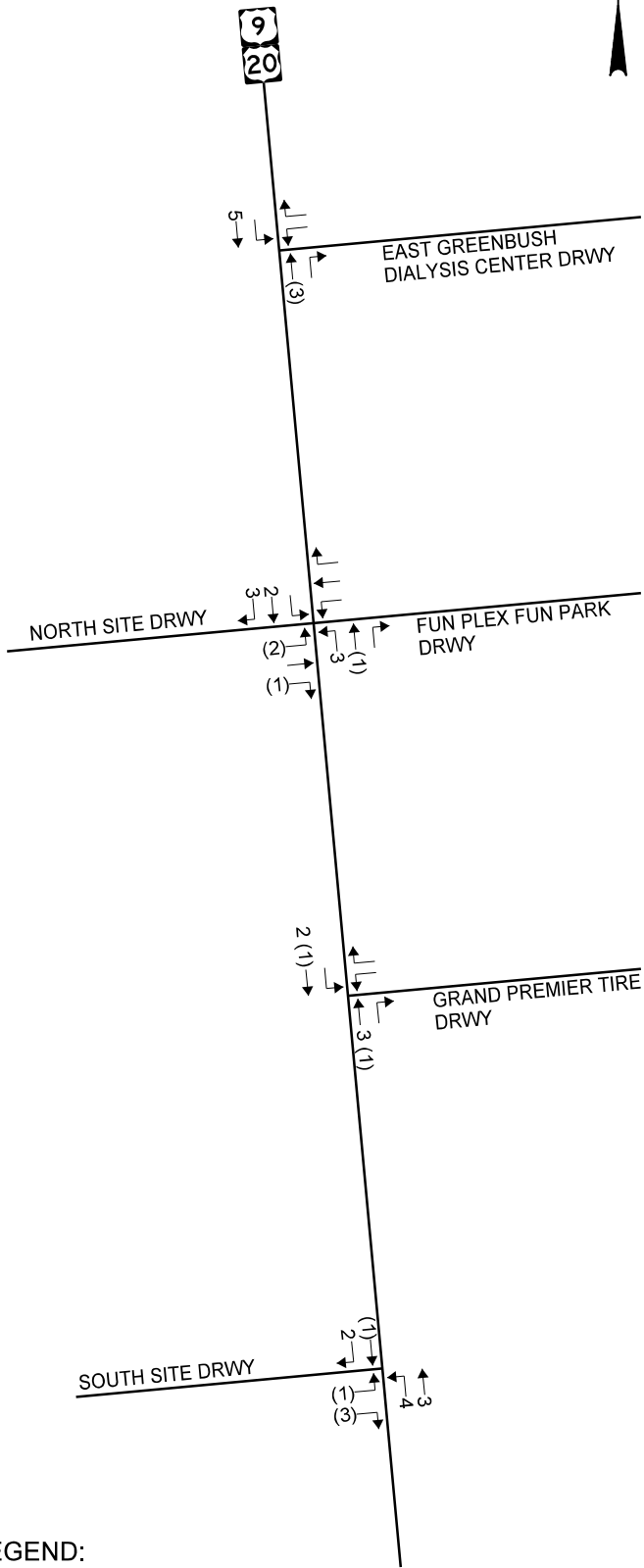
PM PEAK HOUR



LEGEND:
ENTERING (EXITING)

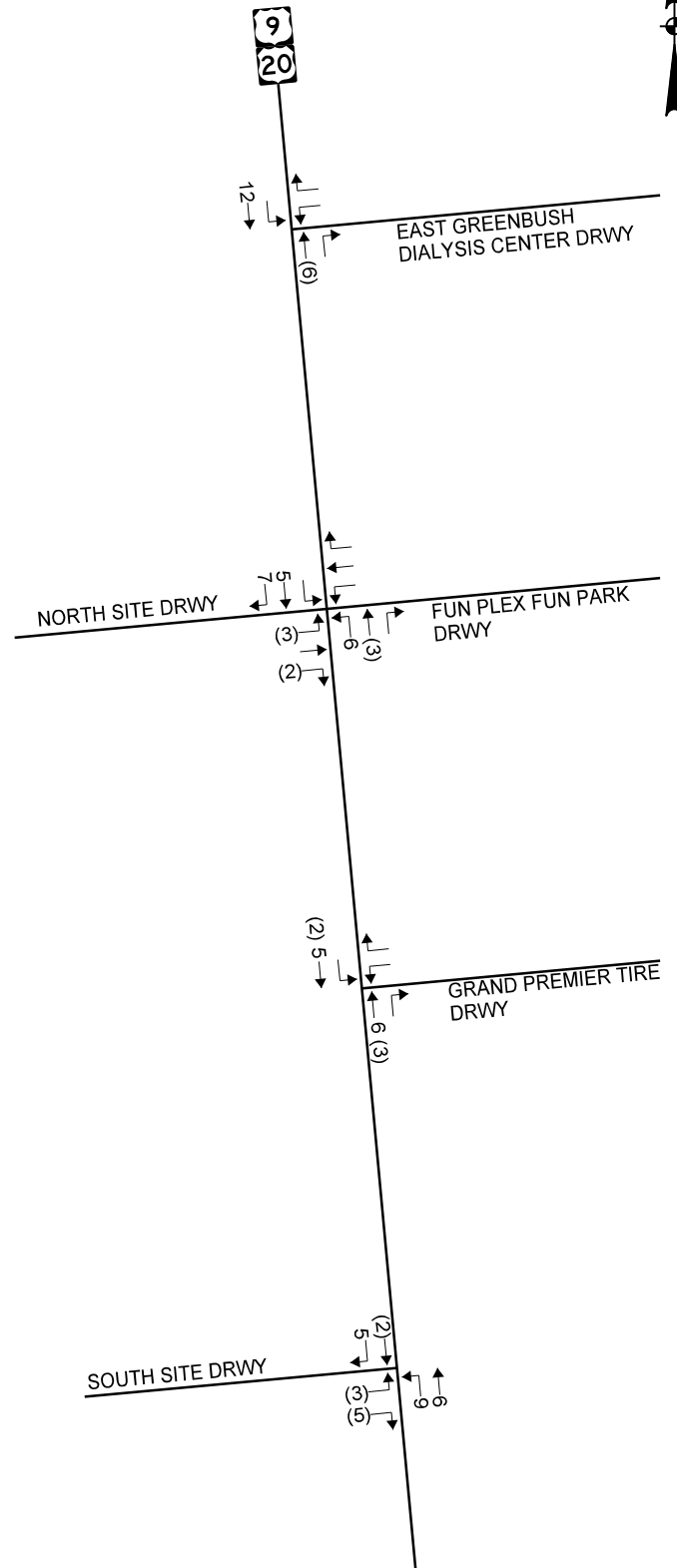


AM PEAK HOUR



LEGEND:
ENTERING (EXITING)

PM PEAK HOUR



LEGEND:
ENTERING (EXITING)

PRIMARY TRIP ASSIGNMENT
COMMERCIAL LAND USES

TOWN CENTER DEVELOPMENT
TOWN OF EAST GREENBUSH, NEW YORK



PROJECT: 116-364

DATE: 01/2017

FIGURE: 7

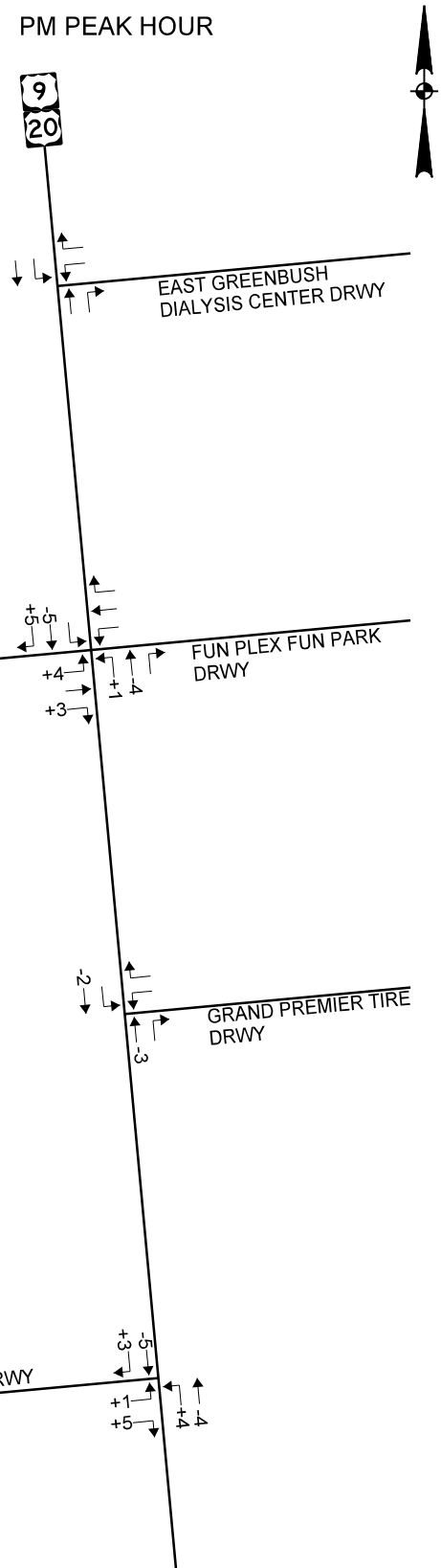
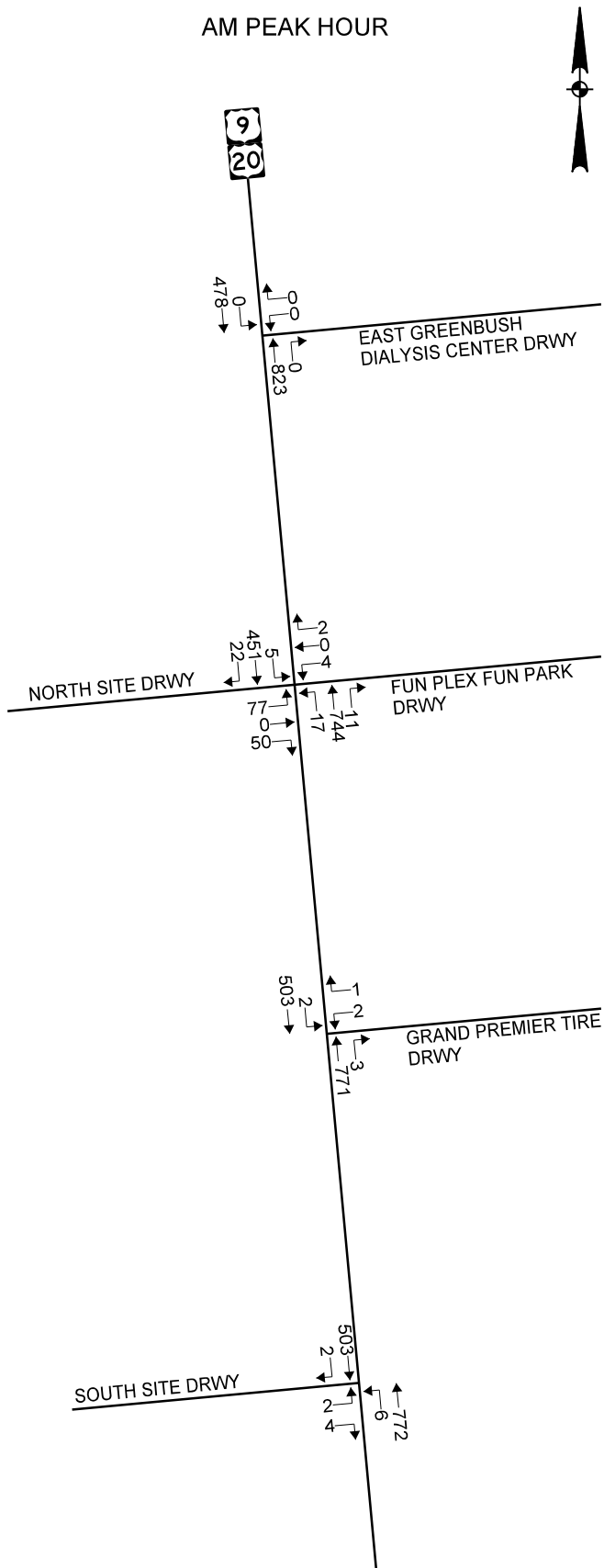
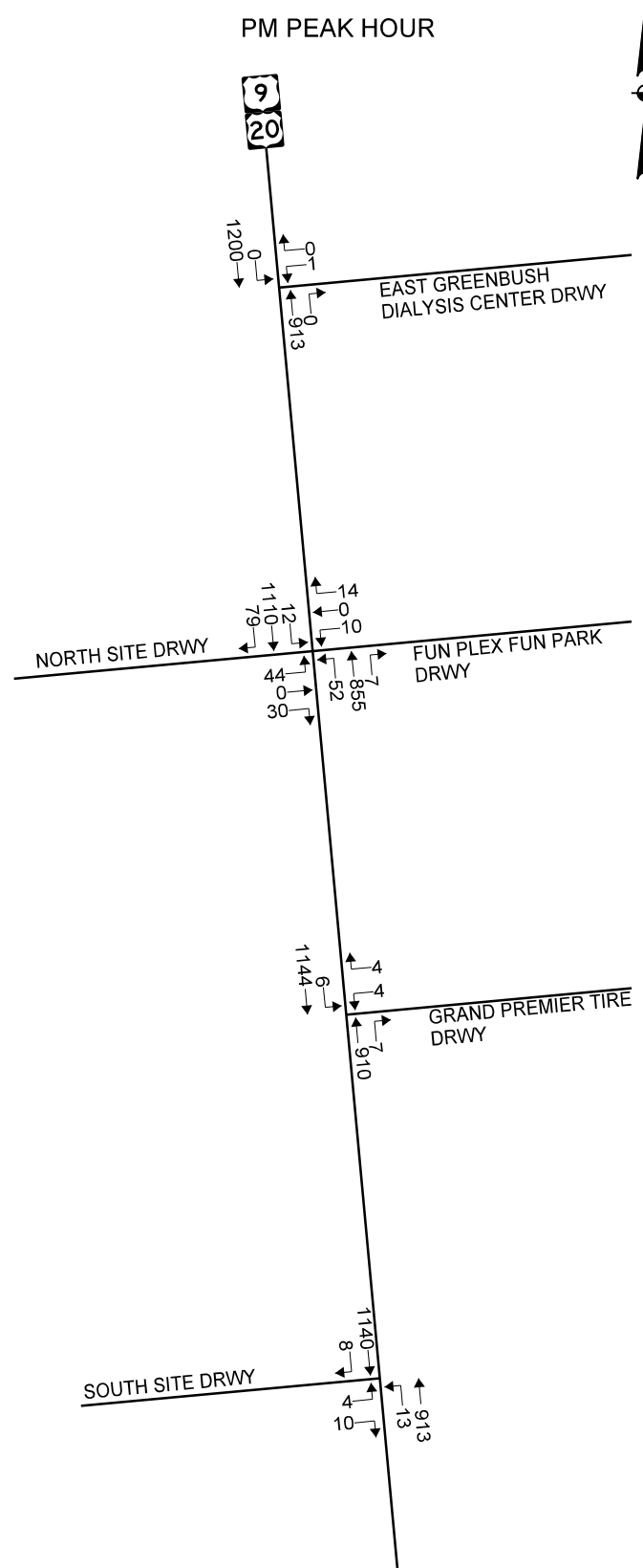


FIGURE: 8

AM PEAK HOUR



PM PEAK HOUR



2019 BUILD
TRAFFIC VOLUMES

TOWN CENTER DEVELOPMENT
TOWN OF EAST GREENBUSH, NEW YORK



PROJECT: 116-364

DATE: 01/2017

FIGURE: 9

Attachment A
Site Plan

Attachment B
Turning Movement Counts



Project No.: 116-364
Counted By: DMQ
Location: US Route 9/FunPlex
Comments: AM Peak

File Name : tm116364am
Site Code : 00116364
Start Date : 12/20/2016
Page No : 1

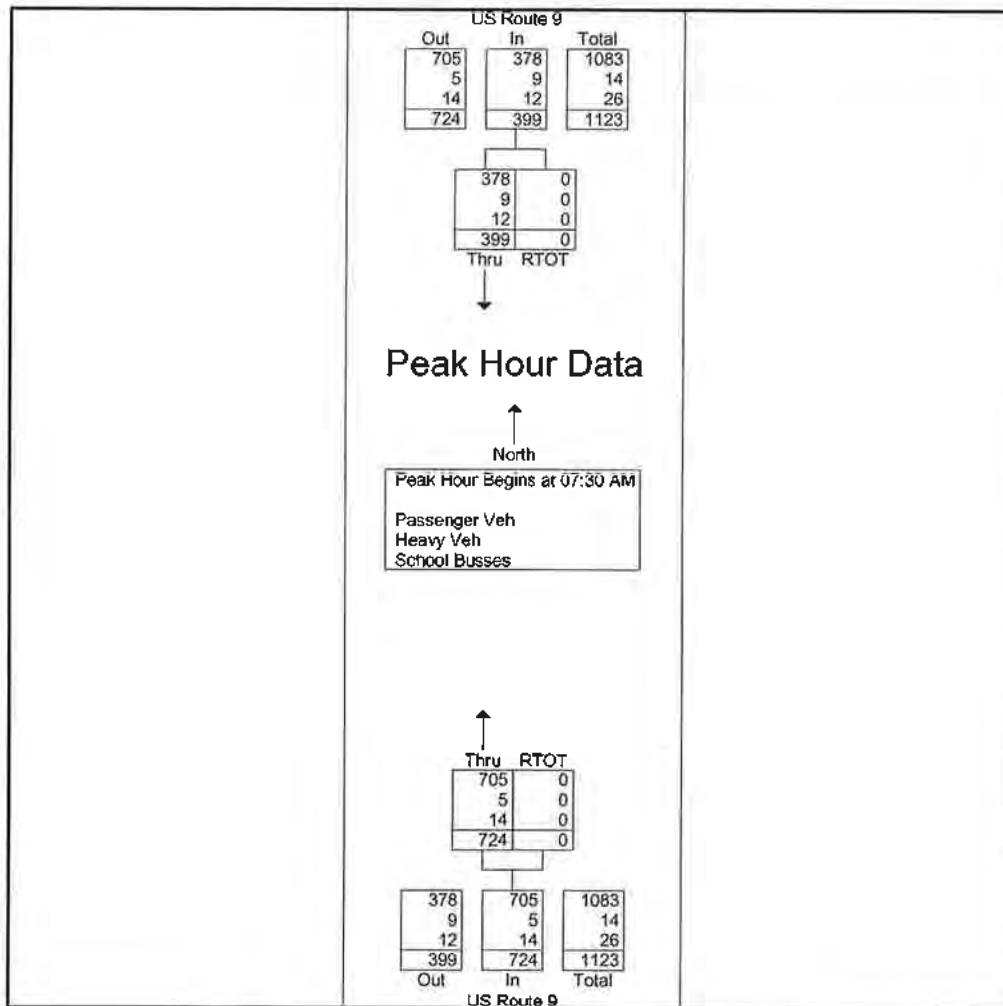
Groups Printed- Passenger Veh - Heavy Veh - School Busses

Start Time	US Route 9 Northbound			US Route 9 Southbound			Int. Total
	Thru	RTOT	App. Total	Thru	RTOT	App. Total	
07:30 AM	183	0	183	115	0	115	298
07:45 AM	201	0	201	104	0	104	305
Total	384	0	384	219	0	219	603
08:00 AM	180	0	180	88	0	88	268
08:15 AM	160	0	160	92	0	92	252
Grand Total	724	0	724	399	0	399	1123
Apprch %	100	0		100	0		
Total %	64.5	0	64.5	35.5	0	35.5	
Passenger Veh	705	0	705	378	0	378	1083
% Passenger Veh	97.4	0	97.4	94.7	0	94.7	96.4
Heavy Veh	5	0	5	9	0	9	14
% Heavy Veh	0.7	0	0.7	2.3	0	2.3	1.2
School Busses	14	0	14	12	0	12	26
% School Busses	1.9	0	1.9	3	0	3	2.3

Project No.: 116-364
 Counted By: DMQ
 Location: US Route 9/FunPlex
 Comments: AM Peak

File Name : tm116364am
 Site Code : 00116364
 Start Date : 12/20/2016
 Page No : 2

	US Route 9 Northbound			US Route 9 Southbound			
Start Time	Thru	RTOT	App. Total	Thru	RTOT	App. Total	Int. Total
Peak Hour Analysis From 7:30:00 AM to 8:15:00 AM - Peak 1 of 1							
Peak Hour for Entire Intersection Begins at 7:30:00 AM							
7:30:00 AM	183	0	183	115	0	115	298
7:45:00 AM	201	0	201	104	0	104	305
8:00:00 AM	180	0	180	88	0	88	268
8:15:00 AM	160	0	160	92	0	92	252
Total Volume	724	0	724	399	0	399	1123
% App. Total	100	0		100	0		
PHF	.900	.000	.900	.867	.000	.867	.920
Passenger Veh	705	0	705	378	0	378	1083
% Passenger Veh	97.4	0	97.4	94.7	0	94.7	96.4
Heavy Veh	5	0	5	9	0	9	14
% Heavy Veh	0.7	0	0.7	2.3	0	2.3	1.2
School Busses	14	0	14	12	0	12	26
% School Busses	1.9	0	1.9	3.0	0	3.0	2.3





Project No.: 116-364
Counted By: DMQ
Location: US Route 9/FunPlex
Comments: PM Peak

File Name : TM116364PM
Site Code : 00116364
Start Date : 12/21/2016
Page No : 1

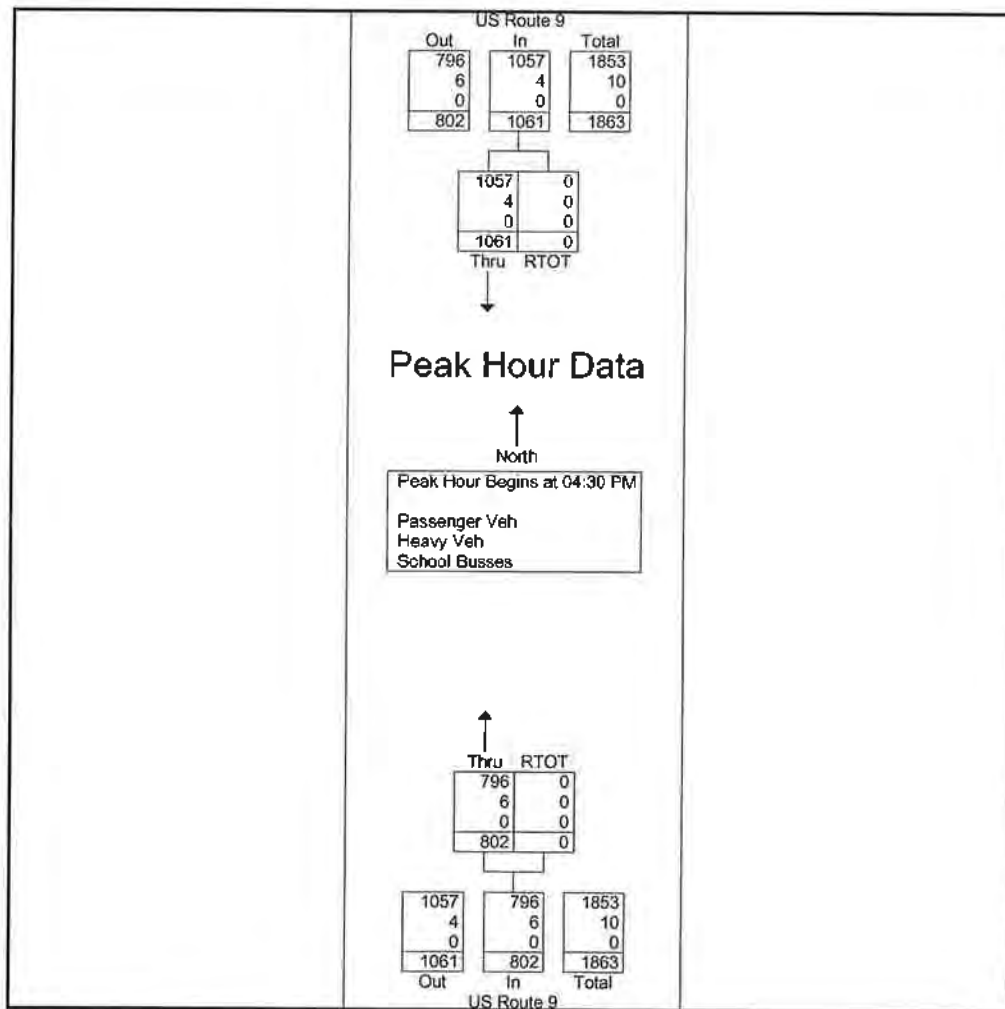
Groups Printed- Passenger Veh - Heavy Veh - School Busses

Start Time	US Route 9 Northbound			US Route 9 Southbound			Int. Total
	Thru	RTOT	App. Total	Thru	RTOT	App. Total	
04:30 PM	193	0	193	259	0	259	452
04:45 PM	210	0	210	282	0	282	492
Total	403	0	403	541	0	541	944
05:00 PM	196	0	196	259	0	259	455
05:15 PM	203	0	203	261	0	261	464
Grand Total	802	0	802	1061	0	1061	1863
Apprch %	100	0		100	0		
Total %	43	0	43	57	0	57	
Passenger Veh	796	0	796	1057	0	1057	1853
% Passenger Veh	99.3	0	99.3	99.6	0	99.6	99.5
Heavy Veh	6	0	6	4	0	4	10
% Heavy Veh	0.7	0	0.7	0.4	0	0.4	0.5
School Busses	0	0	0	0	0	0	0
% School Busses	0	0	0	0	0	0	0

Project No.: 116-364
 Counted By: DMQ
 Location: US Route 9/FunPlex
 Comments: PM Peak

File Name : TM116364PM
 Site Code : 00116364
 Start Date : 12/21/2016
 Page No : 2

	US Route 9 Northbound			US Route 9 Southbound			
Start Time	Thru	RTOT	App. Total	Thru	RTOT	App. Total	Int. Total
Peak Hour Analysis From 4:30:00 PM to 5:15:00 PM - Peak 1 of 1							
Peak Hour for Entire Intersection Begins at 4:30:00 PM							
4:30:00 PM	193	0	193	259	0	259	452
4:45:00 PM	210	0	210	282	0	282	492
5:00:00 PM	196	0	196	259	0	259	455
5:15:00 PM	203	0	203	261	0	261	464
Total Volume	802	0	802	1061	0	1061	1863
% App. Total	100	0		100	0		
PHF	.955	.000	.955	.941	.000	.941	.947
Passenger Veh	796	0	796	1057	0	1057	1853
% Passenger Veh	99.3	0	99.3	99.6	0	99.6	99.5
Heavy Veh	6	0	6	4	0	4	10
% Heavy Veh	0.7	0	0.7	0.4	0	0.4	0.5
School Busses	0	0	0	0	0	0	0
% School Busses	0	0	0	0	0	0	0



Project Number: 116-364 US Route 9/20



Recorder: DMQ



Date: 12/20/2016

Time: AM Peak Hour

Intersection: DIALYSIS CENTER / 575 COLUMBIA TURNPIKE / G-CENT REDEMPTION CENTER REAR ACCESS

Vehicle Turn Movements

time			# of vehicles
	LEFT IN	RIGHT IN	
7:00 AM			0
7:05 AM			0
7:10 AM			0
7:15 AM			0
7:20 AM			0
7:25 AM			0
7:30 AM		(1)	0
7:35 AM		(1)	0
7:40 AM		(1)	0
7:45 AM			0
7:50 AM		(1)	0
7:55 AM	(1)		0
8:00 AM			0
8:05 AM			0
8:10 AM			0
8:15 AM		(1)	0
8:20 AM			0
8:25 AM			0
8:30 AM			0
8:35 AM			0
8:40 AM			0
8:45 AM			0
8:50 AM			0
8:55 AM			0
Sum	(1)	(1)	



time			# of vehicles
	LEFT OUT	RIGHT OUT	
7:00 AM			0
7:05 AM			0
7:10 AM			0
7:15 AM			0
7:20 AM			0
7:25 AM			0
7:30 AM			0
7:35 AM			0
7:40 AM			0
7:45 AM			0
7:50 AM			0
7:55 AM			0
8:00 AM			0
8:05 AM			0
8:10 AM			0
8:15 AM			0
8:20 AM			0
8:25 AM			0
8:30 AM			0
8:35 AM			0
8:40 AM			0
8:45 AM			0
8:50 AM			0
8:55 AM			0
Sum	0	0	



General Notes/Observations:

-DIALYSIS CENTER APPEARED TO BE CLOSED IN THE AM

Project Number: 116-364 US Route 9/20
 Recorder: DMQ
 Date: 12/20/2016
 Time: PM Peak Hour
 Intersection: DIALYSIS CENTER

Vehicle Turn Movements

time	 # of vehicles	 # of vehicles	# of vehicles
	LEFT IN	RIGHT IN	
4:00 PM			0
4:05 PM			0
4:10 PM			0
4:15 PM			0
4:20 PM			0
4:25 PM			0
4:30 PM			0
4:35 PM			0
4:40 PM			0
4:45 PM			0
4:50 PM			0
4:55 PM			0
5:00 PM			0
5:05 PM			0
5:10 PM			0
5:15 PM			0
5:20 PM			0
5:25 PM			0
5:30 PM			0
5:35 PM			0
5:40 PM			0
5:45 PM			0
5:50 PM			0
5:55 PM			0
SUM	0	0	



time	 # of vehicles	 # of vehicles	# of vehicles
	LEFT OUT	RIGHT OUT	
4:00 PM			0
4:05 PM			0
4:10 PM			0
4:15 PM			0
4:20 PM			0
4:25 PM			0
4:30 PM			0
4:35 PM			0
4:40 PM			0
4:45 PM			0
4:50 PM			0
4:55 PM			0
5:00 PM			0
5:05 PM			0
5:10 PM			0
5:15 PM			0
5:20 PM			0
5:25 PM			0
5:30 PM			0
5:35 PM			0
5:40 PM			0
5:45 PM			0
5:50 PM			0
5:55 PM			0
SUM	0	0	



General Notes/Observations:

NO TRAFFIC FROM 575 COLUMBIA TURNPIKE / LO-CENT REDEMPTION CENTER REAR ACCESS

Project Number: 116-364 US Route 9/20
 Recorder: DMQ
 Date: 12/20/2016
 Time: AM Peak Hour
 Intersection: FUNPLEX

Vehicle Turn Movements

time	 # of vehicles	 # of vehicles	# of vehicles
	LEFT IN	RIGHT IN	
7:00 AM			0
7:05 AM			0
7:10 AM			0
7:15 AM			0
7:20 AM			0
7:25 AM			0
7:30 AM			0
7:35 AM			0
7:40 AM			0
7:45 AM			0
7:50 AM			0
7:55 AM			0
8:00 AM			0
8:05 AM			0
8:10 AM			0
8:15 AM			0
8:20 AM			0
8:25 AM			0
8:30 AM			0
8:35 AM			0
8:40 AM			0
8:45 AM			0
8:50 AM			0
8:55 AM			0
SUM	3	6	



time	 # of vehicles	 # of vehicles	# of vehicles
	LEFT OUT	RIGHT OUT	
7:00 AM			0
7:05 AM			0
7:10 AM			0
7:15 AM			0
7:20 AM			0
7:25 AM			0
7:30 AM			0
7:35 AM			0
7:40 AM			0
7:45 AM			0
7:50 AM			0
7:55 AM			0
8:00 AM			0
8:05 AM			0
8:10 AM			0
8:15 AM			0
8:20 AM			0
8:25 AM			0
8:30 AM			0
8:35 AM			0
8:40 AM			0
8:45 AM			0
8:50 AM			0
8:55 AM			0
SUM	2	1	



General Notes/Observations:

⇒ MOST OF THIS TRAFFIC USED THE FUNPLEX DWY TO
 ACCESS THE TIRE STORE

Project Number: 116-364 US Route 9/20
 Recorder: DMQ
 Date: 12/20/2016
 Time: PM Peak Hour
 Intersection: FUNPLEX

Vehicle Turn Movements



time	 # of vehicles	 # of vehicles	# of vehicles
	LEFT IN	RIGHT IN	
4:00 PM			0
4:05 PM			0
4:10 PM			0
4:15 PM			0
4:20 PM			0
4:25 PM			0
4:30 PM	1		0
4:35 PM			0
4:40 PM			0
4:45 PM			0
4:50 PM			0
4:55 PM			0
5:00 PM			0
5:05 PM			0
5:10 PM			0
5:15 PM	1		0
5:20 PM	1		0
5:25 PM			0
5:30 PM			0
5:35 PM			0
5:40 PM			0
5:45 PM			0
5:50 PM			0
5:55 PM			0
SUM	3	0	



time	 # of vehicles	 # of vehicles	# of vehicles
	LEFT OUT	RIGHT OUT	
4:00 PM			0
4:05 PM			0
4:10 PM			0
4:15 PM			0
4:20 PM			0
4:25 PM			0
4:30 PM		1	0
4:35 PM			0
4:40 PM		1	0
4:45 PM			0
4:50 PM			0
4:55 PM	1	1	0
5:00 PM			0
5:05 PM			0
5:10 PM			0
5:15 PM		1	0
5:20 PM	1	1	0
5:25 PM	1	1	0
5:30 PM			0
5:35 PM			0
5:40 PM			0
5:45 PM			0
5:50 PM			0
5:55 PM			0
SUM	4	7	

General Notes/Observations:

Project Number: 116-364 US Route 9/20
 Recorder: DMQ
 Date: 12/20/2016
 Time: AM Peak Hour
 Intersection: GRAND PREMIER TIRE STORE

Vehicle Turn Movements



time	 # of vehicles	 # of vehicles	# of vehicles
	LEFT IN	RIGHT IN	
7:00 AM			0
7:05 AM			0
7:10 AM			0
7:15 AM			0
7:20 AM			0
7:25 AM			0
7:30 AM			0
7:35 AM			0
7:40 AM			0
7:45 AM		1	0
7:50 AM			0
7:55 AM	1		0
8:00 AM			0
8:05 AM		1	0
8:10 AM	1		0
8:15 AM			0
8:20 AM			0
8:25 AM		1	0
8:30 AM			0
8:35 AM			0
8:40 AM			0
8:45 AM			0
8:50 AM			0
8:55 AM			0
SUM	2	3	



time	 # of vehicles	 # of vehicles	# of vehicles
	LEFT OUT	RIGHT OUT	
7:00 AM			0
7:05 AM			0
7:10 AM			0
7:15 AM			0
7:20 AM			0
7:25 AM			0
7:30 AM			0
7:35 AM			0
7:40 AM			0
7:45 AM			0
7:50 AM			0
7:55 AM			0
8:00 AM	1		0
8:05 AM			0
8:10 AM			0
8:15 AM			0
8:20 AM	1	1	0
8:25 AM			0
8:30 AM			0
8:35 AM			0
8:40 AM			0
8:45 AM			0
8:50 AM			0
8:55 AM			0
SUM	2	1	

General Notes/Observations:

Project Number: 116-364 US Route 9/20
 Recorder: DMQ
 Date: 12/20/2016
 Time: PM Peak Hour
 Intersection: GRAND PREMIER TIRE

Vehicle Turn Movements

time	 # of vehicles	 # of vehicles	# of vehicles
	LEFT IN	RIGHT IN	
4:00 PM			0
4:05 PM			0
4:10 PM			0
4:15 PM			0
4:20 PM			0
4:25 PM			0
4:30 PM			0
4:35 PM			0
4:40 PM			0
4:45 PM			0
4:50 PM			0
4:55 PM			0
5:00 PM			0
5:05 PM			0
5:10 PM			0
5:15 PM			0
5:20 PM			0
5:25 PM			0
5:30 PM			0
5:35 PM			0
5:40 PM			0
5:45 PM			0
5:50 PM			0
5:55 PM			0
Sum	10	4	

time	 # of vehicles	 # of vehicles	# of vehicles
	LEFT OUT	RIGHT OUT	
4:00 PM			0
4:05 PM			0
4:10 PM			0
4:15 PM			0
4:20 PM			0
4:25 PM			0
4:30 PM			0
4:35 PM			0
4:40 PM			0
4:45 PM			0
4:50 PM			0
4:55 PM			0
5:00 PM			0
5:05 PM			0
5:10 PM			0
5:15 PM			0
5:20 PM			0
5:25 PM			0
5:30 PM			0
5:35 PM			0
5:40 PM			0
5:45 PM			0
5:50 PM			0
5:55 PM			0
Sum	4	4	

General Notes/Observations:

Attachment C
Level of Service Analyses

LOS Definitions

The following is an excerpt from the 2010 Highway Capacity Manual (HCM).

Level of Service Criteria for Unsignalized Intersections

Level of service (LOS) for Two-Way Stop-Controlled (TWSC) intersections is determined by the computed or measured control delay. For motor vehicles, LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns by using criteria given in Exhibit 19-1. LOS is not defined for the intersection as a whole or for major-street approaches for three primary reasons: (a) major-street through vehicles are assumed to experience zero delay; (b) the disproportionate number of major-street through vehicles at a typical TWSC intersection skews the weighted average of all movements, resulting in a very low overall average delay for all vehicles; and (c) the resulting low delay can mask important LOS deficiencies for minor movements. LOS F is assigned to the movement if the volume-to-capacity (v/c) ratio for the movement exceeds 1.0, regardless of the control delay.

The LOS criteria for TWSC intersections are somewhat different from the criteria used in Chapter 18 for signalized intersections, primarily because user perceptions differ among transportation facility types. The expectation is that a signalized intersection is designed to carry higher traffic volumes and will present greater delay than an unsignalized intersection. Unsignalized intersections are also associated with more uncertainty for users, as delays are less predictable than they are at signals, which can reduce users' delay tolerance.

The LOS criteria for All-Way Stop-Controlled (AWSC) intersections are given in Exhibit 20-2. LOS F is assigned if the v/c ratio of a lane exceeds 1.0, regardless of the control delay. For assessment of LOS at the approach and intersection levels, LOS is based solely on control delay.

Exhibits 19-1/20-2:
Level-of-Service Criteria for Stop Controlled Intersections

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio	
	$v/c \leq 1.0$	$v/c \geq 1.0$
10.0	A	F
>10.0 and ≤ 15.0	B	F
>15.0 and ≤ 25.0	C	F
>25.0 and ≤ 35.0	D	F
>35.0 and ≤ 50.0	E	F
>50.0	F	F

Intersection

Int Delay, s/veh 0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	0	0	0	1	713	0	0	401	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	15	-	-	15	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	5	0
Mvmt Flow	0	0	0	0	0	0	1	775	0	0	436	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	829	1216	221	995	1219	388	442	0	0	775	0	0
Stage 1	439	439	-	777	777	-	-	-	-	-	-	-
Stage 2	390	777	-	218	442	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	266	183	789	202	182	616	1129	-	-	850	-	-
Stage 1	572	582	-	360	410	-	-	-	-	-	-	-
Stage 2	611	410	-	770	580	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	266	183	789	202	182	616	1129	-	-	850	-	-
Mov Cap-2 Maneuver	457	352	-	333	352	-	-	-	-	-	-	-
Stage 1	571	582	-	360	410	-	-	-	-	-	-	-
Stage 2	610	410	-	770	580	-	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1129	-	-	-	-	850	-	-
HCM Lane V/C Ratio	0.001	-	-	-	-	-	-	-
HCM Control Delay (s)	8.2	-	-	0	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	0	-	-

Intersection

Int Delay, s/veh 0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	0	0	0	1	748	0	0	450	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	15	-	-	15	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	5	0
Mvmt Flow	0	0	0	0	0	0	1	813	0	0	489	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	901	1307	248	1060	1311	407	496	0	0	813	0	0
Stage 1	492	492	-	815	815	-	-	-	-	-	-	-
Stage 2	409	815	-	245	496	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	236	161	758	181	160	599	1078	-	-	823	-	-
Stage 1	532	551	-	342	394	-	-	-	-	-	-	-
Stage 2	596	394	-	743	549	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	236	161	758	181	160	599	1078	-	-	823	-	-
Mov Cap-2 Maneuver	429	334	-	315	333	-	-	-	-	-	-	-
Stage 1	532	551	-	342	394	-	-	-	-	-	-	-
Stage 2	595	394	-	743	549	-	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1078	-	-	-	-	823	-	-
HCM Lane V/C Ratio	0.001	-	-	-	-	-	-	-
HCM Control Delay (s)	8.3	-	-	0	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	0	-	-

Intersection

Int Delay, s/veh 0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	0	823	0	0	478
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	15	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	3	0	0	5
Mvmt Flow	0	0	895	0	0	520

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1155	447	0 0 895 0
Stage 1	895	-	- - - -
Stage 2	260	-	- - - -
Critical Hdwy	6.8	6.9	- - 4.1 -
Critical Hdwy Stg 1	5.8	-	- - - -
Critical Hdwy Stg 2	5.8	-	- - - -
Follow-up Hdwy	3.5	3.3	- - 2.2 -
Pot Cap-1 Maneuver	193	564	- - 767 -
Stage 1	364	-	- - - -
Stage 2	766	-	- - - -
Platoon blocked, %			- - - -
Mov Cap-1 Maneuver	193	564	- - 767 -
Mov Cap-2 Maneuver	335	-	- - - -
Stage 1	364	-	- - - -
Stage 2	766	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	767	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	-

Intersection

Int Delay, s/veh 0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	1	0	0	0	808	0	0	1066	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	15	-	-	15	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	0	0	0	1	0	0	0	851	0	0	1122	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1547	1973	561	1412	1973	425	1122	0	0	851	0	0
Stage 1	1122	1122	-	851	851	-	-	-	-	-	-	-
Stage 2	425	851	-	561	1122	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	79	63	476	100	63	583	630	-	-	796	-	-
Stage 1	223	284	-	325	379	-	-	-	-	-	-	-
Stage 2	583	379	-	485	284	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	79	63	476	100	63	583	630	-	-	796	-	-
Mov Cap-2 Maneuver	203	223	-	271	223	-	-	-	-	-	-	-
Stage 1	223	284	-	325	379	-	-	-	-	-	-	-
Stage 2	583	379	-	485	284	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	18.3	0	0
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	630	-	-	-	271	796	-	-
HCM Lane V/C Ratio	-	-	-	-	0.004	-	-	-
HCM Control Delay (s)	0	-	-	0	18.3	0	-	-
HCM Lane LOS	A	-	-	A	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

Intersection

Int Delay, s/veh 0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	1	0	0	0	872	0	0	1123	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	15	-	-	15	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	0	0	0	1	0	0	0	918	0	0	1182	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1641	2100	591	1509	2100	459	1182	0	0	918	0	0
Stage 1	1182	1182	-	918	918	-	-	-	-	-	-	-
Stage 2	459	918	-	591	1182	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	67	52	455	85	52	554	598	-	-	752	-	-
Stage 1	205	266	-	296	353	-	-	-	-	-	-	-
Stage 2	557	353	-	465	266	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	67	52	455	85	52	554	598	-	-	752	-	-
Mov Cap-2 Maneuver	187	206	-	248	206	-	-	-	-	-	-	-
Stage 1	205	266	-	296	353	-	-	-	-	-	-	-
Stage 2	557	353	-	465	266	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	19.6	0	0
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	598	-	-	-	248	752	-	-
HCM Lane V/C Ratio	-	-	-	-	0.004	-	-	-
HCM Control Delay (s)	0	-	-	0	19.6	0	-	-
HCM Lane LOS	A	-	-	A	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

Intersection

Int Delay, s/veh 0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	1	0	914	0	0	1201
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	15	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	1	0	962	0	0	1264

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1594	481	0 0 962 0
Stage 1	962	-	- - - -
Stage 2	632	-	- - - -
Critical Hdwy	6.8	6.9	- - 4.1 -
Critical Hdwy Stg 1	5.8	-	- - - -
Critical Hdwy Stg 2	5.8	-	- - - -
Follow-up Hdwy	3.5	3.3	- - 2.2 -
Pot Cap-1 Maneuver	100	537	- - 724 -
Stage 1	336	-	- - - -
Stage 2	497	-	- - - -
Platoon blocked, %			- - - -
Mov Cap-1 Maneuver	100	537	- - 724 -
Mov Cap-2 Maneuver	278	-	- - - -
Stage 1	336	-	- - - -
Stage 2	497	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	18	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 278	724	-
HCM Lane V/C Ratio	-	- 0.004	-	-
HCM Control Delay (s)	-	- 18	0	-
HCM Lane LOS	-	- C	A	-
HCM 95th %tile Q(veh)	-	- 0	0	-

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	2	0	1	0	712	11	5	396	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	125	35	-	-	15	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	5	0
Mvmt Flow	0	0	0	2	0	1	0	774	12	5	430	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	828	1227	215	1006	1221	393	430	0	0	786	0	0
Stage 1	441	441	-	780	780	-	-	-	-	-	-	-
Stage 2	387	786	-	226	441	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	267	180	796	198	181	612	1140	-	-	842	-	-
Stage 1	570	580	-	359	409	-	-	-	-	-	-	-
Stage 2	614	406	-	762	580	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	265	179	796	197	180	612	1140	-	-	842	-	-
Mov Cap-2 Maneuver	456	346	-	331	350	-	-	-	-	-	-	-
Stage 1	570	577	-	359	409	-	-	-	-	-	-	-
Stage 2	613	406	-	757	577	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	14.2	0	0.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1140	-	-	-	331	612	842	-	-
HCM Lane V/C Ratio	-	-	-	-	0.007	0.002	0.006	-	-
HCM Control Delay (s)	0	-	-	0	15.9	10.9	9.3	-	-
HCM Lane LOS	A	-	-	A	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	0	-	-

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	4	0	2	0	747	11	5	445	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	125	35	-	-	15	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	5	0
Mvmt Flow	0	0	0	4	0	2	0	812	12	5	484	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	901	1319	242	1071	1313	412	484	0	0	824	0	0
Stage 1	495	495	-	818	818	-	-	-	-	-	-	-
Stage 2	406	824	-	253	495	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	236	158	765	178	160	595	1089	-	-	815	-	-
Stage 1	530	549	-	340	393	-	-	-	-	-	-	-
Stage 2	598	390	-	735	549	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	234	157	765	177	159	595	1089	-	-	815	-	-
Mov Cap-2 Maneuver	426	327	-	313	332	-	-	-	-	-	-	-
Stage 1	530	546	-	340	393	-	-	-	-	-	-	-
Stage 2	596	390	-	730	546	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	14.8	0	0.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1089	-	-	-	313	595	815	-	-
HCM Lane V/C Ratio	-	-	-	-	0.014	0.004	0.007	-	-
HCM Control Delay (s)	0	-	-	0	16.7	11.1	9.4	-	-
HCM Lane LOS	A	-	-	A	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	0	-	-

Intersection

Int Delay, s/veh 1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	77	0	50	4	0	2	17	744	11	5	451	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	125	35	-	-	15	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	5	0
Mvmt Flow	84	0	54	4	0	2	18	809	12	5	490	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	954	1371	257	1108	1377	410	514	0	0	821	0	0
Stage 1	513	513	-	852	852	-	-	-	-	-	-	-
Stage 2	441	858	-	256	525	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	216	147	748	167	146	596	1062	-	-	817	-	-
Stage 1	517	539	-	325	379	-	-	-	-	-	-	-
Stage 2	570	376	-	732	533	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	211	144	748	152	143	596	1062	-	-	817	-	-
Mov Cap-2 Maneuver	401	311	-	291	312	-	-	-	-	-	-	-
Stage 1	508	536	-	319	373	-	-	-	-	-	-	-
Stage 2	558	370	-	675	530	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.2	15.4	0.2	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1062	-	-	491	291	596	817	-	-
HCM Lane V/C Ratio	0.017	-	-	0.281	0.015	0.004	0.007	-	-
HCM Control Delay (s)	8.4	-	-	15.2	17.6	11.1	9.4	-	-
HCM Lane LOS	A	-	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.1	0	0	0	-	-

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	10	0	14	0	794	7	12	1055	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	125	35	-	-	15	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	0	0	0	11	0	15	0	836	7	13	1111	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1554	1979	555	1420	1975	422	1111	0	0	843	0	0
Stage 1	1136	1136	-	839	839	-	-	-	-	-	-	-
Stage 2	418	843	-	581	1136	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	78	62	480	98	63	586	636	-	-	802	-	-
Stage 1	218	279	-	331	384	-	-	-	-	-	-	-
Stage 2	588	382	-	472	279	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	75	61	480	97	62	586	636	-	-	802	-	-
Mov Cap-2 Maneuver	198	215	-	270	218	-	-	-	-	-	-	-
Stage 1	218	274	-	331	384	-	-	-	-	-	-	-
Stage 2	573	382	-	464	274	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	14.5	0	0.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	636	-	-	-	270	586	802	-	-
HCM Lane V/C Ratio	-	-	-	-	0.039	0.025	0.016	-	-
HCM Control Delay (s)	0	-	-	0	18.9	11.3	9.6	-	-
HCM Lane LOS	A	-	-	A	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0.1	0	-	-

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	10	0	14	0	858	7	12	1112	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	125	35	-	-	15	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	0	0	0	11	0	15	0	903	7	13	1171	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1648	2107	585	1518	2103	455	1171	0	0	911	0	0
Stage 1	1196	1196	-	907	907	-	-	-	-	-	-	-
Stage 2	452	911	-	611	1196	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	67	52	459	83	52	558	604	-	-	756	-	-
Stage 1	201	262	-	301	357	-	-	-	-	-	-	-
Stage 2	562	356	-	453	262	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	64	51	459	82	51	558	604	-	-	756	-	-
Mov Cap-2 Maneuver	183	200	-	247	202	-	-	-	-	-	-	-
Stage 1	201	257	-	301	357	-	-	-	-	-	-	-
Stage 2	547	356	-	445	257	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	15.2	0	0.1
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	604	-	-	-	247	558	756	-	-
HCM Lane V/C Ratio	-	-	-	-	0.043	0.026	0.017	-	-
HCM Control Delay (s)	0	-	-	0	20.2	11.6	9.8	-	-
HCM Lane LOS	A	-	-	A	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0.1	0.1	-	-

Intersection

Int Delay, s/veh 1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	44	0	30	10	0	14	52	856	7	12	1111	79
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	125	35	-	-	15	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	46	0	32	11	0	15	55	901	7	13	1169	83

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1796	2254	626	1624	2292	454	1253	0	0	908	0	0
Stage 1	1236	1236	-	1014	1014	-	-	-	-	-	-	-
Stage 2	560	1018	-	610	1278	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	52	42	432	69	40	559	562	-	-	758	-	-
Stage 1	190	250	-	259	319	-	-	-	-	-	-	-
Stage 2	485	317	-	453	239	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	~ 46	37	432	58	35	559	562	-	-	758	-	-
Mov Cap-2 Maneuver	153	175	-	192	147	-	-	-	-	-	-	-
Stage 1	171	246	-	234	288	-	-	-	-	-	-	-
Stage 2	426	286	-	413	235	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	32.5	17.1	0.7	0.1
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	562	-	-	207	192	559	758	-	-
HCM Lane V/C Ratio	0.097	-	-	0.376	0.055	0.026	0.017	-	-
HCM Control Delay (s)	12.1	-	-	32.5	24.8	11.6	9.8	-	-
HCM Lane LOS	B	-	-	D	C	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	1.6	0.2	0.1	0.1	-	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	2	0	1	0	722	3	2	398	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	15	-	-	15	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	5	0
Mvmt Flow	0	0	0	2	0	1	0	785	3	2	433	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	829	1225	216	1007	1223	394	433	0	0	788	0	0
Stage 1	437	437	-	786	786	-	-	-	-	-	-	-
Stage 2	392	788	-	221	437	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	266	180	795	198	181	611	1137	-	-	840	-	-
Stage 1	574	583	-	356	406	-	-	-	-	-	-	-
Stage 2	610	405	-	767	583	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	265	180	795	198	181	611	1137	-	-	840	-	-
Mov Cap-2 Maneuver	457	348	-	329	349	-	-	-	-	-	-	-
Stage 1	574	582	-	356	406	-	-	-	-	-	-	-
Stage 2	609	405	-	765	582	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	14.3	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1137	-	-	-	389	840	-	-
HCM Lane V/C Ratio	-	-	-	-	0.008	0.003	-	-
HCM Control Delay (s)	0	-	-	0	14.3	9.3	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

Intersection

Int Delay, s/veh 0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	2	0	1	0	757	3	2	447	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	15	-	-	15	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	5	0
Mvmt Flow	0	0	0	2	0	1	0	823	3	2	486	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	901	1316	243	1071	1314	413	486	0	0	826	0	0
Stage 1	490	490	-	824	824	-	-	-	-	-	-	-
Stage 2	411	826	-	247	490	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	236	159	764	178	160	594	1087	-	-	813	-	-
Stage 1	534	552	-	338	390	-	-	-	-	-	-	-
Stage 2	594	389	-	741	552	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	235	159	764	178	160	594	1087	-	-	813	-	-
Mov Cap-2 Maneuver	428	329	-	312	331	-	-	-	-	-	-	-
Stage 1	534	551	-	338	390	-	-	-	-	-	-	-
Stage 2	593	389	-	739	551	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	14.8	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1087	-	-	-	371	813	-	-
HCM Lane V/C Ratio	-	-	-	-	0.009	0.003	-	-
HCM Control Delay (s)	0	-	-	0	14.8	9.4	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	2	1	771	3	2	503
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	15	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	3	0	0	5
Mvmt Flow	2	1	838	3	2	547

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1118	421	0 0 841 0
Stage 1	840	-	- - - -
Stage 2	278	-	- - - -
Critical Hdwy	6.8	6.9	- - 4.1 -
Critical Hdwy Stg 1	5.8	-	- - - -
Critical Hdwy Stg 2	5.8	-	- - - -
Follow-up Hdwy	3.5	3.3	- - 2.2 -
Pot Cap-1 Maneuver	204	587	- - 803 -
Stage 1	389	-	- - - -
Stage 2	750	-	- - - -
Platoon blocked, %			- - - -
Mov Cap-1 Maneuver	203	587	- - 803 -
Mov Cap-2 Maneuver	355	-	- - - -
Stage 1	389	-	- - - -
Stage 2	748	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	13.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 409	803	-
HCM Lane V/C Ratio	-	- 0.008	0.003	-
HCM Control Delay (s)	-	- 13.9	9.5	-
HCM Lane LOS	-	- B	A	-
HCM 95th %tile Q(veh)	-	- 0	0	-

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	4	0	4	0	797	7	6	1059	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	15	-	-	15	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	0	0	0	4	0	4	0	839	7	6	1115	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1546	1973	557	1413	1970	423	1115	0	0	846	0	0
Stage 1	1127	1127	-	843	843	-	-	-	-	-	-	-
Stage 2	419	846	-	570	1127	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	79	63	479	100	63	585	634	-	-	800	-	-
Stage 1	221	282	-	329	382	-	-	-	-	-	-	-
Stage 2	588	381	-	479	282	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	78	63	479	99	63	585	634	-	-	800	-	-
Mov Cap-2 Maneuver	202	220	-	271	221	-	-	-	-	-	-	-
Stage 1	221	280	-	329	382	-	-	-	-	-	-	-
Stage 2	584	381	-	475	280	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	15	0	0.1
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	634	-	-	-	370	800	-	-
HCM Lane V/C Ratio	-	-	-	-	0.023	0.008	-	-
HCM Control Delay (s)	0	-	-	0	15	9.5	-	-
HCM Lane LOS	A	-	-	A	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	4	0	4	0	861	7	6	1116	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	15	-	-	15	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	0	0	0	4	0	4	0	906	7	6	1175	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1640	2101	587	1510	2097	457	1175	0	0	914	0	0
Stage 1	1187	1187	-	910	910	-	-	-	-	-	-	-
Stage 2	453	914	-	600	1187	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	68	52	458	84	53	556	602	-	-	754	-	-
Stage 1	203	264	-	300	356	-	-	-	-	-	-	-
Stage 2	561	355	-	459	264	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	67	52	458	83	53	556	602	-	-	754	-	-
Mov Cap-2 Maneuver	185	204	-	248	205	-	-	-	-	-	-	-
Stage 1	203	262	-	300	356	-	-	-	-	-	-	-
Stage 2	557	355	-	455	262	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	15.8	0	0.1
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBL	WBL	SBL	SBT	SBR
Capacity (veh/h)	602	-	-	-	343	754	-	-
HCM Lane V/C Ratio	-	-	-	-	0.025	0.008	-	-
HCM Control Delay (s)	0	-	-	0	15.8	9.8	-	-
HCM Lane LOS	A	-	-	A	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-

Intersection

Int Delay, s/veh 0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	4	4	911	7	6	1145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	15	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	4	4	959	7	6	1205

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1578	483	0 0 966 0
Stage 1	963	-	- - - -
Stage 2	615	-	- - - -
Critical Hdwy	6.8	6.9	- - 4.1 -
Critical Hdwy Stg 1	5.8	-	- - - -
Critical Hdwy Stg 2	5.8	-	- - - -
Follow-up Hdwy	3.5	3.3	- - 2.2 -
Pot Cap-1 Maneuver	102	535	- - 721 -
Stage 1	336	-	- - - -
Stage 2	507	-	- - - -
Platoon blocked, %	-	-	- - - -
Mov Cap-1 Maneuver	101	535	- - 721 -
Mov Cap-2 Maneuver	279	-	- - - -
Stage 1	336	-	- - - -
Stage 2	503	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 367	721	-
HCM Lane V/C Ratio	-	- 0.023	0.009	-
HCM Control Delay (s)	-	- 15	10	-
HCM Lane LOS	-	- C	B	-
HCM 95th %tile Q(veh)	-	- 0.1	0	-

Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	1	1	1	724	399	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	3	5	0
Mvmt Flow	1	1	1	787	434	1

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	830	217	435 0
Stage 1	434	-	- -
Stage 2	396	-	- -
Critical Hdwy	6.8	6.9	4.1 -
Critical Hdwy Stg 1	5.8	-	- -
Critical Hdwy Stg 2	5.8	-	- -
Follow-up Hdwy	3.5	3.3	2.2 -
Pot Cap-1 Maneuver	313	794	1135 -
Stage 1	627	-	- -
Stage 2	655	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	313	794	1135 -
Mov Cap-2 Maneuver	504	-	- -
Stage 1	627	-	- -
Stage 2	654	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1135	-	617	-	-
HCM Lane V/C Ratio	0.001	-	0.004	-	-
HCM Control Delay (s)	8.2	-	10.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	1	1	1	759	448	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	3	5	0
Mvmt Flow	1	1	1	825	487	1

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	903	244	488
Stage 1	488	-	-
Stage 2	415	-	-
Critical Hdwy	6.8	6.9	4.1
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	281	763	1086
Stage 1	588	-	-
Stage 2	641	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	281	763	1086
Mov Cap-2 Maneuver	476	-	-
Stage 1	588	-	-
Stage 2	640	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1086	-	586	-	-
HCM Lane V/C Ratio	0.001	-	0.004	-	-
HCM Control Delay (s)	8.3	-	11.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	2	4	6	772	503	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	3	5	0
Mvmt Flow	2	4	7	839	547	2

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	981	274	549
Stage 1	548	-	-
Stage 2	433	-	-
Critical Hdwy	6.8	6.9	4.1
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	250	730	1031
Stage 1	549	-	-
Stage 2	627	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	248	730	1031
Mov Cap-2 Maneuver	446	-	-
Stage 1	549	-	-
Stage 2	623	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1031	-	602	-	-
HCM Lane V/C Ratio	0.006	-	0.011	-	-
HCM Control Delay (s)	8.5	-	11	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	2	2	2	802	1061	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	2	2	2	844	1117	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1544	559	1119	0	-	0
Stage 1	1118	-	-	-	-	-
Stage 2	426	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	108	478	632	-	-	-
Stage 1	279	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	108	478	632	-	-	-
Mov Cap-2 Maneuver	253	-	-	-	-	-
Stage 1	279	-	-	-	-	-
Stage 2	630	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	632	-	331	-	-
HCM Lane V/C Ratio	0.003	-	0.013	-	-
HCM Control Delay (s)	10.7	-	16	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	2	2	2	866	1118	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	2	2	2	912	1177	2

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1638	589	1179
Stage 1	1178	-	-
Stage 2	460	-	-
Critical Hdwy	6.8	6.9	4.1
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	93	457	600
Stage 1	259	-	-
Stage 2	608	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	93	457	600
Mov Cap-2 Maneuver	234	-	-
Stage 1	259	-	-
Stage 2	606	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	600	-	310	-	-
HCM Lane V/C Ratio	0.004	-	0.014	-	-
HCM Control Delay (s)	11	-	16.8	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %ile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	4	10	13	914	1141	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	4	11	14	962	1201	8

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1713	605	1209
Stage 1	1205	-	-
Stage 2	508	-	-
Critical Hdwy	6.8	6.9	4.1
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	83	446	584
Stage 1	251	-	-
Stage 2	575	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	81	446	584
Mov Cap-2 Maneuver	225	-	-
Stage 1	251	-	-
Stage 2	561	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.8	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	584	-	348	-	-
HCM Lane V/C Ratio	0.023	-	0.042	-	-
HCM Control Delay (s)	11.3	-	15.8	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

TOWN OF EAST GREENBUSH

RENSSELAER COUNTY, NEW YORK



WESTERN EAST GREENBUSH FINAL GENERIC ENVIRONMENTAL IMPACT STATEMENT

JULY 2009



E. Transportation Network

Existing Conditions

The transportation network within the Town of East Greenbush is comprised of several key corridors, most notably, the principal arterials of US Route 4 and US Routes 9 & 20, the minor arterial of 3rd Avenue Ext. (NYS Route 915E), and the major collector road, NYS Route 151. These roadways provide direct access to residential and commercial land uses and serve as the main travel corridors for commuters and through traffic, outside of the interstate system. Each of these corridors must balance land use access and mobility to provide access to existing and projected developments while maintaining a satisfactory level of service for the roadway users.

To assess the existing and future needs of the transportation network within the Study Area, available data, and traffic studies for the key corridors were compiled. From these sources, some of which are listed below, data was obtained concerning existing traffic volumes, roadway descriptions, trip generation, level of service, and recommended mitigation measures.

- Route 4 Corridor Study, Capital District Transportation Committee (CDTC), 2006
- NYS Route 151 Corridor Study (Route 4 to Columbia High School, Laberge Group, June 2004
- Village of Tempel Farms Traffic Impact Study, Creighton Manning Engineering, December 2006
- Mill Creek Planned Development District (PDD), The Chazen Companies, October 2000
- SUNY East Campus Expansion Traffic Impact Study, URS Corporation, September 2001
- Route 9 & 20 Corridor Plan, July 2003
- Other Miscellaneous Smaller Traffic Impact Studies
- CDTA Route Performance Data

Based on these previous studies and projected development, a transportation improvement plan was developed for the eight major roadway segments that comprise the key corridors. Those segments include:

- US Route 4 between the northern Town line and Mannix Road
- US Route 4 between Mannix Road and NYS Route 151
- US Route 4 between NYS Route 151 and US Routes 9 & 20
- NYS Route 151 between 3rd Avenue Ext. and US Route 4
- NYS Route 151 between US Route 4 and I-90
- 3rd Avenue Ext. between NYS Route 151 and US Route 4

3rd Avenue Ext. (NYS Route 915E) (between NYS Route 151 and US Route 4)

This 2-lane roadway segment has ample capacity to accommodate the projected traffic outside the intersections and no improvements are recommended to increase this road's size or accommodations. It is anticipated that a future connection from Tempel Lane will be made forming a new intersection at the location of Woodlawn Avenue. But it is anticipated that this intersection will be stop sign controlled, so little disruption for 3rd Avenue Ext. through traffic should be seen. As mentioned previously, it is recommended that the intersection of 3rd Avenue Ext and US Route 4 be constructed as a 2-lane roundabout in the future. The only recommendation for this road segment is as follows:

- Construct a roadway connection extending Tempel Lane to 3rd Avenue Ext, forming a 4-way intersection at Woodlawn Avenue. Provide one left turn lane and one right turn lane northbound. Left turn lanes both eastbound and westbound should be constructed as well. Transit stops should be provided at this intersection.

Assuming a price of \$1.5M per lane-mile, the cost of the above roadway improvement for this segment is estimated at \$2,000,000.

US Routes 9 & 20 (between western Town line and US Route 4)

Traffic operations within this section of the Corridor operate satisfactory and traffic volumes along this route are not projected to change significantly. No capacity improvements are recommended at this time. However, improvements to access management and pedestrian amenities should be considered to improve safety as part of each future development proposed. Improvements for this roadway segment should also include pedestrian amenities on Sherwood Avenue as well. Sherwood Avenue connects this segment of Routes 9 & 20 to NYS Route 151 and will be utilized by cut-through traffic as volumes increase on the arterials. This potential increase of traffic on Sherwood Avenue makes improved pedestrian safety within that corridor critical.

Recommendations for this segment include:

- Develop a detailed access management plan for the corridor and implement with any future development or redevelopment. Plan should focus on combining and eliminating driveways where appropriate and providing inter-parcel connections. Costs for the individual access management improvements at each site are not considered as part of this report and should be paid for by the affected developers outside and addition to any mitigation fee.
- Provide sidewalk connectivity on both sides of Routes 9 & 20.
- Further study should be conducted to determine the need for bicycle lanes and the possibility of widening or restriping of the roadway to accommodate. Costs for these improvements are not included in this report. If determined necessary in the future, costs can be incorporated in future updates to the GEIS.
- Provide sidewalk and drainage improvements on Sherwood Avenue between US Routes 9 & 20 and NYS Route 151.

- Provide support for increasing transit service levels on this major corridor as a long-term traffic mitigation strategy by insuring that development and redevelopment proposals specifically consider pedestrian and transit access at the site plan level.

The improvement cost for Sherwood Avenue was estimates at \$860,000 earlier this year as part of a previous design project. The cost for sidewalk improvements along US Routes 9 & 20 is estimated at \$370,000 and fees for a future bicycle needs and access management study is estimated at \$50,000. This results in a combined total cost for improvements as part of this roadway segment of \$1,280,000.

US Routes 9 & 20 (between US Route 4 and southern Town line)

This 4-lane undivided roadway is underutilized with regard to through traffic, which is projected to see negligible increase over the next 20 years. The peak directional volume is in the LOS D range for single lane roadway based on CDTC guidelines and it is likely that this segment of the road would function satisfactory, with greatly improved safety, if it were converted to a single lane in each direction. This concept, also know as a “Road Diet,” would allow for the construction of a median to allow left turn vehicles to be removed from the through traffic flow, thus reducing rear end accidents, and it would allow the development of better bicycle and landscaping amenities.

Recommendations for this segment include:

- Conduct further study to determine if a “Road Diet” is feasible, if so, construct roadway to provide a single lane in each direction. Locations for two-way left turn medians and raised medians should be investigated and implemented as part of this construction. Bicycle lanes and landscaping should also be provided. Cost for implementation of this improvement is not included in the mitigation fees shown later in this report. If determined appropriate, construction costs can be added to future updates of the GEIS.
- Provide sidewalk connectivity on both sides of Routes 9 & 20 where not currently present.
- Provide support for increasing transit service levels on this major corridor as a long-term traffic mitigation strategy by insuring that development and redevelopment proposals specifically consider pedestrian and transit access at the site plan level.

Costs for sidewalk improvements along this roadway segment are estimated at \$320,000 and additional study to determine the applicability of a “Road Diet” is estimated at \$50,000, for a total cost of improvements for this segment of \$370,000.

Mitigation Cost

As described above, several mitigation measures have been recommended to mitigate the traffic effects of the projected land use development within the Town. The overall cost of these measures, which are also outlined above, is summarized as follows:

Table 42: Mitigation Improvement Costs

Roadway Segment	Improvement Cost Estimate
US Route 4 (between northern Town line and Mannix Road)	\$3,320,000
US Route 4 (between Mannix Road and NYS Route 151)	\$4,480,000
US Route 4 (between NYS Route 151 and US Routes 9 & 20)	\$4,610,000
NYS Route 151 (between 3 rd Avenue Ext. and US Route 4)	\$2,200,000
NYS Route 151 (between US Route 4 and I-90)	\$6,200,000
NYS Route 915E (between NYS Route 151 and US Route 4)	\$2,000,000
US Routes 9 & 20 (between western Town line and US Route 4)	\$1,280,000
US Routes 9 & 20 (between US Route 4 and southern Town line)	\$370,000
Total Cost of Mitigation	\$24,460,000
Assumed Local Share of Mitigation Costs (20%)	\$4,890,000

Source: Laberge Group, 2008

Though the total cost listed above will be required to make all the recommended improvements, it will not all be the cost burden of the Town. Several State and Federal programs are potential funding sources for the projects listed. CDTC's regionally funded Transportation Enhancement Program (TEP) and the federally funded Transportation Improvement Program (TIP) both pay an 80% share on selected projects. In addition, there are other programs that could cover some of the costs; these programs include the NYS Multi-Modal Program Funding (MMPF), the State Administered Community Development Block Grant (CDBG), NYS Marchiselli Funds (NYSMF), Transportation and Community and System Preservation Pilot Program (TCSP), CDTC's Spot Improvement Program and CDTA's Bench and Shelter Program. These are all competitive funding programs requiring the submission of specific applications, and subject to specific limitations and rules. Overall, it is estimated that the local share of the projects listed above will be 20% of the overall cost. This is a financial burden to the Town of **\$4,890,000** to initiate, design, and construct the improvements listed.

This cost is a direct result of the assumed land development that will occur within the Town over the next several years. It is understood that the vehicle trips shown in this report may not represent the total possible build-out of the study area over the next 20 years, but the improvements listed are consistent with the order of magnitude development shown, which is estimated to be **3,734 new PM peak hour trips**. It is assumed that if more development occurs, the necessary improvements for those additional trips would be proportional to what is included in this report for the number of trips shown, so any per trip mitigation cost developed from this data will apply, regardless of the level of development that actually occurs. Given the improvement costs required for the level of development shown, the local share of these costs can be accommodated at **\$1,310 per new PM peak hour trip generated**. To detail that cost for various land use types, it is recommended that transportation mitigation fees be implemented as shown in the table below.

In February of 2017 GAR Associates, LLC was contracted to perform a market study for the proposed development and unit type. I have requested a short summary of their findings as the complete report was almost 150 pages. This document can be shared electronically as well. I asked that this summary include their credentials and examples of locations in which they have performed similar reports.

GAR's conclusions indicated an immediate need in the market for 168 units by 2019. Based on the phased approach of the project that timeline would likely only allow for construction of Buildings A, B, and potentially C. Their report analyzed the current market trends including both supply and demand. The report did specifically indicate that there is not enough demand in place to support Covered Bridge PDD, Thompson Hill Road/Bonacio PDD, and The Town Center PDD.

Prior to each phase of construction, the developer's lender will require a new market study be performed to validate the existing of market demands for the following phase. The intention of developing the site in +/- 50 unit increments provides that the supply at no point far exceeds the market demands. The developer will incur substantial debt service and other carrying costs in the event too many units are built in any single phase.

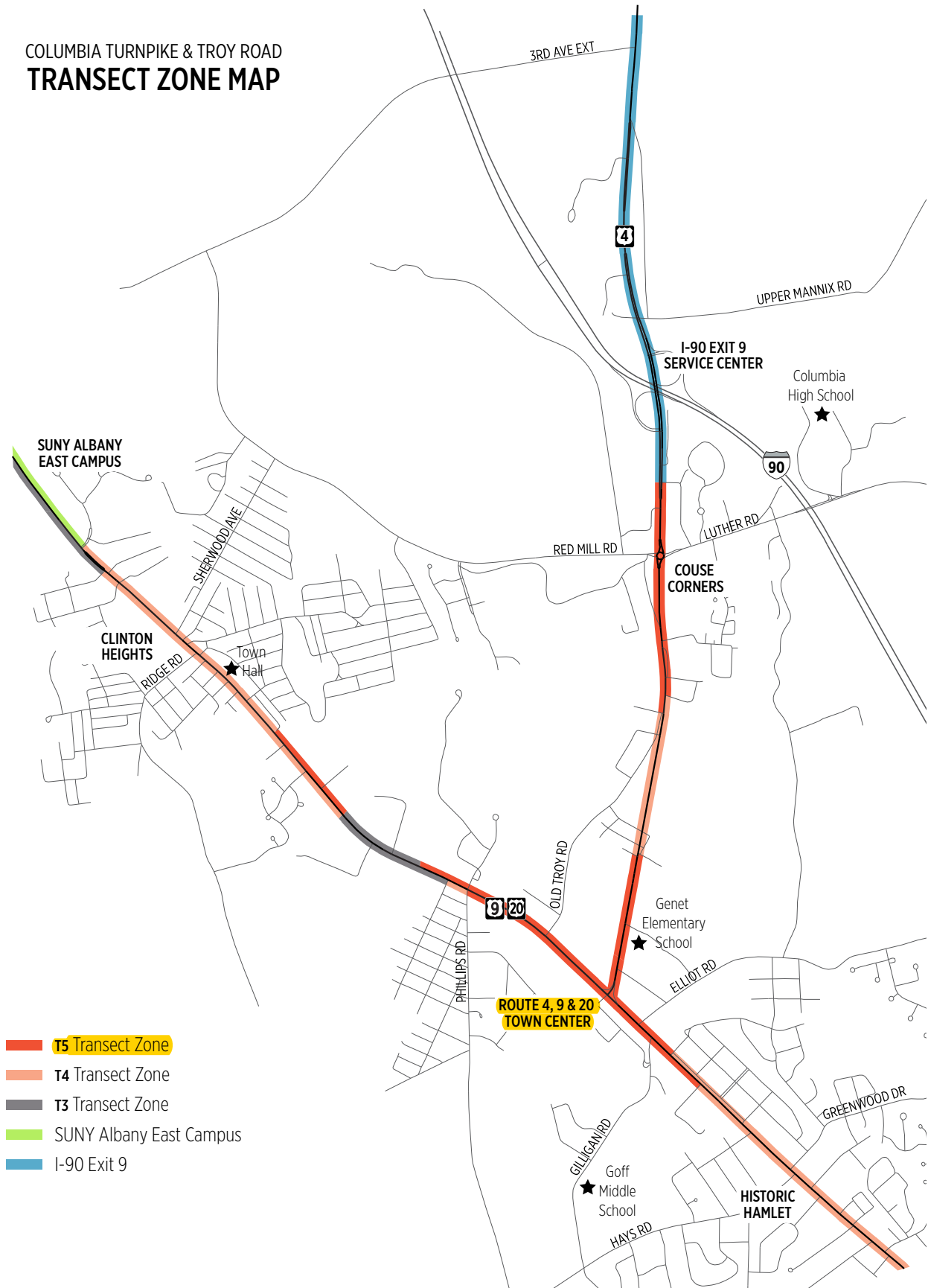


CORRIDOR PLAN & DESIGN GUIDELINES

Columbia Turnpike and Troy Road • East Greenbush, New York

FINAL DRAFT 9 July 2014

COLUMBIA TURNPIKE & TROY ROAD
TRANSECT ZONE MAP



DESIGN GUIDELINES

09 T5 TRANSECT ZONE

Existing Conditions

The T5 transect zone includes:

- **Columbia Turnpike and Route 4 Intersection.** This highly developed area has evolved with a mix of land uses and building types including restaurants, fast food dining, grocery stores, banks, family-owned business, and shopping plazas. It is largely an auto-oriented environment, but it adjoins several residential neighborhoods and is close to local schools, including Genet Elementary and Goff Middle Schools.
- **Couse Corners.** The new roundabout at the Route 4 and 151 is the focal point of the Couse Corner area, which is currently developed with a cluster of small-scale commercial uses and professional offices and adjoining residential neighborhoods and with opportunity for future growth.
- **Underutilized Lands.** There are several large properties fronting on Columbia Turnpike or Troy Road that are currently undeveloped, developed at low densities, and/or underutilized, including the former shopping plaza on Bass Lane and residential land around Genet Elementary School.

Intent

The intent of the T5 Zone is to promote higher-density, mixed-use redevelopment and infill development and to encourage higher-quality, well-designed development. The result will be attractive, coherent centers of activity and commerce that are linked to nearby residential neighborhoods. These areas will become less auto-oriented and more pedestrian-friendly as an interconnected network of streets, service drives, parking lots, sidewalks, paths and walkways takes shape.

This transect zone also provides an opportunity for a type of development that East Greenbush currently lacks - higher-density, compact, multi-family housing in close proximity to transit, shopping, schools, and other services. Higher-density housing along the Columbia Turnpike and Troy Road corridors would improve the viability of nearby businesses by expanding their customer base. It would provide a form of housing that is likely to be in greater demand over the next several decades by both aging baby-boomers and young millennials.

Design Standards

The T5 zone should serve as a focal point for higher-density, mixed-use sites and buildings designed in accordance with the following guidelines:

- **Building Placement and Orientation.** Buildings should face the street with visually interesting facades that invite pedestrian activity by incorporating prominent front entrances and street-level windows. A strong street wall of primarily multi-story buildings situated relatively close to the sidewalk should define the street frontage. The build-to zone should range from 10-70 feet.
- **Building Height.** Most new buildings should be two or three stories tall, but single-story buildings will be permitted. If buildings are single-story, they should occupy at least 60% of the build-to zone, which would likely accommodate not more than one bay of parking and a one-way drive aisle between the building and the street. Multi-story buildings may be located at the edge of the build-to zone, which could accommodate up to two bays of parking and a drive aisle between the building and the street.



Figure 8. Examples of multi-story, mixed-use buildings that accommodate ground floor retail, office or other commercial uses with upper-story residential or office uses. The ground floor is not intended for residential uses. The mass of the large buildings is broken up with variation in roof forms, variation in the facade with wall projections and recesses, fenestration, and other architectural details. The site design features strong pedestrian connections and public amenities like outdoor seating, plazas, promenades, etc. This form and scale of development is highly desirable in the T5 transect zone.

- **Massing.** Large buildings should incorporate design elements such as wall offsets, material, and colors to reduce their perceived mass and maintain a human scale. Buildings should incorporate appropriately scaled features that express architectural or structural elements (cornices, lintels, columns, frieze, etc.). Large blank walls along primary and secondary streets, pedestrian spaces, or internal parking areas are strongly discouraged.
- **Roofs.** Buildings should have flat roofs, steeply pitched, gabled, and/or dormered roofs with appropriately scaled overhangs and/or cornice details.
- **Doors and Windows.** Large buildings should have multiple entrances that are thoughtfully spaced. Facades should incorporate a regular pattern of windows on the ground and upper floors. Street level windows should allow views into the ground story. A majority of the ground floor (as measured by a percentage of the overall wall area) should be transparent.
- **Materials.** The use of high-quality, traditional building materials (or faux composites) is encouraged (masonry, wood, metals, etc.).
- **Use.** First floor commercial uses for buildings fronting directly on Columbia Turnpike or Troy Road are preferred, with residential uses above or located separately in the rear. While professional office space can be located in a stand-alone building, retail, dining and personal service uses on the ground floor are encouraged. Higher-density residential development may be located behind a mixed-use built frontage or an attractively landscaped buffer. Residential building types may include garden apartments, multiplexes, row houses, townhouses, duplexes and single-family homes.
- **Density.** Neighborhoods with a mix of housing types that have an average density of at least 16 dwellings per acre are encouraged (a density that will support transit service).
- **Landscaping.** Attractive and well planned landscaping should be incorporated into site designs. Existing landscaping standards should be improved to include an increase in the number of landscape perimeter islands within parking lots. For larger parking lots, landscape median islands with sidewalks should be required for a select



Figure 9. Examples of single-story and/or single-use buildings that could be incorporated into mixed-use developments and that would complement the architectural character and surrounding higher-density, multi-story structures. Existing single-story structures could be improved to incorporate similar architectural elements and design characteristics. Because of the auto-oriented nature of single-story and/or single-use development, such buildings should be located closer to the street with only one parking bay and drive lane along the front within the build-to zone. Pedestrian connections and public outdoor spaces and amenities can further integrate existing or new single-story and/or single-use buildings into a mixed-use site.

number of single parking bays. Medians with sidewalks should align with pedestrian site access and building entrances.

- **Parking.** Most parking should be provided to the side or rear of buildings, preferably in shared lots located in the center of blocks and screened from the street by buildings. Where parking will be located in front of buildings it should be separated and screened from the sidewalk through landscaping, fencing, walls, and/or change in elevation. Where parking exists in front of buildings that cannot reasonably be eliminated or relocated, effort should be made to screen it and create a landscaped buffer between the parking area and sidewalk. Bicycle parking should also be provided. Additional parking management strategies should be evaluated as density increases such as reduced parking requirements, parking in-lieu of fees, municipal parking lots and/or structures, web-based parking information and mapping, and on-street parking.
 - **Access Management.** Access and parking areas should be shared and interconnected between adjoining lots.
 - **Transit.** Transit stop accommodations should also be provided at suitable locations along the Columbia Turnpike corridor and
- space should be reserved for future transit accommodations along the Troy Road corridor.
 - **Signs.** Existing standards should be used to promote attractive and appropriately scaled signage. This may include a combination of wall, awning, canopy, shingle, window, monument, and sidewalk signs. Signs should be illuminated with direct and shielded lighting and backlit signs should be discouraged.
 - **Public Amenities.** Site designs should incorporate some combination of public amenities such as outdoor seating, café space, plazas, and attractive landscape features (e.g., water features, etc.).

Figure 10. Examples of the types and densities of residential development that are desirable within the T5 transect zone. There should be a range of housing opportunities from residential on the upper floors of mixed-use buildings to single-family homes on small lots. Residential housing should be subordinate to larger, mixed use developments, with the intent to promote live, work, and play opportunities and to provide a critical mass of residents that is needed to support new and existing businesses. Such housing can be used to create a transition from high-intensity commercial or mixed-use areas to existing single-family neighborhoods.



Residential infill between a shopping plaza and a residential neighborhood provides housing within easy walking distance of a grocery store and pharmacy. Some buildings provide underground parking.



This new development under construction features mixed-use buildings with commercial uses on the first floor and several floors of residential above. The buildings front on the street with parking in the center of the block.



A new development organized around a village green. It includes both single-use residential and commercial buildings, as well as mixed-use buildings.



Multi-unit buildings front on greenspace and streets with sidewalks. Parking is provided on-street and in small parking lots dispersed throughout the development.



This compact development consists of duplexes and triplexes that offer another form of family housing. Buildings incorporate private garages and driveways.



Single-family housing development with homes on small lots with front entrances and porches. Vehicular access and parking is provided by rear alleys.

COLUMBIA TURNPIKE AND TROY ROAD

Corridor Concept Plan and Design Guidelines

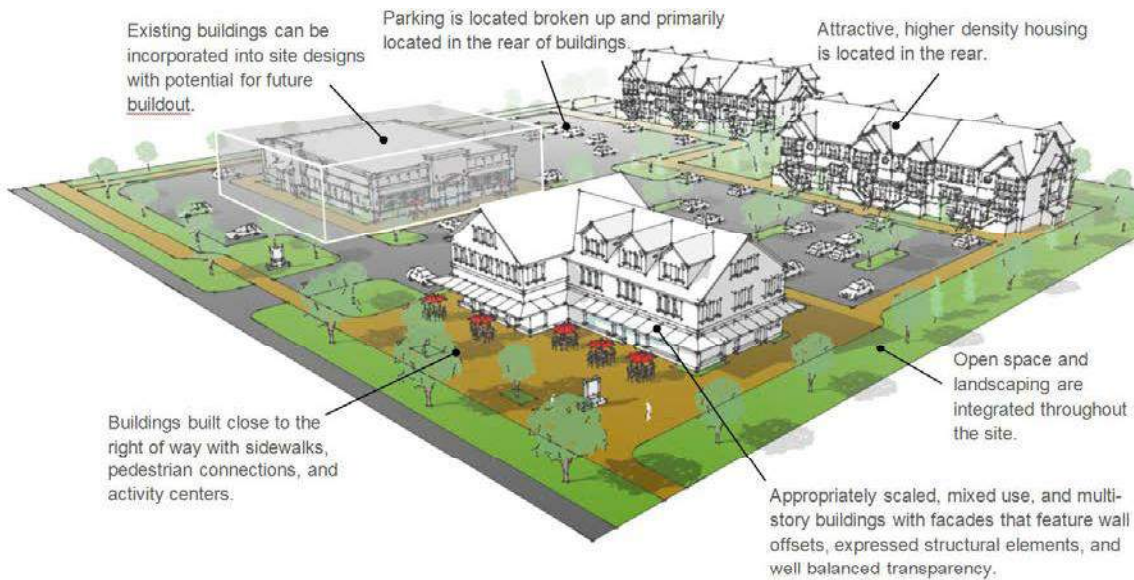


Figure 11. Desired development concepts and approaches around the Columbia Turnpike and Troy Road intersection.

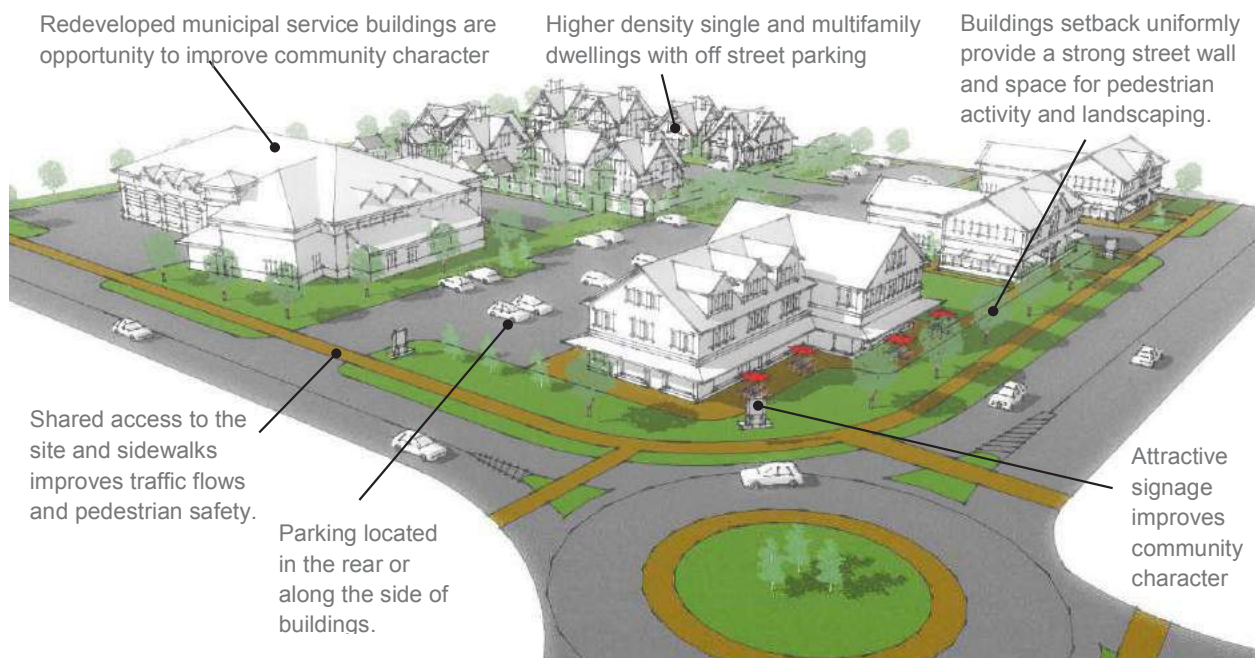


Figure 12. Desired development concepts and approaches at Couse Corners.

9 and 20 Rapid Action Plan

- 1) Announce major package of financial incentives (GEIS) for all of 9 and 20.
 - A. A 50% reduction in GEIS fees for traditional strip development.
 - B. A 100% reduction in GEIS fees for pedestrian oriented mixed use development that compliments and achieves broad goals outlined in the corridor plans.
 - C. Cultivate commercial projects that can be combined with Empire State Development Incentives (usually 20% of total project cost can be awarded excluding residential portions of development.)
- 2) Create a series of zoning incentives (overlay) for re-development at key locations on 9 and 20 east of SUNY. *Corridor plan recommends focusing re-development in a few key areas to create a sense of place ie:*
 - A. **Gateway Area** (SUNY East/Kmart)
 - B. **Town Center** (9 and 20 and Route 4 intersection/Hannaford Plaza/Weathervane)
 - C. **Old Main Street** (Elks club)
- 3) **Pilot Incentives**-Work directly with the County IDA to develop an aggressive tailored PILOT to encourage investment and re-development of vacant and under-utilized sites along the 9 and 20 corridor while simultaneously encouraging IDA to offer less aggressive PILOTS for development along Route 4 that is both market driven and inevitable (Re-balancing of PILOT incentives.)
- 4) **Code Enforcement**-Update the town code to support adequate code enforcement and provide the code enforcement officer with the tools necessary to promote the maintenance of property within the corridor.

- 5) Gateway enhancements-Beautify and improve connectivity at the gateway and improve access to SUNY East Campus. Create a pedestrian connection from 9 and 20 to the SUNY East campus and Regeneron. Provide adequate landscaping and screening in front of the sewer treatment plant. Add decorative street lighting and banners.
- 6) Develop 9 and 20 Corridor Enhancement Fee as part of GEIS that is spent exclusively within the corridor to support enhancements along Columbia Turnpike.