

July 25, 2017



Re: Supplemental Traffic Impact Evaluation, Tech Valley Residences, Town of North Greenbush

VHB has conducted additional analyses to supplement the traffic evaluation dated June 27, 2017 assessing the potential traffic impacts associated with the proposed Tech Valley Residences in the Town of North Greenbush. This letter includes a review of the existing and future traffic operations at the US Route 4/Glenmore Road/Williams Road intersection and two proposed site driveways. As detailed herein, the proposed project is expected to have a minor impact on local traffic operations.

Existing Conditions

A description of the study area roadways, US Route 4 and Glenmore Road, was included in the initial traffic evaluation dated June 27, 2017. The following includes a description of the existing study area intersection.

Study Area Intersection

For the purposes of evaluating existing and future traffic conditions near the site, a project study area has been established and includes one intersection and two site driveways. The following intersection is included in the project study area and is described in detail below:

US Route 4/Glenmore Road/Williams Road

The US Route 4/Glenmore Road/Williams Road intersection is a four-leg intersection controlled with a traffic signal. The northbound and southbound US Route 4 approaches each provide a left-turn lane and a shared through/right-turn lane. Right turns on red are restricted on the northbound approach. The eastbound Glenmore Road approach provides a single lane for shared travel movements and the westbound Williams Road approach provides a shared left-turn/through lane and a right-turn lane. No pedestrian accommodations are provided at the intersection.



Traffic Volumes

2017 Existing Traffic Volumes

To assess the existing operational conditions at the study intersection, available traffic volumes were updated to represent existing and future conditions. PM peak hour turning movements counts (TMCs) were conducted at the US Route 4/Glenmore Road/Williams Road intersection in the fall of 2007 for the evaluation of a proposed Walgreen's Pharmacy in the northwest quadrant of the intersection. Based on growth information provided by the Capital District Transportation Committee (CDTC), the traffic volumes at the intersection were increased by 0.4% per year to represent 2017 Existing traffic volumes. As noted in the June 27, 2017 letter, automatic traffic recorders were installed on US Route 4 and Glenmore Road to document existing traffic volumes along the project frontage. The 2017 existing traffic volumes are illustrated on Figure 1 and were utilized in the development of existing traffic volumes at the study area intersections. Peak hour turning movement counts were not available for the AM peak hour in the Walgreen's study; however, a review of the traffic volumes in the study area and the peak hour trip generation for the site, the PM peak hour represents the worst case peak period and is therefore the focus of this study.

2020 No-Build Traffic Volumes

To determine the impacts of the site-generated traffic volumes near the site, future traffic conditions were evaluated. The project is expected to be fully built and occupied by 2020.

Traffic growth on area roadways is a function of the expected land development, environmental activity, and changes in demographics. A frequently used procedure is to identify estimated traffic generated by planned developments that would be expected to affect the project study area roadways. An alternative procedure is to estimate an annual percentage increase and apply that increase to study area traffic volumes. For this evaluation, both procedures were used.

As noted, information provided by the CDTC indicates that traffic volumes in the study area are increasing by approximately 0.4% per year. The 2017 Existing traffic volumes were increased by 0.4% for three years to represent the 2020 future year conditions.

In addition to accounting for general background growth, the traffic associated with other planned and/or approved developments near the site was considered; specifically, the mixed-use project currently constructed or under construction in the northwest quadrant of the study intersection and the mixed-use building currently under construction across from South Drive on US Route 4 north of the study intersection. Traffic generated by these two projects was estimated using the Institute of Transportation Engineers' (ITE) publication *Trip Generation, 9th Edition*¹ based on available site plans and includes the following:

¹ Trip Generation Manual, 9th Edition, Institute of Transportation Engineers, Washington D.C., 2012



- Mixed-Use Project – 4 single family homes, 109 condominium units, 6,000 square foot (SF) office building, 5,000 SF convenience market with gasoline pumps, 26,822 SF specialty retail space
- Mixed-Use Building – 5,000 SF fast food restaurant with drive-through, 11,950 SF specialty retail space, 16,950 SF office space

The 2020 No-Build traffic volumes were generated by consideration of the general and site specific growth described above. The resulting 2020 No-Build peak hour traffic volumes represent future traffic volume in the study area prior to development of the proposed project and are illustrated on Figure 2. The combination of general and site specific growth in the corridor represents an increase in traffic at the US Route 4/Glenmore Road/Williams Road intersection of approximately ten percent during the PM peak hour when compared to the 2017 Existing traffic volumes.

2020 Build Traffic Volumes

The 2020 Build traffic volumes include the additional traffic associated with the project site development. The trip generation and trip distribution were documented in the June 27, 2017 letter which states that the 204-unit condominium development is expected to generate a total of 93 trips during the AM peak hour and 110 trips during the PM peak hour. The project-related traffic volumes shown in Table 2 of the June 27, 2017 letter were assigned to the study area roadway network based on the trip distribution patterns. The trip distribution and assignment are illustrated on Figures 3 and 4. In general, approximately 55% of the site trips will travel to and from the south, 35% will travel to and from the north, and 10% will travel to and from the east when accessing the site. The project-related traffic volumes were added to the 2020 No-Build peak hour traffic volumes to develop the 2020 Build peak hour traffic volumes summarized on Figure 5. The site generated traffic distributed at the US Route 4/Glenmore Road/Williams Road intersection represents an increase in traffic volumes of approximately 2.5 percent during the PM peak hour when compared to the No-Build condition. This magnitude of traffic increase is significantly less than typical daily fluctuations in traffic of ± 10 percent.

Traffic Operations Analysis

To assess quality of flow, intersection capacity analyses were conducted with respect to 2017 Existing, 2020 No-Build, and 2020 Build traffic volume conditions. Capacity analyses provide an indication of how well the roadway facilities serve the traffic demands placed upon them. Roadway operating conditions are classified by calculated levels-of-service and are represented by a measure of the average vehicle delays drivers encounter.

The evaluation criteria used to analyze the study area intersections is based on the procedures set forth in the latest version of the *Highway Capacity Manual* (HCM)². Level of service (LOS) is a qualitative measure that considers a number of factors including roadway geometry, speed, and travel delay. Levels of service range from A to F, with LOS A representing short vehicle delays and LOS F representing long vehicle delays.

² Highway Capacity Manual, Transportation Research Board, Washington D.C., 2000 and 2010.



Intersection Capacity Analysis

Levels of service analyses were conducted for the 2017 Existing, 2020 No-Build, and 2020 Build conditions for the study area intersection during the PM peak hour and the 2020 Build conditions at the site driveway intersections for the AM and PM peak hours. Tables 1 and 2 summarize the capacity analysis results for the study area and site driveway intersections, respectively. The capacity analyses worksheets are included in Attachment A.

As shown in Table 1, the project is expected to have minimal impacts on traffic operations at the US Route 4/Glenmore Road/Williams Road study area intersection with increases in the overall intersection average vehicle delay of six seconds. There are no changes to level of service between the 2020 No-Build and Build conditions as a result of the additional traffic at the intersection associated with full build-out of the project site. The evaluation shows that the US Route 4 southbound left-turn movement and the northbound through movement currently operate at LOS F conditions. Delays on these approaches will increase through the 2020 conditions. The proposed project will not add traffic to the southbound left-turn movement on US Route 4 and will add only four vehicle trips to the northbound through movement during the PM peak hour; an increase of less than one percent over 2020 No-Build conditions. Based on the resulting levels of service that are consistent with the current operations and minor increase in the average vehicle delays associated with the site traffic, no project-related mitigation is recommended at this intersection. Understanding that the intersection is currently experiencing poor peak hour operating conditions, the Applicant is willing to provide a fair-share contribution to mitigation at this intersection should an improvement project is undertaken by others.

Table 1 PM Peak Hour Signalized Intersection Capacity Analysis

Location/Movement	2017 Existing		2020 No-Build		2020 Build	
	LOS ^a	Delay ^b	LOS	Delay	LOS	Delay
US Rt 4/Glenmore Rd/Williams Rd						
Glenmore Rd EB LTR	D	48	D	49	D	54
Williams Rd WB LT	D	49	D	51	D	50
R	C	25	C	24	C	23
Rt 4 NB L	C	20	C	23	C	25
TR	F	68	F	107	F	120
Rt 4 SB L	F	117	F	153	F	164
TR	A	5	A	7	A	8
Overall	E	62	F	83	F	89

- a. Level of service
- b. Average total delay, in seconds per vehicle



Table 2 2020 Build Unsignalized Intersection Capacity Analysis

Location/Movement	Weekday Morning		Weekday Evening	
	LOS ^a	Delay ^b	LOS	Delay
US Rt 4/Site Dwy				
Rt 4 NB L	A	9	A	9
Site Dwy EB LR	C	16	C	17
Glenmore Rd/Site Dwy				
Glenmore Rd WB L	A	7	A	7
Site Dwy NB LR	A	9	A	9

- a. Level of service
- b. Average total delay, in seconds per vehicle

Table 2 shows that the site driveway approach to US Route 4 will operate at LOS C during both peak hours with the left-turn movements on US Route 4 operating at LOS A conditions with single lanes entering and exiting the site and unsignalized operations. The site driveway approach to Glenmore Road and left-turn movement from Glenmore Road will operate at LOS A during both peak hours with single lanes entering and exiting the site and unsignalized operations.

Conclusions

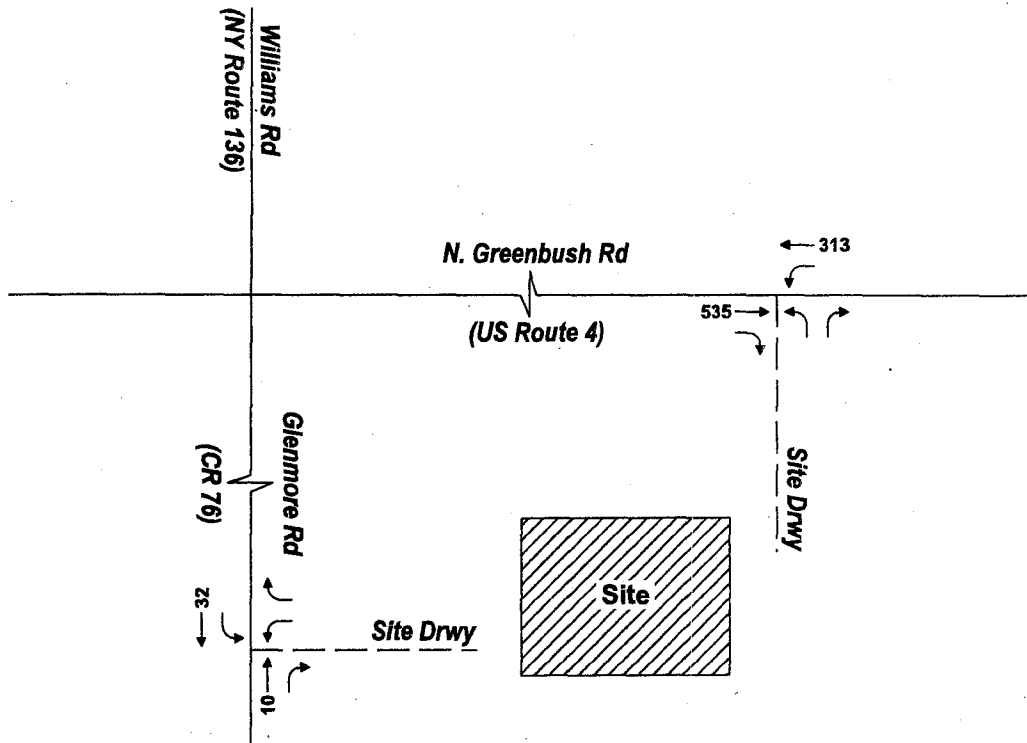
VHB has conducted a supplemental traffic evaluation for the proposed Tech Valley Residences in the Town of North Greenbush. Based on the intersection capacity analysis, it was determined that the project will have minimal impact on intersection operations at the existing study area intersection of US Route 4/Glenmore Road/Williams Road, as the level of service does not change. However, understanding that the intersection is currently experiencing poor peak hour operating conditions, the Applicant is willing to provide a fair-share contribution to mitigation at this intersection should an improvement project is undertaken by others.

The site driveways will operate with acceptable levels of service with single lanes exiting the site and unsignalized control. The conclusions and recommendations identified in the June 27, 2017 evaluation are still valid.

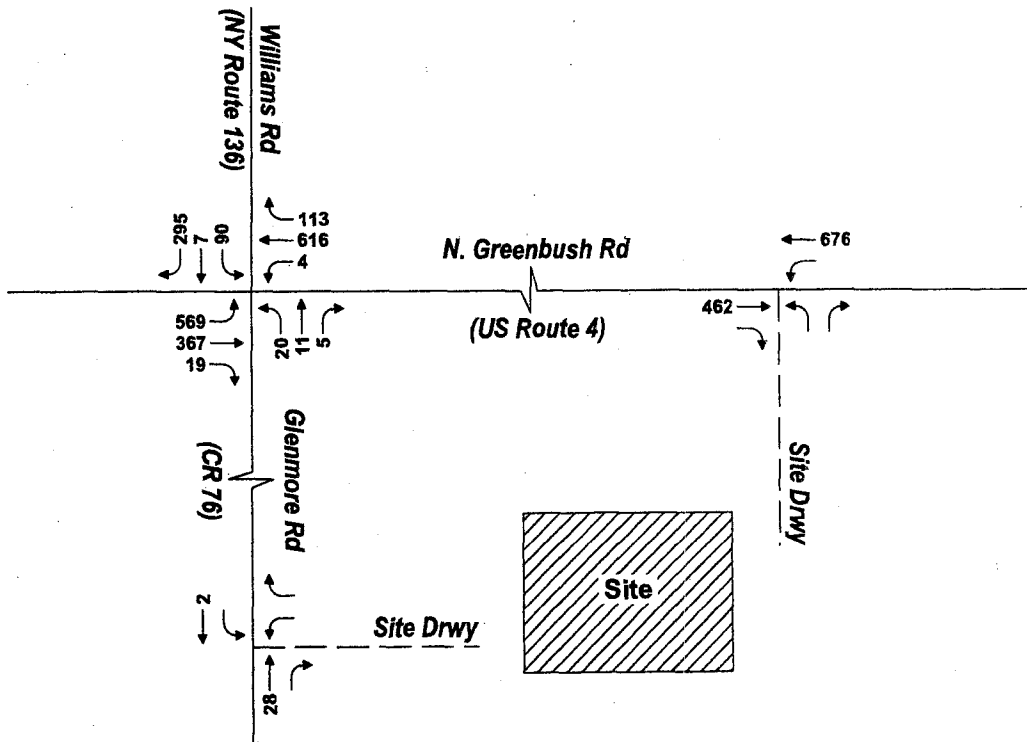
Sincerely,

VHB Engineering, Surveying and Landscape Architecture, P.C.

AM Peak Hour



PM Peak Hour



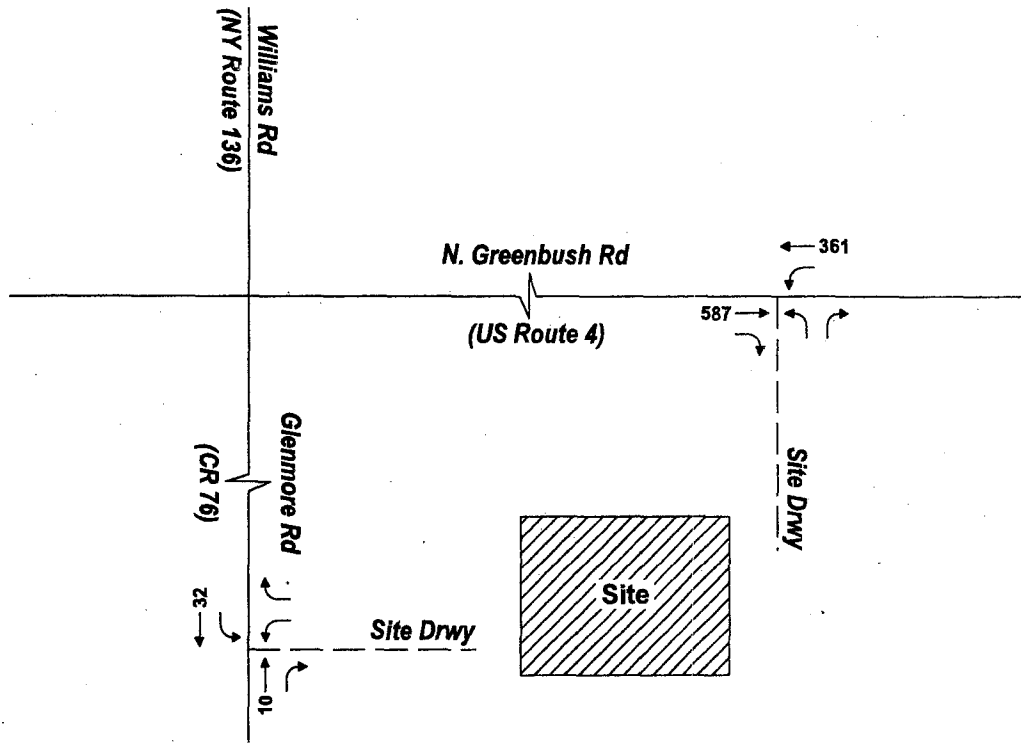
2017 Existing
Traffic Volumes
Tech Valley Residential
North Greenbush, New York

Figure 1

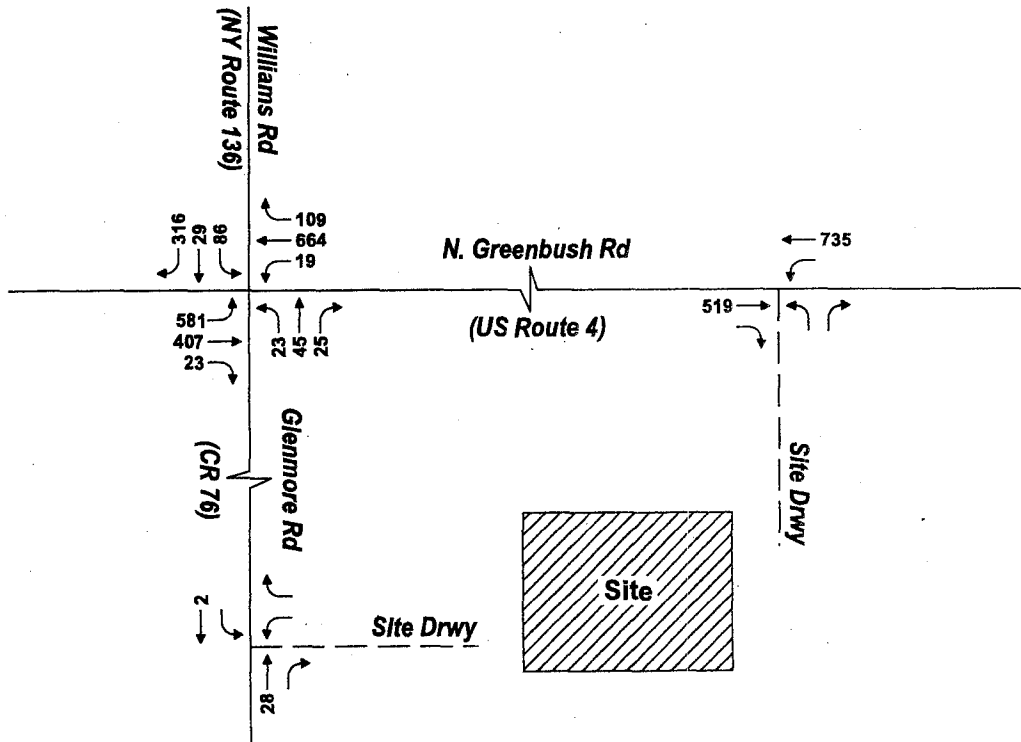


Not to Scale

AM Peak Hour



PM Peak Hour



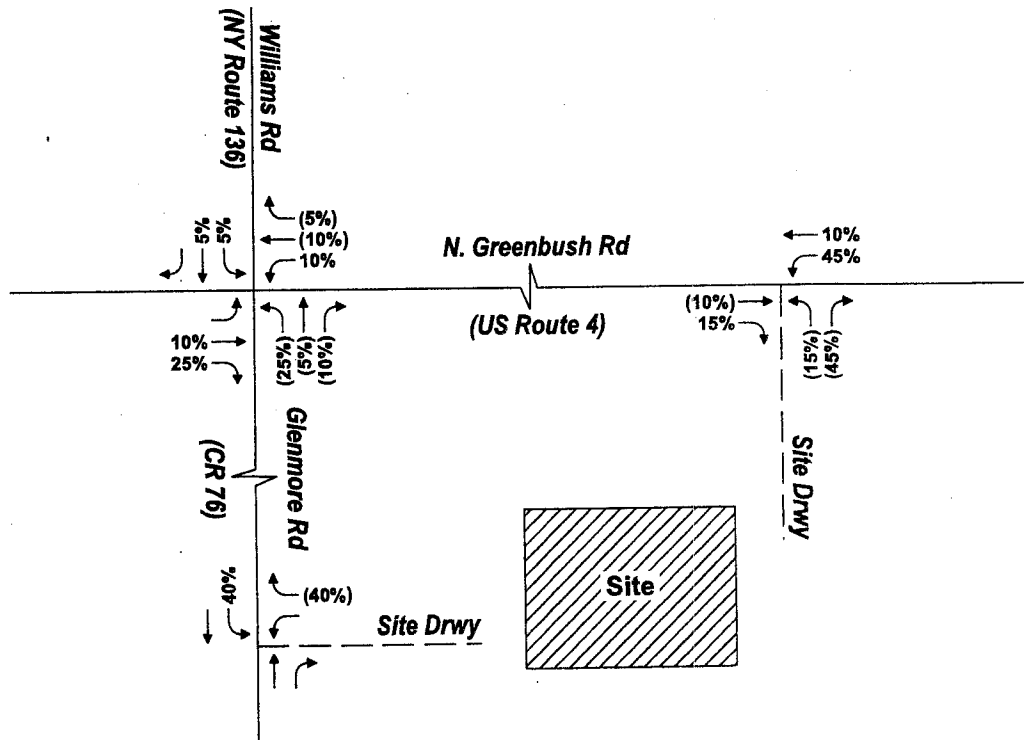
Not to Scale



2020 No-Build
Traffic Volumes
Tech Valley Residential
North Greenbush, New York

Figure 2

xx = Entering Trips
 (xx) = Exiting Trips



Not to Scale



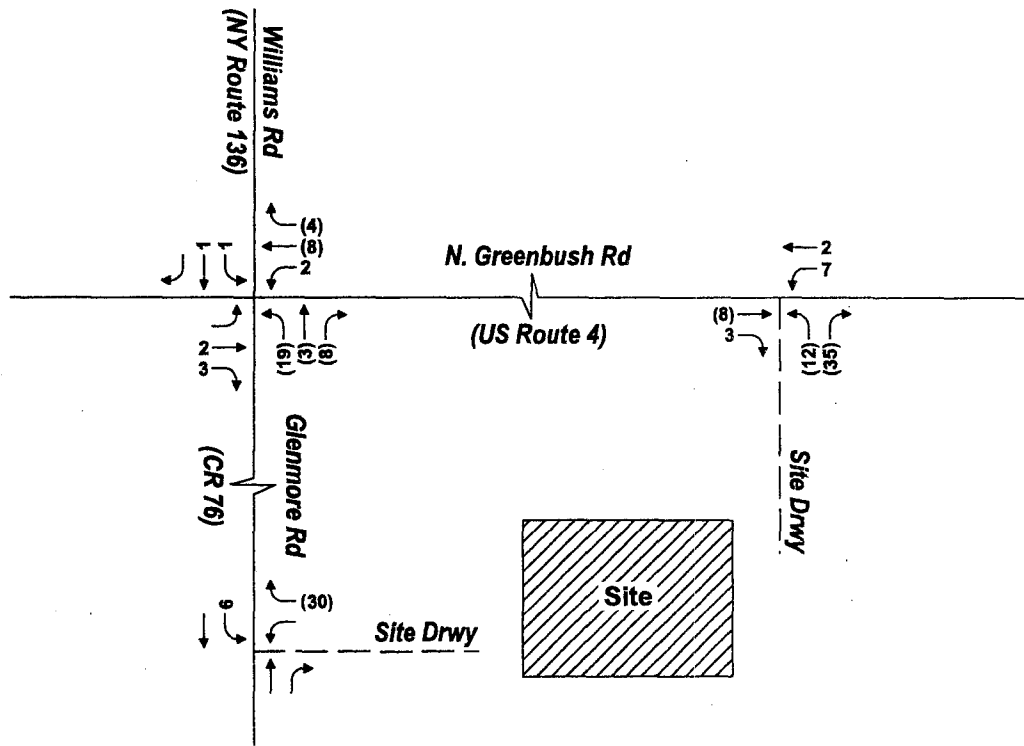
Trip Distribution

Tech Valley Residential
 North Greenbush, New York

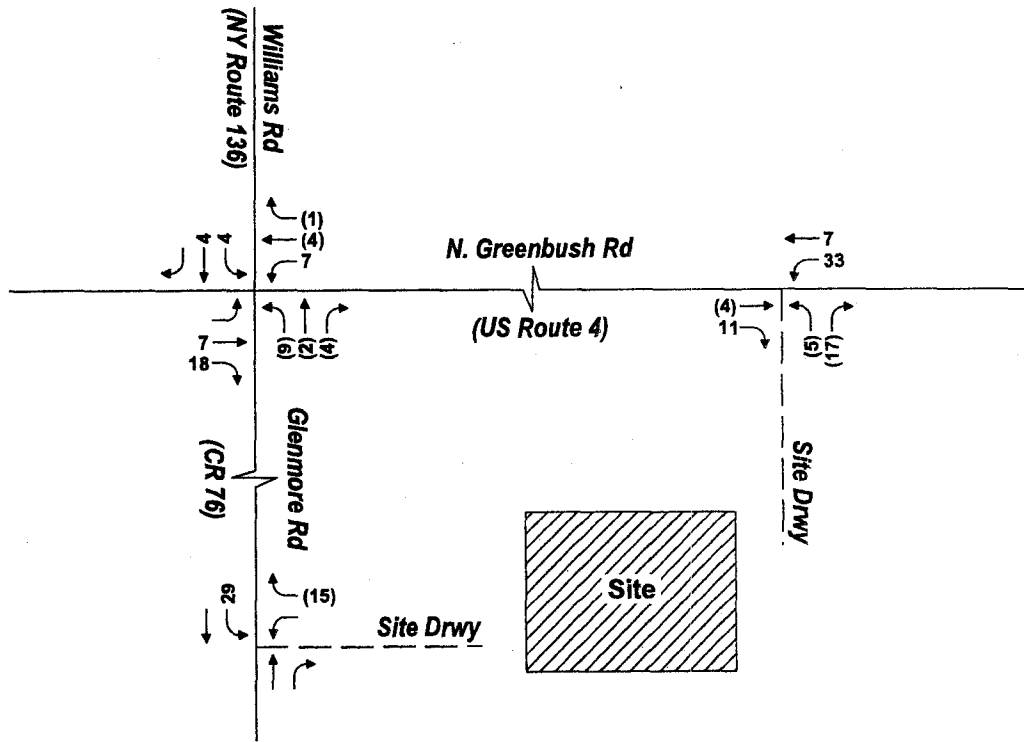
Figure 3

xx = Entering Trips
 (xx) = Exiting Trips

AM Peak Hour



PM Peak Hour



Trip Assignment

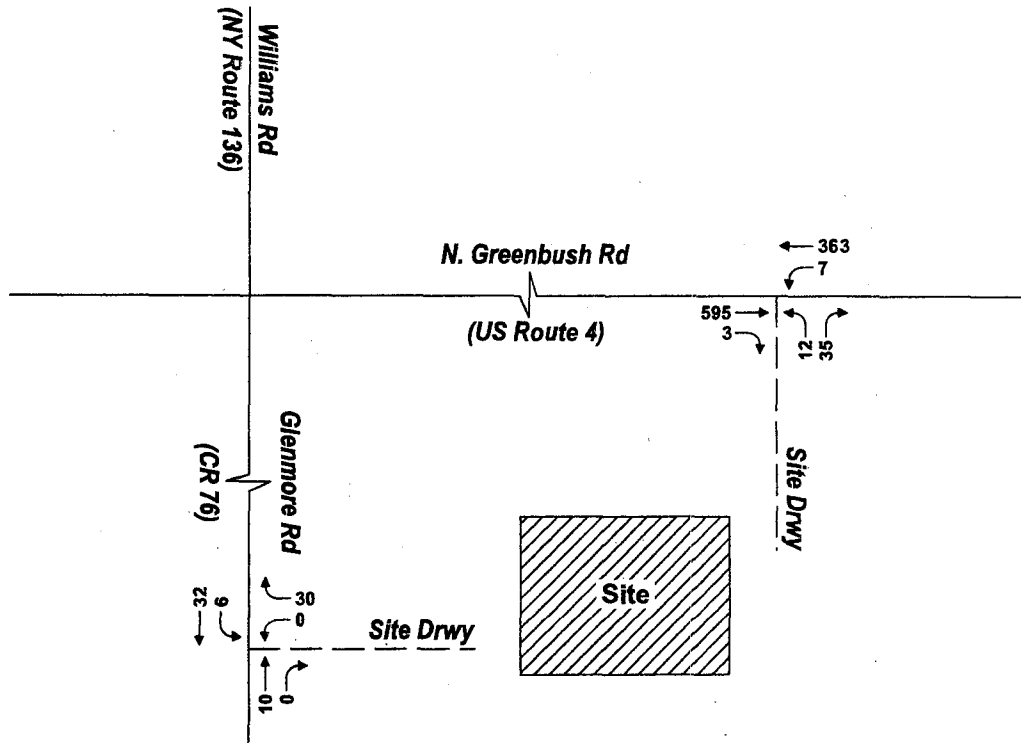
Figure 4

Tech Valley Residential
 North Greenbush, New York

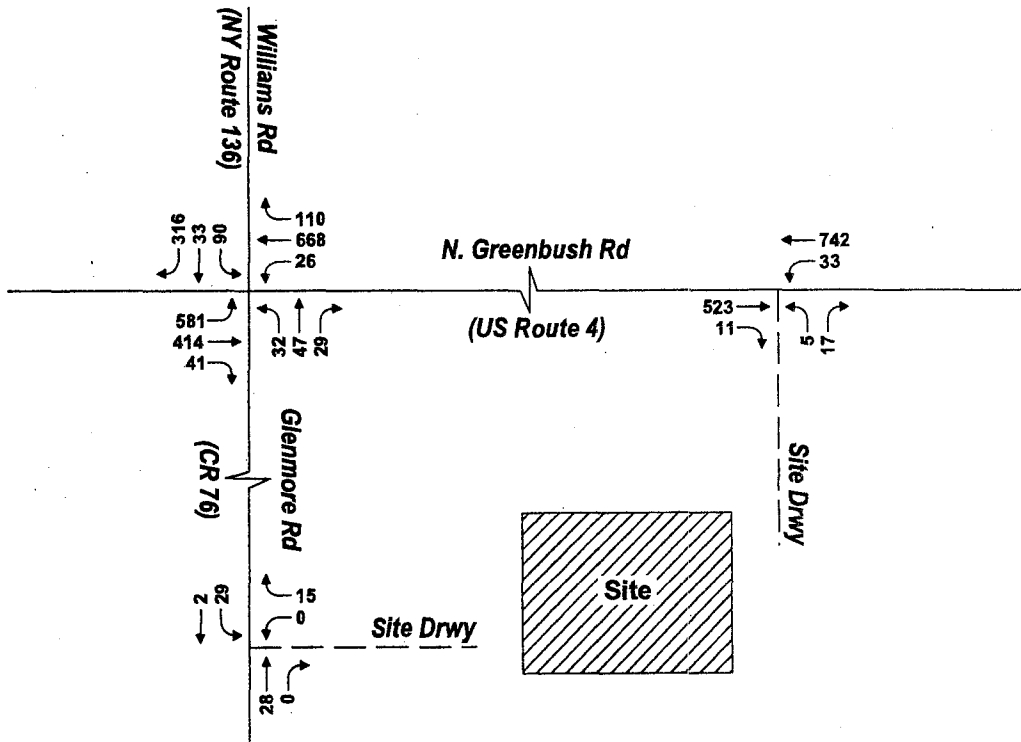


Not to Scale

AM Peak Hour



PM Peak Hour



2020 Build
Traffic Volumes
Tech Valley Residential
North Greenbush, New York

Figure 5



Not to Scale

Attachment A – Intersection Capacity Analyses

HCM 2010 Signalized Intersection Summary
 1: Rt 4 & Glenmore/Williams

2017 Existing
 PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕	↗	↘	↖		↙	↗	↖
Traffic Volume (veh/h)	20	11	5	90	7	295	4	616	113	569	367	19
Future Volume (veh/h)	20	11	5	90	7	295	4	616	113	569	367	19
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1976	1937	1976	1900	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	22	12	5	98	8	321	4	670	123	618	399	21
Adj No. of Lanes	0	1	0	0	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	54	17	249	18	702	478	670	123	551	1324	70
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.44	0.44	0.44	0.28	0.76	0.76
Sat Flow, veh/h	374	327	103	1172	110	1583	963	1532	281	1774	1754	92
Grp Volume(v), veh/h	39	0	0	106	0	321	4	0	793	618	0	420
Grp Sat Flow(s), veh/h/ln	804	0	0	1283	0	1583	963	0	1813	1774	0	1846
Q Serve(g_s), s	1.2	0.0	0.0	0.0	0.0	17.8	0.3	0.0	55.0	35.0	0.0	9.1
Cycle Q Clear(g_c), s	11.6	0.0	0.0	10.4	0.0	17.8	0.3	0.0	55.0	35.0	0.0	9.1
Prop In Lane	0.56		0.13	0.92		1.00	1.00		0.16	1.00		0.05
Lane Grp Cap(c), veh/h	178	0	0	267	0	702	478	0	793	551	0	1394
V/C Ratio(X)	0.22	0.00	0.00	0.40	0.00	0.46	0.01	0.00	1.00	1.12	0.00	0.30
Avail Cap(c_a), veh/h	380	0	0	483	0	944	478	0	793	551	0	1394
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.4	0.0	0.0	48.1	0.0	24.4	20.0	0.0	35.4	40.1	0.0	4.9
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.4	0.0	0.2	0.0	0.0	32.1	76.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	3.4	0.0	7.8	0.1	0.0	34.4	30.7	0.0	4.6
LnGrp Delay(d),s/veh	48.0	0.0	0.0	48.5	0.0	24.6	20.0	0.0	67.5	116.6	0.0	5.1
LnGrp LOS	D			D		C	C		F	F		A
Approach Vol, veh/h		39			427			797			1038	
Approach Delay, s/veh		48.0			30.5			67.3			71.5	
Approach LOS		D			C			E			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		100.0		25.8	40.0	60.0		25.8				
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s		55.0		40.0	35.0	55.0		40.0				
Max Q Clear Time (g_c+l1), s		11.1		19.8	37.0	57.0		13.6				
Green Ext Time (p_c), s		15.0		1.0	0.0	0.0		1.0				
Intersection Summary												
HCM 2010 Ctrl Delay				62.0								
HCM 2010 LOS				E								

HCM 2010 Signalized Intersection Summary
1: Rt 4 & Glenmore/Williams

2020 No-Build
PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	45	25	86	29	316	19	664	109	581	407	23
Future Volume (veh/h)	23	45	25	86	29	316	19	664	109	581	407	23
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1976	1937	1976	1900	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	25	49	27	93	32	343	21	722	118	632	442	25
Adj No. of Lanes	0	1	0	0	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	47	87	36	161	49	746	438	649	106	524	1254	71
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.42	0.42	0.42	0.26	0.72	0.72
Sat Flow, veh/h	63	420	176	549	236	1583	922	1562	255	1774	1747	99
Grp Volume(v), veh/h	101	0	0	125	0	343	21	0	840	632	0	467
Grp Sat Flow(s),veh/h/ln	659	0	0	784	0	1583	922	0	1818	1774	0	1845
Q Serve(g_s), s	1.3	0.0	0.0	0.0	0.0	19.4	1.8	0.0	55.0	35.0	0.0	12.6
Cycle Q Clear(g_c), s	24.1	0.0	0.0	22.7	0.0	19.4	1.8	0.0	55.0	35.0	0.0	12.6
Prop In Lane	0.25		0.27	0.74		1.00	1.00		0.14	1.00		0.05
Lane Grp Cap(c), veh/h	170	0	0	209	0	746	438	0	756	524	0	1325
V/C Ratio(X)	0.59	0.00	0.00	0.60	0.00	0.46	0.05	0.00	1.11	1.21	0.00	0.35
Avail Cap(c_a), veh/h	317	0	0	346	0	897	438	0	756	524	0	1325
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.5	0.0	0.0	50.1	0.0	23.6	23.1	0.0	38.7	42.7	0.0	7.0
Incr Delay (d2), s/veh	3.3	0.0	0.0	1.0	0.0	0.2	0.1	0.0	67.9	110.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	0.0	4.5	0.0	8.5	0.5	0.0	41.7	35.1	0.0	6.4
LnGrp Delay(d),s/veh	48.8	0.0	0.0	51.1	0.0	23.8	23.2	0.0	106.5	152.7	0.0	7.3
LnGrp LOS	D			D		C	C		F	F		A
Approach Vol, veh/h		101			468			861			1099	
Approach Delay, s/veh		48.8			31.1			104.5			90.9	
Approach LOS		D			C			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		100.0		32.3	40.0	60.0		32.3				
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s		55.0		40.0	35.0	55.0		40.0				
Max Q Clear Time (g_c+I1), s		14.6		24.7	37.0	57.0		26.1				
Green Ext Time (p_c), s		16.6		1.3	0.0	0.0		1.3				
Intersection Summary												
HCM 2010 Ctrl Delay			82.8									
HCM 2010 LOS			F									

HCM 2010 Signalized Intersection Summary
1: Rt 4 & Glenmore/Williams

2020 Build
PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	47	29	90	33	316	26	668	110	581	414	41
Future Volume (veh/h)	32	47	29	90	33	316	26	668	110	581	414	41
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1976	1937	1976	1900	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	35	51	32	98	36	343	28	726	120	632	450	45
Adj No. of Lanes	0	1	0	0	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	60	85	41	175	57	762	420	636	105	514	1173	117
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.41	0.41	0.41	0.26	0.70	0.70
Sat Flow, veh/h	116	381	185	579	258	1583	899	1559	258	1774	1667	167
Grp Volume(v), veh/h	118	0	0	134	0	343	28	0	846	632	0	495
Grp Sat Flow(s),veh/h/ln	681	0	0	837	0	1583	899	0	1817	1774	0	1833
Q Serve(g_s), s	4.6	0.0	0.0	0.0	0.0	19.4	2.6	0.0	55.0	35.0	0.0	14.8
Cycle Q Clear(g_c), s	26.7	0.0	0.0	22.1	0.0	19.4	2.6	0.0	55.0	35.0	0.0	14.8
Prop In Lane	0.30		0.27	0.73		1.00	1.00		0.14	1.00		0.09
Lane Grp Cap(c), veh/h	186	0	0	232	0	762	420	0	741	514	0	1291
VIC Ratio(X)	0.64	0.00	0.00	0.58	0.00	0.45	0.07	0.00	1.14	1.23	0.00	0.38
Avail Cap(c_a), veh/h	297	0	0	338	0	880	420	0	741	514	0	1291
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.9	0.0	0.0	49.0	0.0	23.2	24.4	0.0	40.0	43.7	0.0	8.1
Incr Delay (d2), s/veh	3.6	0.0	0.0	0.8	0.0	0.2	0.1	0.0	79.6	120.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	0.0	4.8	0.0	8.5	0.6	0.0	44.0	36.2	0.0	7.5
LnGrp Delay(d),s/veh	53.5	0.0	0.0	49.8	0.0	23.3	24.5	0.0	119.6	163.7	0.0	8.4
LnGrp LOS	D			D		C	C		F	F		A
Approach Vol, veh/h		118			477			874			1127	
Approach Delay, s/veh		53.5			30.8			116.6			95.5	
Approach LOS		D			C			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		100.0		34.9	40.0	60.0		34.9				
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s		55.0		40.0	35.0	55.0		40.0				
Max Q Clear Time (g_c+I1), s		16.8		24.1	37.0	57.0		28.7				
Green Ext Time (p_c), s		17.0		1.4	0.0	0.0		1.3				
Intersection Summary												
HCM 2010 Ctrl Delay			88.8									
HCM 2010 LOS			F									

Intersection

Int Delay, s/veh 0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	4			4	1	
Traffic Vol, veh/h	12	35	7	363	595	3
Future Vol, veh/h	12	35	7	363	595	3
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	13	38	8	395	647	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1058	648	650	0	-	0
Stage 1	648	-	-	-	-	-
Stage 2	410	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	251	474	946	-	-	-
Stage 1	524	-	-	-	-	-
Stage 2	674	-	-	-	-	-
Platoon blocked, %						
Mov Cap-1 Maneuver	248	474	946	-	-	-
Mov Cap-2 Maneuver	248	-	-	-	-	-
Stage 1	524	-	-	-	-	-
Stage 2	667	-	-	-	-	-

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)	946	-	385	-	-
HCM Lane V/C Ratio	0.008	-	0.133	-	-
HCM Control Delay (s)	8.8	0	15.8	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	5	17	33	742	523	11
Future Vol, veh/h	5	17	33	742	523	11
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	5	18	36	807	568	12

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1452	574	580 0
Stage 1	574	-	-
Stage 2	878	-	-
Critical Hdwy	6.4	6.2	4.1 -
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2 -
Pot Cap-1 Maneuver	145	522	1004 -
Stage 1	567	-	-
Stage 2	410	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	136	522	1004 -
Mov Cap-2 Maneuver	136	-	-
Stage 1	567	-	-
Stage 2	383	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.3	0.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1004	-	317	-	-
HCM Lane V/C Ratio	0.036	-	0.075	-	-
HCM Control Delay (s)	8.7	0	17.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection

Int Delay, s/veh 3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1			4	Y	
Traffic Vol, veh/h	10	0	6	32	0	30
Future Vol, veh/h	10	0	6	32	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	11	0	7	35	0	33

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	59
Stage 1	-	-	11
Stage 2	-	-	48
Critical Hdwy	-	4.1	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.2	3.5
Pot Cap-1 Maneuver	-	1621	953
Stage 1	-	-	1017
Stage 2	-	-	980
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1621	949
Mov Cap-2 Maneuver	-	-	949
Stage 1	-	-	1017
Stage 2	-	-	976

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1076	-	-	1621	-
HCM Lane V/C Ratio	0.03	-	-	0.004	-
HCM Control Delay (s)	8.5	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection

Int Delay, s/veh 4.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1			1	1	
Traffic Vol, veh/h	28	0	29	2	0	15
Future Vol, veh/h	28	0	29	2	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	30	0	32	2	0	16

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	30
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	4.1	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	2.2	-
Pot Cap-1 Maneuver	-	1596	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1596	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6.8	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1050	-	-	1596	-
HCM Lane V/C Ratio	0.016	-	-	0.02	-
HCM Control Delay (s)	8.5	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	-