



MEMORANDUM

TO: File

FROM: Jennifer L. Michniewicz, P.E., PTOE

DATE: June 7, 2016

RE: Traffic Impacts of 1366 Technologies at STAMP

BACKGROUND

The Western New York Science & Technology Advanced Manufacturing Park (STAMP), located in the Town of Alabama, Genesee County, New York consists of a mixed used development that includes technology manufacturing uses and ancillary development. A Generic Environmental Impact Statement (GEIS) was prepared based on an assumed development size and phased buildout.

Recently it was determined that the first tenant will be 1366 Technologies. Because this tenant has more accurate buildout information than what was included in the GEIS, a comparison between the traffic impacts of the assumed buildout and actual buildout is necessary.

This Memorandum is meant to supplement the GEIS. General information, such as definition of terms, description of existing conditions, etc. have therefore not been included. The methodologies and software utilized in the GEIS were also used to generate data for this Memorandum; however, both the Highway Capacity and Synchro Software packages have been updated to the most current version – HCS 2010 and Synchro 9 respectively.

STAMP GEIS – Traffic Impact Study (TIS)

- 6.130M square feet of development with 9,000 employees
- Phase 1 – 1M square feet of development with 1,282 employees
- Traffic triggers mitigation at 70% buildout.
- AM/PM peak hour volumes
 - Phase 1 – **403** AM and **402** PM
 - 70% – **1,424** AM and **1,924** PM
 - Full build out – **2,034** AM and **2,749** PM
- Access to the site will be provided via Crosby Road during Phase 1
- Recommended that two intersections be monitored during this phase for potential installation of traffic signals.
 - NY Route 77/NY Route 63/Judge Road intersection, and
 - NY Route 77/Ledge Road

- After Phase 1 and before 70% threshold
 - Recommended a bypass be constructed through the site from NY Route 77/63 overlap, just north of Ham Road to NY Route 77.
 - Several new site driveways as needed in correlation to the site development including two on NY Route 77, two on Judge Road, and two on NY Route 77/63 Overlap, in addition to the bypass road curb cut
 - Capacity improvements may be needed at several off site intersections including:
 - NY Route 77/NY Route 63/Judge Road
 - NY Route 77/Bloomingtondale Road
 - NY Route 77/Ledge Road
 - NY Route 77/Akron Road
 - NY Route 77/I-90 Exit 48A

1366 Technologies

- Approximately 150K square feet of development with 1,000 employees
- Total of **2,486 trips** per day with 86 trucks per day, and peak hourly volume of **959**.
- Anticipated to be developed in four phases.
- Phase 1 assumed to have 25% of the full build out volumes and space creating a total of **622 trips** per day with 22 trucks per day, and peak hourly volume of **240**.
- Access to the site will be provided via a new site driveway on NY Route 77/63 Overlap between Judge Road and Ham Road.

The proposed Phase 1 development of 1366 Technologies results in traffic less than the Phase 1 buildout assumed in the GEIS; however, its full buildout is more than the Phase 1 GEIS build out, but less than the 70% threshold.

Because the actual anticipated traffic volume is more than the GEIS Phase 1 volume, and the proposed site access is different from what was assumed in the GEIS, all of the intersections analyzed within the GEIS TIS will be re-analyzed for both the Phase 1 and full buildout volumes of 1366 Technologies. In addition, a left turn analysis on NY Route 77/63 Overlap, a determination for the need.

The GEIS was prepared utilizing 2015 as the build year. To therefore compare GEIS analyses to 1366 Technologies analyses, they will also be conducted based on 2015 traffic volumes rather than extrapolate to 2016. The GEIS also assumed 70% build out would occur in 2035. It is likely that 1366 Technologies will achieve full buildout much sooner. As such, traffic impacts and any subsequent mitigation of full build out will also be based on 2015 volumes.

TRAFFIC DISTRIBUTIONS

The GEIS presented data using two basic figures. The first figure showed Phase 1 development utilizing the existing roadway network. The second figure showed 70% and Full Buildout Development utilizing all of the proposed site entrances, and the proposed bypass road. 1366 Technologies proposes the addition of one site access road on NY Route 77/63 Overlap between Judge Road and Ham Road. The second figure will therefore be used as the basis of the 1366 Technologies analysis.

Figures 1 and 2 depict the trip distribution percentages for the additional traffic entering and exiting the site as a result of 1366 Technologies. The GEIS utilized a 73% entering/27% existing split during the AM peak hour and 44% entering/56% existing split during the PM peak hour for the Industrial Flex Space land use. The same distribution will be used for 1366 Technologies. Figures 3 and 4 depict the trip distribution of the additional AM and PM peak hour traffic (**240 vehicles per hour**) as a result of **Phase 1**. Figures 5 and 6 depict the trip distribution of the additional AM and PM peak hour traffic (**959 vehicles per hour**) as a result of the **Full Buildout**.

Figure 7 depicts the 2015 traffic existing volumes. This represents the No Build option where 1366 Technologies does not progress. Figures 8 and 9 depict the 2015 traffic volumes for Phase 1. These values are the sum of the No Build volumes and the Phase 1 volumes. Figures 10 and 11 depict the 2015 traffic volumes for Full Buildout. These values are the sum of the No Build volumes and the Full Buildout volumes.

TRAFFIC ANALYSES

In order to determine the impacts, if any, of the traffic that is anticipated to be generated by 1366 Technologies, a level of service and delay analysis was performed for both the Phase 1 and Full Buildout scenarios. Results for the segment analyses and intersection analyses are shown in Figure 12 and Figure 13 respectively.

Phase 1 Summary – 25% Buildout of 1366 Technologies – 2015 Design Year

Generally speaking, the Phase 1 Buildout of 1366 Technologies will exhibit level of service (LOS) and delay values less than the Phase 1 Buildout presented in the GEIS for both segments and intersections. There are a few instances where the delay is a fraction of a second higher. These are minor, and could be a result of the use of different software versions.

In the GEIS, the LOS analyses indicate that the installation of a traffic should be considered at the intersection of NY Route 77/NY Route 63/Judge Road and the intersection of NY Route 77/Ledge Road. Both of these locations had legs of the intersections with LOS of

F. The GEIS noted that based on conversations with NYSDOT, these locations should be monitored to determine when a traffic signal or roundabout should be installed.

For Phase 1 of 1366 Technologies, with the exception of the westbound leg of Judge Road which has a LOS of F during the AM Peak Hour, the LOS analyses at these two locations is no worse than a LOS of E. Therefore, traffic signal or roundabout installations are not recommended for these locations for Phase 1.

Full Buildout Summary – 100% Buildout of 1366 Technologies – 2015 Design Year

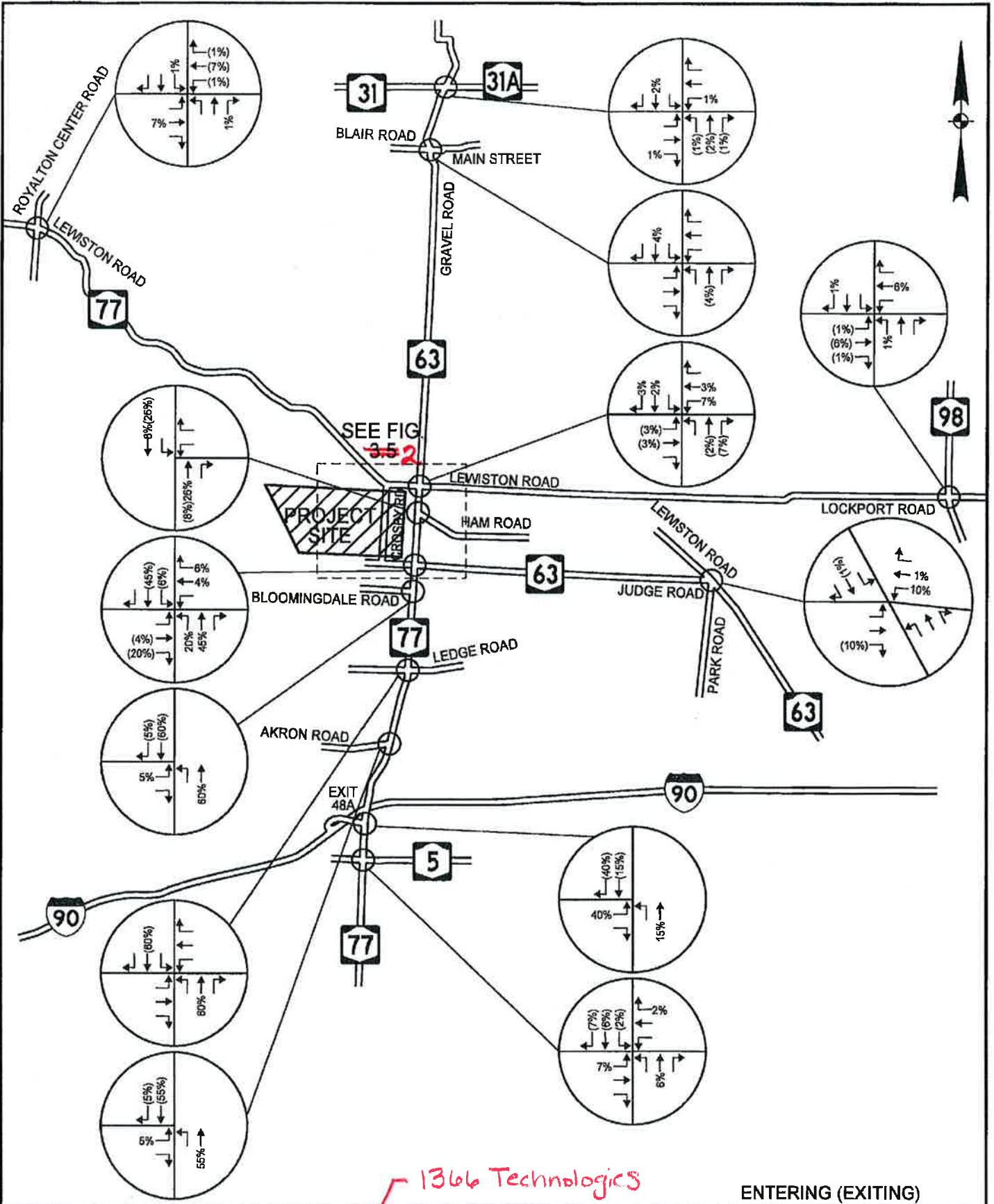
As noted, the total trips that are anticipated to be generated by the full buildout of 1366 Technologies is more than the Phase 1 analysis presented in the GEIS, but less than the 70% threshold. In addition, a site access is proposed on NY Route 77/Route 63 Overlap for 1366 Technologies, which results in a slightly different traffic pattern. Therefore, the improvements presented in the GEIS for both the 70% threshold and the full buildout have been compared to 1366 Technologies. These results, and the recommended improvements, are shown in Figure 14.

Left Turn Lane Analysis

An analysis to determine if a northbound left turn lane on NY Route 77/NY Route 63 Overlap to access the site was performed. This was done utilizing table 9-23 of the AASHTO Manual based on an operating speed of 60-mph. The results are shown in the table below.

Table 1 Left Turn Lane Warrant Analysis Northbound Left Turns into Site				
	Phase 1		Full Buildout	
	AM Peak	PM Peak	AM Peak	PM Peak
Opposing Volume (veh/h)	269	319	315	348
Total Advancing Volume (veh/h)	274	401	543	602
Total NB Left Turn Volume (veh/h)	89	54	356	216
Percentage of Left Turns	32%	13%	66%	36%
Left Turn Lane Warranted?	Yes	Yes	Yes	Yes

FIGURES



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TRIP DISTRIBUTION
~~70% THRESHOLD AND FULL BUILD-OUT~~
 STUDY AREA INTERSECTIONS

STAMP GEIS
 TOWN OF ALABAMA, NEW YORK

ENTERING (EXITING)



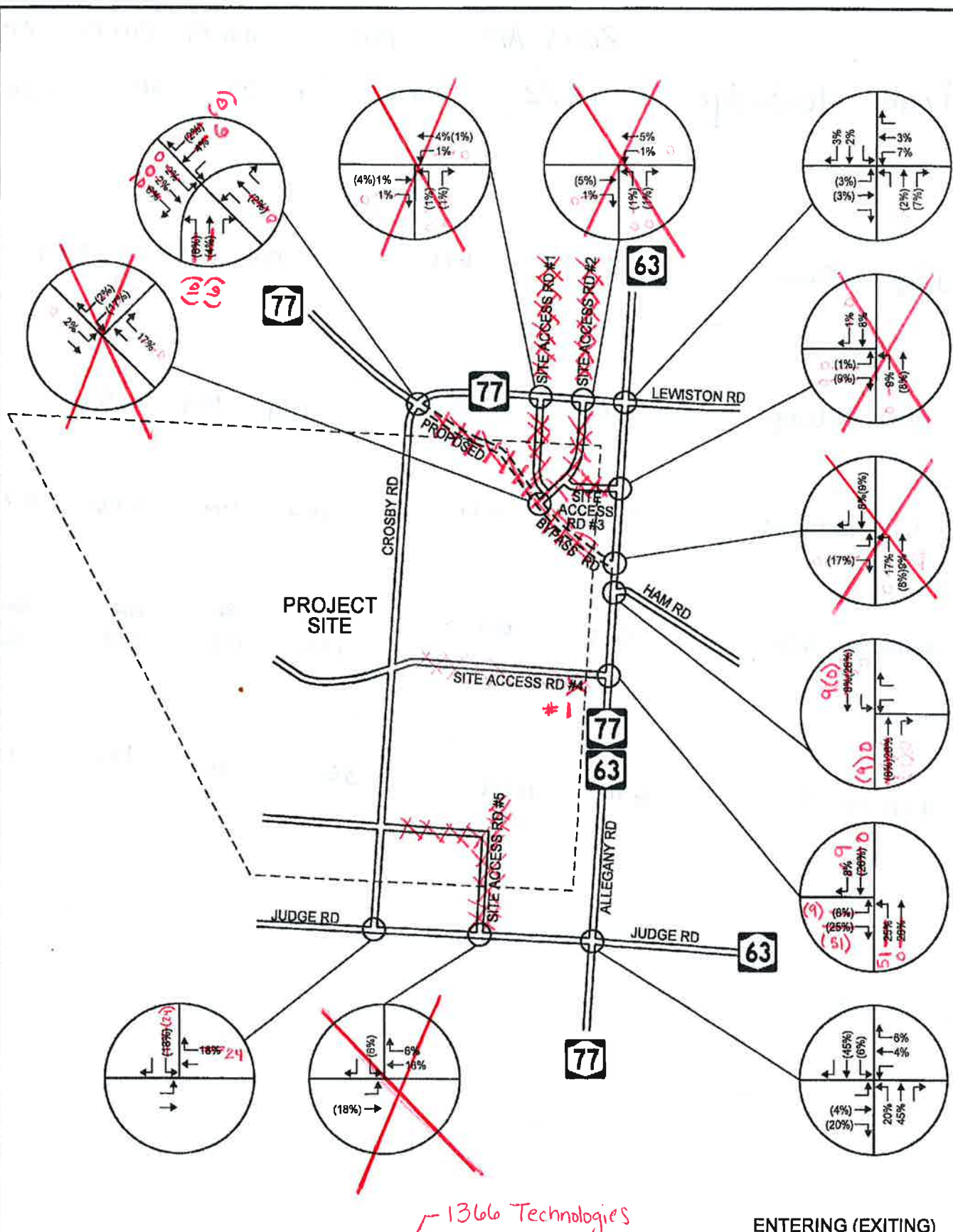
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DATE: 2/2011

FIGURE: 3.3

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TRIP DISTRIBUTION
~~70% THRESHOLD AND FULL BUILD-OUT~~
 SITE ACCESS INTERSECTIONS

STAMP GEIS
 TOWN OF ALABAMA, NEW YORK



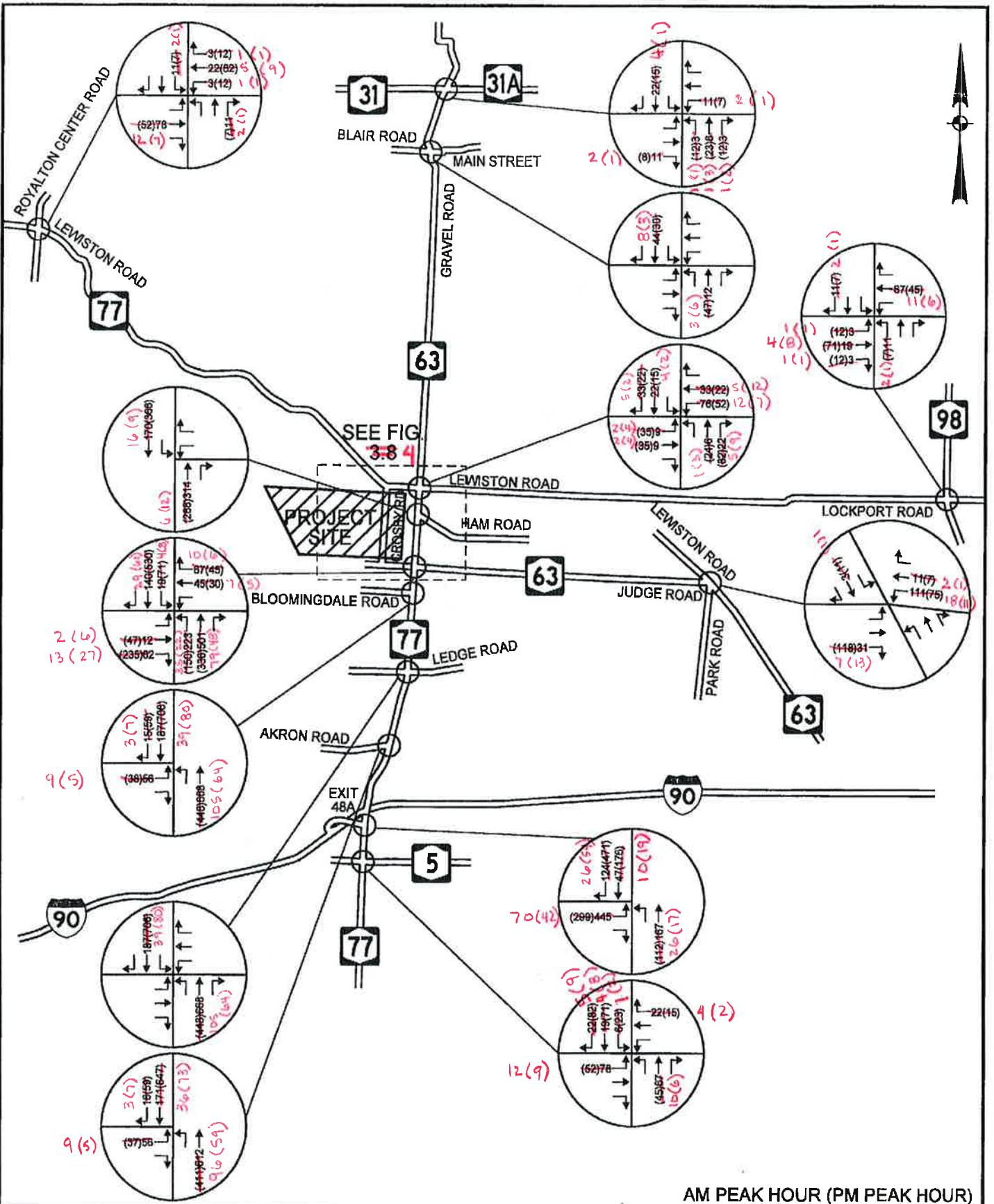
ENTERING (EXITING)

PROJECT: 110-021 DATE: 2/2011 FIGURE: 318

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AM PEAK HOUR (PM PEAK HOUR)

TRIP ASSIGNMENT
~~70% THRESHOLD~~ PHASE I
 STUDY AREA INTERSECTIONS

STAMP GEIS
 TOWN OF ALABAMA, NEW YORK



PROJECT: 110-021

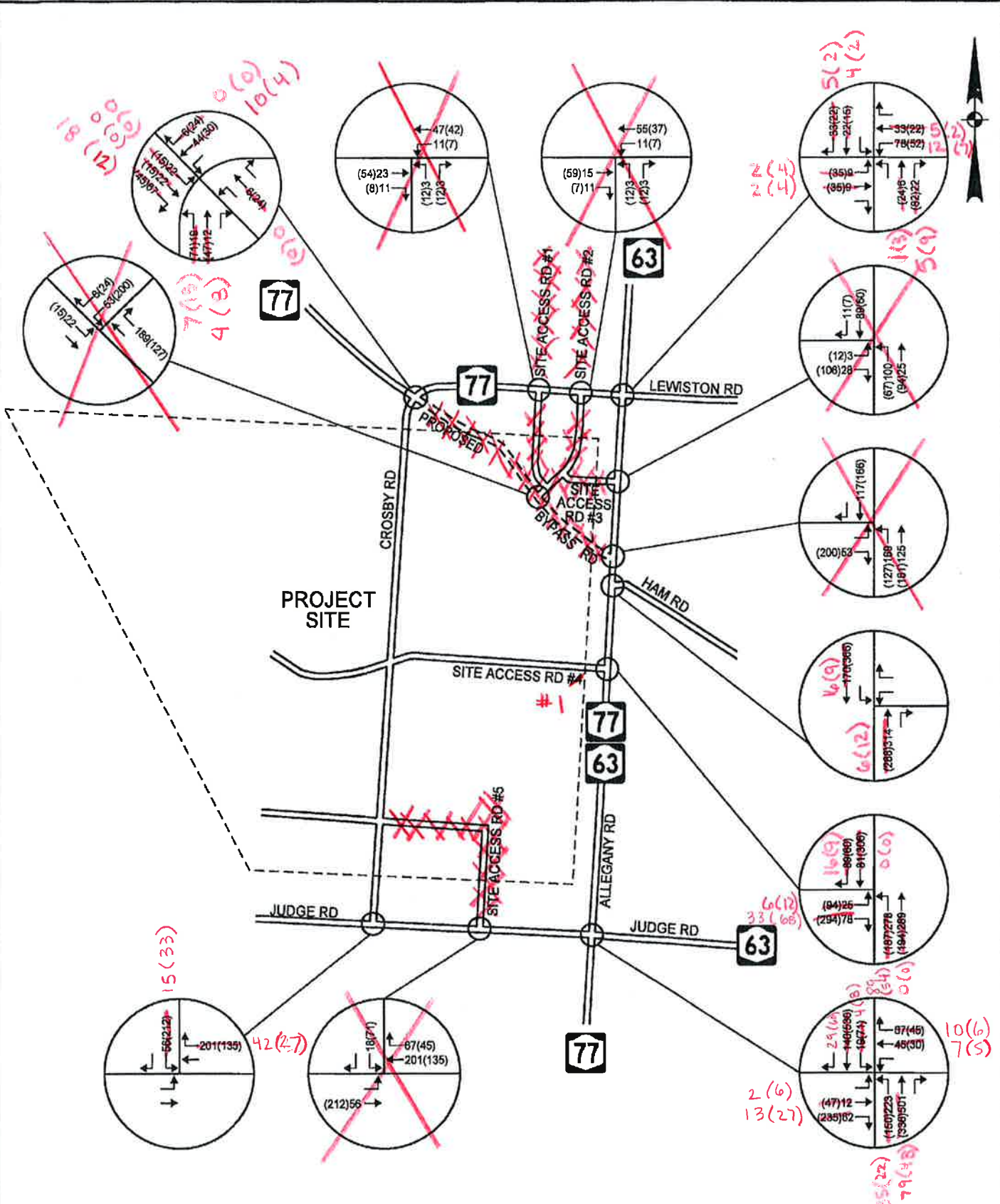
DATE: 2/2011

FIGURE: 3-7

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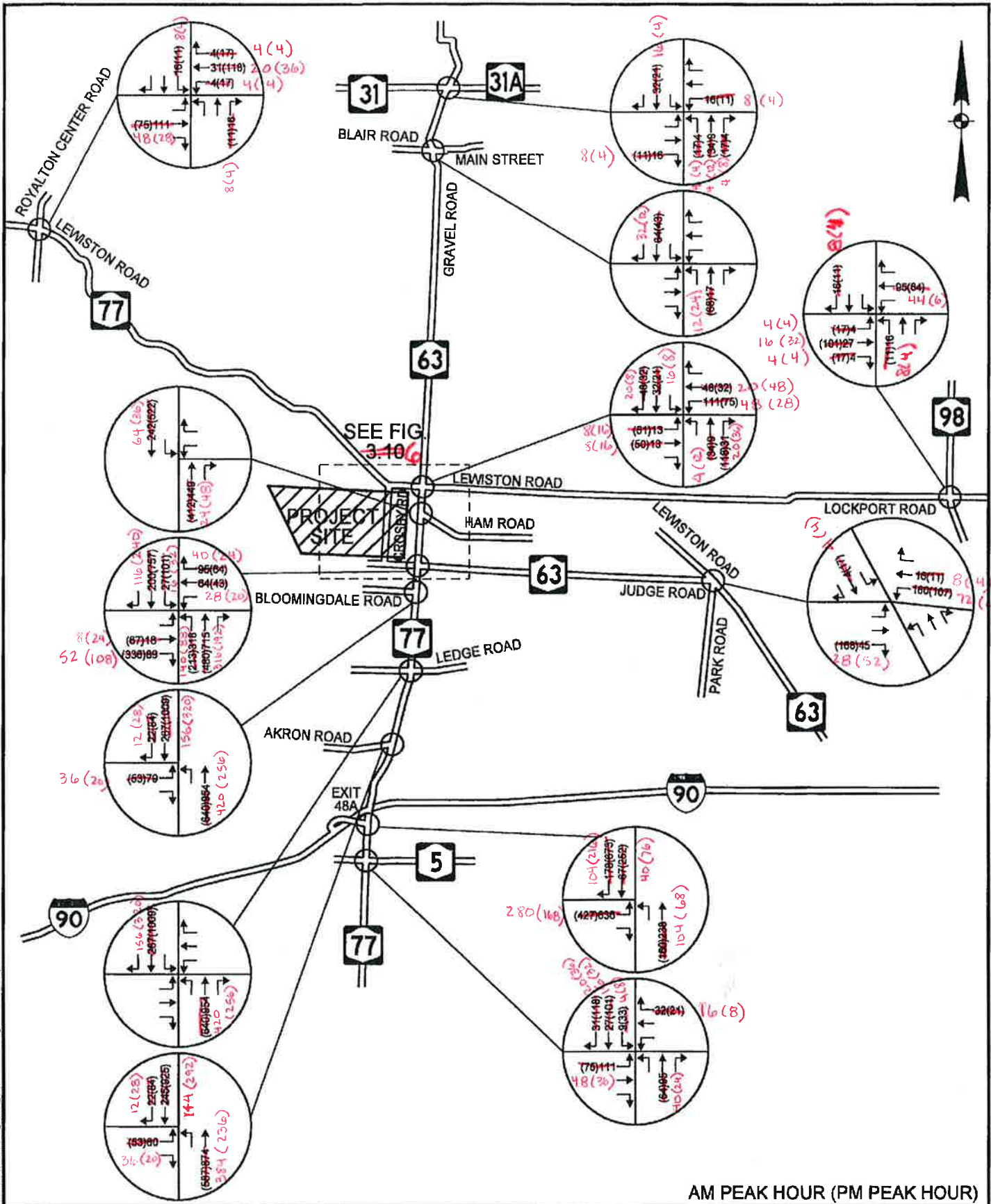
TRIP ASSIGNMENT
 70% THRESHOLD PHASE I
 SITE ACCESS INTERSECTIONS

STAMP GEIS
 TOWN OF ALABAMA, NEW YORK



PROJECT: 110-021 DATE: 2/2011 FIGURE: 3.8

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AM PEAK HOUR (PM PEAK HOUR)

TRIP ASSIGNMENT
FULL BUILD-OUT
STUDY AREA INTERSECTIONS

STAMP GEIS
TOWN OF ALABAMA, NEW YORK



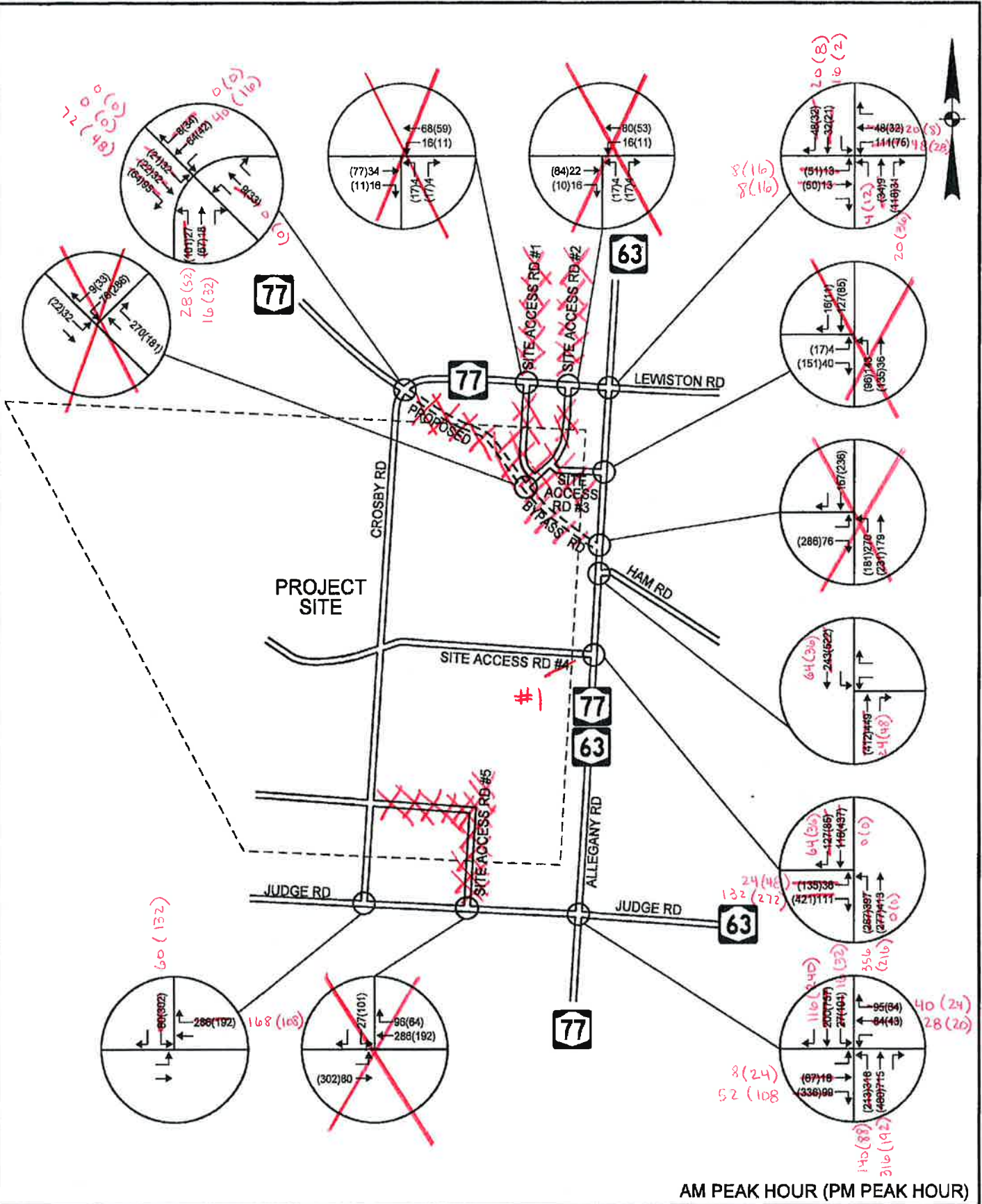
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AM PEAK HOUR (PM PEAK HOUR)

TRIP ASSIGNMENT
FULL BUILD-OUT
SITE ACCESS INTERSECTIONS

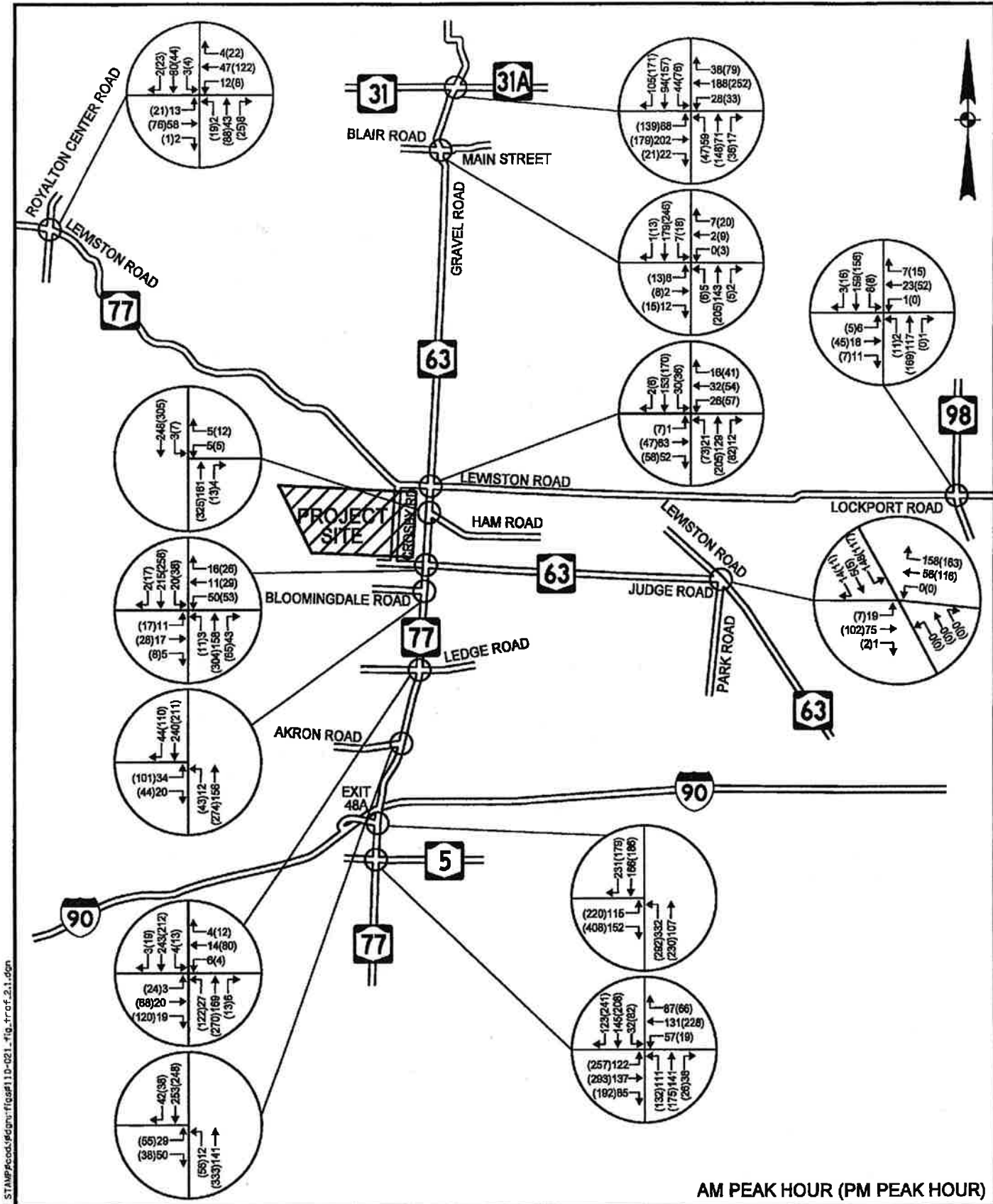
STAMP GEIS
TOWN OF ALABAMA, NEW YORK



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2015 NO-BUILD
TRAFFIC VOLUMES

STAMP GEIS
TOWN OF ALABAMA, NEW YORK



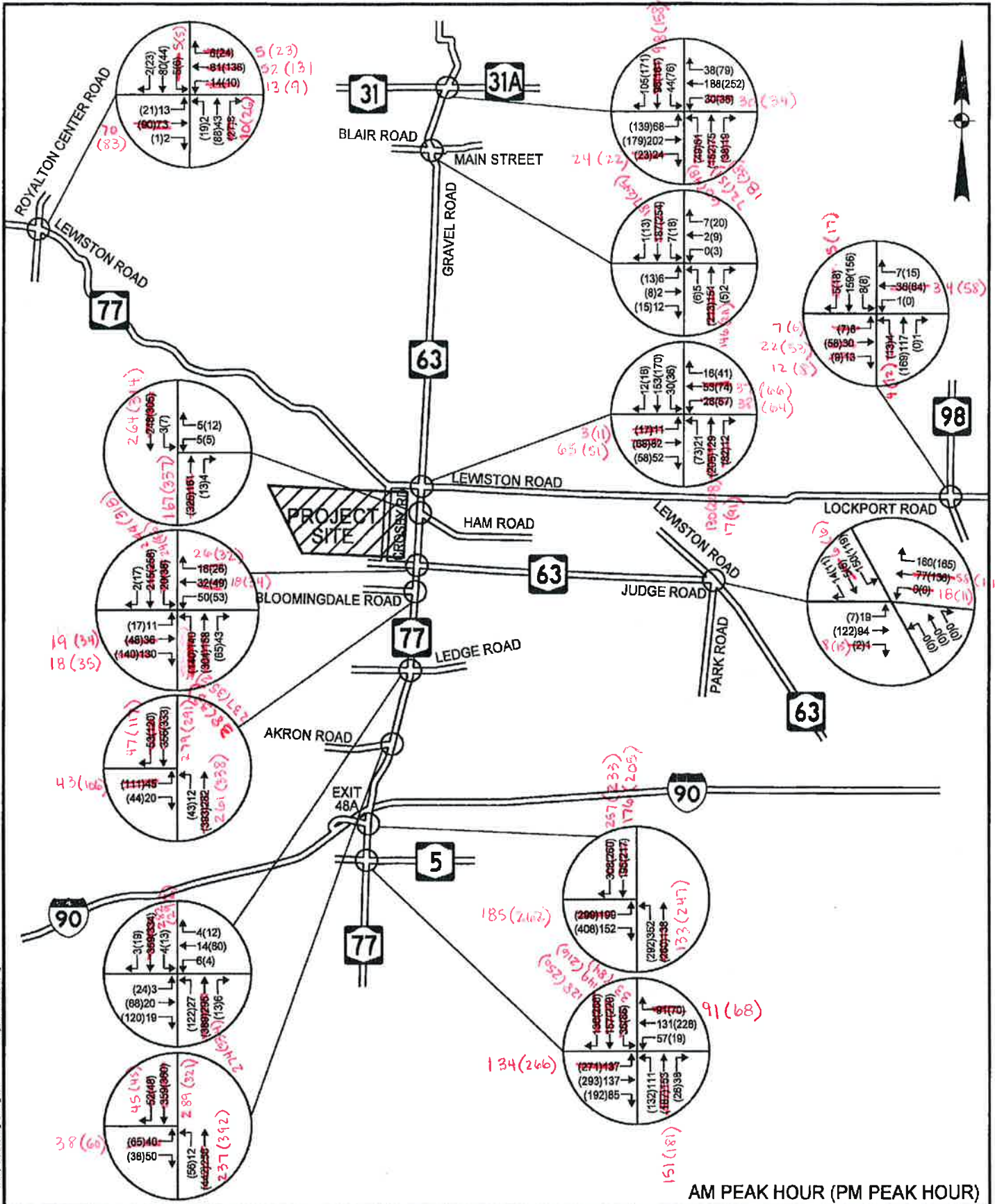
PROJECT: 110-021

DATE: 2/2011

FIGURE: 3.1

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AM PEAK HOUR (PM PEAK HOUR)

2015 BUILD
 PHASE I
 STUDY AREA INTERSECTIONS
 STAMP GEIS
 TOWN OF ALABAMA, NEW YORK

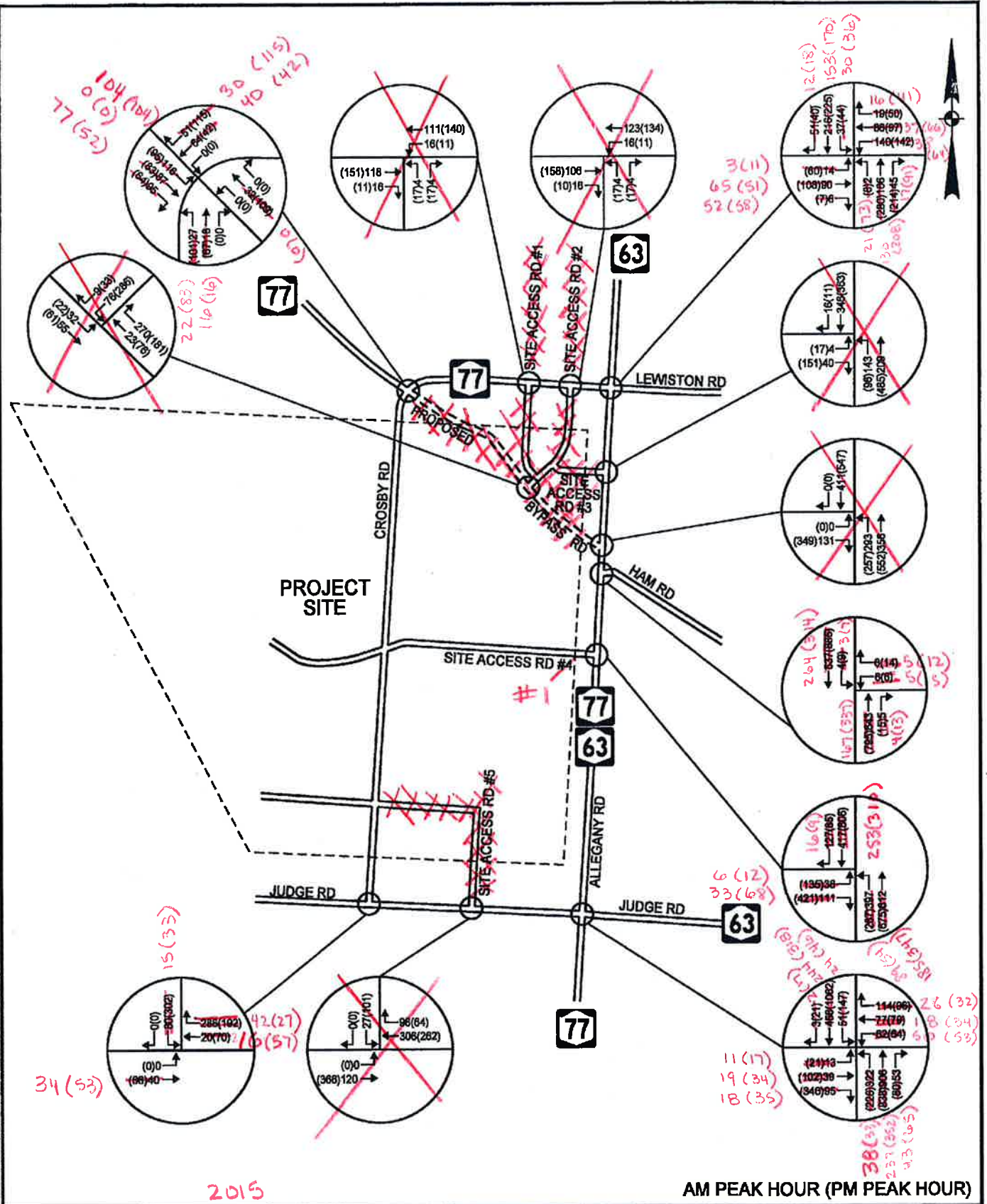


PROJECT: 110-021 DATE: 2/2011 FIGURE: 3.11

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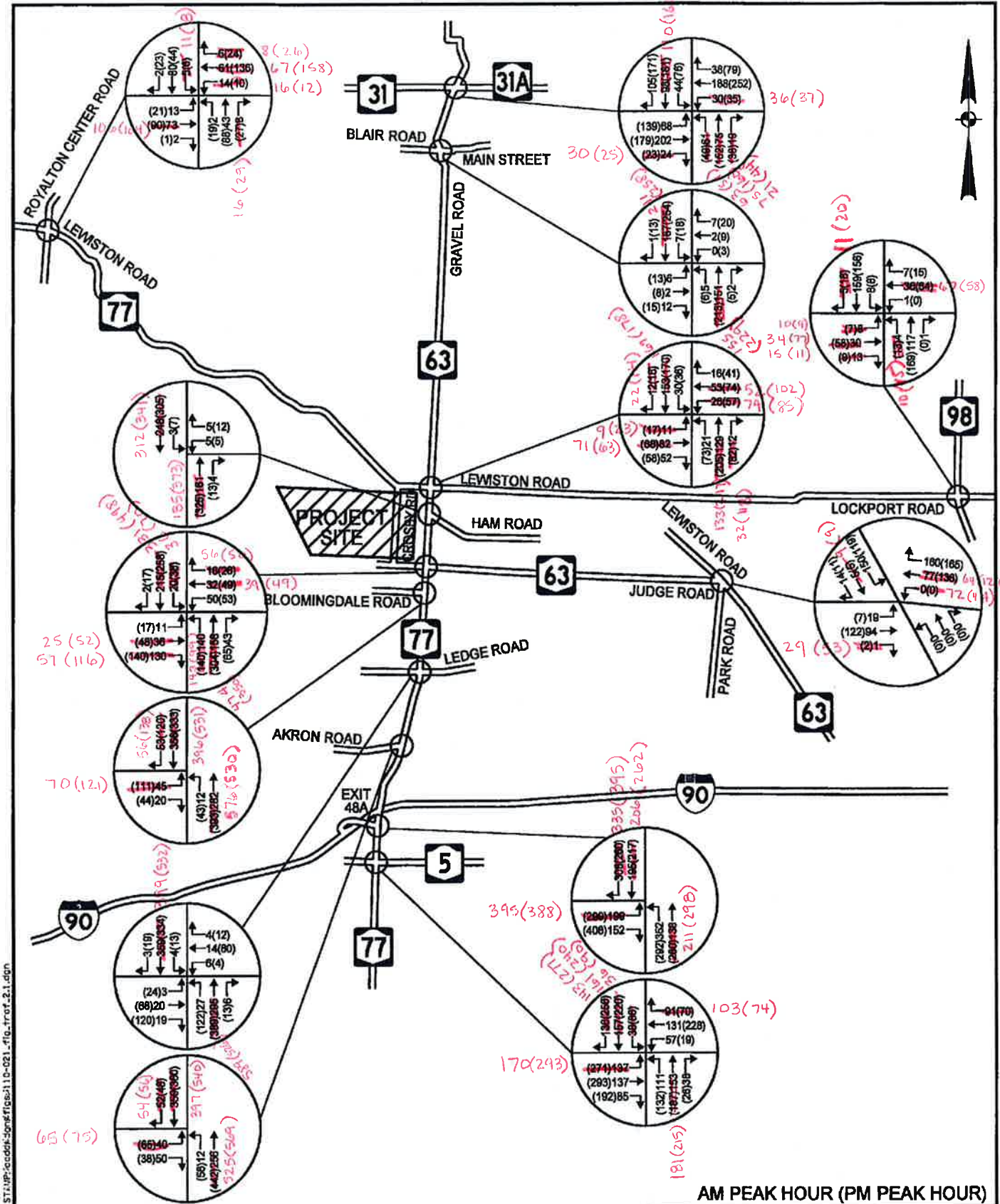
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PROJECT: 110-021 DATE: 2/2011 FIGURE: 3.15

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2015 BUILD
~~PHASE I FULL BUILD-OUT~~
 STUDY AREA INTERSECTIONS
 STAMP GEIS
 TOWN OF ALABAMA, NEW YORK

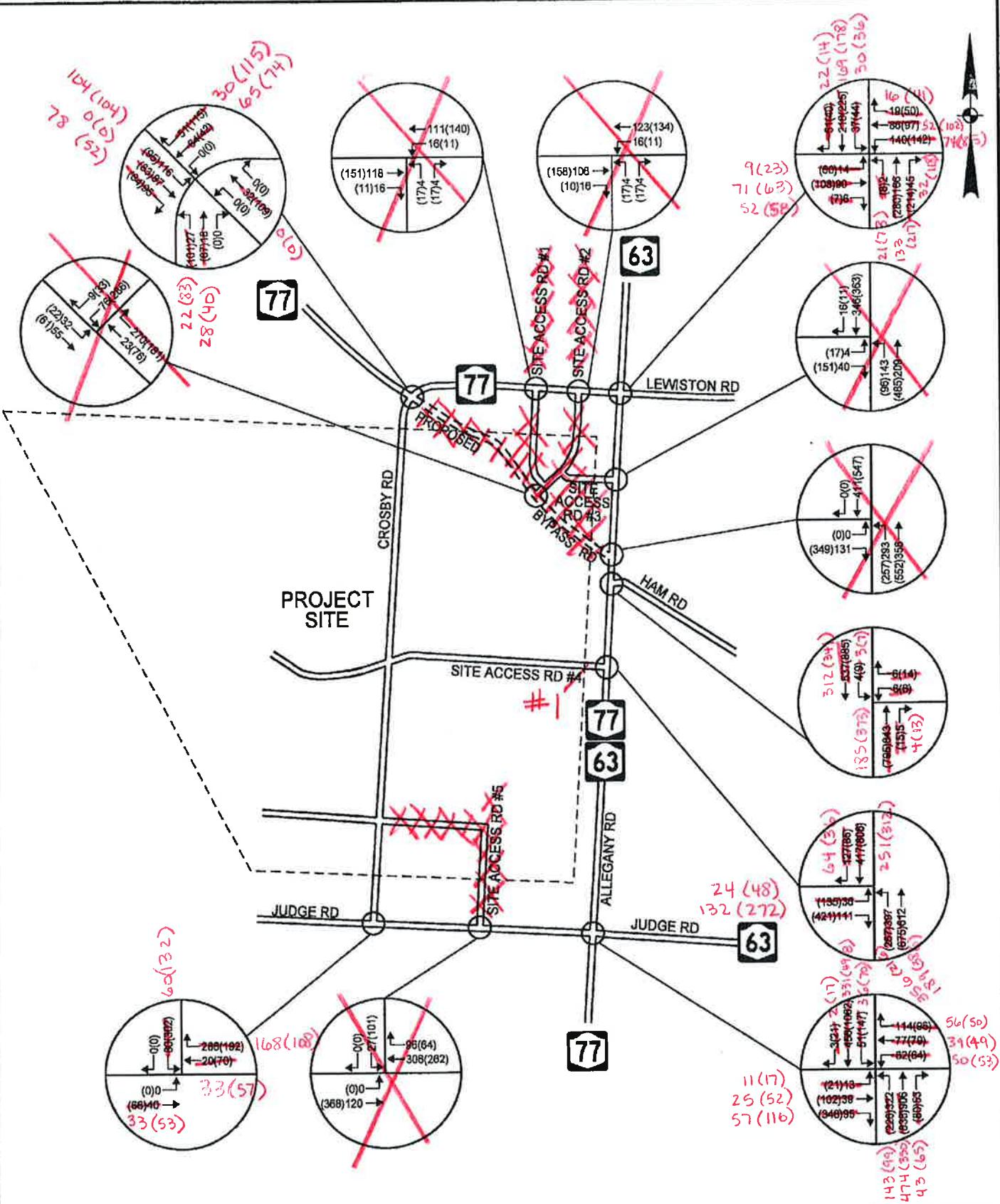
AM PEAK HOUR (PM PEAK HOUR)



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2015

AM PEAK HOUR (PM PEAK HOUR)

2035 BUILD
FULL BUILD-OUT
SITE ACCESS INTERSECTIONS

STAMP GEIS
TOWN OF ALABAMA, NEW YORK



PROJECT: 110-021 DATE: 2/2011 FIGURE: 3-15

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FIGURE 12															
SEGMENT LEVEL OF SERVICE															
NY Route 77 Segment	GEIS										1366 TECHNOLOGIES				
	2015		2015		2035						2015		2015		
	No-Build		Build		No-Build		Build				Build		Build		
			Phase 1				70%		Full Buildout		Phase 1		Full Buildout		
	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS
AM Peak Hour															
Ham Rd to Judge Rd	B	0.16	B	0.16	B	0.18	D	0.43	D	0.55	B	0.19	B	0.24	
Judge Rd to Bloomingdale Rd	B	0.18	C	0.26	B	0.20	D	0.52	E	0.66	C	0.27	D	0.47	
Bloomingdale Rd to Ledge Rd	B	0.16	C	0.24	B	0.18	D	0.48	E	0.61	B	0.24	D	0.42	
Ledge Road to Akron Rd	B	0.17	C	0.26	B	0.20	D	0.50	E	0.62	B	0.28	D	0.47	
Akron Rd. to I-90 Exit 48A	B	0.22	C	0.30	C	0.26	D	0.54	E	0.65	C	0.28	D	0.42	
I-90 Exit 48A to NY Route 5	B	0.23	C	0.25	C	0.27	C	0.35	C	0.38	C	0.25	C	0.29	
PM Peak Hour															
Ham Rd to Judge Rd	B	0.23	B	0.23	C	0.28	E	0.62	E	0.76	C	0.27	C	0.35	
Judge Rd to Bloomingdale Rd	B	0.25	C	0.34	C	0.29	E	0.73	E	0.91	C	0.31	D	0.48	
Bloomingdale Rd to Ledge Rd	B	0.19	C	0.28	B	0.23	E	0.63	E	0.80	C	0.26	D	0.42	
Ledge Road to Akron Rd	C	0.24	C	0.32	C	0.28	E	0.68	E	0.86	C	0.32	D	0.48	
Akron Rd. to I-90 Exit 48A	C	0.29	C	0.36	C	0.34	E	0.71	E	0.87	D	0.41	D	0.58	
I-90 Exit 48A to NY Route 5	C	0.36	D	0.38	D	0.42	D	0.52	D	0.56	D	0.37	D	0.41	

FIGURE 13A INTERSECTION LEVEL OF SERVICE - AM PEAK HOUR																											
Intersection	Control	GEIS														1366 TECHNOLOGIES											
		2015		2015				2035				2035				2015											
		No-Build		Phase 1		No-Build		70%		Full Buildout		Phase 1		Full Buildout													
		LOS	Delay	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.												
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay				
Route 63/Route 31/Route 31A																											
Route 31 EB	LT	S	B	14.7	B	14.9	-	-	B	12.3	B	13.3	-	-	B	13.4	-	-	A	9.6	-	-	A	9.8	-	-	
Route 31A WB	R	A	A	7.6	A	7.6	-	-	A	6.9	A	7.3	-	-	A	7.4	-	-	A	6.4	-	-	A	6.6	-	-	
Route 31A WB	LTR	B	B	12.6	B	12.7	-	-	B	10.8	B	12.1	-	-	B	12.8	-	-	A	8.8	-	-	A	9.3	-	-	
Route 63 NB	LTR	A	A	6.6	A	6.6	-	-	B	10.8	B	11.3	-	-	B	11.6	-	-	A	8.7	-	-	A	8.9	-	-	
Route 31 SB	LTR	A	A	6.8	A	6.8	-	-	B	12.1	B	12.8	-	-	B	13.3	-	-	A	9.2	-	-	A	9.5	-	-	
Overall		A	A	10.4	B	10.5	-	-	B	11.5	B	12.3	-	-	B	12.7	-	-	A	9.0	-	-	A	9.3	-	-	
Route 63/Blair Rd/Main St																											
Route 63 NB	L	TWS	A	0.3	A	0.3	-	-	A	0.3	A	0.3	-	-	A	0.3	-	-	A	0.3	-	-	A	0.3	-	-	
Route 63 SB	L	A	A	0.4	A	0.3	-	-	A	0.4	A	0.3	-	-	A	0.3	-	-	A	0.3	-	-	A	0.3	-	-	
Blair Rd EB	LTR	B	B	10.6	B	10.9	-	-	B	11.7	B	12.4	-	-	B	12.7	-	-	B	10.8	-	-	B	11.1	-	-	
Main St WB	LTR	A	A	9.8	A	10.0	-	-	A	10.4	B	10.7	-	-	B	10.8	-	-	A	9.9	-	-	A	10.0	-	-	
Route 77/Route 63/Lewiston Rd																											
Route 77 EB	LTR	AWS	A	9.4	A	9.7	-	-	B	11.4	B	10.6	-	-	B	11.5	-	-	A	9.2	-	-	B	10.0	-	-	
Lewiston Rd WB	LTR	A	A	9.7	A	9.4	-	-	B	13.5	B	12.1	-	-	B	14.5	-	-	A	9.2	-	-	B	10.5	-	-	
Route 63 NB	LTR	A	A	10.4	B	10.4	-	-	B	13.5	B	12.2	-	-	B	13.7	-	-	B	10.2	-	-	B	11.2	-	-	
Route 63 SB	LTR	A	A	10.6	B	10.2	-	-	B	14.3	B	13.1	-	-	C	15.3	-	-	B	10.0	-	-	B	11.1	-	-	
Overall		A	A	10.2	B	10.0	-	-	B	13.4	B	12.3	-	-	B	14.1	-	-	A	9.8	-	-	B	10.8	-	-	
Route 77/63 Overlap/Ham Rd																											
Route 77/63 SB	L	TWS		0.1	A	0.1	-	-	A	0.2	A	0.2	-	-	A	0.2	-	-	A	0.1	-	-	A	0.1	-	-	
Ham Rd WB	LR	B	B	11.1	B	10.9	-	-	B	11.8	C	18.0	-	-	C	22.9	-	-	B	10.8	-	-	B	11.5	-	-	
Route 77/Route 63/Judge Rd																											
Route 77 NB	L	TWS	A	7.8	A	8.1	-	-	A	8.1	A	9.1	-	-	B	10.1	-	-	A	4.7	-	-	A	8.5	-	-	
Route 77/63 SB	L	A	A	7.8	A	7.8	-	-	A	7.8	A	9.8	-	-	B	11.0	-	-	A	0.7	-	-	A	8.8	-	-	
Judge Rd EB	LTR	B	B	13.7	C	15.9	-	-	C	15.7	F	>999	-	-	F	>999	-	-	E	40.2	-	-	D	34.0	-	-	
Judge Rd WB	LT	B	B	14.7	D	32.5	-	-	C	17.9	F	>999	-	-	F	>999	-	-	F	103.7	-	-	F	103.2	-	-	
Judge Rd EB	LTR	S	-	-	-	-	B	11.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	LT	-	-	-	-	-	-	-	-	-	-	-	-	C	25.8	-	-	C	31.0	-	-	C	21.8	-	-	B	17.9
	R	-	-	-	-	-	-	-	-	-	-	-	-	C	24.7	-	-	C	29.8	-	-	C	20.5	-	-	B	17.3
Judge Rd WB	LT	-	-	-	-	-	B	11.7	-	-	-	-	-	C	33.1	-	-	D	47.9	-	-	C	33.3	-	-	C	20.3
	R	-	-	-	-	-	B	10.7	-	-	-	-	-	C	24.8	-	-	C	29.8	-	-	C	20.6	-	-	B	17.3
Route 77 NB	L	-	-	-	-	-	A	4.9	-	-	-	-	-	A	4.7	-	-	A	6.3	-	-	A	2.8	-	-	A	3.4
	TR	-	-	-	-	-	A	4.7	-	-	-	-	-	B	12.2	-	-	C	23.7	-	-	A	3.9	-	-	A	7.2
Route 77/63 SB	L	-	-	-	-	-	A	4.2	-	-	-	-	-	A	6.6	-	-	B	12.6	-	-	B	10.3	-	-	A	6.2
	TR	-	-	-	-	-	A	4.8	-	-	-	-	-	A	7.8	-	-	A	8.3	-	-	B	12.9	-	-	A	8.7
Overall		-	-	-	-	-	A	7.0	-	-	-	-	-	B	13.0	-	-	B	20.0	-	-	A	9.2	-	-	A	9.3
Route 77/Bloomingdale																											
Route 77 NB	L	TWS	A	0.7	A	0.5	-	-	A	0.8	A	0.5	-	-	A	0.9	-	-	A	0.5	-	-	A	0.4	-	-	
Bloomingdale Rd EB	LR	B	B	11.6	B	15.4	-	-	C	13.8	F	112.0	-	-	F	563.0	-	-	B	13.6	-	-	D	27.7	-	-	
Bloomingdale Rd EB	LR	S	-	-	-	-	-	-	-	-	-	-	-	C	29.0	-	-	D	39.3	-	-	B	16.6	-	-	B	18.3
Route 77 NB	L	-	-	-	-	-	-	-	-	-	-	-	-	A	2.4	-	-	A	2.4	-	-	A	1.7	-	-	A	2.0
	TR	-	-	-	-	-	-	-	-	-	-	-	-	A	6.5	-	-	B	16.5	-	-	A	2.1	-	-	A	3.3
Route 77 SB	TR	-	-	-	-	-	-	-	-	-	-	-	-	A	3.8	-	-	A	4.3	-	-	A	2.3	-	-	A	3.0
Overall		-	-	-	-	-	-	-	-	-	-	-	-	A	7.2	-	-	B	14.0	-	-	A	3.5	-	-	A	4.3

FIGURE 13A INTERSECTION LEVEL OF SERVICE - AM PEAK HOUR																										
Intersection	Control	GEIS														1366 TECHNOLOGIES										
		2015		2015				2035								2015										
		No-Build		Phase 1		No-Build		70%				Full Buildout				Phase 1			Full Buildout							
		LOS	Delay	Build	Build w/ Imp.	LOS	Delay	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.			
Route 77/Ledge Rd		TWS	A	1.3	A	0.9	-	-	A	1.4	A	1.0	-	-	A	1.7	-	-	A	0.1	-	-	A	0.7	-	-
Route 77 NB	L	A	0.2	A	0.1	-	-	A	0.2	A	0.2	-	-	A	0.3	-	-	A	0.9	-	-	A	0.1	-	-	
Route 77 SB	L	B	13.2	C	16.3	-	-	C	15.1	F	60.1	-	-	F	220.0	-	-	B	14.6	-	-	C	24.6	-	-	
Ledge Rd EB	LTR	B	13.8	C	17.7	-	-	C	16.0	F	79.5	-	-	F	381.0	-	-	C	15.7	-	-	D	29.0	-	-	
Ledge Rd WB	LTR	B	13.8	C	17.7	-	-	C	16.0	F	79.5	-	-	F	381.0	-	-	C	15.7	-	-	D	29.0	-	-	
Ledge Rd EB	LTR	S	-	-	-	-	C	23.3	-	-	-	-	C	34.3	-	-	D	42.1	-	-	B	18.0	-	-	C	20.2
Ledge Rd WB	LTR	S	-	-	-	-	C	22.8	-	-	-	-	C	33.4	-	-	D	41.1	-	-	B	16.7	-	-	C	18.6
Route 77 NB	LTR	S	-	-	-	-	A	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Route 77 NB	L	S	-	-	-	-	-	-	-	-	-	-	A	2.2	-	-	A	2.5	-	-	A	1.9	-	-	A	1.8
Route 77 SB	TR	S	-	-	-	-	-	-	-	-	-	-	A	4.8	-	-	B	12.9	-	-	A	2.0	-	-	A	2.7
Route 77 SB	LTR	S	-	-	-	-	A	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Route 77 SB	L	S	-	-	-	-	-	-	-	-	-	-	A	3.3	-	-	A	3.5	-	-	A	3.2	-	-	A	3.0
Route 77 SB	TR	S	-	-	-	-	-	-	-	-	-	-	A	4.8	-	-	A	5.4	-	-	A	4.1	-	-	A	4.2
Overall			-	-	-	-	A	4.9	-	-	-	-	A	6.9	-	-	B	12.2	-	-	A	5.0	-	-	A	4.6
Route 77/Akron Rd		TWS	A	0.7	A	0.5	-	-	A	0.8	A	0.4	A	8.7	A	0.6	A	9.0	A	0.5	A	8.0	A	0.3	A	8.4
Route 77 NB	L	A	0.7	A	0.5	-	-	A	0.8	A	0.4	A	8.7	A	0.6	A	9.0	A	0.5	A	8.0	A	0.3	A	8.4	
Akron Rd EB	LR	B	12.3	B	14.4	-	-	B	13.9	F	82.0	-	-	F	429.0	-	-	B	12.9	-	-	C	23.4	-	-	-
Akron Rd EB	[L]	-	-	-	-	-	-	-	-	-	-	C	20.3	-	-	D	33.5	-	-	B	14.1	-	-	D	26.6	
Akron Rd EB	[R]	-	-	-	-	-	-	-	-	-	-	B	12.9	-	-	B	14.0	-	-	B	10.7	-	-	B	11.8	
Route 77/I-90 Exit 48A		S	C	21.5	C	24.6	-	-	C	26.9	F	91.1	-	-	F	259.0	-	-	C	20.3	-	-	C	28.6	-	-
I-90 Exit 48A EB	L	C	21.5	C	24.6	-	-	C	26.9	F	91.1	-	-	F	259.0	-	-	C	20.3	-	-	C	28.6	-	-	-
I-90 Exit 48A EB	[L,L]	-	-	-	-	-	-	-	-	-	-	C	20.8	-	-	C	25.6	-	-	-	-	-	-	-	-	-
I-90 Exit 48A EB	R	A	6.0	A	6.1	-	-	A	6.0	A	5.6	A	7.0	A	6.2	A	7.0	A	5.4	-	-	A	5.1	-	-	-
Route 77 NB	L	A	7.6	A	9.9	-	-	B	10.9	D	39.0	B	18.4	D	39.6	C	23.0	B	10.3	-	-	C	21.3	-	-	-
Route 77 NB	TR	A	3.5	A	4.0	-	-	A	3.6	B	11.3	A	7.7	B	11.6	A	9.2	A	4.8	-	-	A	8.9	-	-	-
Route 77 SB	T,TR	B	18.2	B	19.8	-	-	C	21.8	D	36.0	-	-	D	38.0	-	-	C	20.9	-	-	C	28.2	-	-	-
Route 77 SB	[T]	-	-	-	-	-	-	-	-	-	-	C	22.5	-	-	C	25.1	-	-	-	-	-	-	-	-	-
Route 77 SB	[R]	-	-	-	-	-	-	-	-	-	-	A	7.9	-	-	A	8.3	-	-	-	-	-	-	-	-	-
Overall		B	12.1	B	14.7	-	-	B	15.0	D	45.4	C	15.1	F	101.0	B	18.1	B	14.2	-	-	C	22.2	-	-	-
Route 77/Route 5		S	A	6.7	A	6.8	-	-	A	7.4	A	8.4	-	-	B	12.3	-	-	A	9.0	-	-	A	9.1	-	-
Route 5 EB	L	A	6.7	A	6.8	-	-	A	7.4	A	8.4	-	-	B	12.3	-	-	A	9.0	-	-	A	9.1	-	-	-
Route 5 EB	TR	A	6.4	A	6.4	-	-	A	6.9	A	6.8	-	-	A	8.7	-	-	A	8.5	-	-	A	8.1	-	-	-
Route 5 WB	L	B	13.6	B	13.6	-	-	B	14.3	B	14.9	-	-	C	20.1	-	-	B	16.8	-	-	B	18.5	-	-	-
Route 5 WB	TR	B	15.2	B	15.3	-	-	B	16.5	B	18.2	-	-	C	30.8	-	-	B	19.9	-	-	C	23.3	-	-	-
Route 77 NB	L	B	19.9	B	19.0	-	-	C	23.2	C	21.8	-	-	B	17.9	-	-	B	13.2	-	-	B	15.0	-	-	-
Route 77 NB	TR	B	19.4	B	19.0	-	-	B	19.7	C	21.2	-	-	B	19.3	-	-	B	13.6	-	-	B	15.2	-	-	-
Route 77 SB	L	C	23.6	C	23.4	-	-	C	23.0	C	22.9	-	-	C	21.2	-	-	B	17.6	-	-	B	19.4	-	-	-
Route 77 SB	TR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Route 77 SB	[T]	C	26.9	C	27.0	-	-	C	29.0	C	29.7	-	-	C	23.8	-	-	B	19.1	-	-	C	21.2	-	-	-
Route 77 SB	[R]	C	22.7	C	22.5	-	-	C	21.8	C	21.5	-	-	C	20.2	-	-	B	17.2	-	-	B	18.9	-	-	-
Overall		B	16.0	B	16.0	-	-	B	16.9	B	17.5	-	-	B	19.7	-	-	B	14.8	-	-	B	16.3	-	-	-
Route 77/Royalton Center Rd		TWS	A	1.4	A	1.2	-	-	A	1.4	A	0.8	-	-	A	0.7	-	-	A	1.2	-	-	A	0.8	-	-
Route 77 EB	L	A	1.4	A	1.2	-	-	A	1.4	A	0.8	-	-	A	0.7	-	-	A	1.2	-	-	A	0.8	-	-	-
Route 77 WB	L	A	1.5	A	1.4	-	-	A	1.5	A	1.4	-	-	A	1.4	-	-	A	1.5	-	-	A	1.4	-	-	-
Royalton Center Rd NB	LTR	B	11.1	B	11.4	-	-	B	11.7	B	13.0	-	-	B	13.4	-	-	B	11.1	-	-	B	11.7	-	-	-
Royalton Center Rd SB	LTR	B	11.3	B	12.0	-	-	B	12.1	B	14.4	-	-	C	15.8	-	-	B	11.6	-	-	B	12.7	-	-	-

FIGURE 13A INTERSECTION LEVEL OF SERVICE - AM PEAK HOUR																										
Intersection	Control	GEIS														1366 TECHNOLOGIES										
		2015		2015				2035								2015										
		No-Build		Phase 1		No-Build		70%				Full Buildout				Phase 1			Full Buildout							
		LOS	Delay	Build	Build w/ Imp.	LOS	Delay	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.			
Route 98/Lockport Rd		TWS	A	0.1	A	0.3	-	-	A	0.2	A	0.9	-	-	A	1.1	-	-	A	0.3	-	-	A	0.7	-	-
Route 98 NB	L		A	0.4	A	0.4	-	-	A	0.5	A	0.5	-	-	A	0.5	-	-	A	0.4	-	-	A	0.4	-	-
Route 98 SB	L		B	12.5	B	13.5	-	-	B	14.2	C	17.8	-	-	C	20.1	-	-	B	12.9	-	-	B	14.4	-	-
Lockport Rd EB	LTR		B	12.5	B	13.0	-	-	B	13.6	C	17.5	-	-	C	20.0	-	-	B	12.9	-	-	B	14.3	-	-
Lockport Rd WB	LTR	B	12.5	B	13.0	-	-	B	13.6	C	17.5	-	-	C	20.0	-	-	B	12.9	-	-	B	14.3	-	-	
Route 63/Lewiston Rd/Park Rd		TWS	A	7.8	A	7.9	-	-	A	7.9	A	8.3	-	-	A	8.5	-	-	A	7.8	-	-	A	7.8	-	-
Route 63 EB	L		A	0.0	A	0.0	-	-	A	0.0	A	0.0	-	-	A	0.0	-	-	A	1.9	-	-	A	4.2	-	-
Route 63 WB	L		A	0.0	A	0.0	-	-	A	0.0	A	0.0	-	-	A	0.0	-	-	A	0.0	-	-	A	0.0	-	-
Park Rd NB	LTR		B	11.4	B	12.1	-	-	B	12.5	C	16.0	-	-	C	18.3	-	-	B	12.4	-	-	C	15.1	-	-
Lewiston Rd SB	L		A	9.2	A	9.4	-	-	A	9.3	B	10.2	-	-	B	10.7	-	-	A	9.5	-	-	B	10.4	-	-
Lewiston Rd SB	TR	A	9.2	A	9.4	-	-	A	9.3	B	10.2	-	-	B	10.7	-	-	A	9.5	-	-	B	10.4	-	-	
Route 77/Crosby Rd		TWS	-	-	-	-	-	-	-	A	3.5	-	-	A	3.3	-	-	A	0.0	-	-	A	0.0	-	-	
Route 77 EB	L		-	-	-	-	-	-	-	-	B	1.7	-	-	C	15.6	-	-	A	4.6	-	-	A	5.6	-	-
Crosby Rd NB	LTR		-	-	-	-	-	-	-	-	B	11.5	-	-	B	13.0	-	-	B	10.1	-	-	B	10.3	-	-
Route 77 SB	LTR	-	-	-	-	-	-	-	-	B	11.5	-	-	B	13.0	-	-	B	10.1	-	-	B	10.3	-	-	
Route 77/63/Site Drwy #1		TWS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B	14.5	B	14.5	E	41.8	E	41.8	
Site Drwy #1 EB	L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B	10.0	B	10.0	B	11.1	B	11.1	
Site Drwy #1	R		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	3.1	-	-	A	7.3	-	-	
Route 77/63 NB	LT		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	8.1	-	-	A	9.3	-	-
Route 77/63 NB	[L]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Judge Rd/Crosby Rd		TWS	-	-	-	-	-	-	-	A	0.0	-	-	A	0.0	-	-	A	0.0	-	-	A	0.0	-	-	
Judge Rd WB	L		-	-	-	-	-	-	-	-	A	9.8	-	-	B	10.3	-	-	A	9.0	-	-	A	9.7	-	-
Crosby Rd SB	LR	-	-	-	-	-	-	-	-	A	9.8	-	-	B	10.3	-	-	A	9.0	-	-	A	9.7	-	-	

KEY:
TWS, AWS, S = Two-way Stop, All-way Stop, or Signal controlled intersection
NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound intersection approaches
LTR = Left turn, through, and/or right turn movements
- = Not Applicable
L[T]R = LR represents the existing geometry, LTR represents the future geometry
A, B, C, etc. = represents the level of service
Y.Y = represents the average delay in seconds per vehicle

FIGURE 13B INTERSECTION LEVEL OF SERVICE - PM PEAK HOUR																										
Intersection	Control	GEIS														1366 TECHNOLOGIES										
		2015		2015				2035								2015										
		No-Build		Phase 1		No-Build		70%				Full Buildout				Phase 1			Full Buildout							
		LOS	Delay	Build	Delay	Build w/ Imp.	Delay	LOS	Delay	Build	Delay	Build w/ Imp.	Delay	Build	Delay	Build w/ Imp.	Build	Delay	Build w/ Imp.	Build	Delay	Build w/ Imp.	Delay			
Route 63/Route 31/Route 31A																										
Route 31 EB	LT	S	B	13.5	B	13.6	-	-	C	22.0	C	23.7	-	-	C	26.9	-	-	B	14.3	-	-	B	14.2	-	-
Route 31A WB	LTR	A	7.3	A	7.3	-	-	A	8.0	A	8.5	-	-	A	8.7	-	-	A	7.7	-	-	A	7.6	-	-	
Route 63 NB	LTR	A	10.0	B	10.1	-	-	B	11.9	B	13.0	-	-	B	13.4	-	-	B	10.5	-	-	B	10.6	-	-	
Route 31 SB	LTR	B	10.5	B	10.6	-	-	B	17.6	C	20.7	-	-	C	22.7	-	-	B	10.7	-	-	B	11.1	-	-	
Route 31 SB	LTR	B	13.7	B	13.9	-	-	C	30.9	C	33.2	-	-	C	34.3	-	-	B	13.7	-	-	B	14.0	-	-	
Overall		B	12.0	B	12.1	-	-	C	20.9	C	23.0	-	-	C	24.3	-	-	B	12.4	-	-	B	12.5	-	-	
Route 63/Blair Rd/Main St																										
Route 63 NB	L	TWS	A	0.3	A	0.3	-	-	A	0.3	A	0.3	-	-	A	0.3	-	-	A	0.2	-	-	A	0.2	-	-
Route 63 SB	L	A	0.3	A	0.6	-	-	A	0.7	A	0.7	-	-	A	0.7	-	-	A	0.6	-	-	A	0.7	-	-	
Blair Rd EB	LTR	B	13.0	B	13.2	-	-	B	14.8	C	16.2	-	-	C	16.8	-	-	B	13.1	-	-	B	13.4	-	-	
Main St WB	LTR	B	11.5	B	11.6	-	-	B	12.7	B	13.6	-	-	B	14.0	-	-	B	11.6	-	-	B	11.8	-	-	
Route 77/Route 63/Lewiston Rd																										
Route 77 EB	LTR	AWS	B	10.6	B	11.4	-	-	B	12.4	C	15.5	-	-	C	18.9	-	-	B	10.8	-	-	B	12.7	-	-
Lewiston Rd WB	LTR	B	11.4	B	12.2	-	-	B	13.8	C	20.7	-	-	D	28.3	-	-	B	12.0	-	-	C	15.4	-	-	
Route 63 NB	LTR	C	15.8	C	17.2	-	-	D	26.0	E	46.2	-	-	F	101.0	-	-	C	17.1	-	-	C	24.9	-	-	
Route 63 SB	LTR	B	12.1	B	12.9	-	-	C	15.5	C	22.2	-	-	D	29.2	-	-	B	12.7	-	-	B	14.8	-	-	
Overall		B	13.4	B	14.2	-	-	C	19.2	D	30.5	-	-	F	55.8	-	-	B	14.1	-	-	C	18.7	-	-	
Route 77/63 Overlap/Ham Rd																										
Route 77/63 SB	L	TWS	A	0.2	A	0.2	-	-	A	0.3	A	0.3	-	-	A	0.4	-	-	A	0.3	-	-	A	0.2	-	-
Ham Rd WB	LR	B	12.7	B	12.6	-	-	B	14.3	D	28.2	-	-	E	44.7	-	-	B	12.7	-	-	B	13.4	-	-	
Route 77/Route 63/Judge Rd																										
Route 77 NB	L	TWS	A	8.1	A	8.3	-	-	A	8.2	B	11.8	-	-	C	16.3	-	-	A	8.2	-	-	A	9.7	-	-
Route 77/63 SB	L	A	8.8	A	8.4	-	-	A	9.2	B	10.8	-	-	B	12.3	-	-	A	8.6	-	-	A	8.7	-	-	
Judge Rd EB	LTR	C	20.2	E	35.5	-	-	D	28.5	F	>999	-	-	F	>999	-	-	C	24.6	-	-	F	184.5	-	-	
Judge Rd WB	LT	D	25.0	F	248.0	-	-	E	49.7	F	>999	-	-	F	>999	-	-	E	48.4	-	-	F	892.4	-	-	
Judge Rd EB	LTR	S	-	-	-	B	11.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
LT	-	-	-	-	-	-	-	-	-	-	-	C	30.5	-	-	C	32.8	-	-	B	15.2	-	-	C	20.5	
R	-	-	-	-	-	-	-	-	-	-	-	C	30.2	-	-	E	58.1	-	-	B	14.4	-	-	B	19.3	
Judge Rd WB	LT	-	-	-	-	B	13.1	-	-	-	-	D	49.2	-	-	E	71.0	-	-	B	18.0	-	-	C	28.6	
R	-	-	-	-	B	10.7	-	-	-	-	-	C	28.0	-	-	C	29.5	-	-	B	14.4	-	-	B	19.1	
Route 77 NB	L	-	-	-	A	5.2	-	-	-	-	-	D	45.4	-	-	F	193.0	-	-	A	5.0	-	-	A	5.2	
TR	-	-	-	-	A	5.7	-	-	-	-	-	B	15.8	-	-	C	29.8	-	-	A	8.0	-	-	A	7.4	
Route 77/63 SB	L	-	-	-	A	4.6	-	-	-	-	-	B	11.2	-	-	E	66.0	-	-	A	5.2	-	-	A	5.5	
TR	-	-	-	-	A	5.4	-	-	-	-	-	C	30.1	-	-	F	102.0	-	-	A	7.5	-	-	B	10.6	
Overall		-	-	-	A	7.6	-	-	-	-	-	C	27.3	-	-	E	74.0	-	-	A	9.6	-	-	B	12.4	
Route 77/Bloomingtondale																										
Route 77 NB	L	TWS	A	1.5	A	1.3	-	-	A	1.7	A	3.6	-	-	A	7.7	-	-	A	1.4	-	-	A	1.5	-	-
Bloomingtondale Rd EB	LR	C	18.2	D	29.2	-	-	D	26.3	F	>999	-	-	F	>999	-	-	C	22.8	-	-	F	111.6	-	-	
Bloomingtondale Rd EB	LR	S	-	-	-	-	-	-	-	-	-	D	53.2	-	-	E	60.4	-	-	B	13.9	-	-	B	3.4	
Route 77 NB	L	-	-	-	-	-	-	-	-	-	-	C	25.1	-	-	C	25.2	-	-	A	3.4	-	-	A	4.6	
TR	-	-	-	-	-	-	-	-	-	-	-	A	6.2	-	-	B	10.4	-	-	A	4.2	-	-	A	6.3	
Route 77 SB	TR	-	-	-	-	-	-	-	-	-	-	C	28.7	-	-	F	133.0	-	-	A	4.5	-	-	A	17.8	
Overall		-	-	-	-	-	-	-	-	-	-	C	22.8	-	-	F	80.4	-	-	A	5.8	-	-	A	6.9	

FIGURE 13B INTERSECTION LEVEL OF SERVICE - PM PEAK HOUR																									
Intersection	Control	GEIS														1366 TECHNOLOGIES									
		2015		2015				2035								2015									
		No-Build		Phase 1		No-Build		70%				Full Buildout				Phase 1			Full Buildout						
		LOS	Delay	Build	Build w/ Imp.	LOS	Delay	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.		
Route 77/Ledge Rd		TWS																							
Route 77 NB	L	A	3.1	A	2.9	-	-	A	3.4	A	6.5	-	-	B	12.3	-	-	A	3.0	-	-	A	3.1	-	-
Route 77 SB	L	A	0.5	A	0.4	-	-	A	0.6	A	0.7	-	-	A	1.5	-	-	A	0.4	-	-	A	0.4	-	-
Ledge Rd EB	LTR	D	26.0	F	66.8	-	-	F	81.5	F	>999	-	-	F	>999	-	-	E	42.3	-	-	F	222.5	-	-
Ledge Rd WB	LTR	D	27.9	F	54.2	-	-	F	56.9	F	>999	-	-	F	>999	-	-	E	40.3	-	-	F	>999	-	-
Ledge Rd EB	LTR	-	-	-	-	B	17.3	-	-	-	-	D	52.3	-	-	D	54.8	-	-	B	14.7	-	-	B	17.6
Ledge Rd WB	LTR	-	-	-	-	B	16.4	-	-	-	-	C	33.7	-	-	C	34.9	-	-	B	14.3	-	-	B	16.8
Route 77 NB	LTR	-	-	-	-	A	6.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	L	-	-	-	-	-	-	-	-	-	-	D	39.5	-	-	E	62.2	-	-	A	3.9	-	-	A	6.1
	TR	-	-	-	-	-	-	-	-	-	-	A	6.9	-	-	B	10.3	-	-	A	4.0	-	-	A	5.2
Route 77 SB	LTR	-	-	-	-	A	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	L	-	-	-	-	-	-	-	-	-	-	A	6.8	-	-	A	6.9	-	-	A	6.6	-	-	A	6.7
	TR	-	-	-	-	-	-	-	-	-	-	D	36.1	-	-	F	137.0	-	-	A	5.4	-	-	B	12.3
Overall		-	-	-	-	-	-	-	-	-	-	C	28.3	-	-	E	77.6	-	-	A	8.5	-	-	B	10.5
Route 77/Akron Rd		TWS																							
Route 77 NB	L	A	1.6	A	1.5	-	-	A	1.7	A	3.4	B	11.7	A	6.3	B	14.4	A	1.5	A	8.3	A	1.6	A	9.1
Akron Rd EB	LR	C	16.3	C	22.6	-	-	C	20.8	F	812.0	-	-	F	>999	-	-	C	19.1	-	-	E	49.9	-	-
	[L]	-	-	-	-	-	-	-	-	-	-	E	37.5	-	-	F	90.6	-	-	C	21.6	-	-	F	53.6
	[R]	-	-	-	-	-	-	-	-	-	-	C	22.6	-	-	E	36.0	-	-	B	10.9	-	-	B	13.3
Route 77/I-90 Exit 48A		S																							
I-90 Exit 48A EB	L	C	25.1	C	23.4	-	-	C	26.5	F	146.0	-	-	F	263.0	-	-	C	21.6	-	-	C	33.1	-	-
	[L,L]	-	-	-	-	-	-	-	-	-	-	C	24.6	-	-	C	31.3	-	-	-	-	-	-	-	-
	R	A	7.2	A	6.8	-	-	A	7.4	B	12.3	B	12.3	B	12.7	B	13.7	A	6.6	-	-	A	7.8	-	-
Route 77 NB	L	B	9.4	B	14.5	-	-	B	15.3	D	40.9	C	27.2	D	41.1	D	43.0	B	13.0	-	-	C	24.0	-	-
	TR	A	5.3	A	7.3	-	-	A	7.3	B	10.9	A	8.3	B	11.4	A	9.2	A	6.9	-	-	A	9.7	-	-
Route 77 SB	T,TR	C	19.0	C	22.7	-	-	C	24.5	F	84.8	-	-	F	223.0	-	-	C	22.5	-	-	C	30.8	-	-
	[T]	-	-	-	-	-	-	-	-	-	-	C	31.3	-	-	D	46.5	-	-	-	-	-	-	-	-
	[R]	-	-	-	-	-	-	-	-	-	-	B	11.6	-	-	C	24.6	-	-	-	-	-	-	-	-
Overall		B	12.7	B	15.3	-	-	B	15.8	E	69.1	B	18.4	F	153.0	C	27.4	B	14.3	-	-	C	22.5	-	-
Route 77/Route 5		S																							
Route 5 EB	L	B	13.6	B	12.1	-	-	B	19.5	C	24.1	-	-	C	33.7	-	-	B	11.6	-	-	B	12.6	-	-
	TR	B	13.2	B	12.0	-	-	B	16.2	B	15.2	-	-	B	16.6	-	-	B	11.8	-	-	B	11.7	-	-
Route 5 WB	L	B	19.2	B	18.6	-	-	C	20.1	C	20.6	-	-	C	21.9	-	-	B	18.9	-	-	B	19.1	-	-
	TR	C	27.4	C	26.3	-	-	D	35.6	D	37.8	-	-	D	43.7	-	-	C	26.9	-	-	C	27.5	-	-
Route 77 NB	L	B	18.5	B	17.5	-	-	C	26.1	C	30.1	-	-	C	29.8	-	-	B	17.7	-	-	B	18.1	-	-
	TR	B	16.1	B	16.1	-	-	B	17.6	B	18.3	-	-	B	18.5	-	-	B	16.2	-	-	B	17.1	-	-
Route 77 SB	L	C	21.6	C	21.4	-	-	C	23.2	C	23.9	-	-	C	26.6	-	-	C	21.5	-	-	C	22.0	-	-
	TR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	[T]	C	24.8	C	23.8	-	-	C	30.4	C	33.9	-	-	D	38.6	-	-	C	24.0	-	-	C	24.4	-	-
	[R]	B	19.9	B	19.8	-	-	C	20.6	C	24.0	-	-	C	21.7	-	-	B	20.0	-	-	C	20.4	-	-
Overall		B	18.6	B	17.7	-	-	C	23.0	C	24.6	-	-	C	27.9	-	-	B	17.8	-	-	C	18.2	-	-
Route 77/Royalton Center Rd		TWS																							
Route 77 EB	L	A	1.8	A	1.6	-	-	A	1.9	A	1.5	-	-	A	1.3	-	-	A	1.7	-	-	A	1.4	-	-
Route 77 WB	L	A	0.4	A	0.5	-	-	A	0.5	A	0.7	-	-	A	0.8	-	-	A	0.5	-	-	A	0.5	-	-
Royalton Center Rd NB	LTR	B	14.3	B	14.4	-	-	C	17.4	C	23.9	-	-	D	30.0	-	-	B	14.1	-	-	C	15.4	-	-
Royalton Center Rd SB	LTR	B	12.2	B	12.4	-	-	B	13.6	C	18.1	-	-	C	22.6	-	-	B	12.1	-	-	B	13.2	-	-

FIGURE 13B INTERSECTION LEVEL OF SERVICE - PM PEAK HOUR																									
Intersection	Control	GEIS														1366 TECHNOLOGIES									
		2015		2015				2035				2035				2015									
		No-Build		Phase 1		No-Build		70%		Full Buildout		Phase 1		Full Buildout											
		LOS	Delay	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.	Build	Build w/ Imp.										
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay		
Route 98/Lockport Rd		TWS																							
Route 98 NB	L	A	0.5	A	0.6	-	-	A	0.6	A	0.8	-	-	A	1.0	-	-	A	0.6	-	-	A	0.7	-	-
Route 98 SB	L	A	0.4	A	0.4	-	-	A	0.4	A	0.4	-	-	A	0.4	-	-	A	0.4	-	-	A	0.4	-	-
Lockport Rd EB	LTR	B	13.1	B	13.3	-	-	B	14.8	C	19.0	-	-	C	22.9	-	-	B	13.1	-	-	B	13.9	-	-
Lockport Rd WB	LTR	B	12.6	B	13.0	-	-	B	14.0	C	16.3	-	-	C	17.7	-	-	B	12.8	-	-	B	12.9	-	-
Route 63/Lewiston Rd/Park Rd		TWS																							
Route 63 EB	L	A	8.1	A	8.1	-	-	A	8.2	A	8.5	-	-	A	8.6	-	-	A	8.1	-	-	A	8.1	-	-
Route 63 WB	L	A	0.0	A	0.0	-	-	A	0.0	A	0.0	-	-	A	0.0	-	-	A	0.7	-	-	A	2.3	-	-
Park Rd NB	LTR	A	0.0	A	0.0	-	-	A	0.0	A	0.0	-	-	A	0.0	-	-	A	0.0	-	-	A	0.0	-	-
Lewiston Rd SB	L	B	11.8	B	12.1	-	-	B	13.2	C	18.0	-	-	C	21.9	-	-	B	12.2	-	-	B	13.6	-	-
	TR	A	9.6	A	9.7	-	-	A	9.9	B	10.8	-	-	B	11.3	-	-	A	9.8	-	-	B	10.7	-	-
Route 77/Crosby Rd		TWS																							
Route 77 EB	L	-	-	-	-	-	-	-	-	A	3.6	-	-	A	3.4	-	-	A	0.0	-	-	A	0.0	-	-
Crosby Rd NB	LTR	-	-	-	-	-	-	-	-	C	19.5	-	-	D	28.9	-	-	A	2.3	-	-	A	3.4	-	-
Route 77 SB	LTR	-	-	-	-	-	-	-	-	B	10.9	-	-	B	11.8	-	-	B	12.0	-	-	B	12.8	-	-
Route 77/63/Site Drwy #1		TWS																							
Site Drwy #1 EB	L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C	16.7	C	16.7	E	40.2	E	40.2
	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B	10.7	B	10.7	B	14.2	B	14.2
Route 77/63 NB	LT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	1.5	-	-	A	4.7	-	-
	[L]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	8.1	-	-	A	8.8	-
Judge Rd/Crosby Rd		TWS																							
Judge Rd WB	L	-	-	-	-	-	-	-	-	A	0.0	-	-	A	0.0	-	-	A	0.0	-	-	A	0.0	-	-
Crosby Rd SB	LR	-	-	-	-	-	-	-	-	B	11.8	-	-	B	13.9	-	-	A	9.4	-	-	B	10.4	-	-

KEY:
TWS, AWS, S = Two-way Stop, All-way Stop, or Signal controlled intersection
NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound intersection approaches
LTR = Left turn, through, and/or right turn movements
- = Not Applicable
L[T]R = LR represents the existing geometry, LTR represents the future geometry
A, B, C, etc. = represents the level of service
Y.Y = represents the average delay in seconds per vehicle

FIGURE 14 IMPROVEMENTS					
Intersection	GEIS			1366 TECHNOLOGIES	
	Phase 1	70%	Full Buildout	Phase 1	Full Buildout
Route 63/Route 31/Route 31A	Nothing recommended	Nothing recommended	Nothing recommended	Nothing recommended <i>(LOS is no worse than a LOS of B)</i>	Nothing recommended <i>(LOS is no worse than a LOS of B)</i>
Route 63/Blair Rd/Main St	Nothing recommended	Nothing recommended	Nothing recommended	Nothing recommended <i>(LOS is no worse than a LOS of B)</i>	Nothing recommended <i>(LOS is no worse than a LOS of B)</i>
Route 77/Route 63/Lewiston Rd	Nothing recommended	Nothing recommended	Monitor the intersection to see if improvements are necessary	Nothing recommended <i>(LOS is no worse than a LOS of C)</i>	Nothing recommended <i>(LOS is no worse than a LOS of C)</i>
Route 77/63 Overlap/Ham Rd	Nothing recommended	Nothing recommended	Nothing recommended	Nothing recommended <i>(LOS is no worse than a LOS of B)</i>	Nothing recommended <i>(LOS is no worse than a LOS of B)</i>
Route 77/Route 63/Judge Rd	Monitor for installation of traffic signal or roundabout, although neither are recommended	Construct eastbound right-turn lane Install traffic signal or roundabout	Monitor the intersection to see if additional improvements are necessary	Monitor for installation of traffic signal or roundabout, although neither are recommended	Construct eastbound right-turn lane Install roundabout. Only install traffic signal if warranted <i>(Eastbound and westbound legs have LOS of F. Based on the anticipated turning movement counts, if designated eastbound right turn lane is constructed, the traffic is unlikely to have traffic volumes required to meet MUTCD traffic signal warrants, which is why a traffic signal is not recommended.)</i>
Route 77/Bloomingtondale	Nothing recommended	Construct northbound left turn lane Extend two-way left turn lane opposite the northbound left turn lane to the NY Route 77/NY Route 63/Judge Road intersection Install traffic signal or roundabout	Monitor the intersection to see if additional improvements are necessary	Nothing recommended <i>(LOS is no worse than a LOS of C)</i>	Monitor for installation of traffic signal or roundabout <i>(The LOS during the AM peak hours no worse than a D. The LOS during the PM peak hours an F for only the eastbound leg. Installation of a traffic signal to address issues that are only felt during one hour of the day is not recommended)</i>
Route 77/Ledge Rd	Monitor for installation of traffic signal or roundabout, although neither are recommended	Construct northbound and southbound left turn lanes Install traffic signal or roundabout	Monitor the intersection to see if additional improvements are necessary	Monitor for installation of traffic signal or roundabout, although neither are recommended	Construct northbound and southbound left turn lanes Install roundabout. Only install traffic signal if warranted <i>(Eastbound and westbound legs have LOS of F. Based on the anticipated turning movement counts, the traffic is unlikely to have traffic volumes required to meet MUTCD traffic signal warrants, which is why a traffic signal is not recommended.)</i>
Route 77/Akron Rd	Nothing recommended	Construct eastbound right turn lane Construct northbound left turn lane Extend two-way left turn lane though the Hamlet of Indian Falls	Nothing more than 70%	Nothing recommended <i>(LOS is no worse than a LOS of C)</i>	Nothing recommended <i>(the LOS for the improvements suggested in the GEIS are worse than the LOS for the existing conditions.)</i>

FIGURE 14 IMPROVEMENTS					
Intersection	GEIS			1366 TECHNOLOGIES	
	Phase 1	70%	Full Buildout	Phase 1	Full Buildout
Route 77/I-90 Exit 48A	Nothing recommended	Construct eastbound left turn lane Change shared southbound through/right turn lane to a right turn only lane add a protected southbound right turn overlap phase to the traffic signal	Nothing more than 70%	Nothing recommended <i>(LOS is no worse than a LOS of C)</i>	Nothing recommended <i>(LOS is no worse than a LOS of C)</i>
Route 77/Route 5	Nothing recommended	Nothing recommended	Nothing recommended	Nothing recommended <i>(LOS is no worse than a LOS of C)</i>	Nothing recommended <i>(LOS is no worse than a LOS of C)</i>
Route 77/Royalton Center Rd	Nothing recommended	Nothing recommended	Nothing recommended	Nothing recommended <i>(LOS is no worse than a LOS of B)</i>	Nothing recommended <i>(LOS is no worse than a LOS of C)</i>
Route 98/Lockport Rd	Nothing recommended	Nothing recommended	Nothing recommended	Nothing recommended <i>(LOS is no worse than a LOS of B)</i>	Nothing recommended <i>(LOS is no worse than a LOS of B)</i>
Route 63/Lewiston Rd/Park Rd	Nothing recommended	Nothing recommended	Nothing recommended	Nothing recommended <i>(LOS is no worse than a LOS of B)</i>	Nothing recommended <i>(LOS is no worse than a LOS of C)</i>
Route 77/Crosby Rd	Provide access to the site	Nothing more than Phase 1	Nothing more than Phase 1	Nothing recommended <i>(LOS is no worse than a LOS of B)</i>	Nothing recommended <i>(LOS is no worse than a LOS of B)</i>
Route 77/63/Site Drwy #1	Nothing recommended	Nothing recommended	Nothing recommended	Construct northbound left turn lane on NY Route 77/NY Route 63 Overlap Provide separate eastbound left and right turn lanes	Monitor for installation of traffic signal or roundabout <i>(LOS on Route 77/Route 63 Overlap is no worse than LOS of B. LOS on Site drive is LOS E.)</i>
Judge Rd/Crosby Rd	Provide access to the site	Nothing more than Phase 1	Nothing more than Phase 1	Provide access to the site	Nothing more than Phase 1 <i>(LOS is no worse than a LOS of A)</i>

**TWO LANE CAPACITY ANALYSIS
(HCS)**

**NO BUILD
2015 DESIGN YEAR**

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	MDN	Highway	Route 77
Agency or Company	CME, HAMJDGnb15am	From/To	Ham Rd to Judge Rd
Date Performed	12/17/2010	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	No-Build 2015

Project Description: 110-021, STAMP

Input Data

	<input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway
	Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Two-way hourly volume 422 veh/h Directional split 56 / 44 Peak-hour factor, PHF 0.90 No-passing zone 0 % Trucks and Buses, P _T 10 % % Recreational vehicles, P _R 0% Access points/ mi 6

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.935
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	502
v_p * highest directional split proportion ² (pc/h)	281
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, S_{FM} (mi/h)	Base free-flow speed, $BFFS_{FM}$ 60.0 mi/h
Observed volume, V_f (veh/h)	Adj. for lane width and shoulder width ³ , f_{LS} (Exhibit 20-5) 1.3 mi/h
Free-flow speed, $FFS = S_{FM} + 0.00776(V_f / f_{HV})$ (mi/h)	Adj. for access points, f_A (Exhibit 20-6) 1.5 mi/h
	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 57.2 mi/h
Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS = FFS - 0.00776 v_p - f_{np}$	53.3

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	474
v_p * highest directional split proportion ² (pc/h)	265
Base percent time-spent-following, $BPTSF(\%) = 100(1 - e^{-0.000879 v_p})$	34.1
Adj. for directional distribution and no-passing zone, $f_{d/np}(\%)$ (Exh. 20-12)	0.2
Percent time-spent-following, $PTSF(\%) = BPTSF + f_{d/np}$	34.3

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	B
Volume to capacity ratio, $v/c = V_p / 3,200$	0.16
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh-mi}) = 0.25 L_t (V / PHF)$	117
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh-mi}) = V * L_t$	422
Peak 15-min total travel time, $TT_{15}(\text{veh-h}) = VMT_{15} / ATS$	2.2

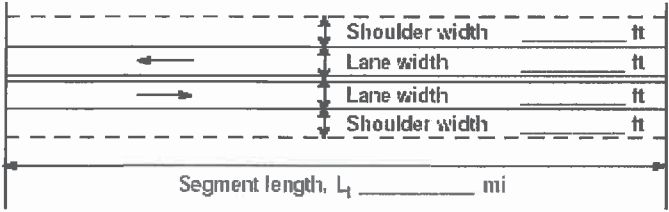
Notes

1. If $V_p \geq 3,200$ pc/h, terminate analysis-the LOS is F.
2. If highest directional split $V_p \geq 1,700$ pc/h, terminated analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	MDN	Highway	Route 77
Agency or Company	CME, JDGBLMnb15am	From/To	Judge Rd to Bloomingdale Rd
Date Performed	12/17/2010	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	No-Build 2015

Project Description: 110-021, STAMP

Input Data	Highway Classification
 <p style="text-align: center;">Segment length, L_1 _____ mi</p>	<input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Two-way hourly volume: 474 veh/h Directional split: 60 / 40 Peak-hour factor, PHF: 0.90 No-passing zone: 0 % Trucks and Buses, P_T : 10 % % Recreational vehicles, P_R : 0% Access points/ mi: 4

Average Travel Speed	
Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.935
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	564
v_p * highest directional split proportion ² (pc/h)	338
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, S_{FM} (mi/h)	Base free-flow speed, $BFFS_{FM}$ 60.0 mi/h
Observed volume, V_f (veh/h)	Adj. for lane width and shoulder width ³ , f_{LS} (Exhibit 20-5) 1.3 mi/h
Free-flow speed, $FFS = S_{FM} + 0.00776(V_f / f_{HV})$ (mi/h)	Adj. for access points, f_A (Exhibit 20-6) 1.0 mi/h
	Free-flow speed, FFS ($FSS = BFFS * f_{LS} * f_A$) 57.7 mi/h
Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS = FFS * 0.00776 v_p * f_{np}$	53.3

Percent Time-Spent-Following	
Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	532
v_p * highest directional split proportion ² (pc/h)	319
Base percent time-spent-following, $BPTSF(\%) = 100(1 - e^{-0.000879 v_p})$	37.4
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)$ (Exh. 20-12)	0.2
Percent time-spent-following, $PTSF(\%) = BPTSF + f_{dnp}$	37.5

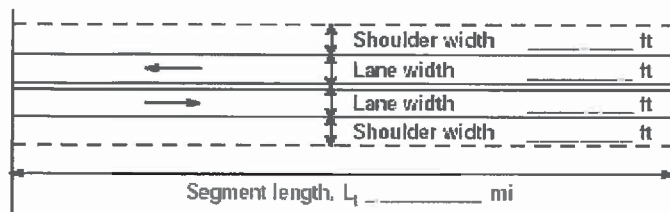
Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	B
Volume to capacity ratio, $v/c = V_p / 3,200$	0.18
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh-mi}) = 0.25 L_1 (V / PHF)$	66
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh-mi}) = V * L_1$	237
Peak 15-min total travel time, $TT_{15}(\text{veh-h}) = VMT_{15} / ATS$	1.2

Notes
 1. If $V_p \geq 3,200$ pc/h, terminate analysis-the LOS is F.
 2. If highest directional split $V_p \geq 1,700$ pc/h, terminated anlysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	MDN	Highway	Route 77
Agency or Company	CME, BLMLDGnb15am	From/To	Bloomingdale Rd to Ledge Rd
Date Performed	12/17/2010	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	No-Build 2015

Project Description: 110-021, STAMP

Input Data																			
 <p style="text-align: center;">Segment length, L_1 _____ mi</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><input checked="" type="checkbox"/> Class I highway</td> <td style="width: 50%;"><input type="checkbox"/> Class II highway</td> </tr> <tr> <td>Terrain <input checked="" type="checkbox"/> Level</td> <td><input type="checkbox"/> Rolling</td> </tr> <tr> <td>Two-way hourly volume</td> <td style="text-align: right;">426 veh/h</td> </tr> <tr> <td>Directional split</td> <td style="text-align: right;">59 / 41</td> </tr> <tr> <td>Peak-hour factor, PHF</td> <td style="text-align: right;">0.90</td> </tr> <tr> <td>No-passing zone</td> <td style="text-align: right;">0</td> </tr> <tr> <td>% Trucks and Buses, P_T</td> <td style="text-align: right;">10 %</td> </tr> <tr> <td>% Recreational vehicles, P_R</td> <td style="text-align: right;">0%</td> </tr> <tr> <td>Access points/ mi</td> <td style="text-align: right;">12</td> </tr> </table>	<input checked="" type="checkbox"/> Class I highway	<input type="checkbox"/> Class II highway	Terrain <input checked="" type="checkbox"/> Level	<input type="checkbox"/> Rolling	Two-way hourly volume	426 veh/h	Directional split	59 / 41	Peak-hour factor, PHF	0.90	No-passing zone	0	% Trucks and Buses, P_T	10 %	% Recreational vehicles, P_R	0%	Access points/ mi	12
<input checked="" type="checkbox"/> Class I highway	<input type="checkbox"/> Class II highway																		
Terrain <input checked="" type="checkbox"/> Level	<input type="checkbox"/> Rolling																		
Two-way hourly volume	426 veh/h																		
Directional split	59 / 41																		
Peak-hour factor, PHF	0.90																		
No-passing zone	0																		
% Trucks and Buses, P_T	10 %																		
% Recreational vehicles, P_R	0%																		
Access points/ mi	12																		

Average Travel Speed	
Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.935
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	506
v_p * highest directional split proportion ² (pc/h)	299
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, S_{FM} mi/h	Base free-flow speed, $BFFS_{FM}$ 60.0 mi/h
Observed volume, V_f veh/h	Adj. for lane width and shoulder width ³ , f_{LS} (Exhibit 20-5) 1.3 mi/h
Free-flow speed, $FFS = S_{FM} + 0.00776(V_f / f_{HV})$ mi/h	Adj. for access points, f_A (Exhibit 20-6) 3.0 mi/h
	Free-flow speed, $FFS (FSS = BFFS * f_{LS} * f_A)$ 55.7 mi/h
Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS = FFS * 0.00776 v_p / f_{np}$	51.8

Percent Time-Spent-Following	
Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	478
v_p * highest directional split proportion ² (pc/h)	282
Base percent time-spent-following, $BPTSF(\%) = 100(1 - e^{-0.000879 v_p})$	34.3
Adj. for directional distribution and no-passing zone, $f_{d/np}(\%)(Exh. 20-12)$	0.3
Percent time-spent-following, $PTSF(\%) = BPTSF + f_{d/np}$	34.6

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	B
Volume to capacity ratio, $v/c = V_p / 3,200$	0.16
Peak 15-min veh-miles of travel, $VMT_{15} (veh \cdot mi) = 0.25 L_1 (V / PHF)$	178
Peak-hour vehicle-miles of travel, $VMT_{60} (veh \cdot mi) = V * L_1$	639
Peak 15-min total travel time, $TT_{15} (veh \cdot h) = VMT_{15} / ATS$	3.4

Notes

- If $V_p \geq 3,200$ pc/h, terminate analysis-the LOS is F.
- If highest directional split $V_p \geq 1,700$ pc/h, terminated analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	MDN	Highway	Route 77
Agency or Company	CME, LDGAKRnb15am	From/To	Ledge Rd to Akron Rd
Date Performed	12/17/2010	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	No-Build 2015

Project Description: 110-021, STAMP

Input Data

<p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p>	<input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Two-way hourly volume 456 veh/h Directional split 63 / 37 Peak-hour factor, PHF 0.90 No-passing zone 0 % Trucks and Buses, P_T 10 % % Recreational vehicles, P_R 0% Access points/ mi 12
	Show North Arrow

Average Travel Speed	
Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.935
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	542
v_p * highest directional split proportion ² (pc/h)	341
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, S_{FM} mi/h	Base free-flow speed, $BFFS_{FM}$ 60.0 mi/h
Observed volume, V_f veh/h	Adj. for lane width and shoulder width ³ , f_{LS} (Exhibit 20-5) 1.3 mi/h
Free-flow speed, FFS $FFS = S_{FM} + 0.00776(V_f / f_{HV})$ mi/h	Adj. for access points, f_A (Exhibit 20-6) 3.0 mi/h
	Free-flow speed, FFS ($FSS = BFFS * f_{LS} * f_A$) 55.7 mi/h
Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS = FFS * 0.00776 v_p * f_{np}$	51.5
Percent Time-Spent-Following	
Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	512
v_p * highest directional split proportion ² (pc/h)	323
Base percent time-spent-following, $BPTSF(\%) = 100(1 - e^{-0.000879 v_p})$	36.2
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)(Exh. 20-12)$	0.2
Percent time-spent-following, $PTSF(\%) = BPTSF + f_{dnp}$	36.5
Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	B
Volume to capacity ratio, $v/c = V_p / 3,200$	0.17
Peak 15-min veh-miles of travel, $VMT_{15} (veh-mi) = 0.25 L_1 (V / PHF)$	177
Peak-hour vehicle-miles of travel, $VMT_{60} (veh-mi) = V * L_1$	638
Peak 15-min total travel time, $TT_{15} (veh-h) = VMT_{15} / ATS$	3.4

Notes

1. If $V_p \geq 3,200$ pc/h, terminate analysis-the LOS is F.
2. If highest directional split $V_p \geq 1,700$ pc/h, terminated anlysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	MDN	Highway	Route 77
Agency or Company	CME, AKR48Anb15am	From/To	Akron Rd to I-90 Exit 48A
Date Performed	12/17/2010	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	No-Build 2015

Project Description: 110-021, STAMP

Input Data

<p style="text-align: center;">Segment length, L_1 _____ mi</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><input checked="" type="checkbox"/> Class I highway</td> <td style="width: 50%;"><input type="checkbox"/> Class II highway</td> </tr> <tr> <td>Terrain <input checked="" type="checkbox"/> Level</td> <td><input type="checkbox"/> Rolling</td> </tr> <tr> <td>Two-way hourly volume</td> <td>619 veh/h</td> </tr> <tr> <td>Directional split</td> <td>55 / 45</td> </tr> <tr> <td>Peak-hour factor, PHF</td> <td>0.90</td> </tr> <tr> <td>No-passing zone</td> <td>0</td> </tr> <tr> <td>% Trucks and Buses, P_T</td> <td>10 %</td> </tr> <tr> <td>% Recreational vehicles, P_R</td> <td>0%</td> </tr> <tr> <td>Access points/ mi</td> <td>4</td> </tr> </table>	<input checked="" type="checkbox"/> Class I highway	<input type="checkbox"/> Class II highway	Terrain <input checked="" type="checkbox"/> Level	<input type="checkbox"/> Rolling	Two-way hourly volume	619 veh/h	Directional split	55 / 45	Peak-hour factor, PHF	0.90	No-passing zone	0	% Trucks and Buses, P_T	10 %	% Recreational vehicles, P_R	0%	Access points/ mi	4
<input checked="" type="checkbox"/> Class I highway	<input type="checkbox"/> Class II highway																		
Terrain <input checked="" type="checkbox"/> Level	<input type="checkbox"/> Rolling																		
Two-way hourly volume	619 veh/h																		
Directional split	55 / 45																		
Peak-hour factor, PHF	0.90																		
No-passing zone	0																		
% Trucks and Buses, P_T	10 %																		
% Recreational vehicles, P_R	0%																		
Access points/ mi	4																		

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.980
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	702
v_p * highest directional split proportion ² (pc/h)	386
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, S_{FM} mi/h	Base free-flow speed, $BFFS_{FM}$ 60.0 mi/h
Observed volume, V_f veh/h	Adj. for lane width and shoulder width ³ , f_{LS} (Exhibit 20-5) 1.3 mi/h
Free-flow speed, $FFS = S_{FM} + 0.00776(V_f / f_{HV})$ mi/h	Adj. for access points, f_A (Exhibit 20-6) 1.0 mi/h
	Free-flow speed, $FFS (FSS = BFFS * f_{LS} * f_A)$ 57.7 mi/h
Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS = FFS - 0.00776 v_p * f_{np}$	52.3

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	695
v_p * highest directional split proportion ² (pc/h)	382
Base percent time-spent-following, $BPTSF(\%) = 100(1 - e^{-0.000879 v_p})$	45.7
Adj. for directional distribution and no-passing zone, $f_{d/np}(\%)(Exh. 20-12)$	0.0
Percent time-spent-following, $PTSF(\%) = BPTSF * f_{d/np}$	45.7

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	B
Volume to capacity ratio, $v/c = V_p / 3,200$	0.22
Peak 15-min veh-miles of travel, $VMT_{15} (veh-mi) = 0.25 L_t (V / PHF)$	258
Peak-hour vehicle-miles of travel, $VMT_{60} (veh-mi) = V * L_t$	929
Peak 15-min total travel time, $TT_{15} (veh-h) = VMT_{15} / ATS$	4.9

Notes

1. If $V_p \geq 3,200$ pc/h, terminate analysis-the LOS is F.
2. If highest directional split $V_p \geq 1,700$ pc/h, terminated anlysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	MDN	Highway	Route 77
Agency or Company	CME, 48ART5nb15am	From/To	I-90 Exit 48A to Route 5
Date Performed	12/17/2010	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	No-Build 2015

Project Description: 110-021, STAMP

Input Data	Highway Characteristics																		
<p style="text-align: center;">Segment length, L_1 _____ mi</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><input checked="" type="checkbox"/> Class I highway</td> <td style="width: 50%;"><input type="checkbox"/> Class II highway</td> </tr> <tr> <td>Terrain <input checked="" type="checkbox"/> Level</td> <td><input type="checkbox"/> Rolling</td> </tr> <tr> <td>Two-way hourly volume</td> <td style="text-align: right;">650 veh/h</td> </tr> <tr> <td>Directional split</td> <td style="text-align: right;">54 / 46</td> </tr> <tr> <td>Peak-hour factor, PHF</td> <td style="text-align: right;">0.90</td> </tr> <tr> <td>No-passing zone</td> <td style="text-align: right;">0</td> </tr> <tr> <td>% Trucks and Buses, P_T</td> <td style="text-align: right;">10 %</td> </tr> <tr> <td>% Recreational vehicles, P_R</td> <td style="text-align: right;">0%</td> </tr> <tr> <td>Access points/ mi</td> <td style="text-align: right;">6</td> </tr> </table>	<input checked="" type="checkbox"/> Class I highway	<input type="checkbox"/> Class II highway	Terrain <input checked="" type="checkbox"/> Level	<input type="checkbox"/> Rolling	Two-way hourly volume	650 veh/h	Directional split	54 / 46	Peak-hour factor, PHF	0.90	No-passing zone	0	% Trucks and Buses, P_T	10 %	% Recreational vehicles, P_R	0%	Access points/ mi	6
<input checked="" type="checkbox"/> Class I highway	<input type="checkbox"/> Class II highway																		
Terrain <input checked="" type="checkbox"/> Level	<input type="checkbox"/> Rolling																		
Two-way hourly volume	650 veh/h																		
Directional split	54 / 46																		
Peak-hour factor, PHF	0.90																		
No-passing zone	0																		
% Trucks and Buses, P_T	10 %																		
% Recreational vehicles, P_R	0%																		
Access points/ mi	6																		

Average Travel Speed	
Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.980
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	737
v_p * highest directional split proportion ² (pc/h)	398
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, S_{FM} mi/h	Base free-flow speed, $BFFS_{FM}$ 60.0 mi/h
Observed volume, V_f veh/h	Adj. for lane width and shoulder width ³ , f_{LS} (Exhibit 20-5) 1.3 mi/h
Free-flow speed, FFS $FFS = S_{FM} + 0.00776(V_f / f_{HV})$ mi/h	Adj. for access points, f_A (Exhibit 20-6) 1.5 mi/h
	Free-flow speed, FFS ($FSS = BFFS * f_{LS} * f_A$) 57.2 mi/h
Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS = FFS * 0.00776 v_p * f_{np}$	51.5

Percent Time-Spent-Following	
Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	729
v_p * highest directional split proportion ² (pc/h)	394
Base percent time-spent-following, $BPTSF(\%) = 100(1 - e^{-0.000879v_p})$	47.3
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)(Exh. 20-12)$	0.0
Percent time-spent-following, $PTSF(\%) = BPTSF + f_{dnp}$	47.3

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	B
Volume to capacity ratio, $v/c = V_p / 3,200$	0.23
Peak 15-min veh-miles of travel, $VMT_{15} (veh-mi) = 0.25L_1(V/PHF)$	126
Peak-hour vehicle-miles of travel, $VMT_{60}(veh-mi) = V * L_1$	455
Peak 15-min total travel time, $TT_{15}(veh-h) = VMT_{15}/ATS$	2.4

Notes
 1. If $V_p \geq 3,200$ pc/h, terminate analysis-the LOS is F.
 2. If highest directional split $V_p \geq 1,700$ pc/h, terminated anlysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	MDN	Highway	Route 77
Agency or Company	CME, HAMJDGnb15pm	From/To	Ham Rd to Judge Rd
Date Performed	12/17/2010	Jurisdiction	Town of Alabama
Analysis Time Period	PM Peak Hour	Analysis Year	No-Build 2015

Project Description: 110-021, STAMP

Input Data

Diagram showing a two-lane highway segment with lane widths, shoulder widths, and segment length L_1 in miles.

Class I highway Class II highway
 Terrain Level Rolling
 Two-way hourly volume 660 veh/h
 Directional split 53 / 47
 Peak-hour factor, PHF 0.90
 No-passing zone 0
 % Trucks and Buses, P_T 7 %
 % Recreational vehicles, P_R 0%
 Access points/ mi 6

Show North Arrow

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.986
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	744
v_p * highest directional split proportion ² (pc/h)	394
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, S_{FM} (mi/h)	Base free-flow speed, $BFFS_{FM}$ 60.0 mi/h
Observed volume, V_f (veh/h)	Adj. for lane width and shoulder width ³ , f_{LS} (Exhibit 20-5) 1.3 mi/h
Free-flow speed, $FFS = S_{FM} + 0.00776(V_f / f_{HV})$ (mi/h)	Adj. for access points, f_A (Exhibit 20-6) 1.5 mi/h
	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 57.2 mi/h
Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS = FFS - 0.00776 v_p - f_{np}$	51.4

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.993
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	738
v_p * highest directional split proportion ² (pc/h)	391
Base percent time-spent-following, $BPTSF(\%) = 100(1 - e^{-0.000879 v_p})$	47.7
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)(\text{Exh. 20-12})$	0.0
Percent time-spent-following, $PTSF(\%) = BPTSF + f_{dnp}$	47.7

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	B
Volume to capacity ratio, $v/c = V / 3,200$	0.23
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh-mi}) = 0.25 L_t (V / PHF)$	183
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh-mi}) = V * L_t$	660
Peak 15-min total travel time, $TT_{15}(\text{veh-h}) = VMT_{15} / ATS$	3.6

Notes

- If $V_p \geq 3,200$ pc/h, terminate analysis-the LOS is F.
- If highest directional split $V_p \geq 1,700$ pc/h, terminated analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	MDN	Highway	Route 77
Agency or Company	CME, JDGBLMnb15pm	From/To	Judge Rd to Bloomingdale Rd
Date Performed	12/17/2010	Jurisdiction	Town of Alabama
Analysis Time Period	PM Peak Hour	Analysis Year	No-Build 2015

Project Description: 110-021, STAMP

Input Data

Diagram labels: Shoulder width (ft), Lane width (ft), Lane width (ft), Shoulder width (ft), Segment length, L_1 (mi)

<input checked="" type="checkbox"/> Class I highway	<input type="checkbox"/> Class II highway
Terrain <input checked="" type="checkbox"/> Level	<input type="checkbox"/> Rolling
Two-way hourly volume	696 veh/h
Directional split	54 / 46
Peak-hour factor, PHF	0.90
No-passing zone	0
% Trucks and Buses, P_T	7 %
% Recreational vehicles, P_R	0%
Access points/ mi	4

Diagram: A circle with a crosshair, labeled "Show North Arrow".

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.986
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	784
v_p * highest directional split proportion ² (pc/h)	423
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, S_{FM} (mi/h)	Base free-flow speed, $BFFS_{FM}$ 60.0 mi/h
Observed volume, V_f (veh/h)	Adj. for lane width and shoulder width ³ , f_{LS} (Exhibit 20-5) 1.3 mi/h
Free-flow speed, $FFS = S_{FM} + 0.00776(V_f / f_{HV})$ (mi/h)	Adj. for access points, f_A (Exhibit 20-6) 1.0 mi/h
	Free-flow speed, FFS ($FSS = BFFS * f_{LS} * f_A$) 57.7 mi/h
Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS = FFS * 0.00776 v_p * f_{np}$	51.6

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.993
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	779
v_p * highest directional split proportion ² (pc/h)	421
Base percent time-spent-following, $BPTSF(\%) = 100(1 - e^{-0.000879 v_p})$	49.6
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)(\text{Exh. 20-12})$	0.0
Percent time-spent-following, $PTSF(\%) = BPTSF + f_{dnp}$	49.6

Level of Service and Other Performance Measures

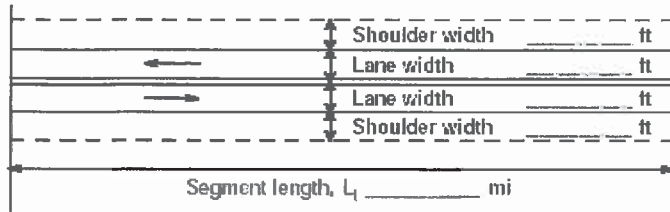
Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	B
Volume to capacity ratio, $v/c = V_p / 3,200$	0.25
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh-mi}) = 0.25 L_1 (V / PHF)$	97
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh-mi}) = V * L_1$	348
Peak 15-min total travel time, $TT_{15}(\text{veh-h}) = VMT_{15} / ATS$	1.9

Notes
 1. If $V_p \geq 3,200$ pc/h, terminate analysis-the LOS is F.
 2. If highest directional split $V_p \geq 1,700$ pc/h, terminated anlysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	MDN	Highway	Route 77
Agency or Company	CME, BLMLDGnb15pm	From/To	Bloomington Rd to Ledge Rd
Date Performed	12/17/2010	Jurisdiction	Town of Alabama
Analysis Time Period	PM Peak Hour	Analysis Year	No-Build 2015

Project Description: 110-021, STAMP

Input Data																			
	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><input type="checkbox"/> Class I highway</td> <td style="width: 50%;"><input type="checkbox"/> Class II highway</td> </tr> <tr> <td>Terrain <input checked="" type="checkbox"/> Level</td> <td><input type="checkbox"/> Rolling</td> </tr> <tr> <td>Two-way hourly volume</td> <td style="text-align: right;">550 veh/h</td> </tr> <tr> <td>Directional split</td> <td style="text-align: right;">56 / 44</td> </tr> <tr> <td>Peak-hour factor, PHF</td> <td style="text-align: right;">0.90</td> </tr> <tr> <td>No-passing zone</td> <td style="text-align: right;">0</td> </tr> <tr> <td>% Trucks and Buses, P_T</td> <td style="text-align: right;">7 %</td> </tr> <tr> <td>% Recreational vehicles, P_R</td> <td style="text-align: right;">0%</td> </tr> <tr> <td>Access points/ mi</td> <td style="text-align: right;">12</td> </tr> </table>	<input type="checkbox"/> Class I highway	<input type="checkbox"/> Class II highway	Terrain <input checked="" type="checkbox"/> Level	<input type="checkbox"/> Rolling	Two-way hourly volume	550 veh/h	Directional split	56 / 44	Peak-hour factor, PHF	0.90	No-passing zone	0	% Trucks and Buses, P _T	7 %	% Recreational vehicles, P _R	0%	Access points/ mi	12
<input type="checkbox"/> Class I highway	<input type="checkbox"/> Class II highway																		
Terrain <input checked="" type="checkbox"/> Level	<input type="checkbox"/> Rolling																		
Two-way hourly volume	550 veh/h																		
Directional split	56 / 44																		
Peak-hour factor, PHF	0.90																		
No-passing zone	0																		
% Trucks and Buses, P _T	7 %																		
% Recreational vehicles, P _R	0%																		
Access points/ mi	12																		

Average Travel Speed	
Grade adjustment factor, f _G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E _T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E _R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.986
Two-way flow rate ¹ , v _p (pc/h)=V/(PHF * f _G * f _{HV})	620
v _p * highest directional split proportion ² (pc/h)	347
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, S _{FM} mi/h	Base free-flow speed, BFFS _{FM} 60.0 mi/h
Observed volume, V _f veh/h	Adj. for lane width and shoulder width ³ , f _{LS} (Exhibit 20-5) 1.3 mi/h
Free-flow speed, FFS FFS=S _{FM} +0.00776(V _f /f _{HV}) mi/h	Adj. for access points, f _A (Exhibit 20-6) 3.0 mi/h
	Free-flow speed, FFS (FSS=BFFS-f _{LS} -f _A) 55.7 mi/h
Adj. for no-passing zones, f _{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) ATS=FFS-0.00776v _p -f _{np}	50.9

Percent Time-Spent-Following	
Grade Adjustment factor, f _G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E _T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E _R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.993
Two-way flow rate ¹ , v _p (pc/h)=V/(PHF * f _G * f _{HV})	615
v _p * highest directional split proportion ² (pc/h)	344
Base percent time-spent-following, BPTSF(%)=100(1-e ^{-0.000879v_p})	41.8
Adj. for directional distribution and no-passing zone, f _{dnp} (%)(Exh. 20-12)	0.0
Percent time-spent-following, PTSF(%)=BPTSF+f _{dnp}	41.8

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	B
Volume to capacity ratio, v/c=V _p /3,200	0.19
Peak 15-min veh-miles of travel, VMT ₁₅ (veh-mi)=0.25L _t (V/PHF)	229
Peak-hour vehicle-miles of travel, VMT ₆₀ (veh-mi)=V*L _t	825
Peak 15-min total travel time, TT ₁₅ (veh-h)=VMT ₁₅ /ATS	4.5

Notes
 1. If V_p >= 3,200 pc/h, terminate analysis-the LOS is F.
 2. If highest directional split V_p >= 1,700 pc/h, terminated anlysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	MDN	Highway	Route 77
Agency or Company	CME, LDGAKRnb15pm	From/To	Ledge Rd to Akron Rd
Date Performed	12/17/2010	Jurisdiction	Town of Alabama
Analysis Time Period	PM Peak Hour	Analysis Year	No-Build 2015

Project Description: 110-021, STAMP

Input Data

<p>Diagram showing a two-way two-lane highway segment. It includes labels for Shoulder width (ft), Lane width (ft), and Segment length, L_1 (mi).</p>	<table border="0"> <tr> <td><input checked="" type="checkbox"/> Class I highway</td> <td><input type="checkbox"/> Class II highway</td> </tr> <tr> <td>Terrain <input checked="" type="checkbox"/> Level</td> <td><input type="checkbox"/> Rolling</td> </tr> <tr> <td>Two-way hourly volume</td> <td>674 veh/h</td> </tr> <tr> <td>Directional split</td> <td>58 / 42</td> </tr> <tr> <td>Peak-hour factor, PHF</td> <td>0.90</td> </tr> <tr> <td>No-passing zone</td> <td>0</td> </tr> <tr> <td>% Trucks and Buses, P_T</td> <td>7 %</td> </tr> <tr> <td>% Recreational vehicles, P_R</td> <td>0%</td> </tr> <tr> <td>Access points/ mi</td> <td>12</td> </tr> </table>	<input checked="" type="checkbox"/> Class I highway	<input type="checkbox"/> Class II highway	Terrain <input checked="" type="checkbox"/> Level	<input type="checkbox"/> Rolling	Two-way hourly volume	674 veh/h	Directional split	58 / 42	Peak-hour factor, PHF	0.90	No-passing zone	0	% Trucks and Buses, P_T	7 %	% Recreational vehicles, P_R	0%	Access points/ mi	12
<input checked="" type="checkbox"/> Class I highway	<input type="checkbox"/> Class II highway																		
Terrain <input checked="" type="checkbox"/> Level	<input type="checkbox"/> Rolling																		
Two-way hourly volume	674 veh/h																		
Directional split	58 / 42																		
Peak-hour factor, PHF	0.90																		
No-passing zone	0																		
% Trucks and Buses, P_T	7 %																		
% Recreational vehicles, P_R	0%																		
Access points/ mi	12																		

Average Travel Speed	
Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.986
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	759
v_p * highest directional split proportion ² (pc/h)	440
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, S_{FM} (mi/h)	Base free-flow speed, $BFFS_{FM}$ 60.0 mi/h
Observed volume, V_f (veh/h)	Adj. for lane width and shoulder width ³ , f_{LS} (Exhibit 20-5) 1.3 mi/h
Free-flow speed, $FFS = S_{FM} + 0.00776(V_f / f_{HV})$ (mi/h)	Adj. for access points, f_A (Exhibit 20-6) 3.0 mi/h
	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 55.7 mi/h
Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS = FFS - 0.00776 v_p f_{np}$	49.8
Percent Time-Spent-Following	
Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.993
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	754
v_p * highest directional split proportion ² (pc/h)	437
Base percent time-spent-following, $BPTSF(\%) = 100(1 - e^{-0.000879 v_p})$	48.5
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)$ (Exh. 20-12)	0.0
Percent time-spent-following, $PTSF(\%) = BPTSF + f_{dnp}$	48.5
Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	C
Volume to capacity ratio, $v/c = V_p / 3,200$	0.24
Peak 15-min veh-miles of travel, $VMT_{15} (\text{veh-mi}) = 0.25 L_t (V / PHF)$	262
Peak-hour vehicle-miles of travel, $VMT_{60} (\text{veh-mi}) = V * L_t$	944
Peak 15-min total travel time, $TT_{15} (\text{veh-h}) = VMT_{15} / ATS$	5.3

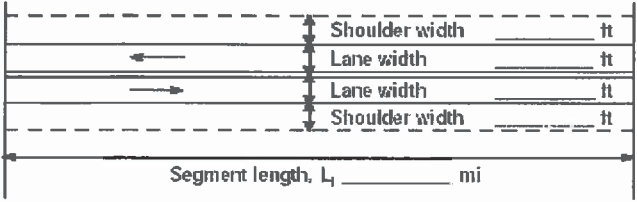
Notes
 1. If $V_p \geq 3,200$ pc/h, terminate analysis-the LOS is F.
 2. If highest directional split $V_p \geq 1,700$ pc/h, terminated analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	MDN	Highway	Route 77
Agency or Company	CME, AKR48Anb15pm	From/To	Akron Rd to I-90 Exit 48A
Date Performed	12/17/2010	Jurisdiction	Town of Alabama
Analysis Time Period	PM Peak Hour	Analysis Year	No-Build 2015

Project Description: 110-021, STAMP

Input Data

	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"><input checked="" type="checkbox"/> Class I highway</td> <td style="width: 50%;"><input type="checkbox"/> Class II highway</td> </tr> <tr> <td>Terrain <input checked="" type="checkbox"/> Level</td> <td><input type="checkbox"/> Rolling</td> </tr> <tr> <td>Two-way hourly volume</td> <td>815 veh/h</td> </tr> <tr> <td>Directional split</td> <td>64 / 36</td> </tr> <tr> <td>Peak-hour factor, PHF</td> <td>0.90</td> </tr> <tr> <td>No-passing zone</td> <td>0</td> </tr> <tr> <td>% Trucks and Buses, P_T</td> <td>7%</td> </tr> <tr> <td>% Recreational vehicles, P_R</td> <td>0%</td> </tr> <tr> <td>Access points/ mi</td> <td>4</td> </tr> </table>	<input checked="" type="checkbox"/> Class I highway	<input type="checkbox"/> Class II highway	Terrain <input checked="" type="checkbox"/> Level	<input type="checkbox"/> Rolling	Two-way hourly volume	815 veh/h	Directional split	64 / 36	Peak-hour factor, PHF	0.90	No-passing zone	0	% Trucks and Buses, P _T	7%	% Recreational vehicles, P _R	0%	Access points/ mi	4
<input checked="" type="checkbox"/> Class I highway	<input type="checkbox"/> Class II highway																		
Terrain <input checked="" type="checkbox"/> Level	<input type="checkbox"/> Rolling																		
Two-way hourly volume	815 veh/h																		
Directional split	64 / 36																		
Peak-hour factor, PHF	0.90																		
No-passing zone	0																		
% Trucks and Buses, P _T	7%																		
% Recreational vehicles, P _R	0%																		
Access points/ mi	4																		

Average Travel Speed	
Grade adjustment factor, f _G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E _T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E _R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f _{HV} = 1 / (1 + P _T (E _T -1) + P _R (E _R -1))	0.986
Two-way flow rate ¹ , v _p (pc/h) = V / (PHF * f _G * f _{HV})	918
v _p * highest directional split proportion ² (pc/h)	588

Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, S _{FM} mi/h	Base free-flow speed, BFFS _{FM} 60.0 mi/h
Observed volume, V _f veh/h	Adj. for lane width and shoulder width ³ , f _{LS} (Exhibit 20-5) 1.3 mi/h
Free-flow speed, FFS FFS = S _{FM} + 0.00776(V _f / f _{HV}) mi/h	Adj. for access points, f _A (Exhibit 20-6) 1.0 mi/h
	Free-flow speed, FFS (FSS = BFFS * f _{LS} * f _A) 57.7 mi/h
Adj. for no-passing zones, f _{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) ATS = FFS - 0.00776v _p * f _{np}	50.6

Percent Time-Spent-Following	
Grade Adjustment factor, f _G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E _T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E _R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, f _{HV} = 1 / (1 + P _T (E _T -1) + P _R (E _R -1))	0.993
Two-way flow rate ¹ , v _p (pc/h) = V / (PHF * f _G * f _{HV})	912
v _p * highest directional split proportion ² (pc/h)	584
Base percent time-spent-following, BPTSF(%) = 100(1 - e ^{-0.000879v_p})	55.1
Adj. for directional distribution and no-passing zone, f _{d/np} (%)(Exh. 20-12)	0.0
Percent time-spent-following, PTSF(%) = BPTSF + f _{d/np}	55.1

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	C
Volume to capacity ratio, v/c = V _p / 3,200	0.29
Peak 15-min veh-miles of travel, VMT ₁₅ (veh-mi) = 0.25L _t (V/PHF)	340
Peak-hour vehicle-miles of travel, VMT ₆₀ (veh-mi) = V * L _t	1223
Peak 15-min total travel time, TT ₁₅ (veh-h) = VMT ₁₅ / ATS	6.7

Notes
 1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F.
 2. If highest directional split v_p >= 1,700 pc/h, terminated analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	MDN	Highway	Route 77
Agency or Company	CME, 48ART5nb15pm	From/To	I-90 Exit 48A to Route 5
Date Performed	12/17/2010	Jurisdiction	Town of Alabama
Analysis Time Period	PM Peak Hour	Analysis Year	No-Build 2015

Project Description: 110-021, STAMP

Input Data

Diagram labels: Shoulder width, Lane width, Lane width, Shoulder width, Segment length, L_1 mi

<input checked="" type="checkbox"/> Class I highway	<input type="checkbox"/> Class II highway
Terrain <input checked="" type="checkbox"/> Level	<input type="checkbox"/> Rolling
Two-way hourly volume	1029 veh/h
Directional split	52 / 48
Peak-hour factor, PHF	0.90
No-passing zone	0
% Trucks and Buses, P_T	7 %
% Recreational vehicles, P_R	0%
Access points/ mi	6

Show North Arrow

Average Travel Speed	
Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.986
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	1159
v_p * highest directional split proportion ² (pc/h)	603
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, S_{FM} (mi/h)	Base free-flow speed, $BFFS_{FM}$ 60.0 mi/h
Observed volume, V_f (veh/h)	Adj. for lane width and shoulder width ³ , f_{LS} (Exhibit 20-5) 1.3 mi/h
Free-flow speed, $FFS = S_{FM} + 0.00776(V_f / f_{HV})$ (mi/h)	Adj. for access points, f_A (Exhibit 20-6) 1.5 mi/h
	Free-flow speed, FFS ($FSS = BFFS * f_{LS} * f_A$) 57.2 mi/h
Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS = FFS * 0.00776 v_p / f_{np}$	48.2
Percent Time-Spent-Following	
Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.993
Two-way flow rate ¹ , v_p (pc/h) = $V / (PHF * f_G * f_{HV})$	1151
v_p * highest directional split proportion ² (pc/h)	599
Base percent time-spent-following, $BPTSF(\%) = 100(1 - e^{-0.000879 v_p})$	63.6
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)$ (Exh. 20-12)	0.0
Percent time-spent-following, $PTSF(\%) = BPTSF + f_{dnp}$	63.6
Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	C
Volume to capacity ratio, $v/c = V_p / 3,200$	0.36
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh-mi}) = 0.25 L_t (V / PHF)$	200
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh-mi}) = V * L_t$	720
Peak 15-min total travel time, $TT_{15}(\text{veh-h}) = VMT_{15} / ATS$	4.1

Notes
 1. If $V_p \geq 3,200$ pc/h, terminate analysis-the LOS is F.
 2. If highest directional split $V_p \geq 1,700$ pc/h, terminated anlysis-the LOS is F.

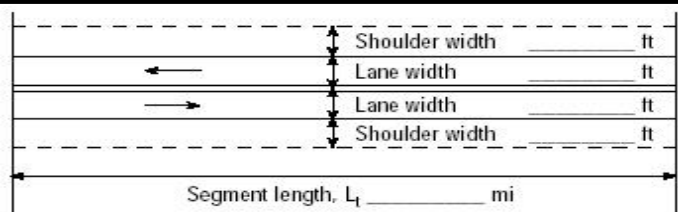
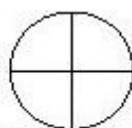
**TWO LANE CAPACITY ANALYSIS
(HCS)**

**BUILD – PHASE 1
2015 DESIGN YEAR**

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, HAMJDGb15amP1	From/To	Ham Rd to Judge Rd
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	Build 2015 - Phase 1

Project Description: 100-021, STAMP

Input Data	
 <p>Analysis direction vol., V_d 258veh/h</p> <p>Opposing direction vol., V_o 203veh/h</p> <p>Shoulder width ft 5.0</p> <p>Lane Width ft 12.0</p> <p>Segment Length mi</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 10 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 6/mi </div> </div>

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.7	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.935	0.935
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	307	241
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 1.5 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 57.2 mi/h	
	Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 52.9 mi/h	
	Percent free flow speed, PFFS 92.6 %	

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990	0.990
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	290	228
Base percent time-spent-following ⁴ , $BPTSF_d (%) = 100(1 - e^{-av_d^b})$	30.1	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	15.2	
Percent time-spent-following, $PTSF_d (%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$	38.6	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	B
Volume to capacity ratio, v/c	0.19
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1618
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1683
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	92.6

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	286.7
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.27
Bicycle level of service (Exhibit 15-4)	E

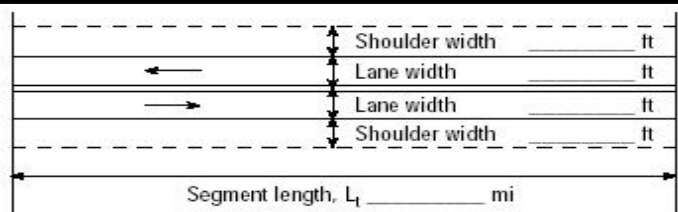
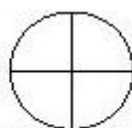
Notes

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only
- Exhibit 15-20 provides coefficients a and b for Equation 15-10.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, JDGBLMB15amP1	From/To	Judge Rd to Bloomingdale Rd
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	Build 2015 - Phase 1

Project Description: 100-021, STAMP

Input Data	
 <p>Analysis direction vol., V_d 378veh/h</p> <p>Opposing direction vol., V_o 252veh/h</p> <p>Shoulder width ft 5.0</p> <p>Lane Width ft 12.0</p> <p>Segment Length mi 0.5</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 10 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 4/mi </div> </div>

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.7	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.935	0.935
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	449	299
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 1.0 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 57.7 mi/h	
	Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 51.9 mi/h	
	Percent free flow speed, PFFS 89.9 %	

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990	0.990
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	424	283
Base percent time-spent-following ⁴ , $BPTSF_d(%) = 100(1 - e^{-av_d^b})$	41.7	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	14.2	
Percent time-spent-following, $PTSF_d(%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$	50.2	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	C
Volume to capacity ratio, v/c	0.27
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1635
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1683
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	89.9

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	420.0
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.46
Bicycle level of service (Exhibit 15-4)	E

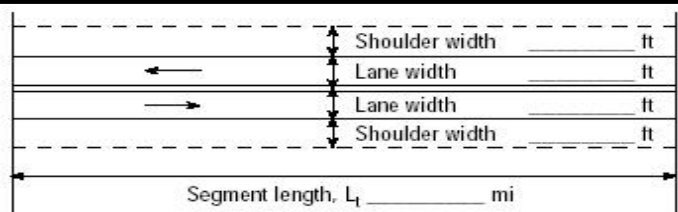
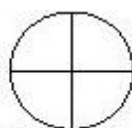
Notes

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only
- Exhibit 15-20 provides coefficients a and b for Equation 15-10.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, BLMLDGB15amP1	From/To	Bloomington Rd to ledge Rd
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	Build 2015 - Phase 1

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length _____ mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 10 % % Recreational vehicles, P_R 0% Access points _____ mi 12/mi </div> </div>
Analysis direction vol., V_d 336veh/h Opposing direction vol., V_o 234veh/h Shoulder width ft 5.0 Lane Width ft 12.0 Segment Length mi 1.5	

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.7	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.935	0.935
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	399	278
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 3.0 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 55.7 mi/h	
	Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 50.4 mi/h	
	Percent free flow speed, PFFS 90.6 %	

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990	0.990
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	377	263
Base percent time-spent-following ⁴ , $BPTSF_d(\%) = 100(1 - e^{-av_d^b})$		39.1
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)		14.7
Percent time-spent-following, $PTSF_d(\%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$		47.8

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	B
Volume to capacity ratio, v/c	0.24
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1635
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1683
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	90.6

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	373.3
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.40
Bicycle level of service (Exhibit 15-4)	E

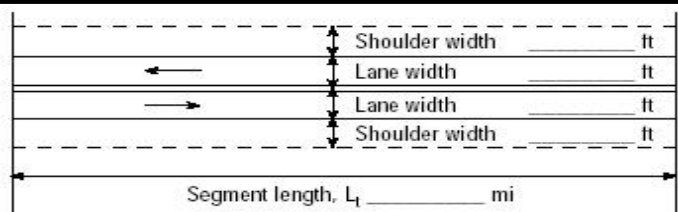
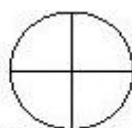
Notes

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only
- Exhibit 15-20 provides coefficients a and b for Equation 15-10.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, LDGAKRb15amP1	From/To	Ledge Rd to Akron Rd
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	Build 2015 - Phase 1

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p> <p>Analysis direction vol., V_d 378veh/h</p> <p>Opposing direction vol., V_o 222veh/h</p> <p>Shoulder width ft 5.0</p> <p>Lane Width ft 12.0</p> <p>Segment Length mi 1.4</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 10 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 12/mi </div> </div>

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.7	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.935	0.935
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	449	264
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 3.0 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 55.7 mi/h	
	Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 50.2 mi/h	
	Percent free flow speed, PFFS 90.1 %	

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990	0.990
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	424	249
Base percent time-spent-following ⁴ , $BPTSF_d (%) = 100(1 - e^{-av_d^b})$	41.5	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	13.3	
Percent time-spent-following, $PTSF_d (%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$	49.9	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	B
Volume to capacity ratio, v/c	0.28
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1618
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1683
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	90.1

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	420.0
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.46
Bicycle level of service (Exhibit 15-4)	E

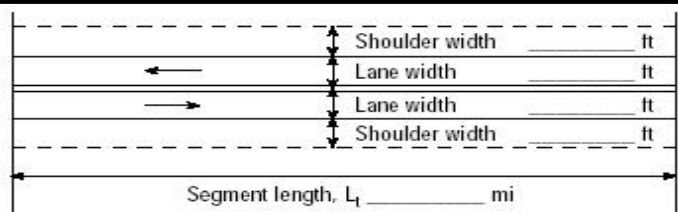
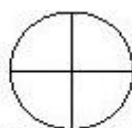
Notes

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only
- Exhibit 15-20 provides coefficients a and b for Equation 15-10.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, AKR48Ab15amP1	From/To	Akron Rd to I-90 Exit 48A
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	Build 2015 - Phase 1

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p> <p>Analysis direction vol., V_d 413veh/h</p> <p>Opposing direction vol., V_o 338veh/h</p> <p>Shoulder width ft 5.0</p> <p>Lane Width ft 12.0</p> <p>Segment Length mi 1.6</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 10 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 4/mi </div> </div>

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.980	0.980
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	468	383
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 1.0 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 57.7 mi/h	
	Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 51.1 mi/h	
	Percent free flow speed, PFFS 88.6 %	

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990	0.990
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	463	379
Base percent time-spent-following ⁴ , $BPTSF_d(\%) = 100(1 - e^{-av_d^b})$	46.5	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	14.5	
Percent time-spent-following, $PTSF_d(\%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$	54.5	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	C
Volume to capacity ratio, v/c	0.28
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1651
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1683
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	88.6

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	458.9
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.51
Bicycle level of service (Exhibit 15-4)	F

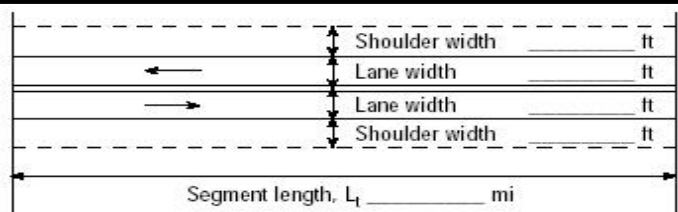
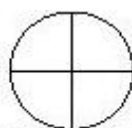
Notes

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only
- Exhibit 15-20 provides coefficients a and b for Equation 15-10.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, 48ART5b15amP1	From/To	I-90 Exit 48A to Route 5
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	Build 2015 - Phase 1

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p> <p>Analysis direction vol., V_d 370veh/h</p> <p>Opposing direction vol., V_o 316veh/h</p> <p>Shoulder width ft 5.0</p> <p>Lane Width ft 12.0</p> <p>Segment Length mi 0.7</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 10 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 6/mi </div> </div>

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.980	0.990
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	420	355
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 1.5 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 57.2 mi/h	
	Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 51.2 mi/h	
	Percent free flow speed, PFFS 89.5 %	

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990	0.990
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	415	355
Base percent time-spent-following ⁴ , $BPTSF_d(%) = 100(1 - e^{-av_d^b})$		42.7
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)		15.0
Percent time-spent-following, $PTSF_d(%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$		50.8

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	C
Volume to capacity ratio, v/c	0.25
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1651
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1683
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	89.5

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	411.1
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.45
Bicycle level of service (Exhibit 15-4)	E

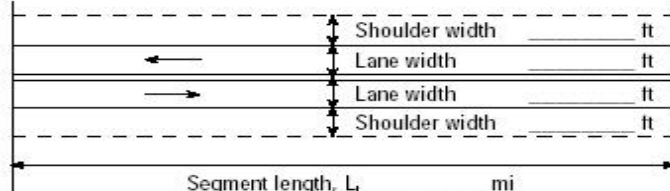
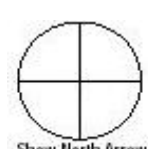
Notes

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only
- Exhibit 15-20 provides coefficients a and b for Equation 15-10.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, HAMJDGb15pmP1	From/To	Ham Rd to Judge Rd
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period		Analysis Year	Build 2015 - Phase 1

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p> <p>Analysis direction vol., V_d 392veh/h</p> <p>Opposing direction vol., V_o 348veh/h</p> <p>Shoulder width ft 5.0</p> <p>Lane Width ft 12.0</p> <p>Segment Length mi 1.0</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 7 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 6/mi </div> </div>

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.986	0.986
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	442	392
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 1.5 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 57.2 mi/h	
	Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 50.7 mi/h	
	Percent free flow speed, PFFS 88.7 %	

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.993	0.993
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	439	389
Base percent time-spent-following ⁴ , $BPTSF_d(%) = 100(1 - e^{-av_d^b})$	46.0	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	15.0	
Percent time-spent-following, $PTSF_d(%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$	54.0	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	C
Volume to capacity ratio, v/c	0.27
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1664
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1688
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	88.7

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	435.6
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.36
Bicycle level of service (Exhibit 15-4)	D

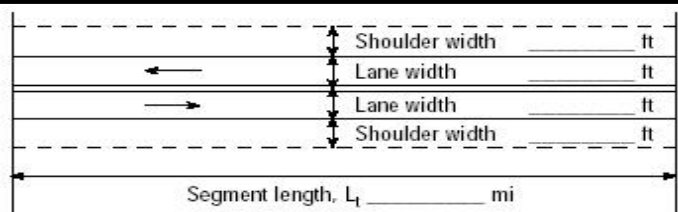
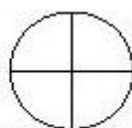
Notes

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information	Site Information
Analyst Agency or Company Date Performed Analysis Time Period	JLM CPL, JDGBLMB15pmP1 6/6/2016 PM Peak Hour
Highway / Direction of Travel From/To Jurisdiction Analysis Year	Route 77 Judge Rd to Bloomingdale Rd Town of Alabama Build 2015 - Phase 1

Project Description: 100-021, STAMP

Input Data	Site Information
	<input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P _T 7% % Recreational vehicles, P _R 0% Access points mi 4/mi
Analysis direction vol., V _d 461veh/h Opposing direction vol., V _o 392veh/h Shoulder width ft 5.0 Lane Width ft 12.0 Segment Length mi 0.5	 Show North Arrow

Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.2	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV,ATS} = 1 / (1 + P _T (E _T -1) + P _R (E _R -1))	0.986	0.953
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v _i (pc/h) v _i = V _i / (PHF * f _{g,ATS} * f _{HV,ATS})	519	457
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f _{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, FFS = S _{FM} + 0.00776(v / f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 1.0 mi/h	
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS (FFS = BFFS * f _{LS} * f _A) 57.7 mi/h	
	Average travel speed, ATS _d = FFS * 0.00776(v _{d,ATS} + v _{o,ATS}) ⁻ 50.1 mi/h	
	f _{np,ATS} 86.9 %	
	Percent free flow speed, PFFS	

Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.0
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} = 1 / (1 + P _T (E _T -1) + P _R (E _R -1))	0.993	1.000
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v _i (pc/h) v _i = V _i / (PHF * f _{HV,PTSF} * f _{g,PTSF})	516	436
Base percent time-spent-following ⁴ , BPTSF _d (%) = 100(1 - e ^{-av_d^b})		51.3
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)		14.3
Percent time-spent-following, PTSF _d (%) = BPTSF _d + f _{np,PTSF} * (V _{d,PTSF} / V _{d,PTSF} + V _{o,PTSF})		59.1

Level of Service and Other Performance Measures	Value
Level of service, LOS (Exhibit 15-3)	C
Volume to capacity ratio, v/c	0.31
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1664
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	86.9

Bicycle Level of Service	Value

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	512.2
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.44
Bicycle level of service (Exhibit 15-4)	D

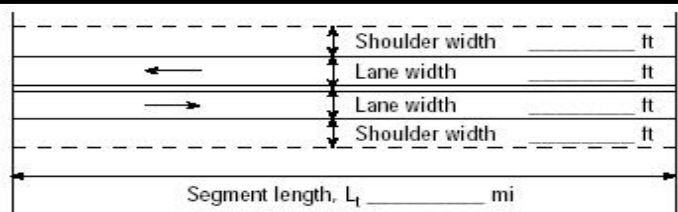
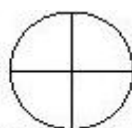
Notes

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- If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only
- Exhibit 15-20 provides coefficients a and b for Equation 15-10.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, BLMLDGB15pmP1	From/To	Bloomington Rd to ledge Rd
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	PM Peak Hour	Analysis Year	Build 2015 - Phase 1

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length _____ mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 7% % Recreational vehicles, P_R 0% Access points _____ mi 12/mi </div> </div>
Analysis direction vol., V_d 389veh/h Opposing direction vol., V_o 305veh/h Shoulder width ft 5.0 Lane Width ft 12.0 Segment Length mi 1.5	

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.986	0.953
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	438	356
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 3.0 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS * f_{LS} * f_A$) 55.7 mi/h	
	Average travel speed, $ATS_d = FFS * 0.00776(v_{d,ATS} + v_{o,ATS})^{-1} * f_{np,ATS}$ 49.5 mi/h	
	Percent free flow speed, PFFS 88.9 %	

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.993	0.993
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	435	341
Base percent time-spent-following ⁴ , $BPTSF_d(%) = 100(1 - e^{-av_d^b})$		45.0
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)		14.6
Percent time-spent-following, $PTSF_d(%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$		53.2

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	C
Volume to capacity ratio, v/c	0.26
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1654
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1688
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	88.9

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	432.2
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.35
Bicycle level of service (Exhibit 15-4)	D

Notes

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	526.7
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.46
Bicycle level of service (Exhibit 15-4)	D

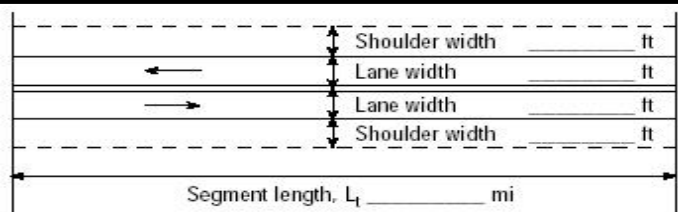
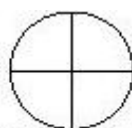
Notes

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- If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only
- Exhibit 15-20 provides coefficients a and b for Equation 15-10.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, AKR48Ab15pmP1	From/To	Akron Rd to I-90 Exit 48A
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	PM Peak Hour	Analysis Year	Build 2015 - Phase 1

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p> <p>Analysis direction vol., V_d 606veh/h</p> <p>Opposing direction vol., V_o 341veh/h</p> <p>Shoulder width ft 5.0</p> <p>Lane Width ft 12.0</p> <p>Segment Length mi 0.7</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 7 % % Recreational vehicles, P_R 0% Access points <i>mi</i> /mi </div> </div>

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.986	0.986
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	683	384
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 3.0 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 55.7 mi/h	
	Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 47.4 mi/h	
	Percent free flow speed, PFFS 85.1 %	

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.993	0.993
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	678	382
Base percent time-spent-following ⁴ , $BPTSF_d(%) = 100(1 - e^{-av_d^b})$	58.7	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	11.4	
Percent time-spent-following, $PTSF_d(%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$	66.0	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.41
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1664
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1688
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	85.1

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	673.3
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.58
Bicycle level of service (Exhibit 15-4)	E

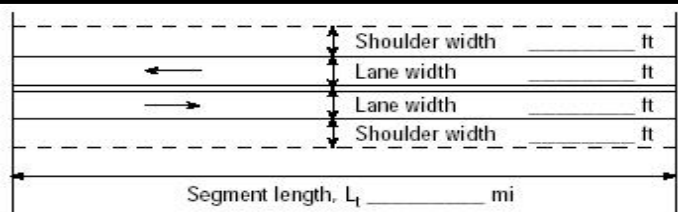
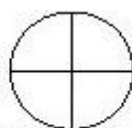
Notes

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only
- Exhibit 15-20 provides coefficients a and b for Equation 15-10.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information	Site Information
Analyst: <i>JLM</i>	Highway / Direction of Travel: <i>Route 77</i>
Agency or Company: <i>CPL, 48ART5b15pmP1</i>	From/To: <i>I-90 Exit 48A to Route 5</i>
Date Performed: <i>6/6/2016</i>	Jurisdiction: <i>Town of Alabama</i>
Analysis Time Period: <i>PM Peak Hour</i>	Analysis Year: <i>Build 2015 - Phase 1</i>

Project Description: *100-021, STAMP*

Input Data	Site Information
	<input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain: <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length: _____ mi Up/down Peak-hour factor, PHF: <i>0.90</i> No-passing zone: <i>0%</i> % Trucks and Buses, P _T : <i>7%</i> % Recreational vehicles, P _R : <i>0%</i> Access points: <i>6/mi</i>
Analysis direction vol., V _d : <i>554veh/h</i> Opposing direction vol., V _o : <i>511veh/h</i> Shoulder width ft: <i>5.0</i> Lane Width ft: <i>12.0</i> Segment Length mi: <i>0.7</i>	 Show North Arrow

Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)		1.2
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV,ATS} = 1 / (1 + P _T (E _T -1) + P _R (E _R -1))	0.993	0.986
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v _i (pc/h) v _i = V _i / (PHF * f _{g,ATS} * f _{HV,ATS})	620	576
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS <i>60.0 mi/h</i>	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f _{LS} (Exhibit 15-7) <i>1.3 mi/h</i>	
Free-flow speed, FFS = S _{FM} + 0.00776(v / f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) <i>1.5 mi/h</i>	
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) <i>0.0 mi/h</i>	Free-flow speed, FFS (FFS = BFFS * f _{LS} * f _A) <i>57.2 mi/h</i>	
	Average travel speed, ATS _d = FFS * 0.00776(v _{d,ATS} + v _{o,ATS}) ⁻ <i>47.9 mi/h</i>	
	f _{np,ATS} Percent free flow speed, PFFS <i>83.8 %</i>	

Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} = 1 / (1 + P _T (E _T -1) + P _R (E _R -1))	0.993	0.993
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v _i (pc/h) v _i = V _i / (PHF * f _{HV,PTSF} * f _{g,PTSF})	620	572
Base percent time-spent-following ⁴ , BPTSF _d (%) = 100(1 - e ^{-av_d^b})	58.2	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	13.6	
Percent time-spent-following, PTSF _d (%) = BPTSF _d + f _{np,PTSF} * (v _{d,PTSF} / v _{d,PTSF} + v _{o,PTSF})	65.3	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	<i>D</i>
Volume to capacity ratio, v/c	<i>0.37</i>
Capacity, C _{d,ATS} (Equation 15-12) pc/h	<i>1688</i>
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	<i>1700</i>
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	<i>83.8</i>

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	615.6
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.53
Bicycle level of service (Exhibit 15-4)	E

Notes

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

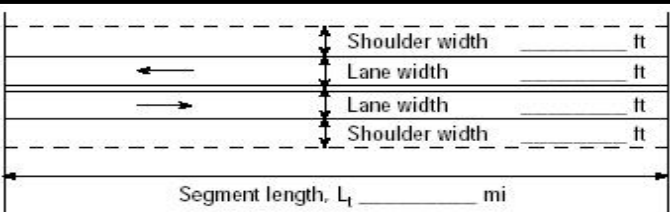
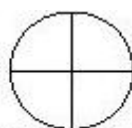
**TWO LANE CAPACITY ANALYSIS
(HCS)**

**BUILD – FULL BUILDOUT
2015 DESIGN YEAR**

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, HAMJDGb15amFB	From/To	Ham Rd to Judge Rd
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	Build 2015 - Full Buildout

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p> <p>Analysis direction vol., V_d 324veh/h</p> <p>Opposing direction vol., V_o 254veh/h</p> <p>Shoulder width ft 5.0</p> <p>Lane Width ft 12.0</p> <p>Segment Length mi 1.0</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 10 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 6/mi </div> </div>

Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.7	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.935	0.935
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	385	302
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 1.5 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 57.2 mi/h	
	Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 51.9 mi/h	
	Percent free flow speed, PFFS 90.7 %	

Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990	0.990
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	364	285
Base percent time-spent-following ⁴ , $BPTSF_d(\%) = 100(1 - e^{-av_d^b})$	37.3	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	15.0	
Percent time-spent-following, $PTSF_d(\%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$	45.7	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	B
Volume to capacity ratio, v/c	0.24
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1635
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1683
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	90.7

Bicycle Level of Service

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	360.0
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.38
Bicycle level of service (Exhibit 15-4)	E

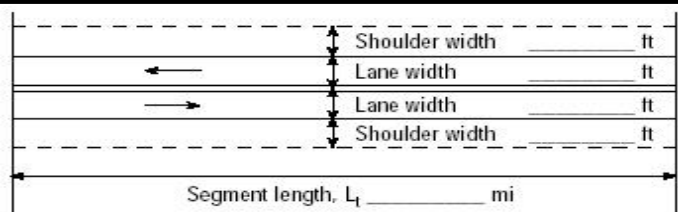
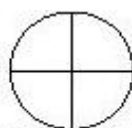
Notes

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only
- Exhibit 15-20 provides coefficients a and b for Equation 15-10.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, JDGBLMB15amFB	From/To	Judge Rd to Bloomingdale Rd
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	Build 2015 - Full Buildout

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p> <p>Analysis direction vol., V_d 659veh/h</p> <p>Opposing direction vol., V_o 439veh/h</p> <p>Shoulder width ft 5.0</p> <p>Lane Width ft 12.0</p> <p>Segment Length mi 0.5</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 10 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 4/mi </div> </div>

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.7	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.935	0.935
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	783	522
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 1.0 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 57.7 mi/h	
	Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 47.6 mi/h	
	Percent free flow speed, PFFS 82.4 %	

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990	1.000
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	740	488
Base percent time-spent-following ⁴ , $BPTSF_d(%) = 100(1 - e^{-av_d^b})$	64.4	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	12.3	
Percent time-spent-following, $PTSF_d(%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$	71.8	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.47
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1666
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	82.4

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	732.2
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.74
Bicycle level of service (Exhibit 15-4)	F

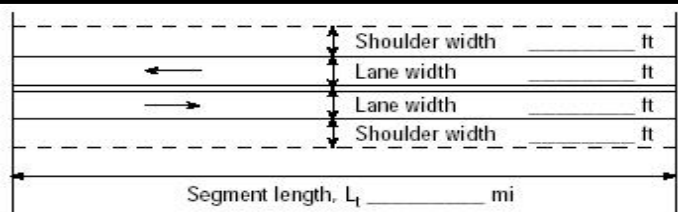
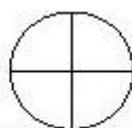
Notes

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, BLMLDGB15amFB	From/To	Bloomington Rd to ledge Rd
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	Build 2015 - Full Buildout

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p> <p>Analysis direction vol., V_d 591veh/h</p> <p>Opposing direction vol., V_o 411veh/h</p> <p>Shoulder width ft 5.0</p> <p>Lane Width ft 12.0</p> <p>Segment Length mi 1.5</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 10 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 12/mi </div> </div>

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.7	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.935	0.935
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	702	488
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 3.0 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 55.7 mi/h	
	Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 46.5 mi/h	
	Percent free flow speed, PFFS 83.4 %	

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990	1.000
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	663	457
Base percent time-spent-following ⁴ , $BPTSF_d (%) = 100(1 - e^{-av_d^b})$	59.8	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	12.8	
Percent time-spent-following, $PTSF_d (%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$	67.4	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.42
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1666
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	83.4

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	656.7
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.69
Bicycle level of service (Exhibit 15-4)	F

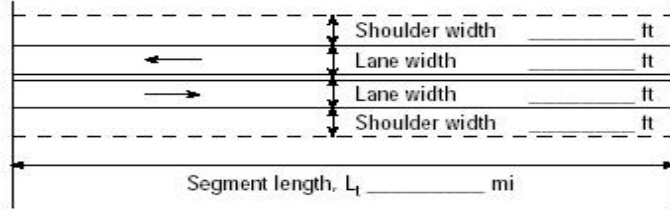

Notes

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, LDGAKRb15amFB	From/To	Ledge Rd to Akron Rd
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	Build 2015 - Full Buildout

Project Description: 100-021, STAMP

Input Data	
 <p>Analysis direction vol., V_d 650veh/h Opposing direction vol., V_o 382veh/h Shoulder width ft 5.0 Lane Width ft 12.0 Segment Length mi 1.4</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  Show North Arrow </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 10 % % Recreational vehicles, P_R 0% Access points mi 12/mi </div> </div>

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.7	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.935	0.935
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	772	454
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 3.0 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 55.7 mi/h	
	Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 46.2 mi/h	
	Percent free flow speed, PFFS 82.9 %	

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990	1.000
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	729	424
Base percent time-spent-following ⁴ , $BPTSF_d (\%) = 100(1 - e^{-av_d^b})$	62.1	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	11.5	
Percent time-spent-following, $PTSF_d (\%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$	69.4	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.47
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1651
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	82.9

Bicycle Level of Service

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	722.2
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.74
Bicycle level of service (Exhibit 15-4)	F

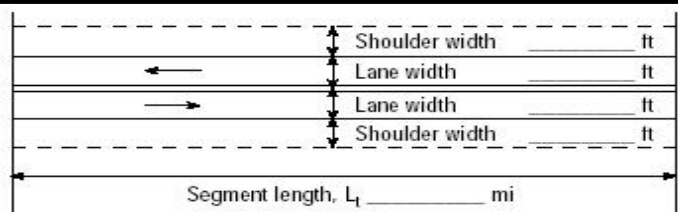
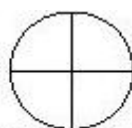
Notes

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, AKR48Ab15amFB	From/To	Akron Rd to I-90 Exit 48A
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	Build 2015 - Full Buildout

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p> <p>Analysis direction vol., V_d 631veh/h</p> <p>Opposing direction vol., V_o 516veh/h</p> <p>Shoulder width ft 5.0</p> <p>Lane Width ft 12.0</p> <p>Segment Length mi 1.6</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 10 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 4/mi </div> </div>

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.980	0.980
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	715	585
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 1.0 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 57.7 mi/h	
	Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 47.6 mi/h	
	Percent free flow speed, PFFS 82.5 %	

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990	0.990
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	708	579
Base percent time-spent-following ⁴ , $BPTSF_d (%) = 100(1 - e^{-av_d^b})$	63.4	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	12.8	
Percent time-spent-following, $PTSF_d (%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$	70.4	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.42
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1683
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	82.5

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	701.1
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.72
Bicycle level of service (Exhibit 15-4)	F

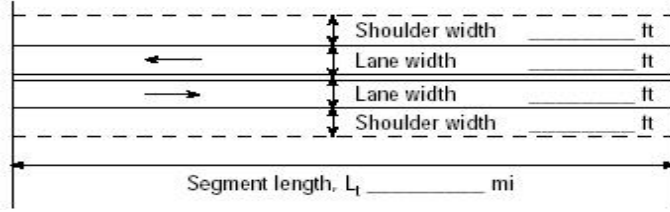
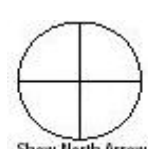
Notes

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only
- Exhibit 15-20 provides coefficients a and b for Equation 15-10.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, 48ART5b15amFB	From/To	I-90 Exit 48A to Route 5
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	AM Peak Hour	Analysis Year	Build 2015 - Full Buildout

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p> <p>Analysis direction vol., V_d 429veh/h</p> <p>Oposing direction vol., V_o 365veh/h</p> <p>Shoulder width ft 5.0</p> <p>Lane Width ft 12.0</p> <p>Segment Length mi 0.7</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 10 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 6/mi </div> </div>

Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.980	0.980
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	486	414
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 1.5 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 57.2 mi/h	
	Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 50.2 mi/h	
	Percent free flow speed, PFFS 87.8 %	

Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.990	1.000
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	481	406
Base percent time-spent-following ⁴ , $BPTSF_d(%) = 100(1 - e^{-av_d^b})$	47.8	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	14.5	
Percent time-spent-following, $PTSF_d(%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$	55.7	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	C
Volume to capacity ratio, v/c	0.29
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1651
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	87.8

Bicycle Level of Service

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	476.7
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.53
Bicycle level of service (Exhibit 15-4)	F

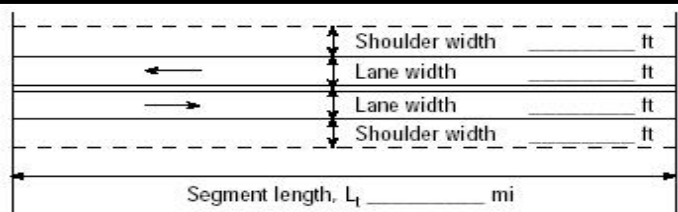
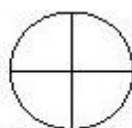
Notes

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, HAMJDGb15pmFB	From/To	Ham Rd to Judge Rd
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	PM Peak Hour	Analysis Year	Build 2015 - Full Buildout

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length _____ mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 7% % Recreational vehicles, P_R 0% Access points _____ mi 6/mi </div> </div>
Analysis direction vol., V_d 519veh/h Opposing direction vol., V_o 461veh/h Shoulder width ft 5.0 Lane Width ft 12.0 Segment Length mi 1.0	

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.986	0.986
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	585	519
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 1.5 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS * f_{LS} * f_A$) 57.2 mi/h	
	Average travel speed, $ATS_d = FFS * 0.00776(v_{d,ATS} + v_{o,ATS})^{-1} * f_{np,ATS}$ 48.6 mi/h	
	Percent free flow speed, PFFS 85.0 %	

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.993	1.000
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	581	512
Base percent time-spent-following ⁴ , $BPTSF_d(%) = 100(1 - e^{-av_d^b})$	56.1	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	13.9	
Percent time-spent-following, $PTSF_d(%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$	63.5	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	C
Volume to capacity ratio, v/c	0.35
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1676
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	85.0

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	576.7
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.50
Bicycle level of service (Exhibit 15-4)	E

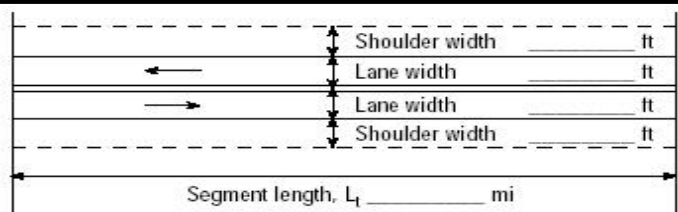
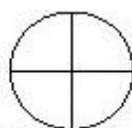
Notes

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, JDGBLMB15pmFB	From/To	Judge Rd to Bloomingdale Rd
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	PM Peak Hour	Analysis Year	Build 2015 - Full Buildout

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p> <p>Analysis direction vol., V_d 715veh/h</p> <p>Opposing direction vol., V_o 609veh/h</p> <p>Shoulder width ft 5.0</p> <p>Lane Width ft 12.0</p> <p>Segment Length mi 0.5</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 7 % % Recreational vehicles, P_R 0% Access points mi 4/mi </div> </div>

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.986	0.986
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	806	686
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed
Mean speed of sample ³ , S_{FM}		Base free-flow speed ⁴ , BFFS 60.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$		Adj. for access points ⁴ , f_A (Exhibit 15-8) 1.0 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h		Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 57.7 mi/h
		Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 46.1 mi/h
		Percent free flow speed, PFFS 79.9 %

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.993	1.000
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	800	677
Base percent time-spent-following ⁴ , $BPTSF_d(\%) = 100(1 - e^{-av_d^b})$		68.7
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)		12.0
Percent time-spent-following, $PTSF_d(\%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$		75.2

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.48
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1688
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	79.9

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	794.4
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.66
Bicycle level of service (Exhibit 15-4)	E

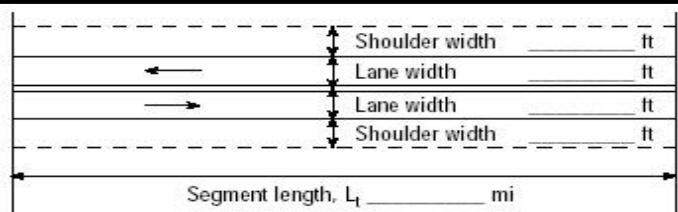
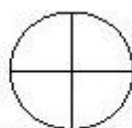
Notes

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only
- Exhibit 15-20 provides coefficients a and b for Equation 15-10.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, BLMLDGB15pmFB	From/To	Bloomington Rd to ledge Rd
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	PM Peak Hour	Analysis Year	Build 2015 - Full Buildout

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p> <p>Analysis direction vol., V_d 631veh/h</p> <p>Opposing direction vol., V_o 495veh/h</p> <p>Shoulder width ft 5.0</p> <p>Lane Width ft 12.0</p> <p>Segment Length mi 1.5</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 7 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 12/mi </div> </div>

Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.986	0.986
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	711	558
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 3.0 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FFS = BFFS - f_{LS} - f_A$) 55.7 mi/h	
	Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 45.9 mi/h	
	Percent free flow speed, PFFS 82.3 %	

Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.993	1.000
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	706	550
Base percent time-spent-following ⁴ , $BPTSF_d (%) = 100(1 - e^{-av_d^b})$	62.6	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	12.7	
Percent time-spent-following, $PTSF_d (%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$	69.7	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.42
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1676
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	82.3

Bicycle Level of Service

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	701.1
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.60
Bicycle level of service (Exhibit 15-4)	E

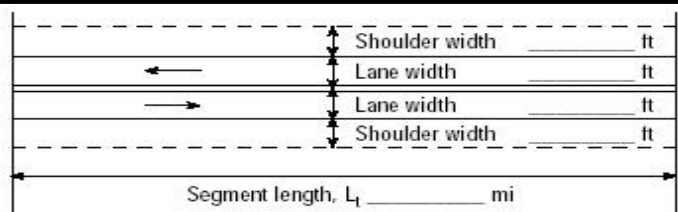
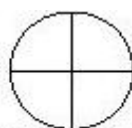
Notes

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only
- Exhibit 15-20 provides coefficients a and b for Equation 15-10.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, LDGAKRb15pmFB	From/To	Ledge Rd to Akron Rd
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	PM Peak Hour	Analysis Year	Build 2015 - Full Buildout

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p> <p>Analysis direction vol., V_d 725veh/h</p> <p>Oposing direction vol., V_o 525veh/h</p> <p>Shoulder width ft 5.0</p> <p>Lane Width ft 12.0</p> <p>Segment Length mi 1.4</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 7 % % Recreational vehicles, P_R 0% Access points mi 12/mi </div> </div>

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.986	0.986
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	817	592
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 3.0 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS (FSS=BFFS- f_{LS} - f_A) 55.7 mi/h	
	Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 44.8 mi/h	
	Percent free flow speed, PFFS 80.4 %	

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.993	1.000
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	811	583
Base percent time-spent-following ⁴ , $BPTSF_d (%) = 100(1 - e^{-av_d^b})$	67.5	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	12.0	
Percent time-spent-following, $PTSF_d (%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$	74.5	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.48
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1688
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	80.4

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	805.6
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.67
Bicycle level of service (Exhibit 15-4)	E

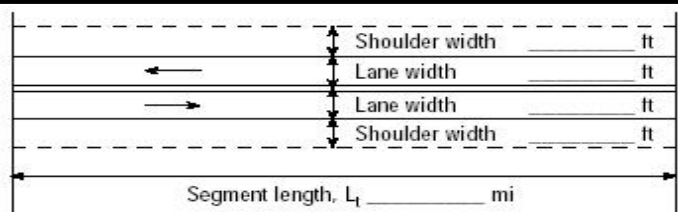
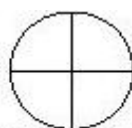
Notes

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only
- Exhibit 15-20 provides coefficients a and b for Equation 15-10.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, AKR48Ab15pmFB	From/To	Akron Rd to I-90 Exit 48A
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	PM Peak Hour	Analysis Year	Build 2015 - Full Buildout

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length _____ mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 7% % Recreational vehicles, P_R 0% Access points _____ mi 4/mi </div> </div>
Analysis direction vol., V_d 860veh/h Opposing direction vol., V_o 483veh/h Shoulder width ft 5.0 Lane Width ft 12.0 Segment Length mi 0.7	

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.986	0.986
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	969	544
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 1.0 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS - f_{LS} - f_A$) 57.7 mi/h	
	Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + v_{o,ATS}) - f_{np,ATS}$ 46.0 mi/h	
	Percent free flow speed, PFFS 79.7 %	

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.993	0.993
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	962	540
Base percent time-spent-following ⁴ , $BPTSF_d(%) = 100(1 - e^{-av_d^b})$		73.3
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)		9.9
Percent time-spent-following, $PTSF_d(%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$		79.6

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.58
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1676
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	79.7

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	955.6
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.76
Bicycle level of service (Exhibit 15-4)	E

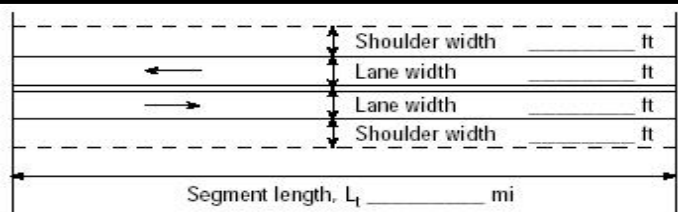
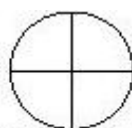
Notes

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only
- Exhibit 15-20 provides coefficients a and b for Equation 15-10.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	JLM	Highway / Direction of Travel	Route 77
Agency or Company	CPL, 48ART5b15pmFB	From/To	I-90 Exit 48A to Route 5
Date Performed	6/6/2016	Jurisdiction	Town of Alabama
Analysis Time Period	PM Peak Hour	Analysis Year	Build 2015 - Full Buildout

Project Description: 100-021, STAMP

Input Data	
 <p>Shoulder width _____ ft</p> <p>Lane width _____ ft</p> <p>Lane width _____ ft</p> <p>Shoulder width _____ ft</p> <p>Segment length, L_1 _____ mi</p> <p>Analysis direction vol., V_d 610veh/h</p> <p>Opposing direction vol., V_o 563veh/h</p> <p>Shoulder width ft 5.0</p> <p>Lane Width ft 12.0</p> <p>Segment Length mi 0.7</p>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.90 No-passing zone 0% % Trucks and Buses, P_T 7 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 6/mi </div> </div>

Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.986	0.986
Grade adjustment factor ¹ , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{g,ATS} * f_{HV,ATS})$	687	634
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S_{FM}	Base free-flow speed ⁴ , BFFS 60.0 mi/h	
Total demand flow rate, both directions, v	Adj. for lane and shoulder width ⁴ , f_{LS} (Exhibit 15-7) 1.3 mi/h	
Free-flow speed, $FFS = S_{FM} + 0.00776(v / f_{HV,ATS})$	Adj. for access points ⁴ , f_A (Exhibit 15-8) 1.5 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 0.0 mi/h	Free-flow speed, FFS ($FSS = BFFS * f_{LS} * f_A$) 57.2 mi/h	
	Average travel speed, $ATS_d = FFS * 0.00776(v_{d,ATS} + v_{o,ATS})^{-1} * f_{np,ATS}$ 46.9 mi/h	
	Percent free flow speed, PFFS 82.1 %	

Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1 / (1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.993	0.993
Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF * f_{HV,PTSF} * f_{g,PTSF})$	683	630
Base percent time-spent-following ⁴ , $BPTSF_d(%) = 100(1 - e^{-av_d^b})$	62.6	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	13.0	
Percent time-spent-following, $PTSF_d(%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})$	69.4	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.41
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1688
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	82.1

Bicycle Level of Service	

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	677.8
Effective width, Wv (Eq. 15-29) ft	22.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.58
Bicycle level of service (Exhibit 15-4)	E

Notes

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

**INTERSECTION CAPACITY ANALYSIS
(SYNCHRO)**

**NO BUILD
2015 DESIGN YEAR**

HCM Signalized Intersection Capacity Analysis 44: NY Route 31 & NY Route 63/NY Route 31
 No-Build 2015 No-Build 2015_AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	9	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			1.00			1.00	
Flt		1.00	0.85		0.98			0.98			0.94	
Flt Protected		0.99	1.00		0.99			0.98			0.99	
Satd. Flow (prot)		1703	1221		1624			1677			1679	
Flt Permitted		0.86	1.00		0.93			0.78			0.92	
Satd. Flow (perm)		1485	1221		1519			1333			1551	
Volume (vph)	68	202	22	28	188	38	59	71	17	44	94	105
Peak-hour factor, PHF	0.80	0.80	0.80	0.78	0.78	0.78	0.67	0.67	0.67	0.74	0.74	0.74
Adj. Flow (vph)	85	252	28	36	241	49	88	106	25	59	127	142
RTOR Reduction (vph)	0	0	19	0	11	0	0	7	0	0	40	0
Lane Group Flow (vph)	0	337	9	0	315	0	0	212	0	0	288	0
Heavy Vehicles (%)	5%	7%	19%	22%	14%	8%	7%	9%	19%	7%	9%	2%
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		10.3	10.3		10.3			14.0			14.0	
Effective Green, g (s)		10.3	10.3		10.3			14.0			14.0	
Actuated g/C Ratio		0.32	0.32		0.32			0.43			0.43	
Clearance Time (s)		4.0	4.0		4.0			4.0			4.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		474	389		484			578			672	
v/s Ratio Prot												
v/s Ratio Perm		c0.23	0.01		0.21			0.16			c0.19	
v/c Ratio		0.71	0.02		0.65			0.37			0.43	
Uniform Delay, d1		9.7	7.5		9.5			6.2			6.4	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		5.0	0.0		3.1			0.4			0.4	
Delay (s)		14.7	7.6		12.6			6.6			6.8	
Level of Service		B	A		B			A			A	
Approach Delay (s)		14.1			12.6			6.6			6.8	
Approach LOS		B			B			A			A	













Intersection Summary			
HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	32.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	6	2	12	0	2	7	5	143	2	7	179	1
Peak Hour Factor	0.40	0.40	0.40	0.45	0.45	0.45	0.80	0.80	0.80	0.88	0.88	0.88
Hourly flow rate (vph)	15	5	30	0	4	16	6	179	2	8	203	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	430	414	204	445	413	180	205			181		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	430	414	204	445	413	180	205			181		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	99	96	100	99	98	100			99		
cM capacity (veh/h)	522	527	842	501	527	868	1379			1406		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	50	20	188	212
Volume Left	15	0	6	8
Volume Right	30	16	2	1
cSH	677	759	1379	1406
Volume to Capacity	0.07	0.03	0.00	0.01
Queue Length 95th (ft)	6	2	0	0
Control Delay (s)	10.7	9.9	0.3	0.3
Lane LOS	B	A	A	A
Approach Delay (s)	10.7	9.9	0.3	0.3
Approach LOS	B	A		

Intersection Summary			
Average Delay		1.8	
Intersection Capacity Utilization	25.7%		ICU Level of Service A
Analysis Period (min)	15		

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⬆			⬆			⬆			⬆	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	63	52	26	32	16	21	129	12	30	153	2
Peak Hour Factor	0.80	0.80	0.80	0.65	0.65	0.65	0.80	0.80	0.80	0.76	0.76	0.76
Hourly flow rate (vph)	1	79	65	40	49	25	26	161	15	39	201	3
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	145	114	203	243								
Volume Left (vph)	1	40	26	39								
Volume Right (vph)	65	25	15	3								
Hadj (s)	-0.14	0.24	0.30	0.14								
Departure Headway (s)	5.1	5.5	5.2	5.0								
Degree Utilization, x	0.21	0.17	0.30	0.34								
Capacity (veh/h)	637	588	645	673								
Control Delay (s)	9.4	9.7	10.4	10.6								
Approach Delay (s)	9.4	9.7	10.4	10.6								
Approach LOS	A	A	B	B								
Intersection Summary												
Delay			10.2									
HCM Level of Service			B									
Intersection Capacity Utilization			31.6%	ICU Level of Service	A							
Analysis Period (min)			15									























Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	5	5	161	4	3	248
Peak Hour Factor	0.63	0.63	0.82	0.82	0.88	0.88
Hourly flow rate (vph)	8	8	196	5	3	282
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	487	199			201	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	487	199			201	
tC, single (s)	6.6	6.6			4.8	
tC, 2 stage (s)						
tF (s)	3.7	3.7			2.8	
p0 queue free %	98	99			100	
cM capacity (veh/h)	507	755			1063	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	16	201	285
Volume Left	8	0	3
Volume Right	8	5	0
cSH	606	1700	1063
Volume to Capacity	0.03	0.12	0.00
Queue Length 95th (ft)	2	0	0
Control Delay (s)	11.1	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	11.1	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay			0.4
Intersection Capacity Utilization	25.4%	ICU Level of Service	A
Analysis Period (min)			15

HCM Unsignalized Intersection Capacity Analysis12: Judge Road & NY Route 77/NY Route 63
 No-Build 2015 No-Build 2015_AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	11	17	5	50	11	16	3	158	43	20	215	2
Peak Hour Factor	0.83	0.83	0.83	0.88	0.88	0.88	0.92	0.92	0.92	0.73	0.73	0.73
Hourly flow rate (vph)	13	20	6	57	12	18	3	172	47	27	295	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)							6					
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	544	576	296	567	554	195	297			218		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	544	576	296	567	554	195	297			218		
tC, single (s)	7.1	6.5	6.2	7.3	6.5	6.3	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.7	4.0	3.4	2.2			2.3		
p0 queue free %	97	95	99	85	97	98	100			98		
cM capacity (veh/h)	425	421	748	387	433	834	1276			1299		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	40	88	3	218	27	297						
Volume Left	13	57	3	0	27	0						
Volume Right	6	18	0	47	0	3						
cSH	452	499	1276	1700	1299	1700						
Volume to Capacity	0.09	0.18	0.00	0.13	0.02	0.17						
Queue Length 95th (ft)	7	16	0	0	2	0						
Control Delay (s)	13.7	14.7	7.8	0.0	7.8	0.0						
Lane LOS	B	B	A		A							
Approach Delay (s)	13.7	14.7	0.1		0.7							
Approach LOS	B	B										
Intersection Summary												
Average Delay			3.1									
Intersection Capacity Utilization			31.8%		ICU Level of Service		A					
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	34	20	12	156	240	44
Peak Hour Factor	0.93	0.93	0.79	0.79	0.82	0.82
Hourly flow rate (vph)	37	22	15	197	293	54
Pedestrians	1					
Lane Width (ft)	11.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	548	321	347			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	548	321	347			
tC, single (s)	6.5	6.2	4.4			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.4			
p0 queue free %	92	97	99			
cM capacity (veh/h)	478	713	1084			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	58	213	346
Volume Left	37	15	0
Volume Right	22	0	54
cSH	545	1084	1700
Volume to Capacity	0.11	0.01	0.20
Queue Length 95th (ft)	9	1	0
Control Delay (s)	12.4	0.7	0.0
Lane LOS	B	A	
Approach Delay (s)	12.4	0.7	0.0
Approach LOS	B		

Intersection Summary			
Average Delay		1.4	
Intersection Capacity Utilization	28.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
No-Build 2015

2: Ledge Road & NY Route 77
No-Build 2015_AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	3	20	19	6	14	4	27	169	6	4	243	3
Peak Hour Factor	0.63	0.63	0.63	0.69	0.69	0.69	0.86	0.86	0.86	0.84	0.84	0.84
Hourly flow rate (vph)	5	32	30	9	20	6	31	197	7	5	289	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	579	567	291	609	565	200	293			203		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	579	567	291	609	565	200	293			203		
tC, single (s)	7.4	6.6	6.3	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.8	4.1	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	92	96	98	95	99	98			100		
cM capacity (veh/h)	359	409	739	362	424	846	1257			1380		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	67	35	235	298
Volume Left	5	9	31	5
Volume Right	30	6	7	4
cSH	506	442	1257	1380
Volume to Capacity	0.13	0.08	0.02	0.00
Queue Length 95th (ft)	11	6	2	0
Control Delay (s)	13.2	13.8	1.3	0.2
Lane LOS	B	B	A	A
Approach Delay (s)	13.2	13.8	1.3	0.2
Approach LOS	B	B		

Intersection Summary			
Average Delay		2.7	
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘ ↙			↑	↕	↙
Sign Control	Stop			Free	Free	
Grade	3%			0%	0%	
Volume (veh/h)	29	50	12	141	253	42
Peak Hour Factor	0.72	0.72	0.82	0.82	0.81	0.81
Hourly flow rate (vph)	40	69	15	172	312	52
Pedestrians	1			1		
Lane Width (ft)	10.0			11.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	540	340	365			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	540	340	365			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	90	99			
cM capacity (veh/h)	492	699	1204			






















Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	110	187	364
Volume Left	40	15	0
Volume Right	69	0	52
cSH	605	1204	1700
Volume to Capacity	0.18	0.01	0.21
Queue Length 95th (ft)	16	1	0
Control Delay (s)	12.3	0.7	0.0
Lane LOS	B	A	
Approach Delay (s)	12.3	0.7	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.91	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1332	1346	1543	1570	2851	
Flt Permitted	0.95	1.00	0.43	1.00	1.00	
Satd. Flow (perm)	1332	1346	703	1570	2851	
Volume (vph)	115	152	352	107	166	231
Peak-hour factor, PHF	0.92	0.92	0.87	0.87	0.91	0.91
Adj. Flow (vph)	125	165	405	123	182	254
RTOR Reduction (vph)	0	74	0	0	195	0
Lane Group Flow (vph)	125	91	405	123	241	0
Heavy Vehicles (%)	31%	16%	17%	17%	8%	21%
Turn Type		pm+ov	pm+pt			
Protected Phases	4	5	5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	8.7	26.7	35.0	35.0	11.0	
Effective Green, g (s)	10.7	30.7	37.0	37.0	13.0	
Actuated g/C Ratio	0.19	0.55	0.66	0.66	0.23	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	256	839	769	1043	665	
v/s Ratio Prot	c0.09	0.04	c0.19	0.08	0.08	
v/s Ratio Perm		0.03	c0.16			
v/c Ratio	0.49	0.11	0.53	0.12	0.36	
Uniform Delay, d1	20.1	6.0	7.0	3.4	17.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	0.1	0.7	0.1	0.3	
Delay (s)	21.5	6.0	7.6	3.5	18.2	
Level of Service	C	A	A	A	B	
Approach Delay (s)	12.7			6.6	18.2	
Approach LOS	B			A	B	
Intersection Summary						
HCM Average Control Delay			12.1		HCM Level of Service	B
HCM Volume to Capacity ratio			0.50			
Actuated Cycle Length (s)			55.7		Sum of lost time (s)	8.0
Intersection Capacity Utilization			47.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
No-Build 2015

30: NY Route 5 & NY Route 77
No-Build 2015_AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	0.94		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1735	1688		1626	1665		1770	1629		1539	1743	1392
Flt Permitted	0.42	1.00		0.59	1.00		0.41	1.00		0.62	1.00	1.00
Satd. Flow (perm)	762	1688		1018	1665		770	1629		1008	1743	1392
Volume (vph)	122	137	85	57	131	87	111	141	38	32	145	123
Peak-hour factor, PHF	0.83	0.83	0.83	0.73	0.73	0.73	0.82	0.82	0.82	0.87	0.87	0.87
Adj. Flow (vph)	147	165	102	78	179	119	135	172	46	37	167	141
RTOR Reduction (vph)	0	23	0	0	25	0	0	14	0	0	0	117
Lane Group Flow (vph)	147	244	0	78	273	0	135	204	0	37	167	24
Confl. Peds. (#/hr)	1					1			1	1		
Heavy Vehicles (%)	4%	8%	3%	11%	0%	16%	2%	8%	29%	17%	9%	16%
Turn Type	pm+pt		Perm			pm+pt		Perm			Perm	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8		2			6			6
Actuated Green, G (s)	36.9	36.9		23.4	23.4		17.3	17.3		9.9	9.9	9.9
Effective Green, g (s)	37.9	37.9		24.4	24.4		18.3	18.3		10.9	10.9	10.9
Actuated g/C Ratio	0.59	0.59		0.38	0.38		0.29	0.29		0.17	0.17	0.17
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	594	996		387	633		272	464		171	296	236
v/s Ratio Prot	0.04	c0.14			c0.16		0.03	c0.13			0.10	
v/s Ratio Perm	0.11			0.08			c0.12		0.04			0.02
v/c Ratio	0.25	0.24		0.20	0.43		0.50	0.44		0.22	0.56	0.10
Uniform Delay, d1	6.4	6.3		13.4	14.8		18.5	18.8		23.0	24.5	22.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.1		0.3	0.5		1.4	0.7		0.6	2.5	0.2
Delay (s)	6.7	6.4		13.6	15.2		19.9	19.4		23.6	26.9	22.7
Level of Service	A	A		B	B		B	B		C	C	C
Approach Delay (s)		6.5			14.9			19.6			24.8	
Approach LOS		A			B			B			C	
Intersection Summary												
HCM Average Control Delay			16.0	HCM Level of Service				B				
HCM Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			64.2	Sum of lost time (s)				12.0				
Intersection Capacity Utilization			52.3%	ICU Level of Service				A				
Analysis Period (min)			15									
c Critical Lane Group												



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	13	58	2	12	47	4	2	43	6	3	80	2
Peak Hour Factor	0.88	0.88	0.88	0.61	0.61	0.61	0.64	0.64	0.64	0.88	0.88	0.88
Hourly flow rate (vph)	15	66	2	20	77	7	3	67	9	3	91	2
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	84			70			266	222	69	259	219	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	84			70			266	222	69	259	219	80
tC, single (s)	4.1			4.1			7.1	6.6	6.7	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.8	3.5	4.0	3.3
p0 queue free %	99			99			99	90	99	99	86	100
cM capacity (veh/h)	1526			1541			604	656	874	625	661	985

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	83	103	80	97
Volume Left	15	20	3	3
Volume Right	2	7	9	2
cSH	1526	1541	673	665
Volume to Capacity	0.01	0.01	0.12	0.15
Queue Length 95th (ft)	1	1	10	13
Control Delay (s)	1.4	1.5	11.1	11.3
Lane LOS	A	A	B	B
Approach Delay (s)	1.4	1.5	11.1	11.3
Approach LOS			B	B

Intersection Summary			
Average Delay		6.2	
Intersection Capacity Utilization	17.8%		ICU Level of Service A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis 51: Lockport Road (CR 12) & NY Route 98
 No-Build 2015 No-Build 2015_AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	6	18	11	1	23	7	2	117	1	8	159	3
Peak Hour Factor	0.52	0.52	0.52	0.75	0.75	0.75	0.65	0.65	0.65	0.62	0.62	0.62
Hourly flow rate (vph)	12	35	21	1	31	9	3	180	2	13	256	5
Pedestrians		1										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	497	473	260	510	475	181	262			182		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	497	473	260	510	475	181	262			182		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.8	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.8	2.2			2.2		
p0 queue free %	97	93	97	100	94	99	100			99		
cM capacity (veh/h)	453	486	783	435	485	738	1313			1406		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	67	41	185	274
Volume Left	12	1	3	13
Volume Right	21	9	2	5
cSH	544	524	1313	1406
Volume to Capacity	0.12	0.08	0.00	0.01
Queue Length 95th (ft)	11	6	0	1
Control Delay (s)	12.5	12.5	0.1	0.4
Lane LOS	B	B	A	A
Approach Delay (s)	12.5	12.5	0.1	0.4
Approach LOS	B	B		

Intersection Summary			
Average Delay		2.7	
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
No-Build 2015

25: NY Route 63 & Lewiston Road
No-Build 2015_AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Sign Control	Free				Free			Stop			Stop		
Grade	0%				0%			0%			0%		
Volume (veh/h)	19	75	1	0	56	158	0	0	0	148	5	14	
Peak Hour Factor	0.75	0.75	0.75	0.92	0.92	0.92	0.25	0.25	0.25	0.92	0.92	0.92	
Hourly flow rate (vph)	25	100	1	0	61	172	0	0	0	161	5	15	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type							None			None			
Median storage veh													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	233			101			230		384	101	212	213	61
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	233			101			230		384	101	212	213	61
tC, single (s)	4.2			4.1			7.1		6.5	6.2	7.2	6.5	6.3
tC, 2 stage (s)													
tF (s)	2.3			2.2			3.5		4.0	3.3	3.6	4.0	3.4
p0 queue free %	98			100			100		100	100	78	99	98
cM capacity (veh/h)	1312			1504			699		539	955	724	675	988
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2						
Volume Total	25	101	61	172	0	161	21						
Volume Left	25	0	0	0	0	161	0						
Volume Right	0	1	0	172	0	0	15						
cSH	1312	1700	1504	1700	1700	724	880						
Volume to Capacity	0.02	0.06	0.00	0.10	0.00	0.22	0.02						
Queue Length 95th (ft)	1	0	0	0	0	21	2						
Control Delay (s)	7.8	0.0	0.0	0.0	0.0	11.4	9.2						
Lane LOS	A				A	B	A						
Approach Delay (s)	1.6		0.0		0.0		11.1						
Approach LOS					A	B							
Intersection Summary													
Average Delay			4.1										
Intersection Capacity Utilization			22.6%		ICU Level of Service			A					
Analysis Period (min)			15										

HCM Signalized Intersection Capacity Analysis 44: NY Route 31 & NY Route 63/NY Route 31
 No-Build 2015 No-Build 2015_PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	9	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			0.99	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Flt		1.00	0.85		0.97			0.98			0.94	
Flt Protected		0.98	1.00		1.00			0.99			0.99	
Satd. Flow (prot)		1768	1253		1788			1735			1704	
Flt Permitted		0.70	1.00		0.95			0.88			0.89	
Satd. Flow (perm)		1267	1253		1703			1548			1536	
Volume (vph)	139	179	21	33	252	79	47	148	36	76	157	171
Peak-hour factor, PHF	0.86	0.86	0.86	0.91	0.91	0.91	0.84	0.84	0.84	0.93	0.93	0.93
Adj. Flow (vph)	162	208	24	36	277	87	56	176	43	82	169	184
RTOR Reduction (vph)	0	0	14	0	15	0	0	10	0	0	42	0
Lane Group Flow (vph)	0	370	10	0	385	0	0	265	0	0	393	0
Confl. Peds. (#/hr)							1		1	1		1
Heavy Vehicles (%)	0%	3%	16%	7%	3%	0%	2%	4%	18%	0%	5%	3%
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		19.1	19.1		19.1			17.3			17.3	
Effective Green, g (s)		19.1	19.1		19.1			17.3			17.3	
Actuated g/C Ratio		0.43	0.43		0.43			0.39			0.39	
Clearance Time (s)		4.0	4.0		4.0			4.0			4.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		545	539		733			603			598	
v/s Ratio Prot												
v/s Ratio Perm		c0.29	0.01		0.23			0.17			c0.26	
v/c Ratio		0.68	0.02		0.53			0.44			0.66	
Uniform Delay, d1		10.2	7.3		9.3			10.0			11.1	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		3.4	0.0		0.7			0.5			2.6	
Delay (s)		13.5	7.3		10.0			10.5			13.7	
Level of Service		B	A		A			B			B	
Approach Delay (s)		13.2			10.0			10.5			13.7	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM Average Control Delay			12.0								HCM Level of Service	B
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			44.4								Sum of lost time (s)	8.0
Intersection Capacity Utilization			77.0%								ICU Level of Service	D
Analysis Period (min)			15									

c Critical Lane Group



















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	13	8	15	3	9	20	6	205	5	18	246	13
Peak Hour Factor	0.69	0.69	0.69	0.65	0.65	0.65	0.95	0.95	0.95	0.90	0.90	0.90
Hourly flow rate (vph)	19	12	22	5	14	31	6	216	5	20	273	14
Pedestrians					1			2			1	
Lane Width (ft)					10.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	590	555	283	582	560	220	288			222		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	590	555	283	582	560	220	288			222		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	97	97	99	97	96	100			99		
cM capacity (veh/h)	390	434	760	399	431	823	1286			1358		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	52	49	227	308
Volume Left	19	5	6	20
Volume Right	22	31	5	14
cSH	503	607	1286	1358
Volume to Capacity	0.10	0.08	0.00	0.01
Queue Length 95th (ft)	9	7	0	1
Control Delay (s)	13.0	11.5	0.3	0.6
Lane LOS	B	B	A	A
Approach Delay (s)	13.0	11.5	0.3	0.6
Approach LOS	B	B		

Intersection Summary			
Average Delay		2.3	
Intersection Capacity Utilization	34.7%		ICU Level of Service A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
No-Build 2015

18: NY Route 77 & NY Route 63
No-Build 2015_PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	7	47	58	57	54	41	73	205	82	36	170	6
Peak Hour Factor	0.85	0.85	0.85	0.87	0.87	0.87	0.88	0.88	0.88	0.89	0.89	0.89
Hourly flow rate (vph)	8	55	68	66	62	47	83	233	93	40	191	7
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	132	175	409	238								
Volume Left (vph)	8	66	83	40								
Volume Right (vph)	68	47	93	7								
Hadj (s)	-0.12	0.03	0.02	0.21								
Departure Headway (s)	5.9	6.0	5.3	5.7								
Degree Utilization, x	0.22	0.29	0.60	0.38								
Capacity (veh/h)	515	535	649	587								
Control Delay (s)	10.6	11.4	15.8	12.1								
Approach Delay (s)	10.6	11.4	15.8	12.1								
Approach LOS	B	B	C	B								
Intersection Summary												
Delay			13.4									
HCM Level of Service			B									
Intersection Capacity Utilization			50.1%	ICU Level of Service	A							
Analysis Period (min)			15									






















Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	5	12	325	13	7	305
Peak Hour Factor	0.33	0.33	0.88	0.88	0.86	0.86
Hourly flow rate (vph)	15	36	369	15	8	355
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	748	377			384	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	748	377			384	
tC, single (s)	6.6	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.4			2.2	
p0 queue free %	96	94			99	
cM capacity (veh/h)	346	650			1185	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	52	384	363
Volume Left	15	0	8
Volume Right	36	15	0
cSH	517	1700	1185
Volume to Capacity	0.10	0.23	0.01
Queue Length 95th (ft)	8	0	1
Control Delay (s)	12.7	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	12.7	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay			0.9
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)			15

HCM Unsignalized Intersection Capacity Analysis12: Judge Road & NY Route 77/NY Route 63
 No-Build 2015 No-Build 2015_PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	17	28	8	53	29	26	11	304	65	38	258	17
Peak Hour Factor	0.81	0.81	0.81	0.63	0.63	0.63	0.93	0.93	0.93	0.87	0.87	0.87
Hourly flow rate (vph)	21	35	10	84	46	41	12	327	70	44	297	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)							6					
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	788	814	306	797	789	362	316			397		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	788	814	306	797	789	362	316			397		
tC, single (s)	7.1	6.6	6.2	7.2	6.5	6.2	4.2			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.3			2.6		
p0 queue free %	92	88	99	67	85	94	99			96		
cM capacity (veh/h)	248	292	738	257	303	676	1184			983		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	65	171	12	397	44	316						
Volume Left	21	84	12	0	44	0						
Volume Right	10	41	0	70	0	20						
cSH	302	360	1184	1700	983	1700						
Volume to Capacity	0.22	0.48	0.01	0.23	0.04	0.19						
Queue Length 95th (ft)	20	62	1	0	3	0						
Control Delay (s)	20.2	25.0	8.1	0.0	8.8	0.0						
Lane LOS	C	D	A		A							
Approach Delay (s)	20.2	25.0	0.2		1.1							
Approach LOS	C	D										
Intersection Summary												
Average Delay			6.1									
Intersection Capacity Utilization			42.8%		ICU Level of Service		A					
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	101	44	43	274	211	110
Peak Hour Factor	0.92	0.92	0.87	0.87	0.80	0.80
Hourly flow rate (vph)	110	48	49	315	264	138
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	746	332	401			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	746	332	401			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	70	93	96			
cM capacity (veh/h)	367	696	1141			
Direction, Lane #						
	EB 1	NB 1	SB 1			
Volume Total	158	364	401			
Volume Left	110	49	0			
Volume Right	48	0	138			
cSH	429	1141	1700			
Volume to Capacity	0.37	0.04	0.24			
Queue Length 95th (ft)	42	3	0			
Control Delay (s)	18.2	1.5	0.0			
Lane LOS	C	A				
Approach Delay (s)	18.2	1.5	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			3.7			
Intersection Capacity Utilization		52.9%		ICU Level of Service		A
Analysis Period (min)			15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	24	68	120	4	80	12	122	270	13	13	212	19
Peak Hour Factor	0.93	0.93	0.93	0.69	0.69	0.69	0.97	0.97	0.97	0.93	0.93	0.93
Hourly flow rate (vph)	26	73	129	6	116	17	126	278	13	14	228	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	878	809	238	968	813	285	248			292		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	878	809	238	968	813	285	248			292		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	84	74	84	96	59	98	90			99		
cM capacity (veh/h)	166	279	801	145	282	759	1311			1226		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	228	139	418	262								
Volume Left	26	6	126	14								
Volume Right	129	17	13	20								
cSH	394	293	1311	1226								
Volume to Capacity	0.58	0.47	0.10	0.01								
Queue Length 95th (ft)	88	60	8	1								
Control Delay (s)	26.0	27.9	3.1	0.5								
Lane LOS	D	D	A	A								
Approach Delay (s)	26.0	27.9	3.1	0.5								
Approach LOS	D	D										
Intersection Summary												
Average Delay			10.7									
Intersection Capacity Utilization		63.7%			ICU Level of Service					B		
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↓	
Sign Control	Stop			Free	Free	
Grade	3%			0%	0%	
Volume (veh/h)	55	38	56	333	248	38
Peak Hour Factor	0.91	0.91	0.93	0.93	0.80	0.80
Hourly flow rate (vph)	60	42	60	358	310	48
Pedestrians	1			1		
Lane Width (ft)	10.0			11.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	813	336	358			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	813	336	358			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	82	94	95			
cM capacity (veh/h)	330	698	1210			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	102	418	358			
Volume Left	60	60	0			
Volume Right	42	0	48			
cSH	420	1210	1700			
Volume to Capacity	0.24	0.05	0.21			
Queue Length 95th (ft)	24	4	0			
Control Delay (s)	16.3	1.6	0.0			
Lane LOS	C	A				
Approach Delay (s)	16.3	1.6	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			2.7			
Intersection Capacity Utilization			51.7%	ICU Level of Service	A	
Analysis Period (min)			15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Fr _t	1.00	0.85	1.00	1.00	0.93	
Fl _t Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1419	1346	1444	1717	2801	
Fl _t Permitted	0.95	1.00	0.46	1.00	1.00	
Satd. Flow (perm)	1419	1346	700	1717	2801	
Volume (vph)	220	408	292	230	186	179
Peak-hour factor, PHF	0.91	0.91	0.86	0.86	0.91	0.91
Adj. Flow (vph)	242	448	340	267	204	197
RTOR Reduction (vph)	0	177	0	0	150	0
Lane Group Flow (vph)	242	271	340	267	251	0
Heavy Vehicles (%)	23%	16%	25%	7%	12%	27%
Turn Type		pm+ov	pm+pt			
Protected Phases	4	5	5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	12.6	28.5	33.8	33.8	11.9	
Effective Green, g (s)	14.6	32.5	35.8	35.8	13.9	
Actuated g/C Ratio	0.25	0.56	0.61	0.61	0.24	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	355	841	657	1053	667	
v/s Ratio Prot	c0.17	0.10	c0.16	0.16	0.09	
v/s Ratio Perm		0.10	c0.16			
v/c Ratio	0.68	0.32	0.52	0.25	0.38	
Uniform Delay, d ₁	19.8	7.0	8.7	5.2	18.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d ₂	5.3	0.2	0.7	0.1	0.4	
Delay (s)	25.1	7.2	9.4	5.3	19.0	
Level of Service	C	A	A	A	B	
Approach Delay (s)	13.5			7.6	19.0	
Approach LOS	B			A	B	
Intersection Summary						
HCM Average Control Delay			12.7		HCM Level of Service	B
HCM Volume to Capacity ratio			0.55			
Actuated Cycle Length (s)			58.4		Sum of lost time (s)	8.0
Intersection Capacity Utilization			49.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	0.97		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1671	1658		1805	1758		1805	1737		1622	1638	1468
Flt Permitted	0.26	1.00		0.45	1.00		0.36	1.00		0.61	1.00	1.00
Satd. Flow (perm)	465	1658		854	1758		687	1737		1041	1638	1468
Volume (vph)	257	293	192	19	228	66	132	175	26	82	208	241
Peak-hour factor, PHF	0.85	0.85	0.85	0.88	0.88	0.88	0.84	0.84	0.84	0.80	0.80	0.80
Adj. Flow (vph)	302	345	226	22	259	75	157	208	31	102	260	301
RTOR Reduction (vph)	0	29	0	0	13	0	0	7	0	0	0	224
Lane Group Flow (vph)	302	542	0	22	321	0	157	232	0	102	260	77
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	8%	7%	9%	0%	4%	6%	0%	8%	0%	11%	16%	10%
Turn Type	pm+pt			Perm			pm+pt			Perm		Perm
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	34.0	34.0		16.6	16.6		23.6	23.6		16.4	16.4	16.4
Effective Green, g (s)	35.0	35.0		17.6	17.6		24.6	24.6		17.4	17.4	17.4
Actuated g/C Ratio	0.52	0.52		0.26	0.26		0.36	0.36		0.26	0.26	0.26
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	480	858		222	458		303	632		268	422	378
v/s Ratio Prot	0.12	c0.33			0.18		c0.02	0.13			c0.16	
v/s Ratio Perm	0.20			0.03			0.16			0.10		0.05
v/c Ratio	0.63	0.63		0.10	0.70		0.52	0.37		0.38	0.62	0.20
Uniform Delay, d1	11.0	11.7		19.0	22.6		17.0	15.8		20.7	22.2	19.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.6	1.5		0.2	4.8		1.5	0.4		0.9	2.7	0.3
Delay (s)	13.6	13.2		19.2	27.4		18.5	16.1		21.6	24.8	19.9
Level of Service	B	B		B	C		B	B		C	C	B
Approach Delay (s)		13.3			26.9			17.1			22.1	
Approach LOS		B			C			B			C	
Intersection Summary												
HCM Average Control Delay			18.6			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			67.6			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			68.1%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
No-Build 2015

63: NY Route 77 & Roylton Center Road
No-Build 2015_PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	21	76	1	8	122	22	19	88	25	4	44	23
Peak Hour Factor	0.66	0.66	0.66	0.74	0.74	0.74	0.76	0.76	0.76	0.71	0.71	0.71
Hourly flow rate (vph)	32	115	2	11	165	30	25	116	33	6	62	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	195			117			444	396	116	472	382	180
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	195			117			444	396	116	472	382	180
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			94	78	97	99	88	96
cM capacity (veh/h)	1391			1484			452	528	942	397	538	868

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	148	205	174	100
Volume Left	32	11	25	6
Volume Right	2	30	33	32
cSH	1391	1484	561	600
Volume to Capacity	0.02	0.01	0.31	0.17
Queue Length 95th (ft)	2	1	33	15
Control Delay (s)	1.8	0.4	14.3	12.2
Lane LOS	A	A	B	B
Approach Delay (s)	1.8	0.4	14.3	12.2
Approach LOS			B	B

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		




















HCM Unsignalized Intersection Capacity Analysis 51: Lockport Road (CR 12) & NY Route 98
 No-Build 2015 No-Build 2015_PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	45	7	0	52	15	11	169	0	8	156	16
Peak Hour Factor	0.73	0.73	0.73	0.86	0.86	0.86	0.94	0.94	0.94	0.77	0.77	0.77
Hourly flow rate (vph)	7	62	10	0	60	17	12	180	0	10	203	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	485	437	213	477	447	180	223			180		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	485	437	213	477	447	180	223			180		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	88	99	100	88	98	99			99		
cM capacity (veh/h)	435	502	832	444	497	868	1357			1408		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	78	78	191	234
Volume Left	7	0	12	10
Volume Right	10	17	0	21
cSH	520	549	1357	1408
Volume to Capacity	0.15	0.14	0.01	0.01
Queue Length 95th (ft)	13	12	1	1
Control Delay (s)	13.1	12.6	0.5	0.4
Lane LOS	B	B	A	A
Approach Delay (s)	13.1	12.6	0.5	0.4
Approach LOS	B	B		

Intersection Summary			
Average Delay		3.8	
Intersection Capacity Utilization	26.6%	ICU Level of Service	A
Analysis Period (min)	15		

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Free		Free		Free		Stop		Stop		Stop	
Grade	0%		0%		0%		0%		0%		0%	
Volume (veh/h)	7	102	2	0	116	163	0	0	0	117	5	11
Peak Hour Factor	0.77	0.77	0.77	0.91	0.91	0.91	0.25	0.25	0.25	0.85	0.85	0.85
Hourly flow rate (vph)	9	132	3	0	127	179	0	0	0	138	6	13
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None						None					
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	307			135			295	459	134	278	281	127
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	307			135			295	459	134	278	281	127
tC, single (s)	4.2			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	79	99	99
cM capacity (veh/h)	1189			1462			643	498	921	666	626	928
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2					
Volume Total	9	135	127	179	0	138	19					
Volume Left	9	0	0	0	0	138	0					
Volume Right	0	3	0	179	0	0	13					
cSH	1189	1700	1462	1700	1700	666	807					
Volume to Capacity	0.01	0.08	0.00	0.11	0.00	0.21	0.02					
Queue Length 95th (ft)	1	0	0	0	0	19	2					
Control Delay (s)	8.1	0.0	0.0	0.0	0.0	11.8	9.6					
Lane LOS	A					A	B	A				
Approach Delay (s)	0.5	0.0		0.0		11.5						
Approach LOS					A	B						
Intersection Summary												
Average Delay			3.1									
Intersection Capacity Utilization			22.2%		ICU Level of Service			A				
Analysis Period (min)			15									

**INTERSECTION CAPACITY ANALYSIS
(SYNCHRO)**

**BUILD – PHASE 1
2015 DESIGN YEAR**

HCM Signalized Intersection Capacity Analysis

Build 2015 - Phase 1

44: NY Route 63/NY Route 63/NY Route 31 & NY Route 31/NY Route 31A

AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Volume (vph)	68	202	24	30	188	38	60	72	18	44	98	105
Future Volume (vph)	68	202	24	30	188	38	60	72	18	44	98	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	9	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		0.98			0.98			0.94	
Flt Protected		0.99	1.00		0.99			0.98			0.99	
Satd. Flow (prot)		1703	1309		1637			1696			1699	
Flt Permitted		0.86	1.00		0.93			0.81			0.91	
Satd. Flow (perm)		1479	1309		1539			1399			1563	
Peak-hour factor, PHF	0.80	0.80	0.80	0.78	0.78	0.78	0.67	0.67	0.67	0.74	0.74	0.74
Adj. Flow (vph)	85	252	30	38	241	49	90	107	27	59	132	142
RTOR Reduction (vph)	0	0	18	0	10	0	0	8	0	0	43	0
Lane Group Flow (vph)	0	338	12	0	318	0	0	216	0	0	290	0
Heavy Vehicles (%)	5%	7%	11%	14%	14%	8%	6%	8%	15%	7%	6%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		14.1	14.1		14.1			13.2			13.2	
Effective Green, g (s)		14.1	14.1		14.1			13.2			13.2	
Actuated g/C Ratio		0.40	0.40		0.40			0.37			0.37	
Clearance Time (s)		4.0	4.0		4.0			4.0			4.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		590	522		614			523			584	
v/s Ratio Prot												
v/s Ratio Perm		c0.23	0.01		0.21			0.15			c0.19	
v/c Ratio		0.57	0.02		0.52			0.41			0.50	
Uniform Delay, d1		8.3	6.4		8.0			8.2			8.5	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		1.3	0.0		0.7			0.5			0.7	
Delay (s)		9.6	6.4		8.8			8.7			9.2	
Level of Service		A	A		A			A			A	
Approach Delay (s)		9.3			8.8			8.7			9.2	
Approach LOS		A			A			A			A	

Intersection Summary

















HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	35.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

47: NY Route 63 & Blair Rd/Main St

Build 2015 - Phase 1
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	2	12	0	2	7	5	146	2	7	187	1
Future Volume (Veh/h)	6	2	12	0	2	7	5	146	2	7	187	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.40	0.40	0.40	0.45	0.45	0.45	0.80	0.80	0.80	0.88	0.88	0.88
Hourly flow rate (vph)	15	5	30	0	4	16	6	183	3	8	213	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	444	428	214	458	426	184	214			186		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	444	428	214	458	426	184	214			186		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	99	96	100	99	98	100			99		
cM capacity (veh/h)	511	517	832	490	518	863	1368			1401		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	50	20	192	222								
Volume Left	15	0	6	8								
Volume Right	30	16	3	1								
cSH	666	762	1368	1401								
Volume to Capacity	0.08	0.03	0.00	0.01								
Queue Length 95th (ft)	6	2	0	0								
Control Delay (s)	10.8	9.9	0.3	0.3								
Lane LOS	B	A	A	A								
Approach Delay (s)	10.8	9.9	0.3	0.3								
Approach LOS	B	A										
Intersection Summary												
Average Delay			1.8									
Intersection Capacity Utilization			26.1%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 18: NY Route 77/NY Route 63/NY Route 63 & NY Route 77/Lewiston Road

Build 2015 - Phase 1
 AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	3	65	52	38	37	16	21	130	17	30	153	12
Future Volume (vph)	3	65	52	38	37	16	21	130	17	30	153	12
Peak Hour Factor	0.80	0.80	0.80	0.90	0.90	0.90	0.80	0.80	0.80	0.90	0.90	0.90
Hourly flow rate (vph)	4	81	65	42	41	18	26	163	21	33	170	13

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	150	101	210	216
Volume Left (vph)	4	42	26	33
Volume Right (vph)	65	18	21	13
Hadj (s)	-0.19	0.10	0.22	0.07
Departure Headway (s)	5.0	5.3	5.1	4.9
Degree Utilization, x	0.21	0.15	0.30	0.30
Capacity (veh/h)	660	611	670	686
Control Delay (s)	9.2	9.2	10.2	10.0
Approach Delay (s)	9.2	9.2	10.2	10.0
Approach LOS	A	A	B	A

Intersection Summary

Delay	9.8
Level of Service	A
Intersection Capacity Utilization	33.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 15: NY Route 77/NY Route 63/NY Route 77 & Ham Road




















Build 2015 - Phase 1
 AM Peak



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	5	137	4	3	264
Future Volume (Veh/h)	5	5	137	4	3	264
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.63	0.63	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	8	152	4	3	293
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
			None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	453	154			156	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	453	154			156	
tC, single (s)	6.6	6.6			4.8	
tC, 2 stage (s)						
tF (s)	3.7	3.7			2.8	
p0 queue free %	98	99			100	
cM capacity (veh/h)	531	801			1109	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	16	156	296			
Volume Left	8	0	3			
Volume Right	8	4	0			
cSH	639	1700	1109			
Volume to Capacity	0.03	0.09	0.00			
Queue Length 95th (ft)	2	0	0			
Control Delay (s)	10.8	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	10.8	0.0	0.1			
Approach LOS	B					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			26.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 12: NY Route 77/NY Route 77/NY Route 63 & Judge Road/NY Route 63

Build 2015 - Phase 1
 AM Peak

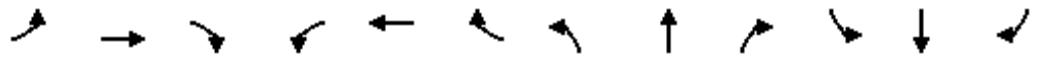
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	19	18	50	18	26	318	237	43	24	244	2
Future Volume (Veh/h)	11	19	18	50	18	26	318	237	43	24	244	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.92	0.92	0.92	0.90	0.90	0.90
Hourly flow rate (vph)	12	21	20	56	20	29	346	258	47	27	271	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						6						
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1300	1323	272	1329	1300	282	273			305		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1300	1323	272	1329	1300	282	273			305		
tC, single (s)	7.1	6.5	6.2	7.3	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.7	4.0	3.3	2.2			2.3		
p0 queue free %	87	81	97	30	83	96	73			98		
cM capacity (veh/h)	91	112	767	80	115	755	1290			1233		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	53	105	346	305	27	273						
Volume Left	12	56	346	0	27	0						
Volume Right	20	29	0	47	0	2						
cSH	154	124	1290	1700	1233	1700						
Volume to Capacity	0.34	0.85	0.27	0.18	0.02	0.16						
Queue Length 95th (ft)	35	130	27	0	2	0						
Control Delay (s)	40.2	103.7	8.8	0.0	8.0	0.0						
Lane LOS	E	F	A		A							
Approach Delay (s)	40.2	103.7	4.7		0.7							
Approach LOS	E	F										
Intersection Summary												
Average Delay			14.7									
Intersection Capacity Utilization			50.4%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

Build 2015 - Phase 1 w/ Imp

12: NY Route 77/NY Route 77/NY Route 63 & Judge Road/NY Route 63

AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↗		↖	↗	
Traffic Volume (vph)	11	19	18	50	18	26	318	237	43	24	244	2
Future Volume (vph)	11	19	18	50	18	26	318	237	43	24	244	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	11	11	12	11	11	11	11	11	11
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.98		1.00	1.00	
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1731	1478		1567	1568	1711	1723		1646	1782	
Flt Permitted		0.85	1.00		0.76	1.00	0.43	1.00		0.57	1.00	
Satd. Flow (perm)		1495	1478		1237	1568	781	1723		995	1782	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	12	21	20	56	20	29	346	258	47	27	271	2
RTOR Reduction (vph)	0	0	18	0	0	26	0	6	0	0	0	0
Lane Group Flow (vph)	0	33	2	0	76	3	346	299	0	27	273	0
Heavy Vehicles (%)	0%	1%	2%	17%	2%	3%	2%	4%	5%	6%	3%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		4.8	4.8		4.8	4.8	37.3	32.5		18.5	17.7	
Effective Green, g (s)		4.8	4.8		4.8	4.8	37.3	32.5		18.5	17.7	
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.74	0.65		0.37	0.35	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		143	141		118	150	871	1117		377	629	
v/s Ratio Prot							c0.12	0.17		0.00	0.15	
v/s Ratio Perm		0.02	0.00		c0.06	0.00	c0.17			0.03		
v/c Ratio		0.23	0.01		0.64	0.02	0.40	0.27		0.07	0.43	
Uniform Delay, d1		20.9	20.5		21.8	20.5	2.5	3.7		10.2	12.4	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.8	0.0		11.4	0.0	0.3	0.1		0.1	0.5	
Delay (s)		21.8	20.5		33.3	20.6	2.8	3.9		10.3	12.9	
Level of Service		C	C		C	C	A	A		B	B	
Approach Delay (s)		21.3			29.8			3.3			12.6	
Approach LOS		C			C			A			B	

Intersection Summary

HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	50.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

33: NY Route 77 & Bloomingdale Rd

Build 2015 - Phase 1
AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	43	20	12	261	279	47
Future Volume (Veh/h)	43	20	12	261	279	47
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	46	22	13	290	310	52
Pedestrians	1					
Lane Width (ft)	11.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	653	337	363			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	653	337	363			
tC, single (s)	6.4	6.2	4.4			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	89	97	99			
cM capacity (veh/h)	423	698	1069			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	68	303	362			
Volume Left	46	13	0			
Volume Right	22	0	52			
cSH	485	1069	1700			
Volume to Capacity	0.14	0.01	0.21			
Queue Length 95th (ft)	12	1	0			
Control Delay (s)	13.6	0.5	0.0			
Lane LOS	B	A				
Approach Delay (s)	13.6	0.5	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			33.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
 33: NY Route 77 & Bloomingdale Rd

Build 2015 - Phase 1 w/ Imp
 AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	20	12	261	279	47
Future Volume (vph)	43	20	12	261	279	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	12	11	11
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frbp, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.96		1.00	1.00	0.98	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	1629		1420	1827	1717	
Flt Permitted	0.97		0.55	1.00	1.00	
Satd. Flow (perm)	1629		815	1827	1717	
Peak-hour factor, PHF	0.93	0.93	0.90	0.90	0.90	0.90
Adj. Flow (vph)	46	22	13	290	310	52
RTOR Reduction (vph)	20	0	0	0	8	0
Lane Group Flow (vph)	48	0	13	290	354	0
Confl. Peds. (#/hr)			1			1
Heavy Vehicles (%)	4%	5%	27%	4%	5%	2%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	2.6		23.0	23.0	23.0	
Effective Green, g (s)	2.6		23.0	23.0	23.0	
Actuated g/C Ratio	0.08		0.68	0.68	0.68	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	126		557	1250	1175	
v/s Ratio Prot	c0.03			0.16	c0.21	
v/s Ratio Perm			0.02			
v/c Ratio	0.38		0.02	0.23	0.30	
Uniform Delay, d1	14.7		1.7	2.0	2.1	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.9		0.0	0.1	0.1	
Delay (s)	16.6		1.7	2.1	2.3	
Level of Service	B		A	A	A	
Approach Delay (s)	16.6			2.1	2.3	
Approach LOS	B			A	A	

Intersection Summary

HCM 2000 Control Delay	3.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	33.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	27.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis

2: NY Route 77 & Ledge Road

Build 2015 - Phase 1
AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	3	20	19	6	14	4	27	274	6	4	282	3
Future Volume (Veh/h)	3	20	19	6	14	4	27	274	6	4	282	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.63	0.63	0.63	0.69	0.69	0.69	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	5	32	30	9	20	6	30	304	7	4	313	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	706	694	314	736	692	308	316			311		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	706	694	314	736	692	308	316			311		
tC, single (s)	7.4	6.6	6.3	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.8	4.1	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	91	96	97	94	99	98			100		
cM capacity (veh/h)	291	346	717	294	360	737	1233			1261		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	67	35	341	320								
Volume Left	5	9	30	4								
Volume Right	30	6	7	3								
cSH	442	371	1233	1261								
Volume to Capacity	0.15	0.09	0.02	0.00								
Queue Length 95th (ft)	13	8	2	0								
Control Delay (s)	14.6	15.7	0.9	0.1								
Lane LOS	B	C	A	A								
Approach Delay (s)	14.6	15.7	0.9	0.1								
Approach LOS	B	C										
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization			41.1%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

2: NY Route 77 & Ledge Road

Build 2015 - Phase 1 w/ Imp
AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (vph)	3	20	19	6	14	4	27	274	6	4	282	3
Future Volume (vph)	3	20	19	6	14	4	27	274	6	4	282	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	11	11	11	11	11	11
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.98		1.00	1.00		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1504			1710		1678	1755		1745	1764	
Flt Permitted		0.97			0.97		0.48	1.00		0.57	1.00	
Satd. Flow (perm)		1462			1675		841	1755		1049	1764	
Peak-hour factor, PHF	0.63	0.63	0.63	0.69	0.69	0.69	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	5	32	30	9	20	6	30	304	7	4	313	3
RTOR Reduction (vph)	0	28	0	0	6	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	29	0	30	310	0	4	316	0
Heavy Vehicles (%)	33%	11%	6%	0%	0%	0%	4%	4%	17%	0%	4%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		2.6			2.6		25.2	25.2		20.6	20.6	
Effective Green, g (s)		2.6			2.6		25.2	25.2		20.6	20.6	
Actuated g/C Ratio		0.07			0.07		0.70	0.70		0.58	0.58	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		106			121		606	1235		603	1015	
v/s Ratio Prot							0.00	c0.18			c0.18	
v/s Ratio Perm		c0.03			0.02		0.03			0.00		
v/c Ratio		0.37			0.24		0.05	0.25		0.01	0.31	
Uniform Delay, d1		15.8			15.7		1.8	1.9		3.2	3.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.2			1.0		0.0	0.1		0.0	0.2	
Delay (s)		18.0			16.7		1.9	2.0		3.2	4.1	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		18.0			16.7			2.0			4.1	
Approach LOS		B			B			A			A	

Intersection Summary

HCM 2000 Control Delay	5.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	35.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

3: NY Route 77 & Akron Road

Build 2015 - Phase 1
AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	50	12	237	289	45
Future Volume (Veh/h)	38	50	12	237	289	45
Sign Control	Stop			Free	Free	
Grade	3%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	42	56	13	263	321	50
Pedestrians	1			1		
Lane Width (ft)	10.0			11.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	636	348	372			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	636	348	372			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	92	99			
cM capacity (veh/h)	436	692	1197			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	98	276	371			
Volume Left	42	13	0			
Volume Right	56	0	50			
cSH	553	1197	1700			
Volume to Capacity	0.18	0.01	0.22			
Queue Length 95th (ft)	16	1	0			
Control Delay (s)	12.9	0.5	0.0			
Lane LOS	B	A				
Approach Delay (s)	12.9	0.5	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			34.4%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: NY Route 77 & Akron Road

Build 2015 - Phase 1 w/ Imp
AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	50	12	237	289	45
Future Volume (Veh/h)	38	50	12	237	289	45
Sign Control	Stop			Free	Free	
Grade	3%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	42	56	13	263	321	50
Pedestrians	1			1		
Lane Width (ft)	10.0			11.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	636	348	372			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	636	348	372			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	92	99			
cM capacity (veh/h)	436	692	1197			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	42	56	13	263	371	
Volume Left	42	0	13	0	0	
Volume Right	0	56	0	0	50	
cSH	436	692	1197	1700	1700	
Volume to Capacity	0.10	0.08	0.01	0.15	0.22	
Queue Length 95th (ft)	8	7	1	0	0	
Control Delay (s)	14.1	10.7	8.0	0.0	0.0	
Lane LOS	B	B	A			
Approach Delay (s)	12.1		0.4		0.0	
Approach LOS	B					
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			28.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
6: NY Route 77 & I-90 Interchange 48A

Build 2015 - Phase 1
AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	185	152	352	133	176	257
Future Volume (vph)	185	152	352	133	176	257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.91	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1646	1346	1543	1733	3013	
Flt Permitted	0.95	1.00	0.37	1.00	1.00	
Satd. Flow (perm)	1646	1346	609	1733	3013	
Peak-hour factor, PHF	0.92	0.92	0.90	0.90	0.91	0.91
Adj. Flow (vph)	201	165	391	148	193	282
RTOR Reduction (vph)	0	68	0	0	223	0
Lane Group Flow (vph)	201	97	391	148	252	0
Heavy Vehicles (%)	6%	16%	17%	6%	5%	12%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	12.8	31.4	35.2	35.2	10.6	
Effective Green, g (s)	14.8	35.4	37.2	37.2	12.6	
Actuated g/C Ratio	0.25	0.59	0.62	0.62	0.21	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	406	883	698	1074	632	
v/s Ratio Prot	c0.12	0.04	c0.19	0.09	0.08	
v/s Ratio Perm		0.03	c0.16			
v/c Ratio	0.50	0.11	0.56	0.14	0.40	
Uniform Delay, d1	19.4	5.4	9.3	4.7	20.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	0.1	1.0	0.1	0.4	
Delay (s)	20.3	5.4	10.3	4.8	20.9	
Level of Service	C	A	B	A	C	
Approach Delay (s)	13.6			8.8	20.9	
Approach LOS	B			A	C	

Intersection Summary

HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

30: NY Route 77 & NY Route 5

Build 2015 - Phase 1
AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	137	85	57	131	91	111	151	38	33	149	128
Future Volume (vph)	134	137	85	57	131	91	111	151	38	33	149	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	0.94		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1769	1688		1626	1684		1770	1671		1595	1759	1553
Flt Permitted	0.33	1.00		0.61	1.00		0.49	1.00		0.63	1.00	1.00
Satd. Flow (perm)	614	1688		1038	1684		908	1671		1052	1759	1553
Peak-hour factor, PHF	0.90	0.90	0.90	0.73	0.73	0.73	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	149	152	94	78	179	125	123	168	42	37	166	142
RTOR Reduction (vph)	0	29	0	0	31	0	0	12	0	0	0	108
Lane Group Flow (vph)	149	217	0	78	273	0	123	198	0	37	166	34
Confl. Peds. (#/hr)	1						1		1	1		
Heavy Vehicles (%)	2%	8%	3%	11%	0%	12%	2%	5%	29%	13%	8%	4%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	27.6	27.6		14.8	14.8		19.8	19.8		12.6	12.6	12.6
Effective Green, g (s)	28.6	28.6		15.8	15.8		20.8	20.8		13.6	13.6	13.6
Actuated g/C Ratio	0.50	0.50		0.28	0.28		0.36	0.36		0.24	0.24	0.24
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	483	841		285	463		377	605		249	416	367
v/s Ratio Prot	c0.05	0.13			c0.16		0.02	c0.12			c0.09	
v/s Ratio Perm	0.11			0.08			0.10			0.04		0.02
v/c Ratio	0.31	0.26		0.27	0.59		0.33	0.33		0.15	0.40	0.09
Uniform Delay, d1	8.6	8.3		16.3	18.0		12.7	13.2		17.3	18.5	17.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	0.2		0.5	1.9		0.5	0.3		0.3	0.6	0.1
Delay (s)	9.0	8.5		16.8	19.9		13.2	13.6		17.6	19.1	17.2
Level of Service	A	A		B	B		B	B		B	B	B
Approach Delay (s)		8.7			19.3			13.4			18.1	
Approach LOS		A			B			B			B	

Intersection Summary

HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
63: Royalton Center Road & NY Route 77

Build 2015 - Phase 1
AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	13	70	2	13	52	5	2	43	10	5	80	2
Future Volume (Veh/h)	13	70	2	13	52	5	2	43	10	5	80	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.61	0.61	0.61	0.64	0.64	0.64	0.88	0.88	0.88
Hourly flow rate (vph)	14	78	2	21	85	8	3	67	16	6	91	2
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	93			82			288	244	81	288	241	89
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	93			82			288	244	81	288	241	89
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	99			99			99	89	98	99	86	100
cM capacity (veh/h)	1514			1519			583	637	942	590	643	975
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	94	114	86	99								
Volume Left	14	21	3	6								
Volume Right	2	8	16	2								
cSH	1514	1519	675	643								
Volume to Capacity	0.01	0.01	0.13	0.15								
Queue Length 95th (ft)	1	1	11	14								
Control Delay (s)	1.2	1.5	11.1	11.6								
Lane LOS	A	A	B	B								
Approach Delay (s)	1.2	1.5	11.1	11.6								
Approach LOS			B	B								
Intersection Summary												
Average Delay			6.1									
Intersection Capacity Utilization			19.3%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
51: NY Route 98 & Lockport Road (CR 12)

Build 2015 - Phase 1
AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	7	22	12	1	34	7	4	117	1	8	159	5
Future Volume (Veh/h)	7	22	12	1	34	7	4	117	1	8	159	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.52	0.52	0.52	0.90	0.90	0.90	0.65	0.65	0.65	0.62	0.62	0.62
Hourly flow rate (vph)	13	42	23	1	38	8	6	180	2	13	256	8
Pedestrians		1										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	507	481	261	523	484	181	265			182		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	507	481	261	523	484	181	265			182		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.8	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.8	2.2			2.2		
p0 queue free %	97	91	97	100	92	99	100			99		
cM capacity (veh/h)	438	479	779	419	476	738	1298			1405		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	78	47	188	277								
Volume Left	13	1	6	13								
Volume Right	23	8	2	8								
cSH	531	505	1298	1405								
Volume to Capacity	0.15	0.09	0.00	0.01								
Queue Length 95th (ft)	13	8	0	1								
Control Delay (s)	12.9	12.9	0.3	0.4								
Lane LOS	B	B	A	A								
Approach Delay (s)	12.9	12.9	0.3	0.4								
Approach LOS	B	B										
Intersection Summary												
Average Delay			3.0									
Intersection Capacity Utilization			24.5%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

25: Park Road/Lewiston Road & NY Route 63

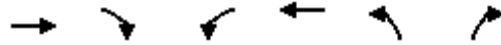
Build 2015 - Phase 1
AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	94	8	18	58	160	0	0	0	150	6	14
Future Volume (Veh/h)	19	94	8	18	58	160	0	0	0	150	6	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.92	0.92	0.92	0.25	0.25	0.25	0.92	0.92	0.92
Hourly flow rate (vph)	25	125	11	20	63	174	0	0	0	163	7	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	237			136			302	458	130	278	289	63
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	237			136			302	458	130	278	289	63
tC, single (s)	4.2			4.1			7.1	6.5	6.2	7.2	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.6	4.0	3.4
p0 queue free %	98			99			100	100	100	75	99	98
cM capacity (veh/h)	1307			1461			619	483	919	648	604	985
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2					
Volume Total	25	136	83	174	0	163	22					
Volume Left	25	0	20	0	0	163	0					
Volume Right	0	11	0	174	0	0	15					
cSH	1307	1700	1461	1700	1700	648	820					
Volume to Capacity	0.02	0.08	0.01	0.10	0.00	0.25	0.03					
Queue Length 95th (ft)	1	0	1	0	0	25	2					
Control Delay (s)	7.8	0.0	1.9	0.0	0.0	12.4	9.5					
Lane LOS	A		A		A	B	A					
Approach Delay (s)	1.2		0.6		0.0	12.1						
Approach LOS					A	B						
Intersection Summary												
Average Delay			4.3									
Intersection Capacity Utilization			25.7%		ICU Level of Service		A					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
56: Crosby Road & NY Route 77/ NY Route 77

Build 2015 - Phase 1
AM Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Traffic Volume (veh/h)	104	77	40	30	22	16
Future Volume (Veh/h)	104	77	40	30	22	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.80	0.80
Hourly flow rate (vph)	116	86	44	33	28	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			202		280	159
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			202		280	159
tC, single (s)			4.2		6.5	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			97		96	98
cM capacity (veh/h)			1307		678	876
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	202	77	48			
Volume Left	0	44	28			
Volume Right	86	0	20			
cSH	1700	1307	748			
Volume to Capacity	0.12	0.03	0.06			
Queue Length 95th (ft)	0	3	5			
Control Delay (s)	0.0	4.6	10.1			
Lane LOS		A	B			
Approach Delay (s)	0.0	4.6	10.1			
Approach LOS			B			
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			27.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 23: NY Route 77/NY Route 63 & Site Access Rd. #1

Build 2015 - Phase 1
 AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	33	89	185	253	16
Future Volume (Veh/h)	6	33	89	185	253	16
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	36	97	201	275	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	678	284	292			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	678	284	292			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	95	92			
cM capacity (veh/h)	386	755	1270			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	7	36	298	292		
Volume Left	7	0	97	0		
Volume Right	0	36	0	17		
cSH	386	755	1270	1700		
Volume to Capacity	0.02	0.05	0.08	0.17		
Queue Length 95th (ft)	1	4	6	0		
Control Delay (s)	14.5	10.0	3.1	0.0		
Lane LOS	B	B	A			
Approach Delay (s)	10.7		3.1	0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			42.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 23: NY Route 77/NY Route 63 & Site Access Rd. #1

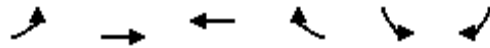
Build 2015 - Phase 1 w/ Imp
 AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	33	89	185	253	16
Future Volume (Veh/h)	6	33	89	185	253	16
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	36	97	201	275	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	678	284	292			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	678	284	292			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	95	92			
cM capacity (veh/h)	386	755	1270			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	7	36	97	201	292	
Volume Left	7	0	97	0	0	
Volume Right	0	36	0	0	17	
cSH	386	755	1270	1700	1700	
Volume to Capacity	0.02	0.05	0.08	0.12	0.17	
Queue Length 95th (ft)	1	4	6	0	0	
Control Delay (s)	14.5	10.0	8.1	0.0	0.0	
Lane LOS	B	B	A			
Approach Delay (s)	10.7		2.6		0.0	
Approach LOS	B					
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			32.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 83: Judge Road & Crosby Road

Build 2015 - Phase 1
 AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	34	16	42	15	0
Future Volume (Veh/h)	0	34	16	42	15	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.92	0.92
Hourly flow rate (vph)	0	38	18	47	16	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	65				80	42
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	65				80	42
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	100
cM capacity (veh/h)	1544				923	1029
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	38	65	16			
Volume Left	0	0	16			
Volume Right	0	47	0			
cSH	1544	1700	923			
Volume to Capacity	0.00	0.04	0.02			
Queue Length 95th (ft)	0	0	1			
Control Delay (s)	0.0	0.0	9.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.0			
Approach LOS			A			
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			13.4%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

Build 2015 - Phase 1

44: NY Route 63/NY Route 63/NY Route 31 & NY Route 31/NY Route 31A

PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Volume (vph)	139	179	22	34	252	79	48	151	38	76	158	171
Future Volume (vph)	139	179	22	34	252	79	48	151	38	76	158	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	9	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			1.00			1.00	
Frbp, ped/bikes		1.00	1.00		1.00			1.00			0.99	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		0.97			0.98			0.94	
Flt Protected		0.98	1.00		1.00			0.99			0.99	
Satd. Flow (prot)		1768	1309		1791			1760			1711	
Flt Permitted		0.69	1.00		0.95			0.88			0.89	
Satd. Flow (perm)		1255	1309		1703			1569			1540	
Peak-hour factor, PHF	0.86	0.86	0.86	0.91	0.91	0.91	0.84	0.84	0.84	0.93	0.93	0.93
Adj. Flow (vph)	162	208	26	37	277	87	57	180	45	82	170	184
RTOR Reduction (vph)	0	0	15	0	15	0	0	11	0	0	40	0
Lane Group Flow (vph)	0	370	11	0	386	0	0	271	0	0	396	0
Confl. Peds. (#/hr)							1		1	1		1
Heavy Vehicles (%)	0%	3%	11%	5%	3%	0%	2%	3%	12%	0%	4%	3%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		20.1	20.1		20.1			18.6			18.6	
Effective Green, g (s)		20.1	20.1		20.1			18.6			18.6	
Actuated g/C Ratio		0.43	0.43		0.43			0.40			0.40	
Clearance Time (s)		4.0	4.0		4.0			4.0			4.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		540	563		732			624			613	
v/s Ratio Prot												
v/s Ratio Perm		c0.29	0.01		0.23			0.17			c0.26	
v/c Ratio		0.69	0.02		0.53			0.43			0.65	
Uniform Delay, d1		10.7	7.6		9.8			10.2			11.4	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		3.6	0.0		0.7			0.5			2.3	
Delay (s)		14.3	7.7		10.5			10.7			13.7	
Level of Service		B	A		B			B			B	
Approach Delay (s)		13.9			10.5			10.7			13.7	
Approach LOS		B			B			B			B	

















Intersection Summary

HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	46.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis

47: NY Route 63 & Blair Rd/Main St

Build 2015 - Phase 1
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	8	15	3	9	20	6	211	5	18	249	13
Future Volume (Veh/h)	13	8	15	3	9	20	6	211	5	18	249	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.69	0.69	0.65	0.65	0.65	0.95	0.95	0.95	0.90	0.90	0.90
Hourly flow rate (vph)	19	12	22	5	14	31	6	222	5	20	277	14
Pedestrians					1			2			1	
Lane Width (ft)					10.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	600	564	286	592	568	226	291			228		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600	564	286	592	568	226	291			228		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	97	97	99	97	96	100			99		
cM capacity (veh/h)	384	429	757	393	426	817	1282			1351		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	53	50	233	311								
Volume Left	19	5	6	20								
Volume Right	22	31	5	14								
cSH	497	599	1282	1351								
Volume to Capacity	0.11	0.08	0.00	0.01								
Queue Length 95th (ft)	9	7	0	1								
Control Delay (s)	13.1	11.6	0.2	0.6								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.1	11.6	0.2	0.6								
Approach LOS	B	B										
Intersection Summary												
Average Delay			2.4									
Intersection Capacity Utilization			34.9%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 18: NY Route 77/NY Route 63/NY Route 63 & NY Route 77/Lewiston Road

Build 2015 - Phase 1
 PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	51	58	64	66	41	73	208	91	36	170	18
Future Volume (vph)	11	51	58	64	66	41	73	208	91	36	170	18
Peak Hour Factor	0.85	0.85	0.85	0.87	0.87	0.87	0.88	0.88	0.88	0.89	0.89	0.89
Hourly flow rate (vph)	13	60	68	74	76	47	83	236	103	40	191	20

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	141	197	422	251
Volume Left (vph)	13	74	83	40
Volume Right (vph)	68	47	103	20
Hadj (s)	-0.22	-0.02	-0.01	0.14
Departure Headway (s)	6.0	6.1	5.4	5.8
Degree Utilization, x	0.23	0.33	0.63	0.40
Capacity (veh/h)	507	528	637	574
Control Delay (s)	10.8	12.0	17.1	12.7
Approach Delay (s)	10.8	12.0	17.1	12.7
Approach LOS	B	B	C	B

Intersection Summary

Delay	14.1
Level of Service	B
Intersection Capacity Utilization	52.3%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 15: NY Route 77/NY Route 63/NY Route 77 & Ham Road




















Build 2015 - Phase 1
 PM Peak



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	12	337	13	7	314
Future Volume (Veh/h)	5	12	337	13	7	314
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.33	0.33	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	15	36	374	14	8	349
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	746	381			388	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	746	381			388	
tC, single (s)	6.6	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.7	3.4			2.3	
p0 queue free %	96	94			99	
cM capacity (veh/h)	347	647			1149	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	51	388	357			
Volume Left	15	0	8			
Volume Right	36	14	0			
cSH	516	1700	1149			
Volume to Capacity	0.10	0.23	0.01			
Queue Length 95th (ft)	8	0	1			
Control Delay (s)	12.7	0.0	0.3			
Lane LOS	B		A			
Approach Delay (s)	12.7	0.0	0.3			
Approach LOS	B					
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			32.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 12: NY Route 77/NY Route 77/NY Route 63 & Judge Road/NY Route 63

Build 2015 - Phase 1
 PM Peak

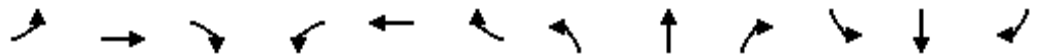
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	34	35	53	34	32	33	352	65	46	318	17
Future Volume (Veh/h)	17	34	35	53	34	32	33	352	65	46	318	17
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.63	0.63	0.63	0.93	0.93	0.93	0.87	0.87	0.87
Hourly flow rate (vph)	19	38	39	84	54	51	35	378	70	53	366	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						6						
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	982	1000	376	1013	975	413	386			448		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	982	1000	376	1013	975	413	386			448		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.3		
p0 queue free %	88	83	94	49	77	92	97			95		
cM capacity (veh/h)	163	223	670	164	231	637	1172			1061		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	96	189	35	448	53	386						
Volume Left	19	84	35	0	53	0						
Volume Right	39	51	0	70	0	20						
cSH	279	260	1172	1700	1061	1700						
Volume to Capacity	0.34	0.73	0.03	0.26	0.05	0.23						
Queue Length 95th (ft)	37	127	2	0	4	0						
Control Delay (s)	24.6	48.4	8.2	0.0	8.6	0.0						
Lane LOS	C	E	A		A							
Approach Delay (s)	24.6	48.4	0.6		1.0							
Approach LOS	C	E										
Intersection Summary												
Average Delay			10.1									
Intersection Capacity Utilization			47.3%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

Build 2015 - Phase 1 - w/ Imp

12: NY Route 77/NY Route 77/NY Route 63 & Judge Road/NY Route 63

PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↗		↖	↗	
Traffic Volume (vph)	17	34	35	53	34	32	33	352	65	46	318	17
Future Volume (vph)	17	34	35	53	34	32	33	352	65	46	318	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	11	11	12	11	11	11	11	11	11
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85		1.00	0.98		1.00	0.99
Flt Protected		0.98	1.00		0.97	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)		1710	1478		1691	1568		1711	1744		1558	1772
Flt Permitted		0.87	1.00		0.78	1.00		0.48	1.00		0.43	1.00
Satd. Flow (perm)		1519	1478		1360	1568		869	1744		698	1772
Peak-hour factor, PHF	0.90	0.90	0.90	0.63	0.63	0.63	0.93	0.93	0.93	0.87	0.87	0.87
Adj. Flow (vph)	19	38	39	84	54	51	35	378	70	53	366	20
RTOR Reduction (vph)	0	0	32	0	0	41	0	8	0	0	3	0
Lane Group Flow (vph)	0	57	7	0	138	10	35	440	0	53	383	0
Heavy Vehicles (%)	0%	3%	2%	7%	3%	3%	2%	3%	2%	12%	3%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		8.4	8.4		8.4	8.4	23.4	21.6		23.4	21.6	
Effective Green, g (s)		8.4	8.4		8.4	8.4	23.4	21.6		23.4	21.6	
Actuated g/C Ratio		0.19	0.19		0.19	0.19	0.53	0.49		0.53	0.49	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		291	283		260	300	498	860		408	873	
v/s Ratio Prot							0.00	c0.25		c0.01	0.22	
v/s Ratio Perm		0.04	0.01		c0.10	0.01	0.03			0.06		
v/c Ratio		0.20	0.03		0.53	0.03	0.07	0.51		0.13	0.44	
Uniform Delay, d1		14.9	14.4		15.9	14.4	4.9	7.5		5.1	7.2	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3	0.0		2.1	0.0	0.1	0.5		0.1	0.4	
Delay (s)		15.2	14.4		18.0	14.4	5.0	8.0		5.2	7.5	
Level of Service		B	B		B	B	A	A		A	A	
Approach Delay (s)		14.9			17.0			7.8			7.3	
Approach LOS		B			B			A			A	

Intersection Summary

HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	43.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

33: NY Route 77 & Bloomingdale Rd

Build 2015 - Phase 1
PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	106	44	43	338	291	117
Future Volume (Veh/h)	106	44	43	338	291	117
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.87	0.87	0.90	0.90
Hourly flow rate (vph)	115	48	49	389	323	130
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	875	388	453			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	875	388	453			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	63	93	96			
cM capacity (veh/h)	307	647	1092			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	163	438	453			
Volume Left	115	49	0			
Volume Right	48	0	130			
cSH	363	1092	1700			
Volume to Capacity	0.45	0.04	0.27			
Queue Length 95th (ft)	56	4	0			
Control Delay (s)	22.8	1.4	0.0			
Lane LOS	C	A				
Approach Delay (s)	22.8	1.4	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			4.1			
Intersection Capacity Utilization		61.2%		ICU Level of Service		B
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
33: NY Route 77 & Bloomingdale Rd

Build 2015 - Phase 1 - w/ Imp
PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	106	44	43	338	291	117
Future Volume (vph)	106	44	43	338	291	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	12	11	11
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.96		1.00	1.00	0.96	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	1653		1719	1845	1724	
Flt Permitted	0.97		0.48	1.00	1.00	
Satd. Flow (perm)	1653		861	1845	1724	
Peak-hour factor, PHF	0.92	0.92	0.87	0.87	0.90	0.90
Adj. Flow (vph)	115	48	49	389	323	130
RTOR Reduction (vph)	19	0	0	0	18	0
Lane Group Flow (vph)	144	0	49	389	435	0
Heavy Vehicles (%)	1%	8%	5%	3%	3%	1%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	7.1		21.2	21.2	21.2	
Effective Green, g (s)	7.1		21.2	21.2	21.2	
Actuated g/C Ratio	0.20		0.58	0.58	0.58	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	323		502	1077	1006	
v/s Ratio Prot	c0.09			0.21	c0.25	
v/s Ratio Perm			0.06			
v/c Ratio	0.45		0.10	0.36	0.43	
Uniform Delay, d1	12.9		3.3	4.0	4.2	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.0		0.1	0.2	0.3	
Delay (s)	13.9		3.4	4.2	4.5	
Level of Service	B		A	A	A	
Approach Delay (s)	13.9			4.1	4.5	
Approach LOS	B			A	A	

Intersection Summary

HCM 2000 Control Delay	5.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	36.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

2: NY Route 77 & Ledge Road

Build 2015 - Phase 1
PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	24	68	120	4	80	12	122	334	13	13	292	19
Future Volume (Veh/h)	24	68	120	4	80	12	122	334	13	13	292	19
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.69	0.69	0.69	0.97	0.97	0.97	0.93	0.93	0.93
Hourly flow rate (vph)	26	73	129	6	116	17	126	344	13	14	314	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1030	961	324	1120	964	350	334			357		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1030	961	324	1120	964	350	334			357		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	77	68	82	94	49	98	90			99		
cM capacity (veh/h)	115	225	717	104	228	697	1220			1159		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	228	139	483	348								
Volume Left	26	6	126	14								
Volume Right	129	17	13	20								
cSH	312	235	1220	1159								
Volume to Capacity	0.73	0.59	0.10	0.01								
Queue Length 95th (ft)	134	85	9	1								
Control Delay (s)	42.3	40.3	3.0	0.4								
Lane LOS	E	E	A	A								
Approach Delay (s)	42.3	40.3	3.0	0.4								
Approach LOS	E	E										
Intersection Summary												
Average Delay			14.0									
Intersection Capacity Utilization			71.3%		ICU Level of Service					C		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

2: NY Route 77 & Ledge Road

Build 2015 - Phase 1 - w/ Imp
PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	24	68	120	4	80	12	122	334	13	13	292	19
Future Volume (vph)	24	68	120	4	80	12	122	334	13	13	292	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	11	11	11	11	11	11
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.92			0.98		1.00	0.99		1.00	0.99	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1590			1740		1694	1769		1586	1770	
Flt Permitted		0.95			0.99		0.42	1.00		0.55	1.00	
Satd. Flow (perm)		1524			1721		744	1769		914	1770	
Peak-hour factor, PHF	0.93	0.93	0.93	0.69	0.69	0.69	0.97	0.97	0.97	0.93	0.93	0.93
Adj. Flow (vph)	26	73	129	6	116	17	126	344	13	14	314	20
RTOR Reduction (vph)	0	104	0	0	12	0	0	2	0	0	4	0
Lane Group Flow (vph)	0	124	0	0	127	0	126	355	0	14	330	0
Heavy Vehicles (%)	0%	4%	2%	0%	0%	0%	3%	3%	10%	10%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.3			7.3		23.0	23.0		16.0	16.0	
Effective Green, g (s)		7.3			7.3		23.0	23.0		16.0	16.0	
Actuated g/C Ratio		0.19			0.19		0.60	0.60		0.42	0.42	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		290			328		521	1062		381	739	
v/s Ratio Prot							0.02	c0.20			c0.19	
v/s Ratio Perm		c0.08			0.07		0.13			0.02		
v/c Ratio		0.43			0.39		0.24	0.33		0.04	0.45	
Uniform Delay, d1		13.7			13.5		3.7	3.8		6.6	8.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.0			0.8		0.2	0.2		0.0	0.4	
Delay (s)		14.7			14.3		3.9	4.0		6.6	8.4	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		14.7			14.3			4.0			8.3	
Approach LOS		B			B			A			A	

Intersection Summary

HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	38.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

3: NY Route 77 & Akron Road

Build 2015 - Phase 1
PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	38	56	392	321	45
Future Volume (Veh/h)	60	38	56	392	321	45
Sign Control	Stop			Free	Free	
Grade	3%			0%	0%	
Peak Hour Factor	0.91	0.91	0.93	0.93	0.90	0.90
Hourly flow rate (vph)	66	42	60	422	357	50
Pedestrians	1			1		
Lane Width (ft)	10.0			11.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	925	384	408			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	925	384	408			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	77	94	95			
cM capacity (veh/h)	283	656	1161			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	108	482	407			
Volume Left	66	60	0			
Volume Right	42	0	50			
cSH	363	1161	1700			
Volume to Capacity	0.30	0.05	0.24			
Queue Length 95th (ft)	31	4	0			
Control Delay (s)	19.1	1.5	0.0			
Lane LOS	C	A				
Approach Delay (s)	19.1	1.5	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			2.8			
Intersection Capacity Utilization			59.3%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: NY Route 77 & Akron Road

Build 2015 - Phase 1 - w/ Imp
PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	38	56	392	321	45
Future Volume (Veh/h)	60	38	56	392	321	45
Sign Control	Stop			Free	Free	
Grade	3%			0%	0%	
Peak Hour Factor	0.91	0.91	0.93	0.93	0.90	0.90
Hourly flow rate (vph)	66	42	60	422	357	50
Pedestrians	1			1		
Lane Width (ft)	10.0			11.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	925	384	408			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	925	384	408			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	77	94	95			
cM capacity (veh/h)	283	656	1161			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	66	42	60	422	407	
Volume Left	66	0	60	0	0	
Volume Right	0	42	0	0	50	
cSH	283	656	1161	1700	1700	
Volume to Capacity	0.23	0.06	0.05	0.25	0.24	
Queue Length 95th (ft)	22	5	4	0	0	
Control Delay (s)	21.6	10.9	8.3	0.0	0.0	
Lane LOS	C	B	A			
Approach Delay (s)	17.4		1.0		0.0	
Approach LOS	C					
Intersection Summary						
Average Delay			2.4			
Intersection Capacity Utilization			36.6%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

6: NY Route 77 & I-90 Interchange 48A

Build 2015 - Phase 1
PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	262	408	292	247	205	233
Future Volume (vph)	262	408	292	247	205	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.92	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1601	1346	1444	1783	3132	
Flt Permitted	0.95	1.00	0.36	1.00	1.00	
Satd. Flow (perm)	1601	1346	546	1783	3132	
Peak-hour factor, PHF	0.91	0.91	0.86	0.86	0.91	0.91
Adj. Flow (vph)	288	448	340	287	225	256
RTOR Reduction (vph)	0	142	0	0	202	0
Lane Group Flow (vph)	288	306	340	287	279	0
Heavy Vehicles (%)	9%	16%	25%	3%	5%	7%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	17.1	34.9	35.3	35.3	11.5	
Effective Green, g (s)	19.1	38.9	37.3	37.3	13.5	
Actuated g/C Ratio	0.30	0.60	0.58	0.58	0.21	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	474	896	592	1032	656	
v/s Ratio Prot	c0.18	0.10	c0.18	0.16	0.09	
v/s Ratio Perm		0.12	c0.16			
v/c Ratio	0.61	0.34	0.57	0.28	0.42	
Uniform Delay, d1	19.4	6.4	11.6	6.8	22.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.2	0.2	1.4	0.1	0.4	
Delay (s)	21.6	6.6	13.0	6.9	22.5	
Level of Service	C	A	B	A	C	
Approach Delay (s)	12.5			10.2	22.5	
Approach LOS	B			B	C	

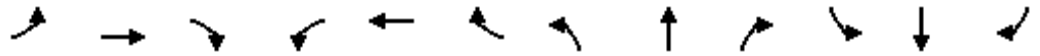
Intersection Summary

HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	64.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
30: NY Route 77 & NY Route 5

Build 2015 - Phase 1
PM Peak



















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	266	293	192	19	228	68	132	181	26	84	216	250
Future Volume (vph)	266	293	192	19	228	68	132	181	26	84	216	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	0.97		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1658		1805	1760		1805	1752		1666	1696	1553
Flt Permitted	0.27	1.00		0.46	1.00		0.38	1.00		0.62	1.00	1.00
Satd. Flow (perm)	500	1658		880	1760		718	1752		1079	1696	1553
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	296	326	213	21	253	76	147	201	29	93	240	278
RTOR Reduction (vph)	0	28	0	0	14	0	0	7	0	0	0	210
Lane Group Flow (vph)	296	511	0	21	315	0	147	223	0	93	240	68
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	2%	7%	9%	0%	4%	5%	0%	7%	0%	8%	12%	4%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	33.9	33.9		16.1	16.1		22.5	22.5		15.3	15.3	15.3
Effective Green, g (s)	34.9	34.9		17.1	17.1		23.5	23.5		16.3	16.3	16.3
Actuated g/C Ratio	0.53	0.53		0.26	0.26		0.35	0.35		0.25	0.25	0.25
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	526	871		226	453		306	620		264	416	381
v/s Ratio Prot	0.12	c0.31			c0.18		c0.02	0.13			c0.14	
v/s Ratio Perm	0.18			0.02			0.15			0.09		0.04
v/c Ratio	0.56	0.59		0.09	0.70		0.48	0.36		0.35	0.58	0.18
Uniform Delay, d1	10.2	10.8		18.8	22.3		16.5	15.9		20.7	22.0	19.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.4	1.0		0.2	4.6		1.2	0.4		0.8	1.9	0.2
Delay (s)	11.6	11.8		18.9	26.9		17.7	16.2		21.5	24.0	20.0
Level of Service	B	B		B	C		B	B		C	C	B
Approach Delay (s)		11.7			26.4			16.8			21.8	
Approach LOS		B			C			B			C	

Intersection Summary		
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.64	B
Actuated Cycle Length (s)	66.4	Sum of lost time (s)
Intersection Capacity Utilization	68.3%	16.0
Analysis Period (min)	15	ICU Level of Service
		C

c Critical Lane Group

















HCM Unsignalized Intersection Capacity Analysis
63: Royalton Center Road & NY Route 77

Build 2015 - Phase 1
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	83	1	9	131	23	19	88	26	5	44	23
Future Volume (Veh/h)	21	83	1	9	131	23	19	88	26	5	44	23
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.66	0.66	0.66	0.90	0.90	0.90	0.76	0.76	0.76	0.71	0.71	0.71
Hourly flow rate (vph)	32	126	2	10	146	26	25	116	34	7	62	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	172			128			433	383	127	462	371	159
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	172			128			433	383	127	462	371	159
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			95	78	96	98	89	96
cM capacity (veh/h)	1417			1464			462	537	926	402	546	892
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	160	182	175	101								
Volume Left	32	10	25	7								
Volume Right	2	26	34	32								
cSH	1417	1464	570	605								
Volume to Capacity	0.02	0.01	0.31	0.17								
Queue Length 95th (ft)	2	1	32	15								
Control Delay (s)	1.7	0.5	14.1	12.1								
Lane LOS	A	A	B	B								
Approach Delay (s)	1.7	0.5	14.1	12.1								
Approach LOS			B	B								
Intersection Summary												
Average Delay			6.5									
Intersection Capacity Utilization			30.8%		ICU Level of Service				A			
Analysis Period (min)			15									

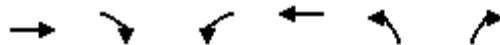
HCM Unsignalized Intersection Capacity Analysis
51: NY Route 98 & Lockport Road (CR 12)

Build 2015 - Phase 1
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	53	8	0	58	15	12	169	0	8	156	17
Future Volume (Veh/h)	6	53	8	0	58	15	12	169	0	8	156	17
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.94	0.94	0.94	0.77	0.77	0.77
Hourly flow rate (vph)	7	59	9	0	64	17	13	180	0	10	203	22
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	489	440	214	478	451	180	225			180		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	489	440	214	478	451	180	225			180		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	88	99	100	87	98	99			99		
cM capacity (veh/h)	427	503	829	445	495	868	1350			1408		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	75	81	193	235								
Volume Left	7	0	13	10								
Volume Right	9	17	0	22								
cSH	518	544	1350	1408								
Volume to Capacity	0.14	0.15	0.01	0.01								
Queue Length 95th (ft)	13	13	1	1								
Control Delay (s)	13.1	12.8	0.6	0.4								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.1	12.8	0.6	0.4								
Approach LOS	B	B										
Intersection Summary												
Average Delay			3.8									
Intersection Capacity Utilization			28.3%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
56: Crosby Road & NY Route 77/ NY Route 77

















Build 2015 - Phase 1
PM Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	104	52	42	115	83	16
Future Volume (Veh/h)	104	52	42	115	83	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.87	0.87	0.85	0.85
Hourly flow rate (vph)	116	58	48	132	98	19
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			174			373 145
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			174			373 145
tC, single (s)			4.2			6.5 6.3
tC, 2 stage (s)						
tF (s)			2.3			3.6 3.4
p0 queue free %			97			84 98
cM capacity (veh/h)			1373			598 892
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	174	180	117			
Volume Left	0	48	98			
Volume Right	58	0	19			
cSH	1700	1373	632			
Volume to Capacity	0.10	0.03	0.19			
Queue Length 95th (ft)	0	3	17			
Control Delay (s)	0.0	2.3	12.0			
Lane LOS			A		B	
Approach Delay (s)	0.0	2.3	12.0			
Approach LOS			B			
Intersection Summary						
Average Delay			3.8			
Intersection Capacity Utilization			32.6%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
63: Royalton Center Road & NY Route 77

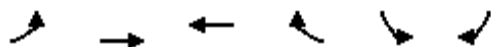
Build 2015 - Phase 1
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	83	1	9	131	23	19	88	26	5	44	23
Future Volume (Veh/h)	21	83	1	9	131	23	19	88	26	5	44	23
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.66	0.66	0.66	0.90	0.90	0.90	0.76	0.76	0.76	0.71	0.71	0.71
Hourly flow rate (vph)	32	126	2	10	146	26	25	116	34	7	62	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	172			128			433	383	127	462	371	159
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	172			128			433	383	127	462	371	159
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			95	78	96	98	89	96
cM capacity (veh/h)	1417			1464			462	537	926	402	546	892
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	160	182	175	101								
Volume Left	32	10	25	7								
Volume Right	2	26	34	32								
cSH	1417	1464	570	605								
Volume to Capacity	0.02	0.01	0.31	0.17								
Queue Length 95th (ft)	2	1	32	15								
Control Delay (s)	1.7	0.5	14.1	12.1								
Lane LOS	A	A	B	B								
Approach Delay (s)	1.7	0.5	14.1	12.1								
Approach LOS			B	B								
Intersection Summary												
Average Delay			6.5									
Intersection Capacity Utilization			30.8%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

83: Judge Road & Crosby Road

Build 2015 - Phase 1
PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	0	53	57	27	33	0
Future Volume (Veh/h)	0	53	57	27	33	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.92	0.92
Hourly flow rate (vph)	0	59	63	30	36	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	93				137	78
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	93				137	78
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	100
cM capacity (veh/h)	1501				856	983
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	59	93	36			
Volume Left	0	0	36			
Volume Right	0	30	0			
cSH	1501	1700	856			
Volume to Capacity	0.00	0.05	0.04			
Queue Length 95th (ft)	0	0	3			
Control Delay (s)	0.0	0.0	9.4			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.4			
Approach LOS			A			
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization		14.6%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

25: Park Road/Lewiston Road & NY Route 63

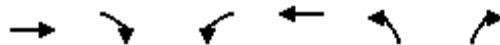
Build 2015 - Phase 1
PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	122	15	11	117	165	0	0	0	119	6	11
Future Volume (Veh/h)	7	122	15	11	117	165	0	0	0	119	6	11
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.91	0.91	0.91	0.25	0.25	0.25	0.85	0.85	0.85
Hourly flow rate (vph)	8	136	17	12	129	181	0	0	0	140	7	13
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	310			153			330	494	144	305	322	129
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	310			153			330	494	144	305	322	129
tC, single (s)	4.2			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	100	78	99	99
cM capacity (veh/h)	1185			1440			606	472	908	636	590	926
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2					
Volume Total	8	153	141	181	0	140	20					
Volume Left	8	0	12	0	0	140	0					
Volume Right	0	17	0	181	0	0	13					
cSH	1185	1700	1440	1700	1700	636	772					
Volume to Capacity	0.01	0.09	0.01	0.11	0.00	0.22	0.03					
Queue Length 95th (ft)	1	0	1	0	0	21	2					
Control Delay (s)	8.1	0.0	0.7	0.0	0.0	12.2	9.8					
Lane LOS	A		A		A	B	A					
Approach Delay (s)	0.4		0.3		0.0	11.9						
Approach LOS					A	B						
Intersection Summary												
Average Delay			3.2									
Intersection Capacity Utilization			28.5%	ICU Level of Service		A						
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
56: Crosby Road & NY Route 77/ NY Route 77

Build 2015 - Phase 1
PM Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	104	52	42	115	83	16
Future Volume (Veh/h)	104	52	42	115	83	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.87	0.87	0.85	0.85
Hourly flow rate (vph)	116	58	48	132	98	19
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			174			373 145
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			174			373 145
tC, single (s)			4.2			6.5 6.3
tC, 2 stage (s)						
tF (s)			2.3			3.6 3.4
p0 queue free %			97			84 98
cM capacity (veh/h)			1373			598 892
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	174	180	117			
Volume Left	0	48	98			
Volume Right	58	0	19			
cSH	1700	1373	632			
Volume to Capacity	0.10	0.03	0.19			
Queue Length 95th (ft)	0	3	17			
Control Delay (s)	0.0	2.3	12.0			
Lane LOS			A		B	
Approach Delay (s)	0.0	2.3	12.0			
Approach LOS			B			
Intersection Summary						
Average Delay			3.8			
Intersection Capacity Utilization			32.6%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 23: NY Route 77/NY Route 63 & Site Access Rd # 1

Build 2015 - Phase 1
 PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	68	54	347	310	9
Future Volume (Veh/h)	12	68	54	347	310	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	74	59	377	337	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	837	342	347			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	837	342	347			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	89	95			
cM capacity (veh/h)	320	701	1212			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	13	74	436	347		
Volume Left	13	0	59	0		
Volume Right	0	74	0	10		
cSH	320	701	1212	1700		
Volume to Capacity	0.04	0.11	0.05	0.20		
Queue Length 95th (ft)	3	9	4	0		
Control Delay (s)	16.7	10.7	1.5	0.0		
Lane LOS	C	B	A			
Approach Delay (s)	11.6		1.5	0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			51.4%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 23: NY Route 77/NY Route 63 & Site Access Rd # 1

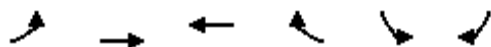
Build 2015 - Phase 1 - w/ Imp
 PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	68	54	347	310	9
Future Volume (Veh/h)	12	68	54	347	310	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	74	59	377	337	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	837	342	347			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	837	342	347			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	89	95			
cM capacity (veh/h)	320	701	1212			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	13	74	59	377	347	
Volume Left	13	0	59	0	0	
Volume Right	0	74	0	0	10	
cSH	320	701	1212	1700	1700	
Volume to Capacity	0.04	0.11	0.05	0.22	0.20	
Queue Length 95th (ft)	3	9	4	0	0	
Control Delay (s)	16.7	10.7	8.1	0.0	0.0	
Lane LOS	C	B	A			
Approach Delay (s)	11.6		1.1		0.0	
Approach LOS	B					
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			33.5%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 83: Judge Road & Crosby Road

Build 2015 - Phase 1
 PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	0	53	57	27	33	0
Future Volume (Veh/h)	0	53	57	27	33	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.92	0.92
Hourly flow rate (vph)	0	59	63	30	36	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	93				137	78
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	93				137	78
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	100
cM capacity (veh/h)	1501				856	983
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	59	93	36			
Volume Left	0	0	36			
Volume Right	0	30	0			
cSH	1501	1700	856			
Volume to Capacity	0.00	0.05	0.04			
Queue Length 95th (ft)	0	0	3			
Control Delay (s)	0.0	0.0	9.4			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.4			
Approach LOS			A			
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization			14.6%		ICU Level of Service	A
Analysis Period (min)			15			

**INTERSECTION CAPACITY ANALYSIS
(SYNCHRO)**

**BUILD – FULL BUILDOUT
2015 DESIGN YEAR**

HCM Signalized Intersection Capacity Analysis

Build 2015 - Full Buildout

44: NY Route 63/NY Route 63/NY Route 31 & NY Route 31/NY Route 31A

AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Volume (vph)	68	202	30	36	188	38	63	75	21	44	110	105
Future Volume (vph)	68	202	30	36	188	38	63	75	21	44	110	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	9	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		0.98			0.98			0.95	
Flt Protected		0.99	1.00		0.99			0.98			0.99	
Satd. Flow (prot)		1703	1309		1635			1693			1703	
Flt Permitted		0.86	1.00		0.92			0.80			0.91	
Satd. Flow (perm)		1483	1309		1515			1385			1570	
Peak-hour factor, PHF	0.80	0.80	0.80	0.78	0.78	0.78	0.67	0.67	0.67	0.74	0.74	0.74
Adj. Flow (vph)	85	252	38	46	241	49	94	112	31	59	149	142
RTOR Reduction (vph)	0	0	23	0	10	0	0	9	0	0	39	0
Lane Group Flow (vph)	0	338	15	0	326	0	0	228	0	0	311	0
Heavy Vehicles (%)	5%	7%	11%	14%	14%	8%	6%	8%	15%	7%	6%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		14.4	14.4		14.4			13.7			13.7	
Effective Green, g (s)		14.4	14.4		14.4			13.7			13.7	
Actuated g/C Ratio		0.40	0.40		0.40			0.38			0.38	
Clearance Time (s)		4.0	4.0		4.0			4.0			4.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		591	522		604			525			595	
v/s Ratio Prot												
v/s Ratio Perm		c0.23	0.01		0.22			0.16			c0.20	
v/c Ratio		0.57	0.03		0.54			0.43			0.52	
Uniform Delay, d1		8.4	6.6		8.3			8.3			8.7	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		1.3	0.0		1.0			0.6			0.8	
Delay (s)		9.8	6.6		9.3			8.9			9.5	
Level of Service		A	A		A			A			A	
Approach Delay (s)		9.5			9.3			8.9			9.5	
Approach LOS		A			A			A			A	

Intersection Summary

















HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	36.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

47: NY Route 63 & Blair Rd/Main St

Build 2015 - Full Buildout
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	2	12	0	2	7	5	155	2	7	211	1
Future Volume (Veh/h)	6	2	12	0	2	7	5	155	2	7	211	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.40	0.40	0.40	0.45	0.45	0.45	0.80	0.80	0.80	0.88	0.88	0.88
Hourly flow rate (vph)	15	5	30	0	4	16	6	194	3	8	240	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	482	466	240	496	464	196	241			197		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	482	466	240	496	464	196	241			197		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	99	96	100	99	98	100			99		
cM capacity (veh/h)	482	492	803	462	493	851	1337			1388		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	50	20	203	249								
Volume Left	15	0	6	8								
Volume Right	30	16	3	1								
cSH	636	743	1337	1388								
Volume to Capacity	0.08	0.03	0.00	0.01								
Queue Length 95th (ft)	6	2	0	0								
Control Delay (s)	11.1	10.0	0.3	0.3								
Lane LOS	B	A	A	A								
Approach Delay (s)	11.1	10.0	0.3	0.3								
Approach LOS	B	A										
Intersection Summary												
Average Delay			1.7									
Intersection Capacity Utilization			27.4%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

Build 2015 - Full Buildout

18: NY Route 77/NY Route 63/NY Route 63 & NY Route 77/Lewiston Road

AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	9	71	52	74	52	16	21	133	32	30	169	22
Future Volume (vph)	9	71	52	74	52	16	21	133	32	30	169	22
Peak Hour Factor	0.80	0.80	0.80	0.90	0.90	0.90	0.80	0.80	0.80	0.90	0.90	0.90
Hourly flow rate (vph)	11	89	65	82	58	18	26	166	40	33	188	24

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	165	158	232	245
Volume Left (vph)	11	82	26	33
Volume Right (vph)	65	18	40	24
Hadj (s)	-0.16	0.15	0.16	0.05
Departure Headway (s)	5.3	5.6	5.4	5.2
Degree Utilization, x	0.24	0.25	0.35	0.36
Capacity (veh/h)	611	580	619	643
Control Delay (s)	10.0	10.5	11.2	11.1
Approach Delay (s)	10.0	10.5	11.2	11.1
Approach LOS	B	B	B	B

Intersection Summary

Delay	10.8
Level of Service	B
Intersection Capacity Utilization	41.9%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 15: NY Route 77/NY Route 63/NY Route 77 & Ham Road

Build 2015 - Full Buildout
 AM Peak



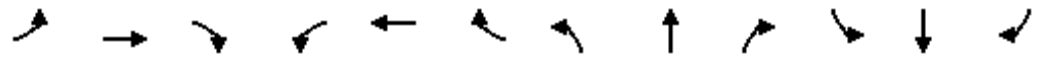
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	5	185	4	3	312
Future Volume (Veh/h)	5	5	185	4	3	312
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.63	0.63	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	8	206	4	3	347
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	561	208			210	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	561	208			210	
tC, single (s)	6.6	6.6			4.8	
tC, 2 stage (s)						
tF (s)	3.7	3.7			2.8	
p0 queue free %	98	99			100	
cM capacity (veh/h)	458	745			1054	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	16	210	350			
Volume Left	8	0	3			
Volume Right	8	4	0			
cSH	568	1700	1054			
Volume to Capacity	0.03	0.12	0.00			
Queue Length 95th (ft)	2	0	0			
Control Delay (s)	11.5	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	11.5	0.0	0.1			
Approach LOS	B					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization		28.8%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

Build 2015 - Full Buildout

12: NY Route 77/NY Route 77/NY Route 63 & Judge Road/NY Route 63

AM Peak



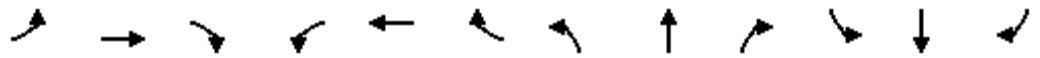
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Volume (veh/h)	11	25	57	50	39	56	143	474	43	36	331	2
Future Volume (Veh/h)	11	25	57	50	39	56	143	474	43	36	331	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.92	0.92	0.92	0.90	0.90	0.90
Hourly flow rate (vph)	12	28	63	56	43	62	155	515	47	40	368	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1326	1321	369	1374	1298	538	370			562		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1326	1321	369	1374	1298	538	370			562		
tC, single (s)	7.1	6.5	6.2	7.3	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.7	4.0	3.3	2.2			2.3		
p0 queue free %	85	79	91	26	68	89	87			96		
cM capacity (veh/h)	78	131	677	76	135	541	1189			990		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	103	161	155	562	40	370						
Volume Left	12	56	155	0	40	0						
Volume Right	63	62	0	47	0	2						
cSH	224	165	1189	1700	990	1700						
Volume to Capacity	0.46	0.98	0.13	0.33	0.04	0.22						
Queue Length 95th (ft)	56	188	11	0	3	0						
Control Delay (s)	34.0	103.2	8.5	0.0	8.8	0.0						
Lane LOS	D	F	A		A							
Approach Delay (s)	34.0	103.2	1.8		0.9							
Approach LOS	D	F										
Intersection Summary												
Average Delay			15.7									
Intersection Capacity Utilization			53.0%	ICU Level of Service		A						
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

Build 2015 - Full Buildout - w/ Imp

12: NY Route 77/NY Route 77/NY Route 63 & Judge Road/NY Route 63

AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↗		↖	↗	
Traffic Volume (vph)	11	25	57	50	39	56	143	474	43	36	331	2
Future Volume (vph)	11	25	57	50	39	56	143	474	43	36	331	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	11	11	12	11	11	11	11	11	11
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		0.99	1.00		0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1735	1478		1617	1568	1711	1742		1646	1782	
Flt Permitted		0.89	1.00		0.80	1.00	0.41	1.00		0.44	1.00	
Satd. Flow (perm)		1570	1478		1334	1568	735	1742		761	1782	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	12	28	63	56	43	62	155	515	47	40	368	2
RTOR Reduction (vph)	0	0	53	0	0	53	0	4	0	0	1	0
Lane Group Flow (vph)	0	40	10	0	99	9	155	558	0	40	369	0
Heavy Vehicles (%)	0%	1%	2%	17%	2%	3%	2%	4%	5%	6%	3%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		7.2	7.2		7.2	7.2	32.3	27.0		23.7	22.4	
Effective Green, g (s)		7.2	7.2		7.2	7.2	32.3	27.0		23.7	22.4	
Actuated g/C Ratio		0.15	0.15		0.15	0.15	0.68	0.57		0.50	0.47	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		237	224		202	237	621	990		403	840	
v/s Ratio Prot							c0.03	c0.32		0.00	0.21	
v/s Ratio Perm		0.03	0.01		c0.07	0.01	0.14			0.05		
v/c Ratio		0.17	0.04		0.49	0.04	0.25	0.56		0.10	0.44	
Uniform Delay, d1		17.5	17.2		18.5	17.2	3.2	6.5		6.1	8.4	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3	0.1		1.9	0.1	0.2	0.7		0.1	0.4	
Delay (s)		17.9	17.3		20.3	17.3	3.4	7.2		6.2	8.7	
Level of Service		B	B		C	B	A	A		A	A	
Approach Delay (s)		17.5			19.2			6.4			8.5	
Approach LOS		B			B			A			A	

Intersection Summary

HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	47.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 33: NY Route 77 & Bloomingdale Rd

Build 2015 - Full Buildout
 AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	20	12	576	396	56
Future Volume (Veh/h)	70	20	12	576	396	56
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	75	22	13	640	440	62
Pedestrians	1					
Lane Width (ft)	11.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1138	472	503			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1138	472	503			
tC, single (s)	6.4	6.2	4.4			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	66	96	99			
cM capacity (veh/h)	218	585	944			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	97	653	502			
Volume Left	75	13	0			
Volume Right	22	0	62			
cSH	254	944	1700			
Volume to Capacity	0.38	0.01	0.30			
Queue Length 95th (ft)	43	1	0			
Control Delay (s)	27.7	0.4	0.0			
Lane LOS	D	A				
Approach Delay (s)	27.7	0.4	0.0			
Approach LOS	D					
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization			51.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
33: NY Route 77 & Bloomingdale Rd

Build 2015 - Full Buildout - w/ Imp
AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	70	20	12	576	396	56
Future Volume (vph)	70	20	12	576	396	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	12	11	11
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frbp, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.97		1.00	1.00	0.98	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	1645		1420	1827	1722	
Flt Permitted	0.96		0.46	1.00	1.00	
Satd. Flow (perm)	1645		695	1827	1722	
Peak-hour factor, PHF	0.93	0.93	0.90	0.90	0.90	0.90
Adj. Flow (vph)	75	22	13	640	440	62
RTOR Reduction (vph)	20	0	0	0	6	0
Lane Group Flow (vph)	77	0	13	640	496	0
Confl. Peds. (#/hr)			1			1
Heavy Vehicles (%)	4%	5%	27%	4%	5%	2%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	4.5		27.9	27.9	27.9	
Effective Green, g (s)	4.5		27.9	27.9	27.9	
Actuated g/C Ratio	0.11		0.69	0.69	0.69	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	183		479	1261	1189	
v/s Ratio Prot	c0.05			c0.35	0.29	
v/s Ratio Perm			0.02			
v/c Ratio	0.42		0.03	0.51	0.42	
Uniform Delay, d1	16.7		2.0	3.0	2.7	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.6		0.0	0.3	0.2	
Delay (s)	18.3		2.0	3.3	3.0	
Level of Service	B		A	A	A	
Approach Delay (s)	18.3			3.3	3.0	
Approach LOS	B			A	A	

















Intersection Summary

HCM 2000 Control Delay	4.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	40.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis

2: NY Route 77 & Ledge Road

Build 2015 - Full Buildout
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	20	19	6	14	4	27	589	6	4	399	3
Future Volume (Veh/h)	3	20	19	6	14	4	27	589	6	4	399	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.63	0.63	0.63	0.69	0.69	0.69	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	5	32	30	9	20	6	30	654	7	4	443	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1186	1174	444	1216	1172	658	446			661		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1186	1174	444	1216	1172	658	446			661		
tC, single (s)	7.4	6.6	6.3	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.8	4.1	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	82	95	93	89	99	97			100		
cM capacity (veh/h)	127	179	605	128	188	468	1104			937		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	67	35	691	450								
Volume Left	5	9	30	4								
Volume Right	30	6	7	3								
cSH	250	184	1104	937								
Volume to Capacity	0.27	0.19	0.03	0.00								
Queue Length 95th (ft)	26	17	2	0								
Control Delay (s)	24.6	29.0	0.7	0.1								
Lane LOS	C	D	A	A								
Approach Delay (s)	24.6	29.0	0.7	0.1								
Approach LOS	C	D										
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utilization			58.5%		ICU Level of Service					B		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

2: NY Route 77 & Ledge Road

Build 2015 - Full Buildout - w/ Imp
AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	3	20	19	6	14	4	27	589	6	4	399	3
Future Volume (vph)	3	20	19	6	14	4	27	589	6	4	399	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	11	11	11	11	11	11
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.98		1.00	1.00		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1504			1710		1678	1761		1745	1765	
Flt Permitted		0.97			0.97		0.41	1.00		0.41	1.00	
Satd. Flow (perm)		1462			1675		731	1761		760	1765	
Peak-hour factor, PHF	0.63	0.63	0.63	0.69	0.69	0.69	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	5	32	30	9	20	6	30	654	7	4	443	3
RTOR Reduction (vph)	0	28	0	0	6	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	29	0	30	660	0	4	446	0
Heavy Vehicles (%)	33%	11%	6%	0%	0%	0%	4%	4%	17%	0%	4%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		2.6			2.6		28.5	28.5		23.9	23.9	
Effective Green, g (s)		2.6			2.6		28.5	28.5		23.9	23.9	
Actuated g/C Ratio		0.07			0.07		0.73	0.73		0.61	0.61	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		97			111		547	1283		464	1078	
v/s Ratio Prot							0.00	c0.38			0.25	
v/s Ratio Perm		c0.03			0.02		0.04			0.01		
v/c Ratio		0.40			0.26		0.05	0.51		0.01	0.41	
Uniform Delay, d1		17.5			17.3		1.8	2.3		3.0	4.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.7			1.3		0.0	0.4		0.0	0.3	
Delay (s)		20.2			18.6		1.8	2.7		3.0	4.2	
Level of Service		C			B		A	A		A	A	
Approach Delay (s)		20.2			18.6			2.6			4.2	
Approach LOS		C			B			A			A	

Intersection Summary

HCM 2000 Control Delay	4.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	39.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 3: NY Route 77 & Akron Road

Build 2015 - Full Buildout
 AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	65	50	12	525	397	54
Future Volume (Veh/h)	65	50	12	525	397	54
Sign Control	Stop			Free	Free	
Grade	3%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	72	56	13	583	441	60
Pedestrians	1			1		
Lane Width (ft)	10.0			11.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1081	473	502			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1081	473	502			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	70	90	99			
cM capacity (veh/h)	238	588	1072			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	128	596	501			
Volume Left	72	13	0			
Volume Right	56	0	60			
cSH	321	1072	1700			
Volume to Capacity	0.40	0.01	0.29			
Queue Length 95th (ft)	46	1	0			
Control Delay (s)	23.4	0.3	0.0			
Lane LOS	C	A				
Approach Delay (s)	23.4	0.3	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			50.9%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: NY Route 77 & Akron Road

Build 2015 - Full Buildout - w/ Imp
AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	65	50	12	525	397	54
Future Volume (Veh/h)	65	50	12	525	397	54
Sign Control	Stop			Free	Free	
Grade	3%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	72	56	13	583	441	60
Pedestrians	1			1		
Lane Width (ft)	10.0			11.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1081	473	502			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1081	473	502			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	70	90	99			
cM capacity (veh/h)	238	588	1072			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	72	56	13	583	501	
Volume Left	72	0	13	0	0	
Volume Right	0	56	0	0	60	
cSH	238	588	1072	1700	1700	
Volume to Capacity	0.30	0.10	0.01	0.34	0.29	
Queue Length 95th (ft)	31	8	1	0	0	
Control Delay (s)	26.6	11.8	8.4	0.0	0.0	
Lane LOS	D	B	A			
Approach Delay (s)	20.1		0.2	0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			38.2%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

6: NY Route 77 & I-90 Interchange 48A

Build 2015 - Full Buildout
AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	395	152	352	211	206	335
Future Volume (vph)	395	152	352	211	206	335
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.91	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1646	1346	1543	1733	2995	
Flt Permitted	0.95	1.00	0.23	1.00	1.00	
Satd. Flow (perm)	1646	1346	366	1733	2995	
Peak-hour factor, PHF	0.92	0.92	0.90	0.90	0.91	0.91
Adj. Flow (vph)	429	165	391	234	226	368
RTOR Reduction (vph)	0	58	0	0	296	0
Lane Group Flow (vph)	429	107	391	234	298	0
Heavy Vehicles (%)	6%	16%	17%	6%	5%	12%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	23.9	45.3	40.2	40.2	12.8	
Effective Green, g (s)	25.9	49.3	42.2	42.2	14.8	
Actuated g/C Ratio	0.34	0.65	0.55	0.55	0.19	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	560	942	564	961	582	
v/s Ratio Prot	c0.26	0.03	c0.21	0.14	0.10	
v/s Ratio Perm		0.04	c0.17			
v/c Ratio	0.77	0.11	0.69	0.24	0.51	
Uniform Delay, d1	22.4	5.1	17.6	8.7	27.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.2	0.1	3.7	0.1	0.8	
Delay (s)	28.6	5.1	21.3	8.9	28.2	
Level of Service	C	A	C	A	C	
Approach Delay (s)	22.1			16.6	28.2	
Approach LOS	C			B	C	

Intersection Summary

HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	76.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

















HCM Signalized Intersection Capacity Analysis
30: NY Route 77 & NY Route 5

Build 2015 - Full Buildout
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	137	85	57	131	103	111	151	38	36	161	143
Future Volume (vph)	170	137	85	57	131	103	111	151	38	36	161	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	0.93		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1769	1688		1626	1669		1770	1671		1595	1759	1553
Flt Permitted	0.29	1.00		0.61	1.00		0.45	1.00		0.63	1.00	1.00
Satd. Flow (perm)	542	1688		1038	1669		846	1671		1052	1759	1553
Peak-hour factor, PHF	0.90	0.90	0.90	0.73	0.73	0.73	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	189	152	94	78	179	141	123	168	42	40	179	159
RTOR Reduction (vph)	0	27	0	0	36	0	0	12	0	0	0	123
Lane Group Flow (vph)	189	219	0	78	284	0	123	198	0	40	179	36
Confl. Peds. (#/hr)	1						1		1	1		
Heavy Vehicles (%)	2%	8%	3%	11%	0%	12%	2%	5%	29%	13%	8%	4%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	31.0	31.0		15.0	15.0		20.0	20.0		12.7	12.7	12.7
Effective Green, g (s)	32.0	32.0		16.0	16.0		21.0	21.0		13.7	13.7	13.7
Actuated g/C Ratio	0.52	0.52		0.26	0.26		0.34	0.34		0.22	0.22	0.22
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	525	885		272	437		341	575		236	395	348
v/s Ratio Prot	c0.07	0.13			c0.17		0.02	c0.12			c0.10	
v/s Ratio Perm	0.12			0.08			0.10			0.04		0.02
v/c Ratio	0.36	0.25		0.29	0.65		0.36	0.34		0.17	0.45	0.10
Uniform Delay, d1	8.7	7.9		17.9	20.0		14.3	14.9		19.1	20.4	18.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	0.1		0.6	3.3		0.7	0.4		0.3	0.8	0.1
Delay (s)	9.1	8.1		18.5	23.3		15.0	15.2		19.4	21.2	18.9
Level of Service	A	A		B	C		B	B		B	C	B
Approach Delay (s)		8.5			22.4			15.1			20.1	
Approach LOS		A			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			16.3	HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio			0.50									
Actuated Cycle Length (s)			61.0	Sum of lost time (s)				16.0				
Intersection Capacity Utilization			54.6%	ICU Level of Service				A				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
63: Royalton Center Road & NY Route 77

Build 2015 - Full Buildout
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	106	2	16	67	8	2	43	16	11	80	2
Future Volume (Veh/h)	13	106	2	16	67	8	2	43	16	11	80	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.61	0.61	0.61	0.64	0.64	0.64	0.88	0.88	0.88
Hourly flow rate (vph)	14	118	2	26	110	13	3	67	25	13	91	2
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	123			122			365	324	121	374	318	116
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	123			122			365	324	121	374	318	116
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	99			98			99	88	97	97	84	100
cM capacity (veh/h)	1477			1469			510	572	895	505	579	941
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	134	149	95	106								
Volume Left	14	26	3	13								
Volume Right	2	13	25	2								
cSH	1477	1469	629	573								
Volume to Capacity	0.01	0.02	0.15	0.18								
Queue Length 95th (ft)	1	1	13	17								
Control Delay (s)	0.8	1.4	11.7	12.7								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.8	1.4	11.7	12.7								
Approach LOS			B	B								
Intersection Summary												
Average Delay			5.8									
Intersection Capacity Utilization			23.9%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
51: NY Route 98 & Lockport Road (CR 12)

Build 2015 - Full Buildout
AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	10	34	15	1	67	7	10	117	1	8	159	11
Future Volume (Veh/h)	10	34	15	1	67	7	10	117	1	8	159	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.52	0.52	0.52	0.90	0.90	0.90	0.65	0.65	0.65	0.62	0.62	0.62
Hourly flow rate (vph)	19	65	29	1	74	8	15	180	2	13	256	18
Pedestrians		1										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	548	504	266	564	512	181	275			182		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	548	504	266	564	512	181	275			182		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.8	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.8	2.2			2.2		
p0 queue free %	95	86	96	100	84	99	99			99		
cM capacity (veh/h)	382	461	774	371	455	738	1287			1405		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	113	83	197	287								
Volume Left	19	1	15	13								
Volume Right	29	8	2	18								
cSH	495	471	1287	1405								
Volume to Capacity	0.23	0.18	0.01	0.01								
Queue Length 95th (ft)	22	16	1	1								
Control Delay (s)	14.4	14.3	0.7	0.4								
Lane LOS	B	B	A	A								
Approach Delay (s)	14.4	14.3	0.7	0.4								
Approach LOS	B	B										
Intersection Summary												
Average Delay			4.5									
Intersection Capacity Utilization			27.1%	ICU Level of Service		A						
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

25: Park Road/Lewiston Road & NY Route 63

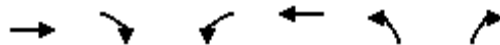
Build 2015 - Full Buildout
AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	94	29	72	64	160	0	0	0	150	9	14
Future Volume (Veh/h)	19	94	29	72	64	160	0	0	0	150	9	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.92	0.92	0.92	0.25	0.25	0.25	0.92	0.92	0.92
Hourly flow rate (vph)	25	125	39	78	70	174	0	0	0	163	10	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	244			164			440	594	144	401	440	70
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	244			164			440	594	144	401	440	70
tC, single (s)	4.2			4.1			7.1	6.5	6.2	7.2	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.6	4.0	3.4
p0 queue free %	98			95			100	100	100	69	98	98
cM capacity (veh/h)	1299			1427			482	387	903	520	477	976
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2					
Volume Total	25	164	148	174	0	163	25					
Volume Left	25	0	78	0	0	163	0					
Volume Right	0	39	0	174	0	0	15					
cSH	1299	1700	1427	1700	1700	520	688					
Volume to Capacity	0.02	0.10	0.05	0.10	0.00	0.31	0.04					
Queue Length 95th (ft)	1	0	4	0	0	33	3					
Control Delay (s)	7.8	0.0	4.2	0.0	0.0	15.1	10.4					
Lane LOS	A		A		A	C	B					
Approach Delay (s)	1.0		2.0		0.0	14.4						
Approach LOS					A	B						
Intersection Summary												
Average Delay			5.1									
Intersection Capacity Utilization			32.4%		ICU Level of Service		A					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
56: Crosby Road & NY Route 77/ NY Route 77

Build 2015 - Full Buildout
AM Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	104	78	65	30	22	28
Future Volume (Veh/h)	104	78	65	30	22	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.80	0.80
Hourly flow rate (vph)	116	87	72	33	28	35
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			203		336	160
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			203		336	160
tC, single (s)			4.2		6.5	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			94		95	96
cM capacity (veh/h)			1306		615	875
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	203	105	63			
Volume Left	0	72	28			
Volume Right	87	0	35			
cSH	1700	1306	737			
Volume to Capacity	0.12	0.06	0.09			
Queue Length 95th (ft)	0	4	7			
Control Delay (s)	0.0	5.6	10.3			
Lane LOS		A	B			
Approach Delay (s)	0.0	5.6	10.3			
Approach LOS			B			
Intersection Summary						
Average Delay			3.3			
Intersection Capacity Utilization			28.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 23: NY Route 77/NY Route 63 & Site Access Rd. #1

Build 2015 - Full Buildout
 AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	24	132	356	189	251	64
Future Volume (Veh/h)	24	132	356	189	251	64
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	143	387	205	273	70
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1287	308	343			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1287	308	343			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	79	80	68			
cM capacity (veh/h)	124	732	1216			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	26	143	592	343		
Volume Left	26	0	387	0		
Volume Right	0	143	0	70		
cSH	124	732	1216	1700		
Volume to Capacity	0.21	0.20	0.32	0.20		
Queue Length 95th (ft)	19	18	35	0		
Control Delay (s)	41.8	11.1	7.3	0.0		
Lane LOS	E	B	A			
Approach Delay (s)	15.8		7.3	0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			6.3			
Intersection Capacity Utilization			60.1%	ICU Level of Service		B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 23: NY Route 77/NY Route 63 & Site Access Rd. #1

Build 2015 - Full Buildout - w/ Imp
 AM Peak

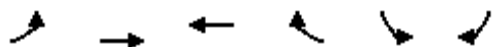


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	24	132	356	189	251	64
Future Volume (Veh/h)	24	132	356	189	251	64
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	143	387	205	273	70
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1287	308	343			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1287	308	343			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	79	80	68			
cM capacity (veh/h)	124	732	1216			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	26	143	387	205	343	
Volume Left	26	0	387	0	0	
Volume Right	0	143	0	0	70	
cSH	124	732	1216	1700	1700	
Volume to Capacity	0.21	0.20	0.32	0.12	0.20	
Queue Length 95th (ft)	19	18	35	0	0	
Control Delay (s)	41.8	11.1	9.3	0.0	0.0	
Lane LOS	E	B	A			
Approach Delay (s)	15.8		6.1		0.0	
Approach LOS	C					
Intersection Summary						
Average Delay			5.7			
Intersection Capacity Utilization			50.2%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

83: Judge Road & Crosby Road

Build 2015 - Full Buildout
AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↶		↶	
Traffic Volume (veh/h)	0	33	33	168	60	0
Future Volume (Veh/h)	0	33	33	168	60	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.92	0.92
Hourly flow rate (vph)	0	37	37	187	65	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	224				168	130
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	224				168	130
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	100
cM capacity (veh/h)	1351				823	919
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	37	224	65			
Volume Left	0	0	65			
Volume Right	0	187	0			
cSH	1351	1700	823			
Volume to Capacity	0.00	0.13	0.08			
Queue Length 95th (ft)	0	0	6			
Control Delay (s)	0.0	0.0	9.7			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.7			
Approach LOS			A			
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization		22.1%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

Build 2015 - Full Buildout

44: NY Route 63/NY Route 63/NY Route 31 & NY Route 31/NY Route 31A

PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	↗
Traffic Volume (vph)	139	179	25	37	252	79	51	160	44	76	161	171
Future Volume (vph)	139	179	25	37	252	79	51	160	44	76	161	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	9	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			1.00			1.00	
Frbp, ped/bikes		1.00	1.00		1.00			1.00			0.99	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		0.97			0.98			0.94	
Flt Protected		0.98	1.00		0.99			0.99			0.99	
Satd. Flow (prot)		1768	1309		1790			1754			1711	
Flt Permitted		0.69	1.00		0.94			0.88			0.89	
Satd. Flow (perm)		1253	1309		1692			1559			1546	
Peak-hour factor, PHF	0.86	0.86	0.86	0.91	0.91	0.91	0.84	0.84	0.84	0.93	0.93	0.93
Adj. Flow (vph)	162	208	29	41	277	87	61	190	52	82	173	184
RTOR Reduction (vph)	0	0	16	0	14	0	0	11	0	0	40	0
Lane Group Flow (vph)	0	370	13	0	391	0	0	292	0	0	399	0
Confl. Peds. (#/hr)							1		1	1		1
Heavy Vehicles (%)	0%	3%	11%	5%	3%	0%	2%	3%	12%	0%	4%	3%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		20.3	20.3		20.3			18.6			18.6	
Effective Green, g (s)		20.3	20.3		20.3			18.6			18.6	
Actuated g/C Ratio		0.43	0.43		0.43			0.40			0.40	
Clearance Time (s)		4.0	4.0		4.0			4.0			4.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		542	566		732			618			613	
v/s Ratio Prot												
v/s Ratio Perm		c0.30	0.01		0.23			0.19			c0.26	
v/c Ratio		0.68	0.02		0.53			0.47			0.65	
Uniform Delay, d1		10.7	7.6		9.8			10.5			11.5	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		3.5	0.0		0.8			0.6			2.5	
Delay (s)		14.2	7.6		10.6			11.1			14.0	
Level of Service		B	A		B			B			B	
Approach Delay (s)		13.8			10.6			11.1			14.0	
Approach LOS		B			B			B			B	

Intersection Summary

















HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	46.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis

47: NY Route 63 & Blair Rd/Main St

Build 2015 - Full Buildout

PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	8	15	3	9	20	6	229	5	18	258	13
Future Volume (Veh/h)	13	8	15	3	9	20	6	229	5	18	258	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.69	0.69	0.65	0.65	0.65	0.95	0.95	0.95	0.90	0.90	0.90
Hourly flow rate (vph)	19	12	22	5	14	31	6	241	5	20	287	14
Pedestrians					1			2			1	
Lane Width (ft)					10.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	628	593	296	620	598	246	301			247		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628	593	296	620	598	246	301			247		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	97	97	99	97	96	100			98		
cM capacity (veh/h)	366	413	747	376	410	797	1272			1330		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	53	50	252	321								
Volume Left	19	5	6	20								
Volume Right	22	31	5	14								
cSH	480	579	1272	1330								
Volume to Capacity	0.11	0.09	0.00	0.02								
Queue Length 95th (ft)	9	7	0	1								
Control Delay (s)	13.4	11.8	0.2	0.6								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.4	11.8	0.2	0.6								
Approach LOS	B	B										
Intersection Summary												
Average Delay			2.3									
Intersection Capacity Utilization			35.7%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

Build 2015 - Full Buildout

18: NY Route 77/NY Route 63/NY Route 63 & NY Route 77/Lewiston Road

PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	23	63	58	85	102	41	73	217	118	36	178	14
Future Volume (vph)	23	63	58	85	102	41	73	217	118	36	178	14
Peak Hour Factor	0.85	0.85	0.85	0.87	0.87	0.87	0.88	0.88	0.88	0.89	0.89	0.89
Hourly flow rate (vph)	27	74	68	98	117	47	83	247	134	40	200	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	169	262	464	256
Volume Left (vph)	27	98	83	40
Volume Right (vph)	68	47	134	16
Hadj (s)	-0.16	0.02	-0.04	0.15
Departure Headway (s)	6.7	6.6	5.9	6.5
Degree Utilization, x	0.31	0.48	0.76	0.46
Capacity (veh/h)	466	487	589	503
Control Delay (s)	12.7	15.4	24.9	14.8
Approach Delay (s)	12.7	15.4	24.9	14.8
Approach LOS	B	C	C	B

Intersection Summary			
Delay		18.7	
Level of Service		C	
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
 15: NY Route 77/NY Route 63/NY Route 77 & Ham Road

Build 2015 - Full Buildout
 PM Peak






















Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	12	373	13	7	341
Future Volume (Veh/h)	5	12	373	13	7	341
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.33	0.33	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	15	36	414	14	8	379
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	816	421			428	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	816	421			428	
tC, single (s)	6.6	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.7	3.4			2.3	
p0 queue free %	95	94			99	
cM capacity (veh/h)	315	614			1110	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	51	428	387			
Volume Left	15	0	8			
Volume Right	36	14	0			
cSH	480	1700	1110			
Volume to Capacity	0.11	0.25	0.01			
Queue Length 95th (ft)	9	0	1			
Control Delay (s)	13.4	0.0	0.2			
Lane LOS	B		A			
Approach Delay (s)	13.4	0.0	0.2			
Approach LOS	B					
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			33.6%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

Build 2015 - Full Buildout

12: NY Route 77/NY Route 77/NY Route 63 & Judge Road/NY Route 63

PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	52	116	53	49	50	99	350	65	70	498	17
Future Volume (Veh/h)	17	52	116	53	49	50	99	350	65	70	498	17
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.63	0.63	0.63	0.93	0.93	0.93	0.87	0.87	0.87
Hourly flow rate (vph)	19	58	129	84	78	79	106	376	70	80	572	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						6						
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1408	1400	582	1513	1375	411	592			446		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1408	1400	582	1513	1375	411	592			446		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.3		
p0 queue free %	56	50	75	0	35	88	89			92		
cM capacity (veh/h)	43	115	513	38	119	639	984			1063		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	206	241	106	446	80	592						
Volume Left	19	84	106	0	80	0						
Volume Right	129	79	0	70	0	20						
cSH	172	88	984	1700	1063	1700						
Volume to Capacity	1.20	2.75	0.11	0.26	0.08	0.35						
Queue Length 95th (ft)	278	577	9	0	6	0						
Control Delay (s)	184.5	892.4	9.1	0.0	8.7	0.0						
Lane LOS	F	F	A		A							
Approach Delay (s)	184.5	892.4	1.7		1.0							
Approach LOS	F	F										
Intersection Summary												
Average Delay			152.5									
Intersection Capacity Utilization			62.1%		ICU Level of Service					B		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

Build 2015 - Full Buildout - w/ Imp

12: NY Route 77/NY Route 77/NY Route 63 & Judge Road/NY Route 63

PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↗		↖	↗	
Traffic Volume (vph)	17	52	116	53	49	50	99	350	65	70	498	17
Future Volume (vph)	17	52	116	53	49	50	99	350	65	70	498	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	11	11	12	11	11	11	11	11	11
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.99	1.00		0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1713	1478		1704	1568	1711	1744		1558	1776	
Flt Permitted		0.90	1.00		0.80	1.00	0.29	1.00		0.47	1.00	
Satd. Flow (perm)		1560	1478		1392	1568	521	1744		769	1776	
Peak-hour factor, PHF	0.90	0.90	0.90	0.63	0.63	0.63	0.93	0.93	0.93	0.87	0.87	0.87
Adj. Flow (vph)	19	58	129	84	78	79	106	376	70	80	572	20
RTOR Reduction (vph)	0	0	107	0	0	65	0	8	0	0	1	0
Lane Group Flow (vph)	0	77	22	0	162	14	106	438	0	80	591	0
Heavy Vehicles (%)	0%	3%	2%	7%	3%	3%	2%	3%	2%	12%	3%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		6			
Actuated Green, G (s)		9.6	9.6		9.6	9.6	35.6	31.1		31.8	29.2	
Effective Green, g (s)		9.6	9.6		9.6	9.6	35.6	31.1		31.8	29.2	
Actuated g/C Ratio		0.17	0.17		0.17	0.17	0.64	0.56		0.58	0.53	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		270	256		241	272	432	980		479	937	
v/s Ratio Prot							c0.02	0.25		0.01	c0.33	
v/s Ratio Perm		0.05	0.02		c0.12	0.01	0.14			0.09		
v/c Ratio		0.29	0.09		0.67	0.05	0.25	0.45		0.17	0.63	
Uniform Delay, d1		19.9	19.2		21.4	19.1	4.9	7.1		5.3	9.2	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.6	0.1		7.2	0.1	0.3	0.3		0.2	1.4	
Delay (s)		20.5	19.3		28.6	19.1	5.2	7.4		5.5	10.6	
Level of Service		C	B		C	B	A	A		A	B	
Approach Delay (s)		19.7			25.5			7.0			10.0	
Approach LOS		B			C			A			B	

Intersection Summary

HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	55.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 33: NY Route 77 & Bloomingdale Rd

Build 2015 - Full Buildout
 PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	121	44	43	530	531	138
Future Volume (Veh/h)	121	44	43	530	531	138
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.87	0.87	0.90	0.90
Hourly flow rate (vph)	132	48	49	609	590	153
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1374	666	743			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1374	666	743			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	13	89	94			
cM capacity (veh/h)	152	449	851			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	180	658	743			
Volume Left	132	49	0			
Volume Right	48	0	153			
cSH	185	851	1700			
Volume to Capacity	0.98	0.06	0.44			
Queue Length 95th (ft)	198	5	0			
Control Delay (s)	111.6	1.5	0.0			
Lane LOS	F	A				
Approach Delay (s)	111.6	1.5	0.0			
Approach LOS	F					
Intersection Summary						
Average Delay			13.3			
Intersection Capacity Utilization			79.5%	ICU Level of Service	D	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

33: NY Route 77 & Bloomingdale Rd

Build 2015 - Full Buildout - w/ Imp
PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	121	44	43	530	531	138
Future Volume (vph)	121	44	43	530	531	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	12	11	11
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.96		1.00	1.00	0.97	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	1660		1719	1845	1741	
Flt Permitted	0.96		0.29	1.00	1.00	
Satd. Flow (perm)	1660		518	1845	1741	
Peak-hour factor, PHF	0.92	0.92	0.87	0.87	0.90	0.90
Adj. Flow (vph)	132	48	49	609	590	153
RTOR Reduction (vph)	28	0	0	0	14	0
Lane Group Flow (vph)	152	0	49	609	729	0
Heavy Vehicles (%)	1%	8%	5%	3%	3%	1%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	7.8		28.0	28.0	28.0	
Effective Green, g (s)	7.8		28.0	28.0	28.0	
Actuated g/C Ratio	0.18		0.64	0.64	0.64	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	295		331	1179	1112	
v/s Ratio Prot	c0.09			0.33	c0.42	
v/s Ratio Perm			0.09			
v/c Ratio	0.52		0.15	0.52	0.66	
Uniform Delay, d1	16.3		3.1	4.3	4.9	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.5		0.2	0.4	1.4	
Delay (s)	17.8		3.4	4.6	6.3	
Level of Service	B		A	A	A	
Approach Delay (s)	17.8			4.5	6.3	
Approach LOS	B			A	A	

Intersection Summary

















HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	43.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

2: NY Route 77 & Ledge Road

Build 2015 - Full Buildout
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	68	120	4	80	12	122	526	13	13	532	19
Future Volume (Veh/h)	24	68	120	4	80	12	122	526	13	13	532	19
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.69	0.69	0.69	0.97	0.97	0.97	0.93	0.93	0.93
Hourly flow rate (vph)	26	73	129	6	116	17	126	542	13	14	572	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1486	1417	582	1576	1420	548	592			555		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1486	1417	582	1576	1420	548	592			555		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	0	37	75	80	2	97	87			99		
cM capacity (veh/h)	8	117	513	30	118	540	979			976		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	228	139	681	606								
Volume Left	26	6	126	14								
Volume Right	129	17	13	20								
cSH	57	115	979	976								
Volume to Capacity	4.03	1.21	0.13	0.01								
Queue Length 95th (ft)	Err	222	11	1								
Control Delay (s)	Err	222.5	3.1	0.4								
Lane LOS	F	F	A	A								
Approach Delay (s)	Err	222.5	3.1	0.4								
Approach LOS	F	F										
Intersection Summary												
Average Delay			1398.5									
Intersection Capacity Utilization			94.0%		ICU Level of Service				F			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

2: NY Route 77 & Ledge Road

Build 2015 - Full Buildout - w/ Imp
PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	24	68	120	4	80	12	122	526	13	13	532	19
Future Volume (vph)	24	68	120	4	80	12	122	526	13	13	532	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	11	11	11	11	11	11
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.92			0.98		1.00	1.00		1.00	0.99	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1590			1740		1694	1774		1586	1776	
Flt Permitted		0.95			0.99		0.24	1.00		0.46	1.00	
Satd. Flow (perm)		1522			1721		426	1774		762	1776	
Peak-hour factor, PHF	0.93	0.93	0.93	0.69	0.69	0.69	0.97	0.97	0.97	0.93	0.93	0.93
Adj. Flow (vph)	26	73	129	6	116	17	126	542	13	14	572	20
RTOR Reduction (vph)	0	85	0	0	9	0	0	1	0	0	2	0
Lane Group Flow (vph)	0	143	0	0	130	0	126	554	0	14	590	0
Heavy Vehicles (%)	0%	4%	2%	0%	0%	0%	3%	3%	10%	10%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.8			9.8		29.7	29.7		22.6	22.6	
Effective Green, g (s)		9.8			9.8		29.7	29.7		22.6	22.6	
Actuated g/C Ratio		0.21			0.21		0.63	0.63		0.48	0.48	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		314			355		349	1109		362	845	
v/s Ratio Prot							0.02	c0.31			c0.33	
v/s Ratio Perm		c0.09			0.08		0.20			0.02		
v/c Ratio		0.46			0.37		0.36	0.50		0.04	0.70	
Uniform Delay, d1		16.5			16.2		5.5	4.8		6.6	9.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1			0.6		0.6	0.4		0.0	2.5	
Delay (s)		17.6			16.8		6.1	5.2		6.7	12.3	
Level of Service		B			B		A	A		A	B	
Approach Delay (s)		17.6			16.8			5.4			12.2	
Approach LOS		B			B			A			B	

Intersection Summary

HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	47.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

3: NY Route 77 & Akron Road

Build 2015 - Full Buildout
PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	75	38	56	569	540	56
Future Volume (Veh/h)	75	38	56	569	540	56
Sign Control	Stop			Free	Free	
Grade	3%			0%	0%	
Peak Hour Factor	0.91	0.91	0.93	0.93	0.90	0.90
Hourly flow rate (vph)	82	42	60	612	600	62
Pedestrians	1			1		
Lane Width (ft)	10.0			11.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1364	633	663			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1364	633	663			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	46	91	94			
cM capacity (veh/h)	152	473	935			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	124	672	662			
Volume Left	82	60	0			
Volume Right	42	0	62			
cSH	197	935	1700			
Volume to Capacity	0.63	0.06	0.39			
Queue Length 95th (ft)	91	5	0			
Control Delay (s)	49.9	1.6	0.0			
Lane LOS	E	A				
Approach Delay (s)	49.9	1.6	0.0			
Approach LOS	E					
Intersection Summary						
Average Delay			5.0			
Intersection Capacity Utilization			81.6%	ICU Level of Service	D	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: NY Route 77 & Akron Road

Build 2015 - Full Buildout - w/ Imp
PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	75	38	56	569	540	56
Future Volume (Veh/h)	75	38	56	569	540	56
Sign Control	Stop			Free	Free	
Grade	3%			0%	0%	
Peak Hour Factor	0.91	0.91	0.93	0.93	0.90	0.90
Hourly flow rate (vph)	82	42	60	612	600	62
Pedestrians	1			1		
Lane Width (ft)	10.0			11.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1364	633	663			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1364	633	663			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	46	91	94			
cM capacity (veh/h)	152	473	935			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	82	42	60	612	662	
Volume Left	82	0	60	0	0	
Volume Right	0	42	0	0	62	
cSH	152	473	935	1700	1700	
Volume to Capacity	0.54	0.09	0.06	0.36	0.39	
Queue Length 95th (ft)	67	7	5	0	0	
Control Delay (s)	53.6	13.3	9.1	0.0	0.0	
Lane LOS	F	B	A			
Approach Delay (s)	40.0		0.8	0.0		
Approach LOS	E					
Intersection Summary						
Average Delay			3.8			
Intersection Capacity Utilization			49.6%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

6: NY Route 77 & I-90 Interchange 48A

Build 2015 - Full Buildout
PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	388	408	292	298	262	395
Future Volume (vph)	388	408	292	298	262	395
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.91	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1601	1346	1444	1783	3093	
Flt Permitted	0.95	1.00	0.18	1.00	1.00	
Satd. Flow (perm)	1601	1346	269	1783	3093	
Peak-hour factor, PHF	0.91	0.91	0.86	0.86	0.91	0.91
Adj. Flow (vph)	426	448	340	347	288	434
RTOR Reduction (vph)	0	96	0	0	280	0
Lane Group Flow (vph)	426	352	340	347	442	0
Heavy Vehicles (%)	9%	16%	25%	3%	5%	7%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	25.6	48.0	45.0	45.0	16.6	
Effective Green, g (s)	27.6	52.0	47.0	47.0	18.6	
Actuated g/C Ratio	0.33	0.63	0.57	0.57	0.23	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	534	912	500	1014	696	
v/s Ratio Prot	c0.27	0.11	c0.20	0.19	0.14	
v/s Ratio Perm		0.15	c0.19			
v/c Ratio	0.80	0.39	0.68	0.34	0.64	
Uniform Delay, d1	25.0	7.5	20.3	9.5	28.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.1	0.3	3.8	0.2	1.9	
Delay (s)	33.1	7.8	24.0	9.7	30.8	
Level of Service	C	A	C	A	C	
Approach Delay (s)	20.1			16.8	30.8	
Approach LOS	C			B	C	

Intersection Summary

HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	82.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

30: NY Route 77 & NY Route 5

Build 2015 - Full Buildout

PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	293	192	19	228	74	132	215	26	84	216	277
Future Volume (vph)	293	293	192	19	228	74	132	215	26	84	216	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	0.96		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1658		1805	1756		1805	1755		1667	1696	1553
Flt Permitted	0.26	1.00		0.46	1.00		0.38	1.00		0.59	1.00	1.00
Satd. Flow (perm)	486	1658		880	1756		713	1755		1042	1696	1553
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	326	326	213	21	253	82	147	239	29	93	240	308
RTOR Reduction (vph)	0	28	0	0	15	0	0	6	0	0	0	233
Lane Group Flow (vph)	326	511	0	21	320	0	147	262	0	93	240	75
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	2%	7%	9%	0%	4%	5%	0%	7%	0%	8%	12%	4%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	34.5	34.5		16.3	16.3		22.5	22.5		15.3	15.3	15.3
Effective Green, g (s)	35.5	35.5		17.3	17.3		23.5	23.5		16.3	16.3	16.3
Actuated g/C Ratio	0.53	0.53		0.26	0.26		0.35	0.35		0.24	0.24	0.24
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	529	878		227	453		302	615		253	412	377
v/s Ratio Prot	0.13	c0.31			c0.18		0.02	c0.15			c0.14	
v/s Ratio Perm	0.20			0.02			0.15			0.09		0.05
v/c Ratio	0.62	0.58		0.09	0.71		0.49	0.43		0.37	0.58	0.20
Uniform Delay, d1	10.5	10.7		18.9	22.5		16.9	16.6		21.1	22.4	20.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.1	1.0		0.2	5.0		1.2	0.5		0.9	2.1	0.3
Delay (s)	12.6	11.7		19.1	27.5		18.1	17.1		22.0	24.4	20.4
Level of Service	B	B		B	C		B	B		C	C	C
Approach Delay (s)		12.0			27.0			17.5			22.2	
Approach LOS		B			C			B			C	

















Intersection Summary

HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

















HCM Unsignalized Intersection Capacity Analysis
63: Royalton Center Road & NY Route 77

Build 2015 - Full Buildout
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	104	1	12	158	26	19	88	29	8	44	23
Future Volume (Veh/h)	21	104	1	12	158	26	19	88	29	8	44	23
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.66	0.66	0.66	0.90	0.90	0.90	0.76	0.76	0.76	0.71	0.71	0.71
Hourly flow rate (vph)	32	158	2	13	176	29	25	116	38	11	62	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	205			160			502	454	159	536	440	190
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	205			160			502	454	159	536	440	190
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			94	76	96	97	88	96
cM capacity (veh/h)	1378			1425			410	489	889	349	497	856
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	192	218	179	105								
Volume Left	32	13	25	11								
Volume Right	2	29	38	32								
cSH	1378	1425	525	543								
Volume to Capacity	0.02	0.01	0.34	0.19								
Queue Length 95th (ft)	2	1	38	18								
Control Delay (s)	1.4	0.5	15.4	13.2								
Lane LOS	A	A	C	B								
Approach Delay (s)	1.4	0.5	15.4	13.2								
Approach LOS			C	B								
Intersection Summary												
Average Delay			6.5									
Intersection Capacity Utilization			30.0%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
51: NY Route 98 & Lockport Road (CR 12)

Build 2015 - Full Buildout
PM Peak





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	77	11	0	58	15	15	169	0	8	156	20
Future Volume (Veh/h)	9	77	11	0	58	15	15	169	0	8	156	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.94	0.94	0.94	0.77	0.77	0.77
Hourly flow rate (vph)	10	86	12	0	64	17	16	180	0	10	203	26
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	497	448	216	503	461	180	229			180		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	497	448	216	503	461	180	229			180		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	83	99	100	87	98	99			99		
cM capacity (veh/h)	420	496	826	406	488	868	1345			1408		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	108	81	196	239								
Volume Left	10	0	16	10								
Volume Right	12	17	0	26								
cSH	510	537	1345	1408								
Volume to Capacity	0.21	0.15	0.01	0.01								
Queue Length 95th (ft)	20	13	1	1								
Control Delay (s)	13.9	12.9	0.7	0.4								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.9	12.9	0.7	0.4								
Approach LOS	B	B										
Intersection Summary												
Average Delay			4.5									
Intersection Capacity Utilization			33.1%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

25: Park Road/Lewiston Road & NY Route 63

Build 2015 - Full Buildout

PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	122	53	44	120	165	0	0	0	119	9	11
Future Volume (Veh/h)	7	122	53	44	120	165	0	0	0	119	9	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.91	0.91	0.91	0.25	0.25	0.25	0.85	0.85	0.85
Hourly flow rate (vph)	8	136	59	48	132	181	0	0	0	140	11	13
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	313			195			428	590	166	380	439	132
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	313			195			428	590	166	380	439	132
tC, single (s)	4.2			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			100	100	100	75	98	99
cM capacity (veh/h)	1182			1390			508	405	884	556	494	923
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2					
Volume Total	8	195	180	181	0	140	24					
Volume Left	8	0	48	0	0	140	0					
Volume Right	0	59	0	181	0	0	13					
cSH	1182	1700	1390	1700	1700	556	660					
Volume to Capacity	0.01	0.11	0.03	0.11	0.00	0.25	0.04					
Queue Length 95th (ft)	1	0	3	0	0	25	3					
Control Delay (s)	8.1	0.0	2.3	0.0	0.0	13.6	10.7					
Lane LOS	A		A		A	B	B					
Approach Delay (s)	0.3		1.1		0.0	13.2						
Approach LOS					A	B						
Intersection Summary												
Average Delay			3.6									
Intersection Capacity Utilization			35.0%		ICU Level of Service		A					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
56: Crosby Road & NY Route 77/ NY Route 77

Build 2015 - Full Buildout
PM Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	104	52	74	115	83	40
Future Volume (Veh/h)	104	52	74	115	83	40
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.87	0.87	0.85	0.85
Hourly flow rate (vph)	116	58	85	132	98	47
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			174	447		145
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			174	447		145
tC, single (s)			4.2	6.5		6.3
tC, 2 stage (s)						
tF (s)			2.3	3.6		3.4
p0 queue free %			94	81		95
cM capacity (veh/h)			1373	527		892
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	174	217	145			
Volume Left	0	85	98			
Volume Right	58	0	47			
cSH	1700	1373	608			
Volume to Capacity	0.10	0.06	0.24			
Queue Length 95th (ft)	0	5	23			
Control Delay (s)	0.0	3.4	12.8			
Lane LOS			A		B	
Approach Delay (s)	0.0	3.4	12.8			
Approach LOS			B			
Intersection Summary						
Average Delay			4.8			
Intersection Capacity Utilization			35.8%		ICU Level of Service A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 23: NY Route 77/NY Route 63 & Site Access Rd # 1

Build 2015 - Full Buildout
 PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	48	272	216	386	312	36
Future Volume (Veh/h)	48	272	216	386	312	36
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	52	296	235	420	339	39
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1248	358	378			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1248	358	378			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	66	57	80			
cM capacity (veh/h)	153	686	1180			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	52	296	655	378		
Volume Left	52	0	235	0		
Volume Right	0	296	0	39		
cSH	153	686	1180	1700		
Volume to Capacity	0.34	0.43	0.20	0.22		
Queue Length 95th (ft)	35	55	19	0		
Control Delay (s)	40.2	14.2	4.7	0.0		
Lane LOS	E	B	A			
Approach Delay (s)	18.1		4.7	0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			6.8			
Intersection Capacity Utilization			64.2%	ICU Level of Service	C	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 23: NY Route 77/NY Route 63 & Site Access Rd # 1

Build 2015 - Full Buildout - w/ Imp
 PM Peak

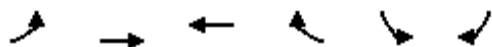


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	48	272	216	386	312	36
Future Volume (Veh/h)	48	272	216	386	312	36
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	52	296	235	420	339	39
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1248	358	378			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1248	358	378			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	66	57	80			
cM capacity (veh/h)	153	686	1180			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	52	296	235	420	378	
Volume Left	52	0	235	0	0	
Volume Right	0	296	0	0	39	
cSH	153	686	1180	1700	1700	
Volume to Capacity	0.34	0.43	0.20	0.25	0.22	
Queue Length 95th (ft)	35	55	19	0	0	
Control Delay (s)	40.2	14.2	8.8	0.0	0.0	
Lane LOS	E	B	A			
Approach Delay (s)	18.1		3.2		0.0	
Approach LOS	C					
Intersection Summary						
Average Delay			6.0			
Intersection Capacity Utilization			43.9%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

83: Judge Road & Crosby Road

Build 2015 - Full Buildout
PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	53	57	108	132	0
Future Volume (Veh/h)	0	53	57	108	132	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.92	0.92
Hourly flow rate (vph)	0	59	63	120	143	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	183				182	123
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	183				182	123
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				82	100
cM capacity (veh/h)	1392				807	928
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	59	183	143			
Volume Left	0	0	143			
Volume Right	0	120	0			
cSH	1392	1700	807			
Volume to Capacity	0.00	0.11	0.18			
Queue Length 95th (ft)	0	0	16			
Control Delay (s)	0.0	0.0	10.4			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.4			
Approach LOS			B			
Intersection Summary						
Average Delay			3.9			
Intersection Capacity Utilization			23.6%	ICU Level of Service		A
Analysis Period (min)			15			