

April 27, 2021

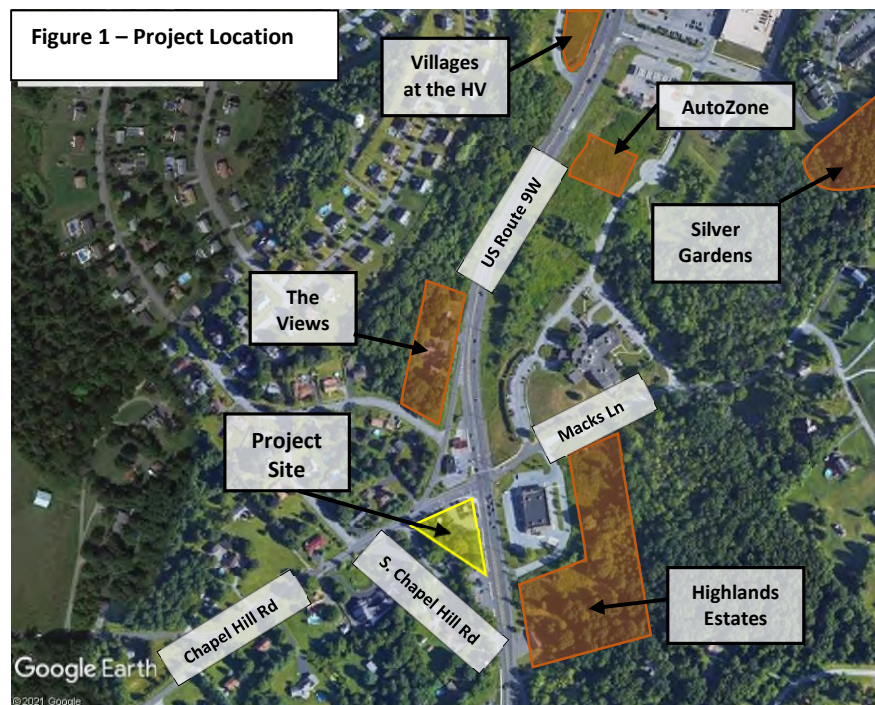
Mr. Tyler Fronte
Stewart's Shops Corp.
PO Box 435
Saratoga Springs, New York 12866

RE: Traffic Assessment, Stewart's Shop, US Route 9W/Chapel Hill Road, Town of Lloyd, Ulster County, NY; CM Project No. 119-297

Creighton Manning Engineering, LLP (CM) has conducted a traffic assessment for the proposed redevelopment of the used car dealership and single family house property located in the southwest quadrant of the US Route 9W/Chapel Hill Road/Macks Lane intersection in into a *Stewart's Shop* in the Town of Lloyd, Ulster County, New York. This evaluation is based on the "Site Plan" prepared by *Stewart's Shops* dated September 9, 2019, included under Attachment A.

1. Introduction and Background

The proposed project includes the construction of a 3,851 square-foot (SF) *Stewart's Shop* convenience market at 3733 US Route 9W. The project will remove the existing *MAG Auto Corp* used car dealership and single-family house property. Access to the site will be provided via one right-in, right-out driveway on US Route 9W, one right-in, right-out driveway on Chapel Hill Road, and one full access driveway on S. Chapel Hill Road. The proposed project is expected to be completed in 2022. The project location is shown on Figure 1.



2. Existing Conditions

Roadways Serving the Site

US Route 9W is classified as an urban principal arterial other near the project site and provides north-south travel through Ulster County. Data published by the New York State Department of Transportation (NYSDOT) in the latest version of the *Pavement Data Report* indicates that the pavement on US Route 9W is in good

condition near the project site. Along the project frontage, US Route 9W consists of two 12-foot wide northbound travel lanes and one 12-foot wide southbound travel lanes with eight-foot wide paved shoulders. The posted speed limit is 45 mph in the project vicinity. A 5-foot wide sidewalk is provided on the west side of US Route 9W for approximately ¼ mile segment from Chapel Hill Road to the south.

Chapel Hill Road is classified as an urban major collector near the project site and provides east-west travel from US Route 44 to US Route 9W in the Town of Lloyd. Along the project frontage, Chapel Hill Road consists of two 11-foot wide eastbound travel lanes and one 12-foot wide westbound travel lane with four foot wide paved shoulders. The posted speed limit is 40 mph in the project vicinity. A sidewalk is provided on the south side of the road between Route 9W and S. Chapel Hill Road.

S. Chapel Hill Road is a 30-mph local road that connects Chapel Hill Road to US Route 9W. S. Chapel Hill Road consists of one 11-foot wide travel lane in each direction with no paved shoulders. There are no sidewalks provided on either side of S. Chapel Hill Road.

Study Area Intersections

The US Route 9W/Chapel Hill Road/Macks Lane intersection is a four-leg intersection operating under actuated traffic signal control. The eastbound Chapel Hill Road approach provides an exclusive left turn lane in addition to a shared lane for all travel movements while the westbound Macks Lane approach provides a single lane for all movements. The northbound US Route 9W approach provides an exclusive left turn lane as well as two through lanes with shared right turn movements, while the southbound approach provides an exclusive left turn lane and single through lane with shared right turn movements. A sidewalk is provided on the south side of Chapel Hill Road and north side of Macks Lane, as well as on the west side of US Route 9W on either side of the intersection. There is a marked crosswalk with pedestrian signals and push buttons across the north leg of the intersection.

The US Route 9W/S. Chapel Hill Road intersection is a three-leg intersection operating under stop control on the eastbound S. Chapel Hill Road approach. There is one travel lane in each direction along with a 10- to 11-foot-wide striped median on the north and south side of US Route 9W. The eastbound S. Chapel Hill Road approach also provides one travel lane in each direction for shared travel movements. There are no sidewalks or crosswalks at the intersection.

The Chapel Hill Road (CR11)/S. Chapel Hill Road intersection is a three-leg intersection operating under stop control on the northbound S. Chapel Hill approach. All approaches provide a single lane for shared travel movements. There are no pedestrian accommodations at the intersection.

Transit Accommodations

Transit service in the area is provided by *Ulster County Area Transit (UCAT)*. The KPL Route (Kingston/Poughkeepsie/Marlboro) provides north-south bus service between Marlboro and Kingston via US Route 9W. The KPL Route operates primarily during commuter periods between 5:00 a.m. and 10:00 p.m. with a total of seven trips in each direction.

3. Traffic Assessment

Data Collection

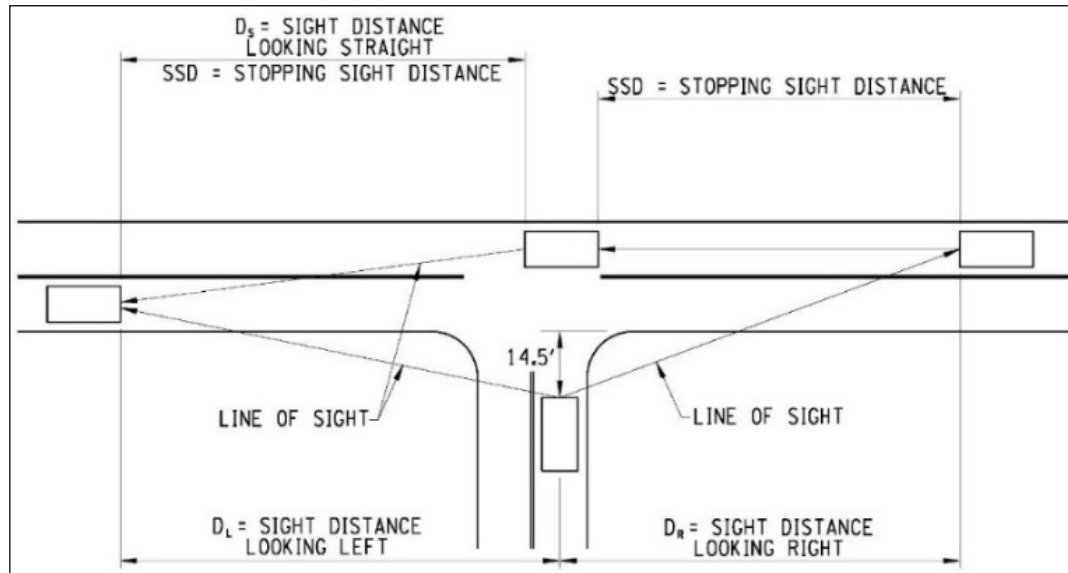
Intersection turning movement counts were conducted at the intersections of US Route 9W/S. Chapel Hill Road and Chapel Hill Road/S. Chapel Hill Road during the morning and evening commuter peak periods from 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. on Tuesday, March 2, 2021 and Wednesday, March 3, 2021. Traffic counts collected at the Route 9W/Chapel Hill Road/Macks Lane intersection as part of the Villages of the Hudson Valley, and adjusted based on a comparison of counts collected by The Views project, were used to

establish existing 2018 traffic volumes. The 2021 counts were compared to the 2018 traffic data and was found to be approximately 20% to 33% lower than the historic volumes, and is an expected result of the COVID-19 pandemic. As such, the historic traffic volumes at the Route 9W and N. Chapel Hill Road intersections were used as existing 2018 conditions, and the turning movements at the S. Chapel Hill Road intersections and Chapel Hill Road and Route 9W were increased by 33% and 20% respectively. The raw traffic counts are included under Attachment B and the 2018 Existing traffic volumes are shown on Figure 2-1.

Sight Distance Analysis

A sight distance evaluation was completed at the three proposed Site Driveway intersections with US Route 9W, Chapel Hill Road and S. Chapel Hill Road. Available *intersection* sight distance was measured from the perspective of a passenger car exiting the site. In addition, the sight distance for vehicles traveling northbound on US Route 9W, westbound on Chapel Hill Road and southbound on S. Chapel Hill Road looking straight ahead to turn left into the site was measured. The available intersection sight distance on a side street or driveway should provide drivers a sufficient view of the intersecting highway to allow vehicles to enter or exit the intersection without excessively slowing vehicles traveling at or near the operating speed on the intersecting mainline road.

Stopping sight distance was also measured on US Route 9W, Chapel Hill Road and SS. Chapel Hill Road at the proposed Site Driveway locations. Stopping sight distance is the length of the roadway ahead that is visible to the driver. The available stopping sight distance on a roadway should be of sufficient length to enable a vehicle traveling at or near the operating speed to stop before reaching a stationary object in its path. The following diagram illustrates these sight distance measurements.



Intersection and Stopping Sight Distance Measurements

The posted speed limits on US Route 9W, Chapel Hill Road and S. Chapel Hill Road are 45-mph, 30-mph, and 40-mph, respectively. The sight distances measured in the field were compared to the guidelines presented in *A Policy on Geometric Design of Highways and Streets, 2011* published by the American Association of State Highway Transportation Officials (AASHTO) and NYSDOT design guidance (EB 17-007) for a 50-mph, 35-mph, and 40-mph (posted speed limits plus five-mph). The results of the sight distance analysis are summarized in Table 1.

Table 1 – Sight Distance Summary (feet)

Intersection		Intersection Sight Distance ¹				Stopping Sight Distance ²	
		Right-Turn from Driveway (D _L)	Left-Turn from Driveway		Left-Turn from Major Street (D _S)	SSD _{EB/NB}	SSD _{WB/SB}
			Looking Left (D _L)	Looking Right (D _R)			
US Route 9W/Site Driveway	Available	740	NA	NA	NA	NA	755
	Recommended	480	NA	NA	NA	NA	425
Chapel Hill Road/ Site Driveway	Available	630	NA	NA	NA	>900	NA
	Recommended	430	NA	NA	NA	330	NA
S. Chapel Hill Road/ Site Driveway	Available	133 [310] ³	133 [310] ³	140 *to intersection	415	140 *to intersection	415
	Recommended	335	390	390	285	225	225

¹ Intersection sight distance is measured at 14.5 feet back from the travel way at an object height of 3.5 feet and an eye height of 3.5 feet.

² Stopping sight distance measured for a 2-foot object located in the path of eastbound, westbound, northbound, or southbound vehicles on US Route 9W, Chapel Hill Road or S. Chapel Hill Road at an eye height of 3.5 feet.

³ [XXX] = Sight distance assuming vegetation along the east side of S. Chapel Hill Road is cleared

The analysis indicates that the intersection sight distance looking left to make a right turn from the Site Driveways and the stopping sight distance for vehicles turning right into the Site Driveways meet the AASHTO guidelines for the 50-mph operating speed on US Route 9W and the 45-mph operating speed on Chapel Hill Road. Further, the stopping sight distance and the distance looking straight for vehicles traveling southbound to turn left into the Site Driveway on S. Chapel Hill road exceed the guidelines for a 35-mph operating speed.

Drivers looking left along S. Chapel Hill Road have limited sight distance, but this will improve with the vegetation clearing included with development of the site. After clearing, the sight distance may still be 25 to 80 feet short, but this is not considered critical because stopping sight distances are exceeded and the short road will likely result in vehicles traveling less than 35 mph.

Trip Generation

Trip generation determines the quantity of traffic expected to travel to and from a given site. The Institute of Transportation Engineers (ITE) collects actual traffic counts from similar land uses and publishes them in *Trip Generation, 10th Edition*, which is the industry standard used for estimating trip generation for a proposed land use. The trip generation was estimated for the proposed use based on ITE Land Use Code 853- Convenience Market with Gasoline Pumps land use. The trip generation for the project is summarized in Table 2.

It can be expected that some trips to the convenience market originate from traffic that is already passing the site on US Route 9W or Chapel Hill Road. Pass-by trips are vehicles that will stop at the site before continuing to their primary destination. For example, a driver traveling northbound on US Route 9W leaving work may stop at the convenience store and then continue northbound towards home. This type of trip is considered a pass-by trip. Based on a review of data published by ITE, a pass-by trip percentage (60% for the AM peak and 65% for the PM peak) was applied to trips generated by the site. A summary of the trip generation for the proposed site is shown in Table 2.

Table 2 –Trip Generation Summary

Land Use	Size	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Convenience Market with Gasoline Pumps (LUC 853)	3,851 SF	78	78	156	95	95	190
Pass-By Trips (60% AM/65% PM)		47	47	94	62	62	124
Total New Primary Trips		31	31	62	33	33	66

The trip generation summary shows that the project is expected to generate 62 new vehicle trips during the AM peak hour and 66 new vehicle trips during the PM peak hour.

Although the trip generation estimate above is based on ITE sources and industry methodologies, it is expected that customers will have several gas/convenience store options, including this project, the existing Sunoco on the northwest corner of the subject intersection, Highland Estates if approved, and Mobil at Argent Drive. We do not expect a significant increase in traffic to the area as a result of the project, but assume such based on standard analysis methodologies.

Future Traffic Volumes

To evaluate the impact of the proposed development, traffic projections were prepared for the expected year of completion, 2022. Historical traffic volume data found in the latest version of the *Traffic Data Report* published by NYSDOT indicates that traffic volumes in the vicinity of the site have remained relatively stable over the last several years; however, in order to provide a conservative background growth estimate, the Existing 2018 traffic volumes were increased by a one-percent per year growth rate for four years. In addition to general background traffic growth, vehicle trips associated with other developments in the project area were considered when developing the No-Build traffic volumes. The Town of Lloyd indicated that the following other known approved developments could contribute to future background traffic volumes:

- Highland Estates Mixed-Use – 3 KSF of gas station/convenience market with 13KSF retail along with a 9.6 KSF professional office building located on the east side of US Route 9W across from the S. Chapel Hill Road intersection. In addition, a 9.24 KSF med-dental office building located on the south side of Macks Lane behind the existing Walgreens.
- Silver Gardens – 57 units of senior housing located on Argent Drive behind Bridgeview Plaza.
- The Views at Highland – Residential development with 22 dwellings and 14 KSF of commercial space located on US Route 9W adjacent to N. Chapel Hill Road.
- The Villages at the Hudson Valley – 175 single-family detached houses for seniors, 135-bed assisted living facility, 5,000 SF primary care office located west of Route 9W, opposite Bridgeview Plaza
- AutoZone – 7,000 SF auto parts store located next to Dunkin Donuts
- Dollar General and Apartments – 7,000 SF Dollar General and 72 apartments located on US Route 9W north of Haviland Road
- Highland Self Storage – 89,000 SF self-storage facility along the west side of Route 9W, just south of the Mid-Hudson Bridge access.

The traffic generated by the projects were distributed based on the site driveways and proposed turn restrictions, and the resulting trip assignment is shown on Figure 3-1. The site generated trips were distributed (Figures 4-1, 5-1), assigned (Figures 4-2, 5-2), and added to the 2022 No-Build traffic volumes resulting in the 2022 Build traffic volumes. These traffic volumes represent expected traffic conditions after full build out of the proposed project and are shown on Figure 6.

Traffic Operations

An intersection level of service and capacity analysis was conducted at the study area intersection using the Synchro Software, which automates the procedures contained in the *Highway Capacity Manual (HCM) 6th Edition*. Levels of service range from A to F with LOS A conditions considered excellent with very little delay while LOS F generally represents conditions with very long delays. Attachment C contains detailed descriptions of LOS criteria for signalized and unsignalized intersections and the detailed HCS Level of Service reports. Table 3 summarizes the results of the intersection analysis. Further, this analysis assumes the completion of a road widening (separate left and right turn lanes) on N. Chapel Hill Road approaching Chapel Hill Road, as proposed by The Views.

Table 3 –Level of Service Summary

Intersection	Control	AM Peak Hour				PM Peak Hour			
		2018 Existing	2022 No-Build	2022 Build	2022 Build w/ Imp	2018 Existing	2022 No-Build	2022 Build	2022 Build w/ Imp
US Route 9W/Chapel Hill Rd/Macks Ln	S								
Chapel Hill EB L[L]		F (145.7)	F (188.3)	F (210.4)	F (183.1)	D (51.6)	E (57.1)	E (63.5)	D (50.1)
Chapel Hill EB TR		A (0.0)	A (0.0)	A (0.0)	D (37.7)	A (0.0)	F (96.2)	F (115.4)	D (48.5)
Macks Lane WB LT		F (88.1)	F (196.5)	F (196.5)	F (89.0)	E (60.8)	F (524.3)	F (524.3)	F (225.6)
Macks Lane WB [R]		--	--	--	D (38.3)	--	--	--	D (40.1)
US Route 9W NB L		F (146.0)	F (121.8)	F (121.8)	F (121.8)	F (126.0)	F (87.5)	F (87.5)	F (87.5)
US Route 9W NB T		B (17.5)	C (33.9)	C (33.1)	C (33.1)	B (16.3)	C (27.2)	C (26.9)	C (23.0)
US Route 9W NB R		B (17.4)	C (33.5)	C (32.8)	C (32.8)	B (16.3)	C (27.1)	C (26.8)	C (22.9)
US Route 9W SB L		F (135.3)	F (92.2)	F (92.2)	F (92.2)	E (75.3)	F (239.4)	F (239.4)	F (239.4)
US Route 9W SB TR		B (19.3)	B (16.7)	C (28.2)	C (28.2)	F (73.9)	F (180.9)	F (190.9)	F (142.4)
Overall		E (60.4)	F (102.9)	F (99.6)	E (79.4)	D (51.7)	F (158.2)	F (164.5)	F (100.6)
US Route 9W/Site Drwy #1	U								
Site Driveway #1 EB R		-	--	B (13.3)	B (13.3)	--	--	C (23.8)	C (23.8)
US Route 9W/S. Chapel Hill Road	U								
S. Chapel Hill Rd EB LR		B (12.7)	B (13.8)	B (13.9)	B (13.9)	B (13.2)	D (24.8)	D (29.3)	D (29.3)
US Route 9W NB LT		A (8.8)	A (9.1)	A (9.3)	A (9.3)	B (10.5)	B (11.5)	B (12.0)	B (12.0)
Chapel Hill Road/N. Chapel Hill Rd/Site Drwy #2	U								
Site Driveway #2 NB R		--	--	B (12.1)	B (12.1)	--	--	B (10.1)	B (10.1)
N. Chapel Hill Rd SB L		--	B (13.1)	B (14.7)	B (14.7)	--	B (11.9)	B (12.9)	B (12.9)
N. Chapel Hill Rd SB R		A (9.5)	A (9.6)	A (9.6)	A (9.6)	C (19.1)	D (25.0)	C (24.4)	C (24.4)
Chapel Hill Rd/S. Chapel Hill Rd									
Chapel Hill Rd WB LT		A (9.4)	A (9.5)	A (9.6)	A (9.6)	A (8.1)	A (8.3)	A (8.3)	A (8.3)
S. Chapel Hill Rd NB LR		C (18.5)	C (19.6)	C (20.3)	C (20.3)	C (18.1)	C (22.4)	C (24.6)	C (24.6)
S. Chapel Hill Rd/Site Drwy #3									
Site Driveway #3 WB LR		--	--	A (8.5)	A (8.5)	--	--	A (8.5)	A (8.5)
S. Chapel Hill Rd SB LT		--	--	A (7.3)	A (7.3)	--	--	A (7.3)	A (7.3)

S, U = Signalized or Unsignalized intersection

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

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

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

-- = Not Applicable

The LOS analysis indicates that the stop controlled intersections on Chapel Hill Road and US Route 9W operate at LOS C or better during the AM peak hour under all scenarios. During the PM peak hour, these intersections currently operate at LOS C or better, with US Route 9W/S. Chapel Hill Road and Chapel Hill Road/N. Chapel Hill Road/Site Driveway #2 operating at LOS D or better under the 2022 No-Build, 2022 Build and the 2022 Build with Improvement scenarios. This largely assumes no influence from the adjacent traffic signal. Although the analysis cannot calculate the results, we fully expect that delays will be higher at the Site Driveway #2, N. Chapel Hill Road, and S. Chapel Road intersections if/when the signal is queued up past these intersections.

The US Route 9W/Chapel Hill Road/Macks Lane intersection currently operates at LOS E during the AM peak hour, and LOS D during the PM peak hour, with several movements operating at LOS E/F. Under the 2022 No-Build and 2022 Build scenarios, the intersection operates at LOS F during the AM and PM peak hour as a result of the increases in traffic. To improve operations, the Build with Improvement scenario includes widening Chapel Hill Road for a separate through/right turn lane, and Macks Lane for a separate right turn lane. Under these conditions, the overall intersection delay improves to better than No-Build conditions, but remains at LOS F during the PM peak hour. During the AM peak hour, the intersection improves to LOS E.

To improve conditions further, additional improvements are necessary. Based on the traffic volumes and signal timings, a second southbound through lane was considered at the signal which would merge south of the intersection, as a sensitivity analysis. The results shown below in Table 4.

Table 4 –Level of Service Summary

Intersection	Control	AM Peak Hour				PM Peak Hour			
		2022 No-Build	2022 Build	2022 Build w/ Imp	2022 Build SA	2022 No-Build	2022 Build	2022 Build w/ Imp	2022 Build SA
US Route 9W/Chapel Hill Rd/Macks Ln	S								
Chapel Hill EB L[L]		F (188.3)	F (210.4)	F (183.1)	D (47.8)	E (57.1)	E (63.5)	D (50.1)	D (46.1)
Chapel Hill EB TR		A (0.0)	A (0.0)	D (37.7)	C (26.9)	F (96.2)	F (115.4)	D (48.5)	D (44.6)
Macks Lane WB LT		F (196.5)	F (196.5)	F (89.0)	F (110.7)	F (524.3)	F (524.3)	F (225.6)	E (67.6)
Macks Lane WB [R]		--	--	D (38.3)	C (34.3)	--	--	D (40.1)	C (24.5)
US Route 9W NB L		F (121.8)	F (121.8)	F (121.8)	F (120.1)	F (87.5)	F (87.5)	F (87.5)	F (93.5)
US Route 9W NB T		C (33.9)	C (33.1)	C (33.1)	E (60.5)	C (27.2)	C (26.9)	C (23.0)	D (37.4)
US Route 9W NB R		C (33.5)	C (32.8)	C (32.8)	D (59.6)	C (27.1)	C (26.8)	C (22.9)	D (37.0)
US Route 9W SB L		F (92.2)	F (92.2)	F (92.2)	F (126.8)	F (239.4)	F (239.4)	F (239.4)	E (58.6)
US Route 9W SB T{R}R		B (16.7)	C (28.2)	C (28.2)	C (23.4)	F (180.9)	F (190.9)	F (142.4)	C (28.6)
Overall		F (102.9)	F (99.6)	E (79.4)	D (52.8)	F (158.2)	F (164.5)	F (100.6)	D (39.2)

S, U = Signalized or Unsignalized intersection

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

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

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

-- = Not Applicable

The sensitivity analysis shows that when additional lanes on Chapel Hill Road, Macks Lane, and Route 9W are implemented, the intersection will operate at an overall LOS D during the AM and PM peak hours with delays comparable to existing conditions. These improvements would require additional analysis for feasibility, as ROW may be necessary. Further, these improvements would meet and exceed the impact of the project so the limits of responsibility will need to be determined.

Queueing Summary

In order to address possible vehicle backup issues on Chapel Hill Road, a queueing study was done on the eastbound leg of the US Route 9W/Chapel Hill Road/Macks Lane. The study was conducted on Wednesday, March 3, 2021 from 4:00 p.m. to 6:00 p.m. and on Thursday, March 4, 2021 from 7:00 a.m. to 9:00 a.m. to obtain data for the AM and PM peak commuting hours. The study showed that during the AM peak hour, the queues on Chapel Hill Road had a 95th-percentile “worst-case condition” of 11 vehicles queued at the intersection. From the observation, queues from Chapel Hill only once backed up past the intersection with S. Chapel Hill Road, blocking cars from entering or exiting. During the PM peak hour, the study showed a 95th-percentile queue of 7 vehicles, and the queues were never backed up past S. Chapel Hill Road. These observations were completed during the pandemic so it is expected that pre-pandemic queues are longer.

4. Conclusions

The proposed project includes the construction of a 3,851 square-foot (SF) *Stewart's Shop* convenience market at 3733 US Route 9W. The project will remove the existing *MAG Auto Corp* used car dealership and single-family house property. Access to the site will be provided via one right-in, right-out driveway on US Route 9W, one right-in, right-out driveway on Chapel Hill Road, and one full access driveway on S. Chapel Hill Road. The proposed project is expected to be completed in 2022. The following is noted regarding the proposed project:

- The project is expected to generate 62 new trips during the AM peak hour and 66 new trips during the PM peak hour.
- The sight distance analysis indicates that all intersection and stopping sight distances for the Site Driveways on US Route 9W and Chapel Hill meet the AASHTO guidelines. Drivers looking left along S. Chapel Hill Road have limited sight distance, but this will improve with the vegetation clearing included with development of the site. After clearing, the sight distance may still be 25 to 80 feet short, but this is not considered critical because stopping sight distances are exceeded and the short road will likely result in vehicles traveling less than 35 mph.
- The US Route 9W/Chapel Hill Road/Macks Lane intersection currently operates at LOS E during the AM peak hour, and LOS D during the PM peak hour. Under the No-Build, Build scenarios, the intersection operates at LOS F during the AM and PM peak hour. A Build with Improvement scenario includes widening Chapel Hill Road for a separate through/right turn lane, and Macks Lane for a separate right turn lane. Under these conditions, the overall intersection delay improves to better than No-Build conditions, but remains at an overall LOS F.
- The analysis indicates that the stop controlled intersections on Chapel Hill Road and US Route 9W operate at LOS C or better during the AM peak hour, and LOS D or better for the PM peak hour, but will be influenced by operations at the traffic signal and delays could be longer at times.
- A sensitivity analysis was completed that included the additional lanes on Chapel Hill Road, Macks Lane, and a second through lane on Route 9W southbound. Under these conditions, the intersection will operate at an overall LOS D during the AM and PM peak hours, comparable to existing conditions. These improvements would require additional analysis for feasibility and would exceed the impact of the project.
- It is recommended that sidewalks be provided along the project frontages with Route 9W and Chapel Hill Road. Further, site features should be located such that future widening does not require significant adjustments to parking, sidewalks, signing, or operations.

If you have any questions regarding the above analysis, please feel free to contact our office.

Respectfully submitted,
Creighton Manning Engineering, LLP



Kenneth W. Wersted, P.E., PTOE
Associate



Mathew Flaherty, EIT
Assistant Project Engineer

Attachments

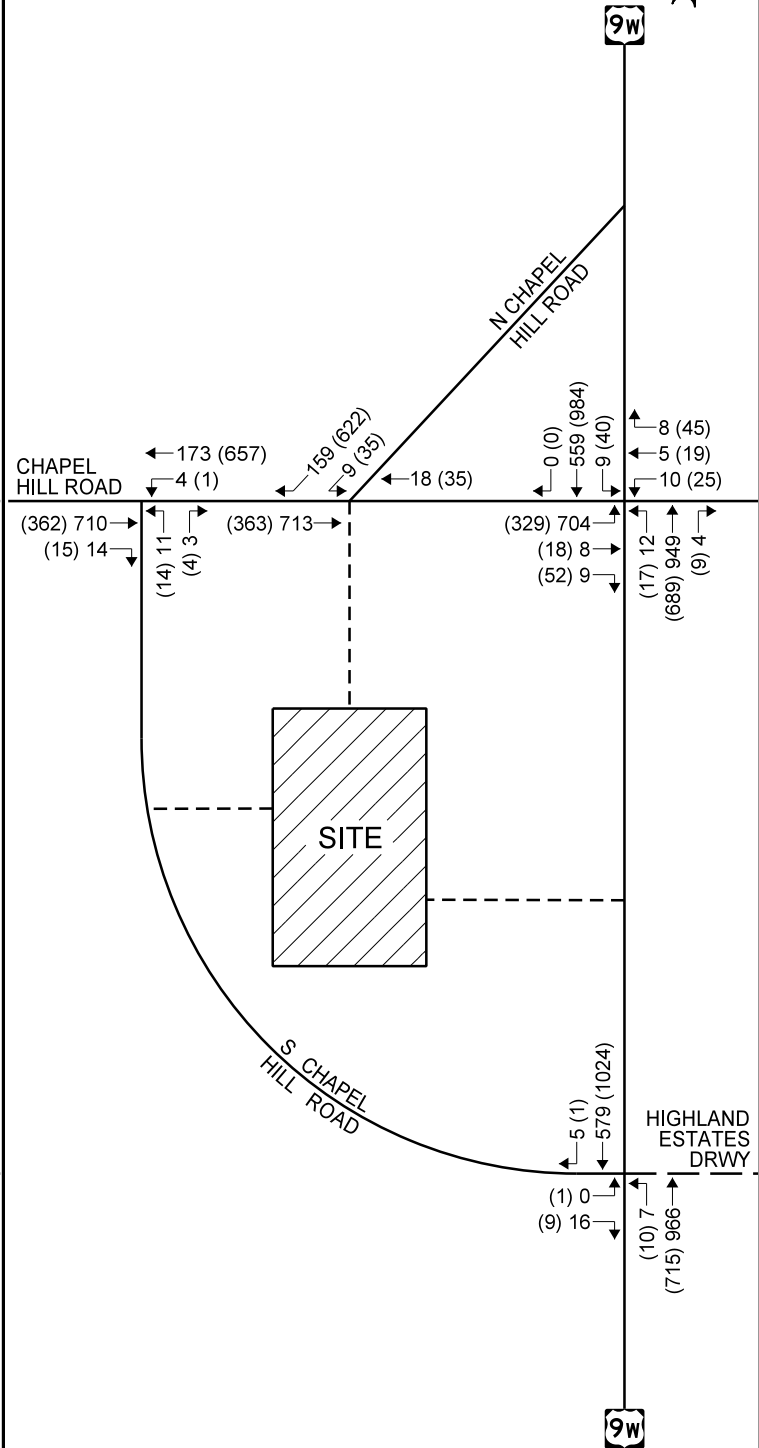
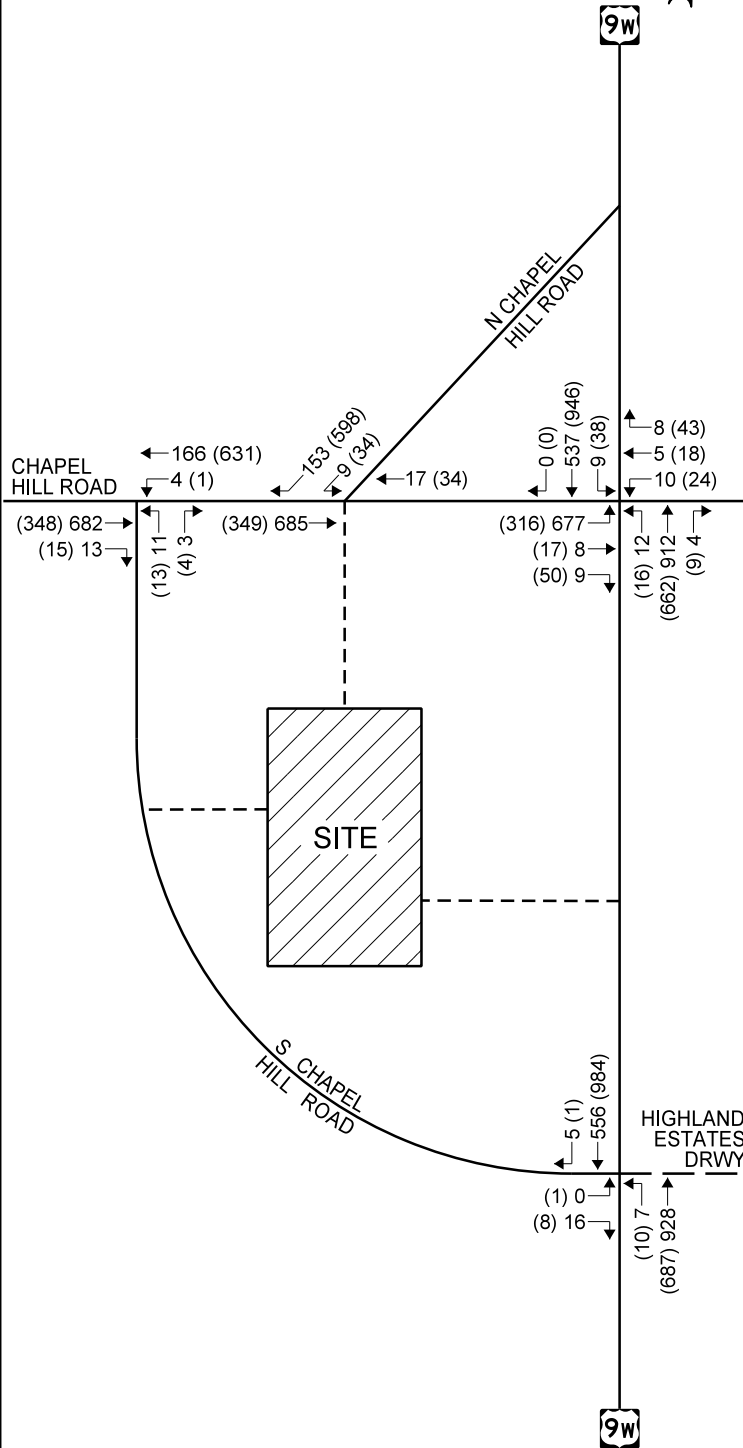
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①

2021 EXISTING

②

2022 BACKGROUND GROWTH



AM PEAK HOUR (PM PEAK HOUR)

AM PEAK HOUR (PM PEAK HOUR)

TRAFFIC VOLUMES

STEWART'S - LLOYD
TOWN OF LLOYD, NEW YORK

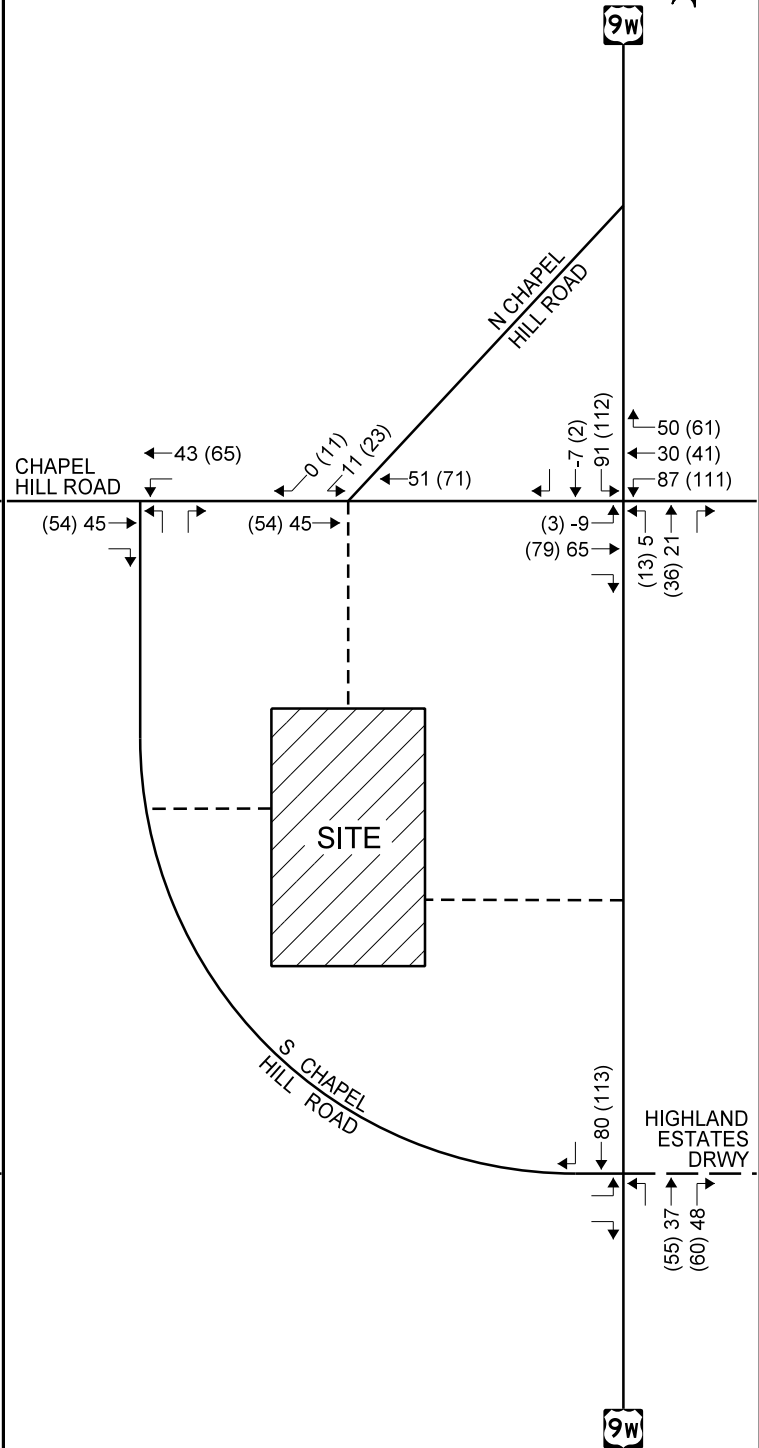
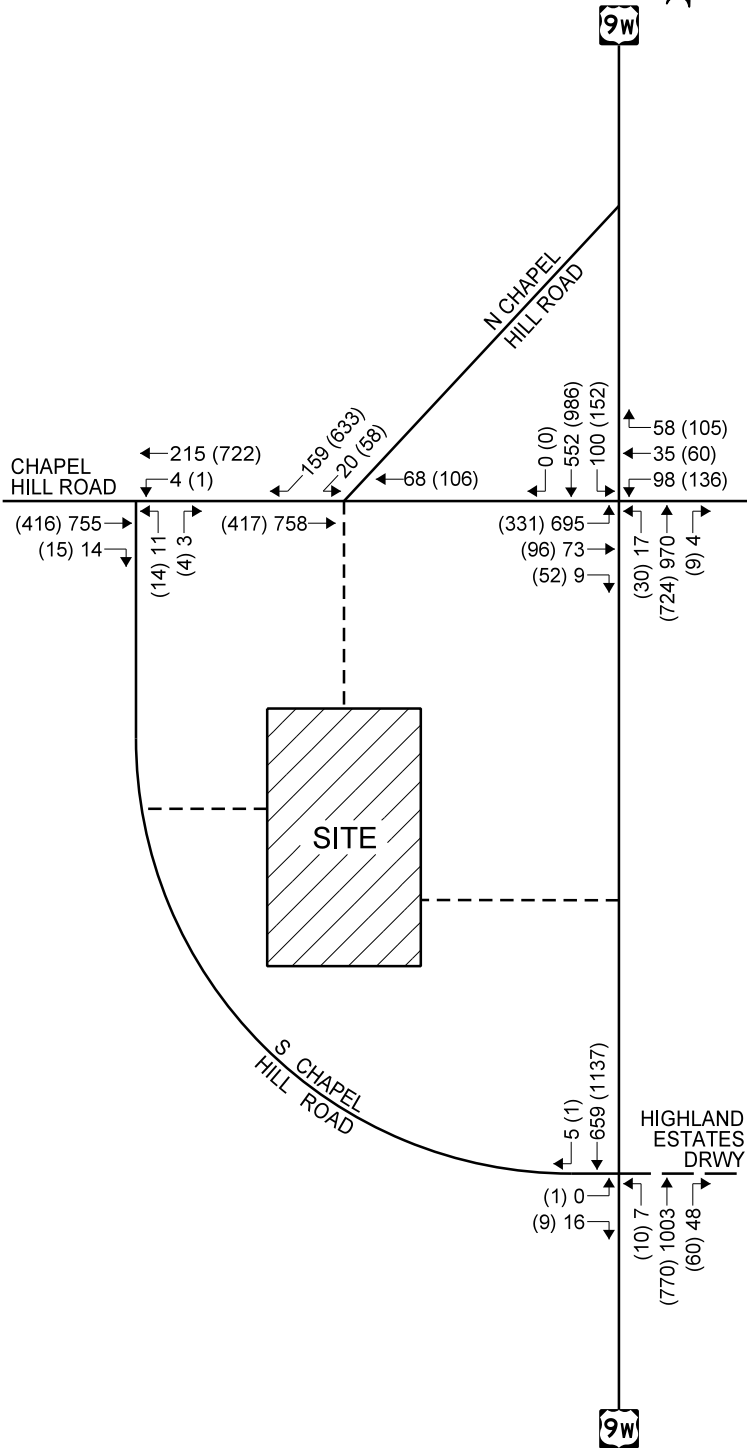


PROJECT: 119-297 DATE: 03/2021 FIGURE: 2

①

2022 NO-BUILD

②

TRIP ASSIGNMENT
OTHER DEVELOPMENTS

AM PEAK HOUR (PM PEAK HOUR)

AM PEAK HOUR (PM PEAK HOUR)

TRAFFIC VOLUMES

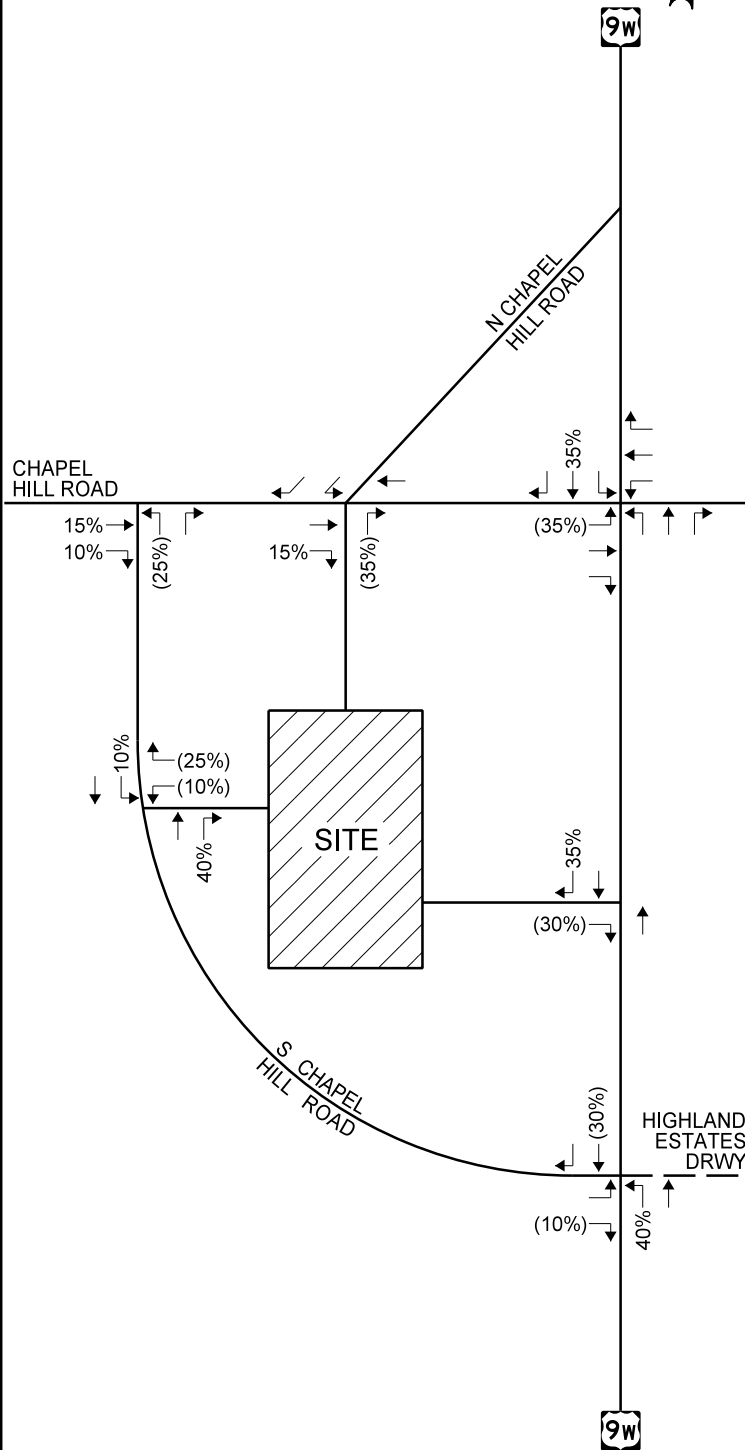
STEWART'S - LLOYD
TOWN OF LLOYD, NEW YORK

PROJECT: 119-297 DATE: 03/2021 FIGURE: 3

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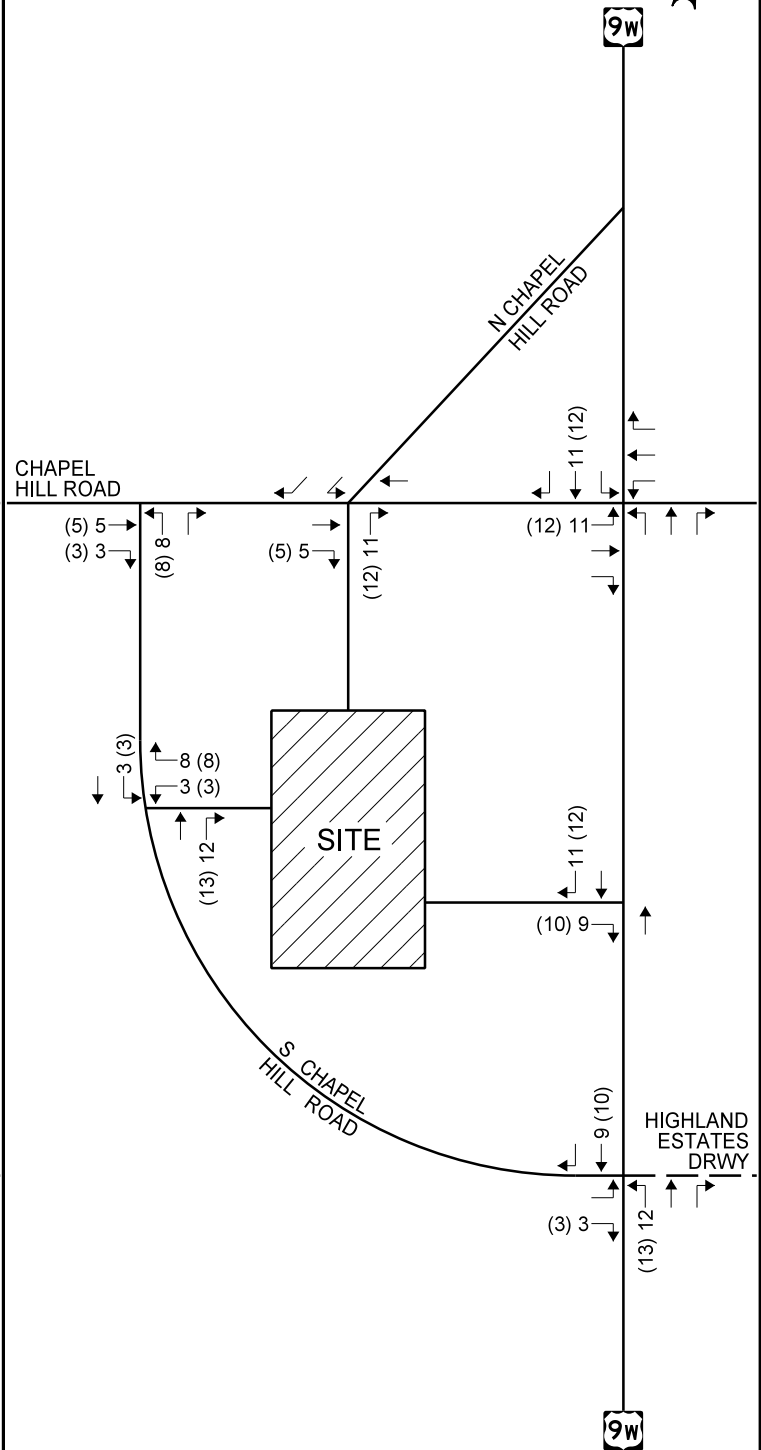
①

TRIP DISTRIBUTION PRIMARY



②

TRIP ASSIGNMENT PRIMARY



ENTER (EXIT)

AM PEAK HOUR (PM PEAK HOUR)

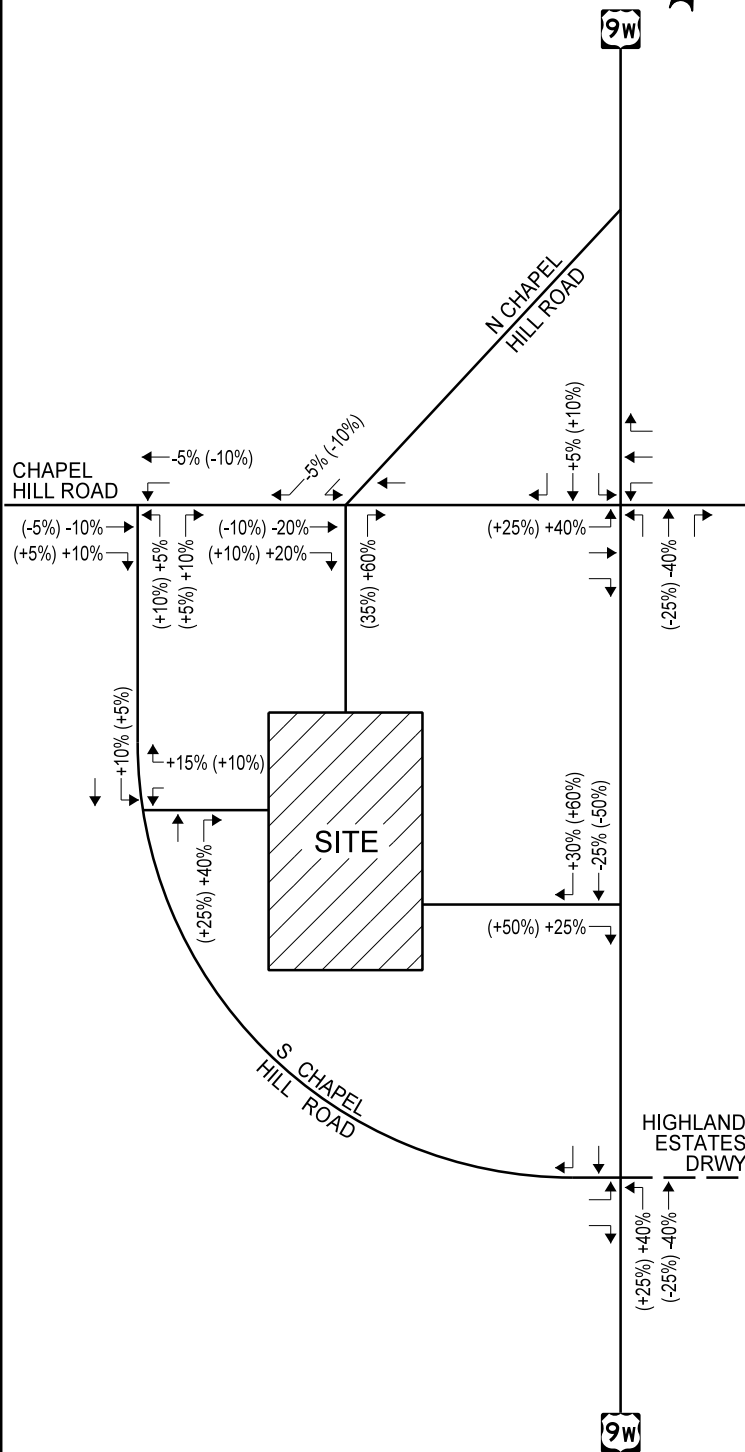
TRAFFIC VOLUMES

STEWART'S - LLOYD
TOWN OF LLOYD, NEW YORK



①

TRIP DISTRIBUTION PASS-BY



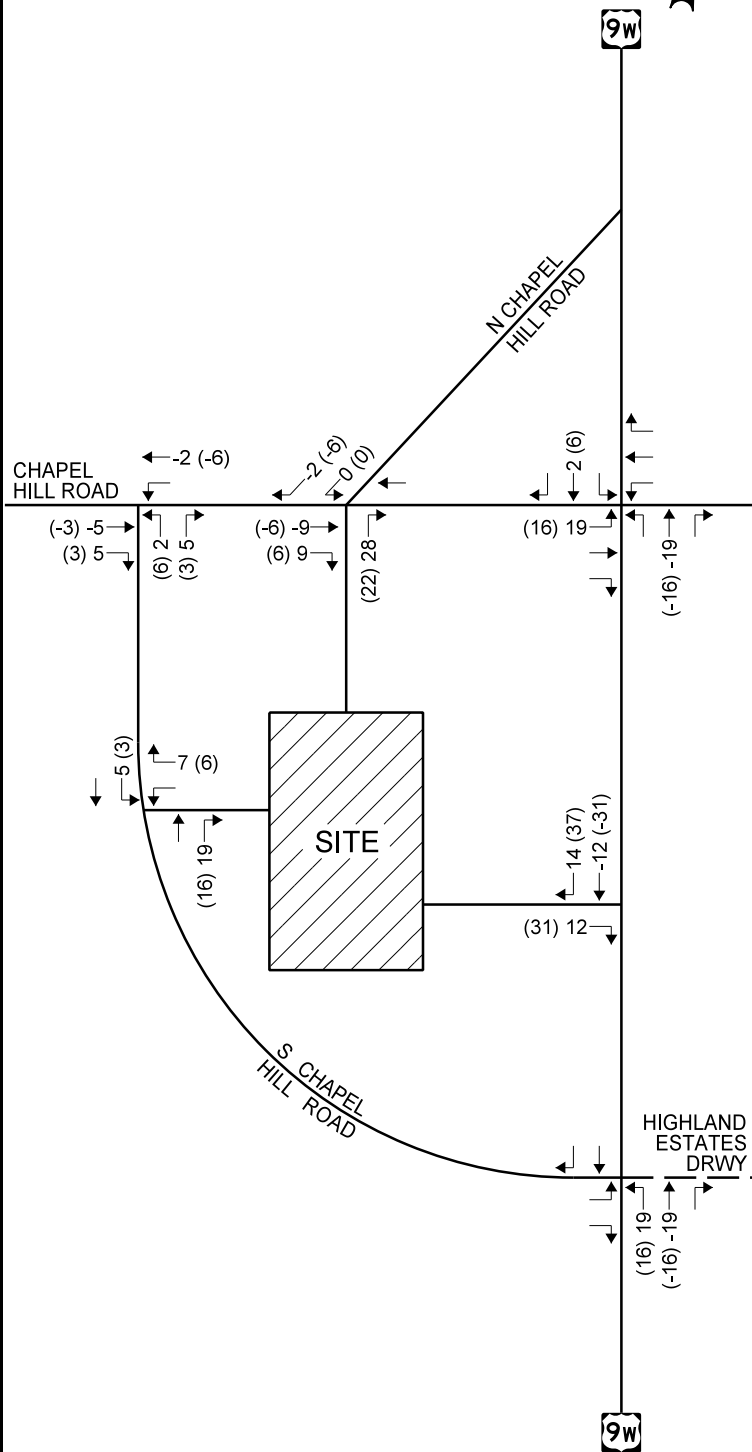
AM PEAK HOUR (PM PEAK HOUR)

TRAFFIC VOLUMES

STEWART'S - LLOYD
TOWN OF LLOYD, NEW YORK

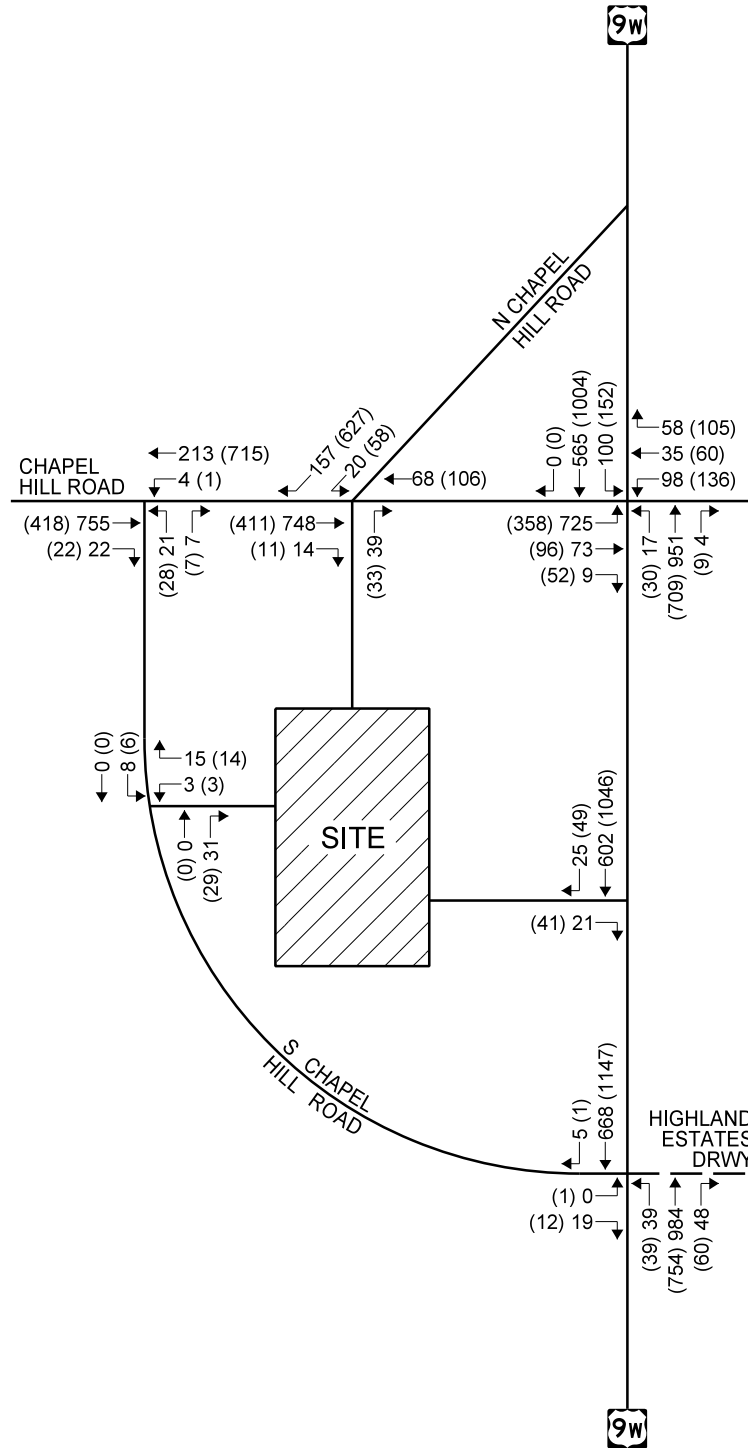
②

TRIP ASSIGNMENT PASS-BY



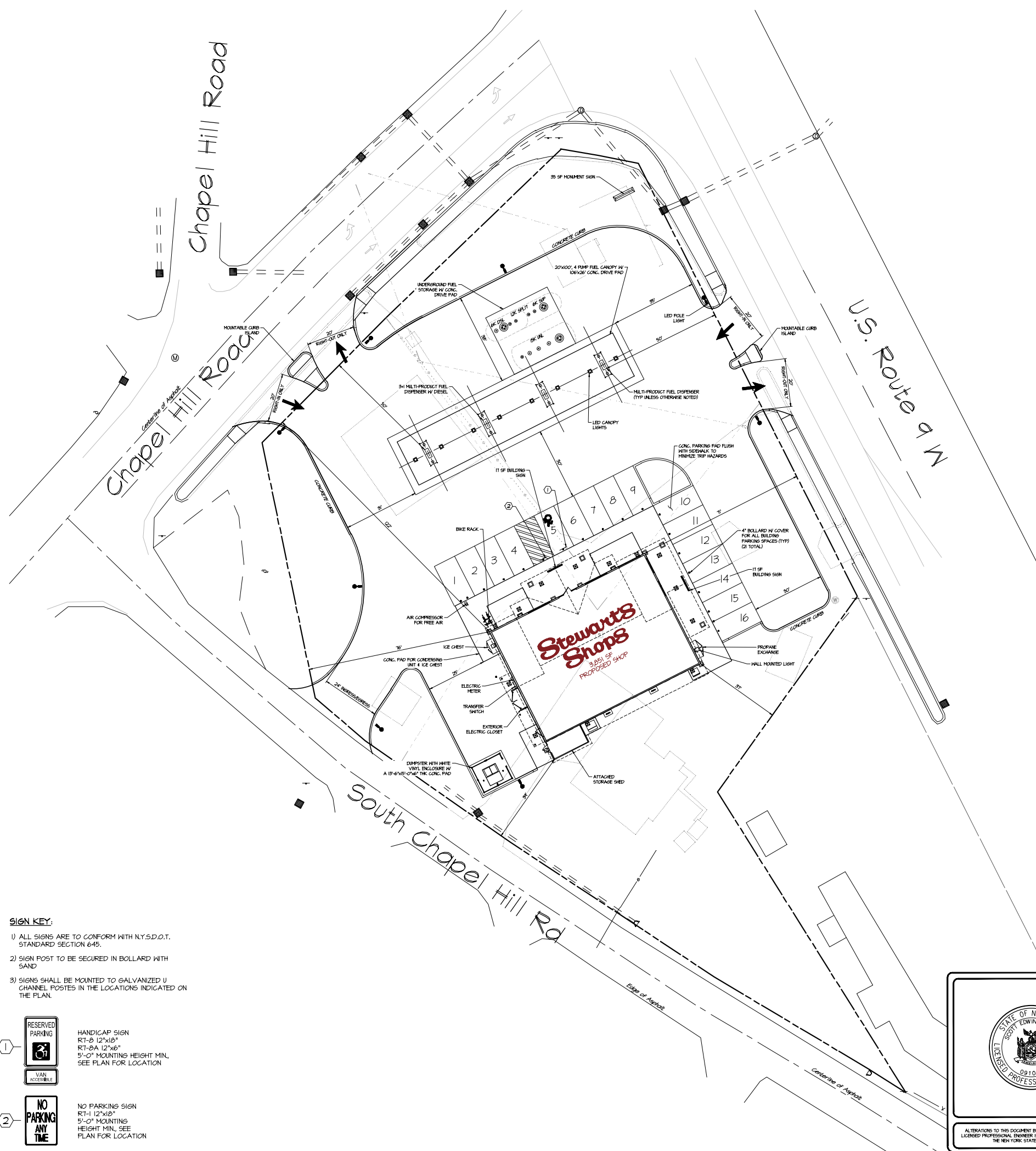
AM PEAK HOUR (PM PEAK HOUR)





Attachment A
Concept Site Plan

Stewarts – Chapel Hill Road
Town of Lloyd, New York



SIGN KEY:

- 1) ALL SIGNS ARE TO CONFORM WITH N.Y.S.D.O.T. STANDARD SECTION 645.
- 2) SIGN POST TO BE SECURED IN BOLLARD WITH SAND
- 3) SIGNS SHALL BE MOUNTED TO GALVANIZED U CHANNEL POSTS IN THE LOCATIONS INDICATED ON THE PLAN.

1




HANDICAP SIGN
RT-8 12"x18"
RT-8A 12"x6"
5'-0" MOUNTING HEIGHT MIN.
SEE PLAN FOR LOCATION

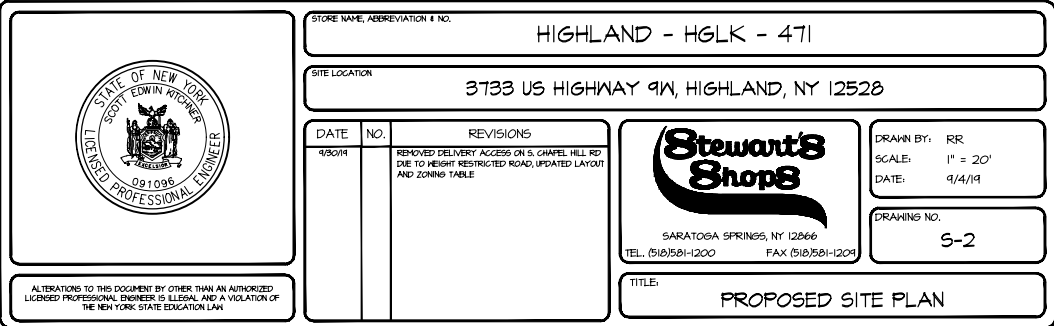
2



NO PARKING SIGN
RT-1 12"x18"
5'-0" MOUNTING HEIGHT MIN.
SEE PLAN FOR LOCATION

SITE LOCATION MAP

SCALE: N.T.S.



Attachment B
Traffic Counts

Stewarts – Chapel Hill Road
Town of Lloyd, New York

119-297 Stewarts - Lloyd - TMC

Wed Mar 3, 2021

Full Length (7 AM-9 AM)

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 817104, Location: 41.694984, -73.966202, Site Code: 119-297



Provided by: Creighton Manning
Engineering, LLP
2 Winners Circle,
Albany, NY, 12205, US

Leg Direction	S. Chapel Hill Rd Eastbound					US Route 9W Northbound					US Route 9W Southbound					
Time	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	Int
2021-03-03 7:00AM	0	2	0	2	0	2	145	0	147	0	112	0	0	112	0	261
7:15AM	0	3	0	3	0	0	176	0	176	0	123	3	0	126	0	305
7:30AM	0	5	0	5	0	3	214	0	217	0	129	0	0	129	0	351
7:45AM	0	4	0	4	0	1	166	0	167	0	117	1	0	118	0	289
Hourly Total	0	14	0	14	0	6	701	0	707	0	481	4	0	485	0	1206
8:00AM	0	1	0	1	0	2	172	0	174	0	125	0	0	125	0	300
8:15AM	0	1	1	2	0	1	161	0	162	0	131	0	0	131	0	295
8:30AM	0	2	0	2	0	3	176	0	179	0	97	0	0	97	0	278
8:45AM	0	1	0	1	0	1	142	0	143	0	94	1	0	95	0	239
Hourly Total	0	5	1	6	0	7	651	0	658	0	447	1	0	448	0	1112
9:00AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	19	1	20	0	13	1352	0	1365	0	928	5	0	933	0	2318
% Approach	0%	95.0%	5.0%	-	-	1.0%	99.0%	0%	-	-	99.5%	0.5%	0%	-	-	-
% Total	0%	0.8%	0%	0.9%	-	0.6%	58.3%	0%	58.9%	-	40.0%	0.2%	0%	40.3%	-	-
Lights	0	19	1	20	-	13	1240	0	1253	-	847	4	0	851	-	2124
% Lights	0%	100%	100%	100%	-	100%	91.7%	0%	91.8%	-	91.3%	80.0%	0%	91.2%	-	91.6%
Articulated Trucks and Single-Unit Trucks	0	0	0	0	-	0	96	0	96	-	67	1	0	68	-	164
% Articulated Trucks and Single-Unit Trucks	0%	0%	0%	0%	-	0%	7.1%	0%	7.0%	-	7.2%	20.0%	0%	7.3%	-	7.1%
Buses	0	0	0	0	-	0	16	0	16	-	14	0	0	14	-	30
% Buses	0%	0%	0%	0%	-	0%	1.2%	0%	1.2%	-	1.5%	0%	0%	1.5%	-	1.3%
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Bicycles on Road	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

119-297 Stewarts - Lloyd - TMC

Wed Mar 3, 2021

Full Length (7 AM-9 AM)

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 817104, Location: 41.694984, -73.966202, Site Code: 119-297



Provided by: Creighton Manning
Engineering, LLP
2 Winners Circle,
Albany, NY, 12205, US

[N] US Route 9W

Total: 2285

In: 933 Out: 1352



[W] S. Chapel Hill Rd

Total: 39

In: 20 Out: 19

Out: 947

In: 1365

Total: 2312

[S] US Route 9W

119-297 Stewarts - Lloyd - TMC

Wed Mar 3, 2021

AM Peak (7:15 AM - 8:15 AM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 817104, Location: 41.694984, -73.966202, Site Code: 119-297



Provided by: Creighton Manning
Engineering, LLP
2 Winners Circle,
Albany, NY, 12205, US

Leg Direction	S. Chapel Hill Rd Eastbound					US Route 9W Northbound					US Route 9W Southbound					
Time	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	Int
2021-03-03 7:15AM	0	3	0	3	0	0	176	0	176	0	123	3	0	126	0	305
7:30AM	0	5	0	5	0	3	214	0	217	0	129	0	0	129	0	351
7:45AM	0	4	0	4	0	1	166	0	167	0	117	1	0	118	0	289
8:00AM	0	1	0	1	0	2	172	0	174	0	125	0	0	125	0	300
Total	0	13	0	13	0	6	728	0	734	0	494	4	0	498	0	1245
% Approach	0%	100%	0%	-	-	0.8%	99.2%	0%	-	-	99.2%	0.8%	0%	-	-	-
% Total	0%	1.0%	0%	1.0%	-	0.5%	58.5%	0%	59.0%	-	39.7%	0.3%	0%	40.0%	-	-
PHF	-	0.650	-	0.650	-	0.500	0.850	-	0.846	-	0.957	0.333	-	0.965	-	0.887
Lights	0	13	0	13	-	6	678	0	684	-	451	3	0	454	-	1151
% Lights	0%	100%	0%	100%	-	100%	93.1%	0%	93.2%	-	91.3%	75.0%	0%	91.2%	-	92.4%
Articulated Trucks and Single-Unit Trucks	0	0	0	0	-	0	41	0	41	-	35	1	0	36	-	77
% Articulated Trucks and Single-Unit Trucks	0%	0%	0%	0%	-	0%	5.6%	0%	5.6%	-	7.1%	25.0%	0%	7.2%	-	6.2%
Buses	0	0	0	0	-	0	9	0	9	-	8	0	0	8	-	17
% Buses	0%	0%	0%	0%	-	0%	1.2%	0%	1.2%	-	1.6%	0%	0%	1.6%	-	1.4%
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Bicycles on Road	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

119-297 Stewarts - Lloyd - TMC

Wed Mar 3, 2021

AM Peak (7:15 AM - 8:15 AM) - Overall Peak Hour

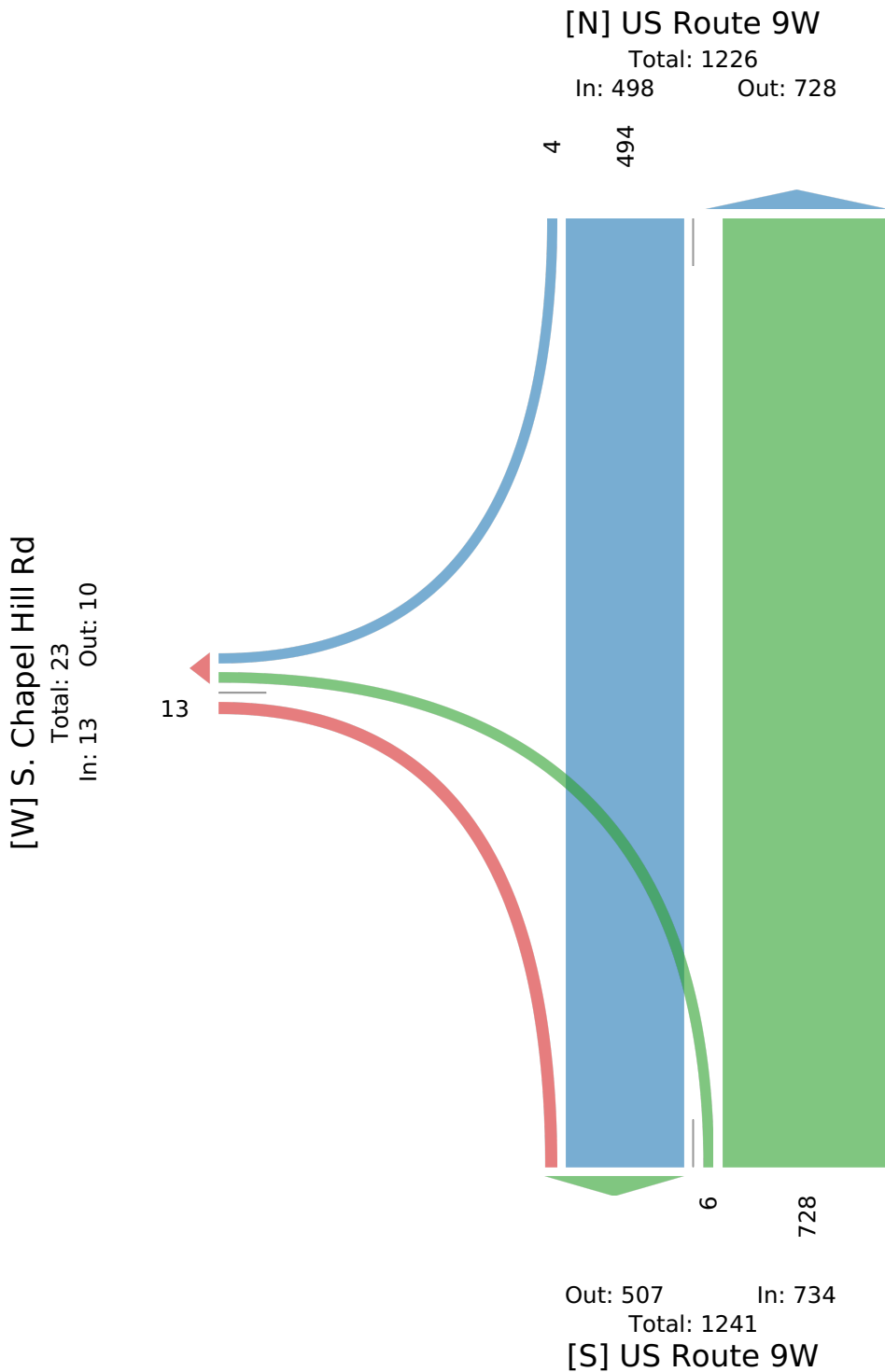
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 817104, Location: 41.694984, -73.966202, Site Code: 119-297



Provided by: Creighton Manning
Engineering, LLP
2 Winners Circle,
Albany, NY, 12205, US



119-297 Stewarts - Lloyd - TMC

Tue Mar 2, 2021

Full Length (4 PM-6 PM)

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 817099, Location: 41.694984, -73.966202, Site Code: 119-297



Provided by: Creighton Manning
Engineering, LLP
2 Winners Circle,
Albany, NY, 12205, US

Leg Direction	West Eastbound					US Route 9W Northbound					US Route 9W Southbound					
Time	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	Int
2021-03-02 4:00PM	0	3	0	3	0	5	157	0	162	0	191	0	0	191	0	356
4:15PM	1	2	0	3	0	4	161	0	165	0	223	1	0	224	0	392
4:30PM	0	1	0	1	0	0	144	0	144	0	189	0	0	189	0	334
4:45PM	0	1	0	1	0	2	174	0	176	0	184	0	0	184	0	361
Hourly Total	1	7	0	8	0	11	636	0	647	0	787	1	0	788	0	1443
5:00PM	0	3	0	3	0	2	175	0	177	0	186	0	0	186	0	366
5:15PM	0	4	0	4	0	4	157	0	161	0	193	0	0	193	0	358
5:30PM	1	3	0	4	0	5	131	0	136	0	165	0	0	165	0	305
5:45PM	0	4	0	4	0	1	126	0	127	0	155	0	0	155	0	286
Hourly Total	1	14	0	15	0	12	589	0	601	0	699	0	0	699	0	1315
6:00PM	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2
Hourly Total	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2
Total	2	21	0	23	0	23	1225	0	1248	0	1488	1	0	1489	0	2760
% Approach	8.7%	91.3%	0%	-	-	1.8%	98.2%	0%	-	-	99.9%	0.1%	0%	-	-	-
% Total	0.1%	0.8%	0%	0.8%	-	0.8%	44.4%	0%	45.2%	-	53.9%	0%	0%	53.9%	-	-
Lights	2	21	0	23	-	23	1190	0	1213	-	1438	1	0	1439	-	2675
% Lights	100%	100%	0%	100%	-	100%	97.1%	0%	97.2%	-	96.6%	100%	0%	96.6%	-	96.9%
Articulated Trucks and Single-Unit Trucks	0	0	0	0	-	0	33	0	33	-	48	0	0	48	-	81
% Articulated Trucks and Single-Unit Trucks	0%	0%	0%	0%	-	0%	2.7%	0%	2.6%	-	3.2%	0%	0%	3.2%	-	2.9%
Buses	0	0	0	0	-	0	2	0	2	-	2	0	0	2	-	4
% Buses	0%	0%	0%	0%	-	0%	0.2%	0%	0.2%	-	0.1%	0%	0%	0.1%	-	0.1%
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Bicycles on Road	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

119-297 Stewarts - Lloyd - TMC

Tue Mar 2, 2021

Full Length (4 PM-6 PM)

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 817099, Location: 41.694984, -73.966202, Site Code: 119-297



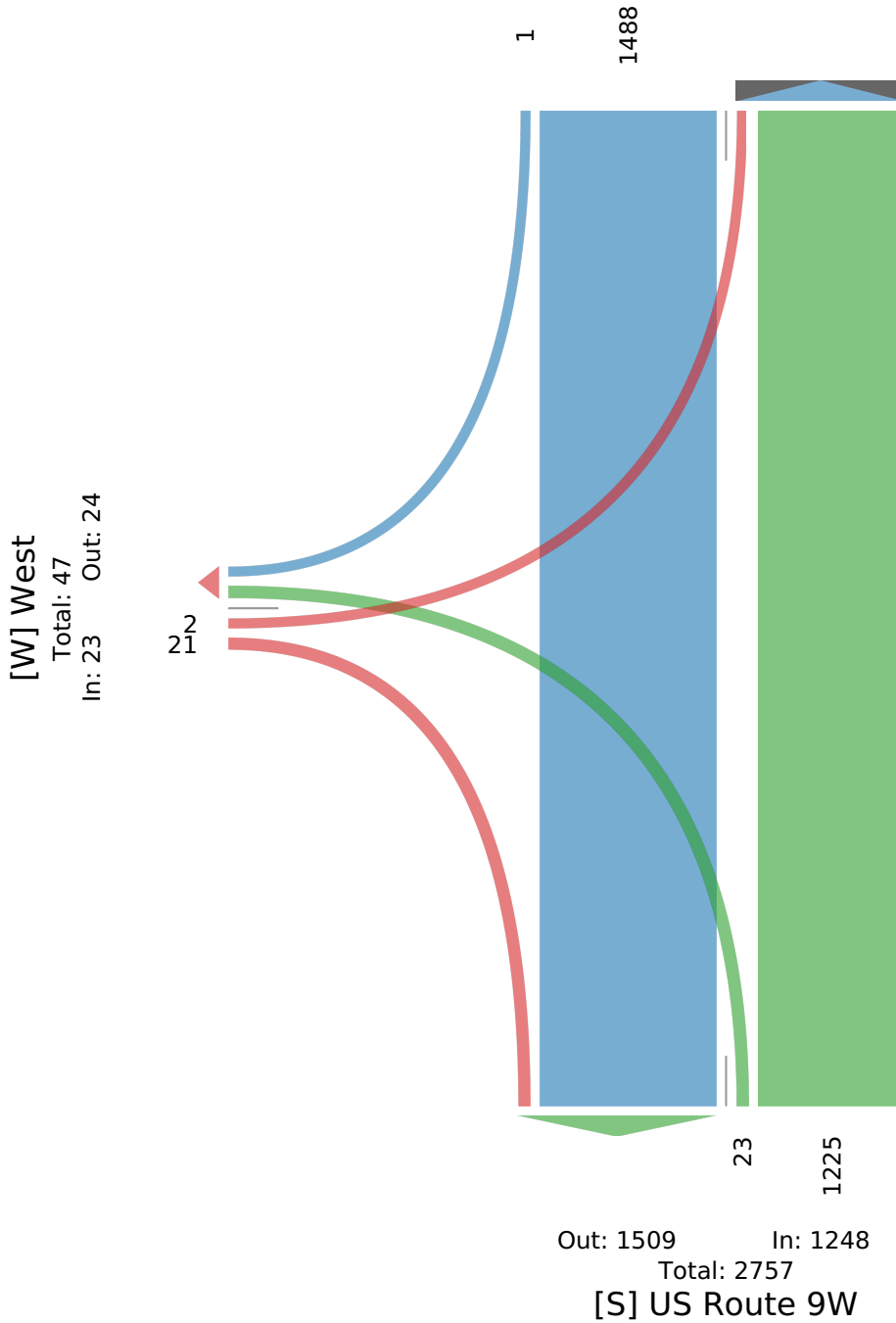
Provided by: Creighton Manning
Engineering, LLP
2 Winners Circle,
Albany, NY, 12205, US

[N] US Route 9W

Total: 2716

In: 1489

Out: 1227



119-297 Stewarts - Lloyd - TMC

Tue Mar 2, 2021

PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 817099, Location: 41.694984, -73.966202, Site Code: 119-297



Provided by: Creighton Manning
Engineering, LLP
2 Winners Circle,
Albany, NY, 12205, US

Leg Direction	West Eastbound					US Route 9W Northbound					US Route 9W Southbound					
Time	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	Int
2021-03-02 4:15PM	1	2	0	3	0	4	161	0	165	0	223	1	0	224	0	392
4:30PM	0	1	0	1	0	0	144	0	144	0	189	0	0	189	0	334
4:45PM	0	1	0	1	0	2	174	0	176	0	184	0	0	184	0	361
5:00PM	0	3	0	3	0	2	175	0	177	0	186	0	0	186	0	366
Total	1	7	0	8	0	8	654	0	662	0	782	1	0	783	0	1453
% Approach	12.5%	87.5%	0%	-	-	1.2%	98.8%	0%	-	-	99.9%	0.1%	0%	-	-	-
% Total	0.1%	0.5%	0%	0.6%	-	0.6%	45.0%	0%	45.6%	-	53.8%	0.1%	0%	53.9%	-	-
PHF	0.250	0.583	-	0.667	-	0.500	0.934	-	0.935	-	0.877	0.250	-	0.874	-	0.927
Lights	1	7	0	8	-	8	634	0	642	-	759	1	0	760	-	1410
% Lights	100%	100%	0%	100%	-	100%	96.9%	0%	97.0%	-	97.1%	100%	0%	97.1%	-	97.0%
Articulated Trucks and Single-Unit Trucks	0	0	0	0	-	0	19	0	19	-	21	0	0	21	-	40
% Articulated Trucks and Single-Unit Trucks	0%	0%	0%	0%	-	0%	2.9%	0%	2.9%	-	2.7%	0%	0%	2.7%	-	2.8%
Buses	0	0	0	0	-	0	1	0	1	-	2	0	0	2	-	3
% Buses	0%	0%	0%	0%	-	0%	0.2%	0%	0.2%	-	0.3%	0%	0%	0.3%	-	0.2%
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Bicycles on Road	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

119-297 Stewarts - Lloyd - TMC

Tue Mar 2, 2021

PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour

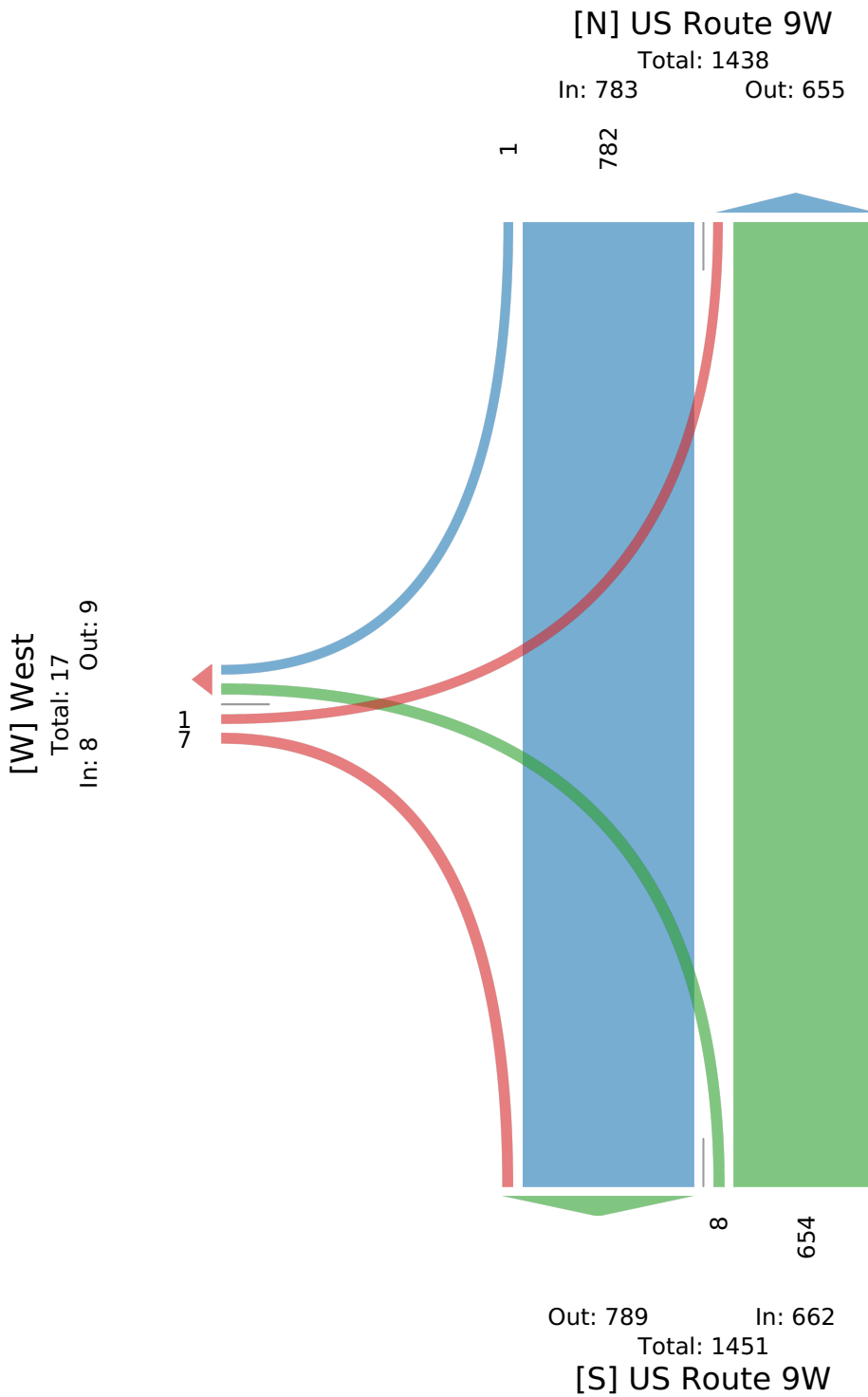
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 817099, Location: 41.694984, -73.966202, Site Code: 119-297



Provided by: Creighton Manning
Engineering, LLP
2 Winners Circle,
Albany, NY, 12205, US



119-297 Stewarts - Lloyd - TMC

Wed Mar 3, 2021

Full Length (7 AM-9 AM)

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 817106, Location: 41.695861, -73.968139, Site Code: 119-297



Provided by: Creighton Manning
Engineering, LLP
2 Winners Circle,
Albany, NY, 12205, US

Leg Direction	Macks Lane Eastbound					Macks Lane Westbound					S. Chapel Hill Rd Northbound					
Time	T	R	U	App	Ped*	L	T	U	App	Ped*	L	R	U	App	Ped*	Int
2021-03-03 7:00AM	107	1	0	108	0	0	35	0	35	0	2	2	0	4	0	147
7:15AM	121	1	0	122	0	1	31	0	32	0	2	0	0	2	0	156
7:30AM	144	4	0	148	0	1	42	0	43	0	3	1	0	4	0	195
7:45AM	114	4	0	118	0	0	36	0	36	0	2	0	0	2	0	156
Hourly Total	486	10	0	496	0	2	144	0	146	0	9	3	0	12	0	654
8:00AM	110	1	0	111	0	0	39	0	39	0	2	0	0	2	0	152
8:15AM	105	1	0	106	0	2	47	0	49	0	1	1	0	2	0	157
8:30AM	114	2	0	116	0	0	30	0	30	0	3	1	0	4	0	150
8:45AM	82	2	0	84	0	1	34	1	36	0	1	2	0	3	0	123
Hourly Total	411	6	0	417	0	3	150	1	154	0	7	4	0	11	0	582
9:00AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	897	16	0	913	0	5	294	1	300	0	16	7	0	23	0	1236
% Approach	98.2%	1.8%	0%	-	-	1.7%	98.0%	0.3%	-	-	69.6%	30.4%	0%	-	-	-
% Total	72.6%	1.3%	0%	73.9%	-	0.4%	23.8%	0.1%	24.3%	-	1.3%	0.6%	0%	1.9%	-	-
Lights	871	16	0	887	-	5	275	1	281	-	15	7	0	22	-	1190
% Lights	97.1%	100%	0%	97.2%	-	100%	93.5%	100%	93.7%	-	93.8%	100%	0%	95.7%	-	96.3%
Articulated Trucks and Single-Unit Trucks	13	0	0	13	-	0	13	0	13	-	1	0	0	1	-	27
% Articulated Trucks and Single-Unit Trucks	1.4%	0%	0%	1.4%	-	0%	4.4%	0%	4.3%	-	6.3%	0%	0%	4.3%	-	2.2%
Buses	13	0	0	13	-	0	6	0	6	-	0	0	0	0	-	19
% Buses	1.4%	0%	0%	1.4%	-	0%	2.0%	0%	2.0%	-	0%	0%	0%	0%	-	1.5%
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Bicycles on Road	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

119-297 Stewarts - Lloyd - TMC

Wed Mar 3, 2021

Full Length (7 AM-9 AM)

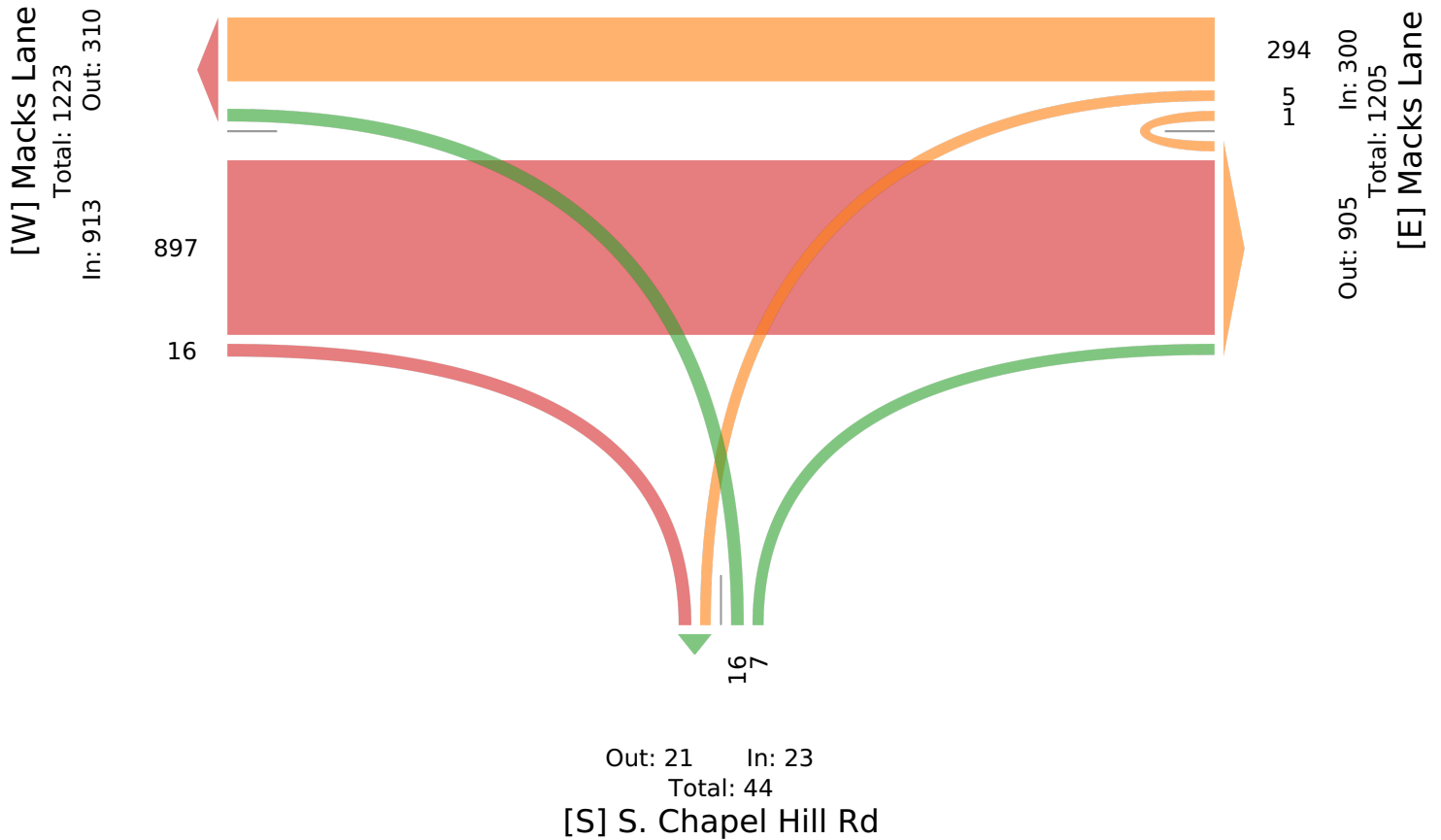
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 817106, Location: 41.695861, -73.968139, Site Code: 119-297



Provided by: Creighton Manning
Engineering, LLP
2 Winners Circle,
Albany, NY, 12205, US



119-297 Stewarts - Lloyd - TMC

Wed Mar 3, 2021

AM Peak (7:30 AM - 8:30 AM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 817106, Location: 41.695861, -73.968139, Site Code: 119-297



Provided by: Creighton Manning
Engineering, LLP
2 Winners Circle,
Albany, NY, 12205, US

Leg Direction	Macks Lane Eastbound					Macks Lane Westbound					S. Chapel Hill Rd Northbound					
Time	T	R	U	App	Ped*	L	T	U	App	Ped*	L	R	U	App	Ped*	Int
2021-03-03 7:30AM	144	4	0	148	0	1	42	0	43	0	3	1	0	4	0	195
7:45AM	114	4	0	118	0	0	36	0	36	0	2	0	0	2	0	156
8:00AM	110	1	0	111	0	0	39	0	39	0	2	0	0	2	0	152
8:15AM	105	1	0	106	0	2	47	0	49	0	1	1	0	2	0	157
Total	473	10	0	483	0	3	164	0	167	0	8	2	0	10	0	660
% Approach	97.9%	2.1%	0%	-	-	1.8%	98.2%	0%	-	-	80.0%	20.0%	0%	-	-	-
% Total	71.7%	1.5%	0%	73.2%	-	0.5%	24.8%	0%	25.3%	-	1.2%	0.3%	0%	1.5%	-	-
PHF	0.821	0.625	-	0.816	-	0.375	0.872	-	0.852	-	0.667	0.500	-	0.625	-	0.846
Lights	456	10	0	466	-	3	155	0	158	-	8	2	0	10	-	634
% Lights	96.4%	100%	0%	96.5%	-	100%	94.5%	0%	94.6%	-	100%	100%	0%	100%	-	96.1%
Articulated Trucks and Single-Unit Trucks	10	0	0	10	-	0	5	0	5	-	0	0	0	0	-	15
% Articulated Trucks and Single-Unit Trucks	2.1%	0%	0%	2.1%	-	0%	3.0%	0%	3.0%	-	0%	0%	0%	0%	-	2.3%
Buses	7	0	0	7	-	0	4	0	4	-	0	0	0	0	-	11
% Buses	1.5%	0%	0%	1.4%	-	0%	2.4%	0%	2.4%	-	0%	0%	0%	0%	-	1.7%
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Bicycles on Road	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

119-297 Stewarts - Lloyd - TMC

Wed Mar 3, 2021

AM Peak (7:30 AM - 8:30 AM) - Overall Peak Hour

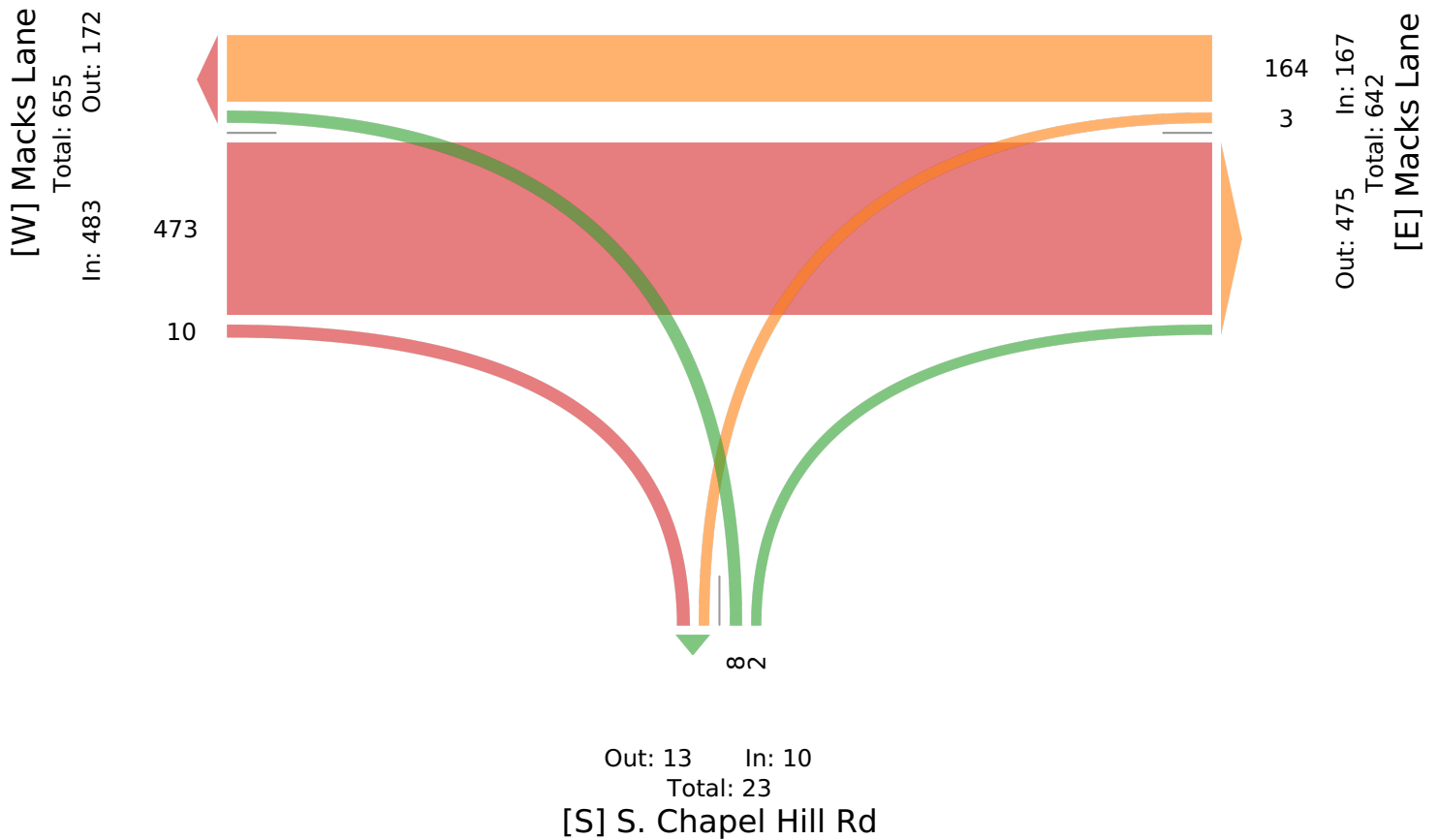
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 817106, Location: 41.695861, -73.968139, Site Code: 119-297



Provided by: Creighton Manning
Engineering, LLP
2 Winners Circle,
Albany, NY, 12205, US



119-297 Stewarts - Lloyd - TMC

Tue Mar 2, 2021

Full Length (4 PM-6 PM)

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 817105, Location: 41.695861, -73.968139, Site Code: 119-297



Provided by: Creighton Manning
Engineering, LLP
2 Winners Circle,
Albany, NY, 12205, US

Leg Direction	Macks Lane Eastbound						Macks Lane Westbound						S. Chapel Hill Rd Northbound						
Time	T	R	U	App	Ped*		L	T	U	App	Ped*		L	R	U	App	Ped*		Int
2021-03-02 4:00PM	88	3	0	91	0		0	94	0	94	0		5	0	0	5	0		190
4:15PM	55	2	0	57	0		2	124	0	126	0		4	0	0	4	0		187
4:30PM	67	2	0	69	0		0	116	0	116	0		1	0	0	1	0		186
4:45PM	68	1	0	69	0		1	103	0	104	0		3	1	0	4	0		177
Hourly Total	278	8	0	286	0		3	437	0	440	0		13	1	0	14	0		740
5:00PM	77	4	0	81	0		0	110	1	111	0		2	1	0	3	0		195
5:15PM	78	4	0	82	0		0	117	0	117	0		4	1	0	5	0		204
5:30PM	66	2	0	68	0		1	104	0	105	0		4	0	0	4	0		177
5:45PM	53	3	0	56	0		1	96	0	97	0		1	0	0	1	0		154
Hourly Total	274	13	0	287	0		2	427	1	430	0		11	2	0	13	0		730
6:00PM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0
Hourly Total	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0
Total	552	21	0	573	0		5	864	1	870	0		24	3	0	27	0		1470
% Approach	96.3%	3.7%	0%	-	-		0.6%	99.3%	0.1%	-	-		88.9%	11.1%	0%	-	-		-
% Total	37.6%	1.4%	0%	39.0%	-		0.3%	58.8%	0.1%	59.2%	-		1.6%	0.2%	0%	1.8%	-		-
Lights	544	21	0	565	-		5	853	1	859	-		24	3	0	27	-		1451
% Lights	98.6%	100%	0%	98.6%	-		100%	98.7%	100%	98.7%	-		100%	100%	0%	100%	-		98.7%
Articulated Trucks and Single-Unit Trucks	7	0	0	7	-		0	11	0	11	-		0	0	0	0	-		18
% Articulated Trucks and Single-Unit Trucks	1.3%	0%	0%	1.2%	-		0%	1.3%	0%	1.3%	-		0%	0%	0%	0%	-		1.2%
Buses	1	0	0	1	-		0	0	0	0	-		0	0	0	0	-		1
% Buses	0.2%	0%	0%	0.2%	-		0%	0%	0%	0%	-		0%	0%	0%	0%	-		0.1%
Bicycles on Road	0	0	0	0	-		0	0	0	0	-		0	0	0	0	-		0
% Bicycles on Road	0%	0%	0%	0%	-		0%	0%	0%	0%	-		0%	0%	0%	0%	-		0%
Pedestrians	-	-	-	-	0		-	-	-	-	0		-	-	-	-	0		-
% Pedestrians	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-
Bicycles on Crosswalk	-	-	-	-	0		-	-	-	-	0		-	-	-	-	0		-
% Bicycles on Crosswalk	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

119-297 Stewarts - Lloyd - TMC

Tue Mar 2, 2021

Full Length (4 PM-6 PM)

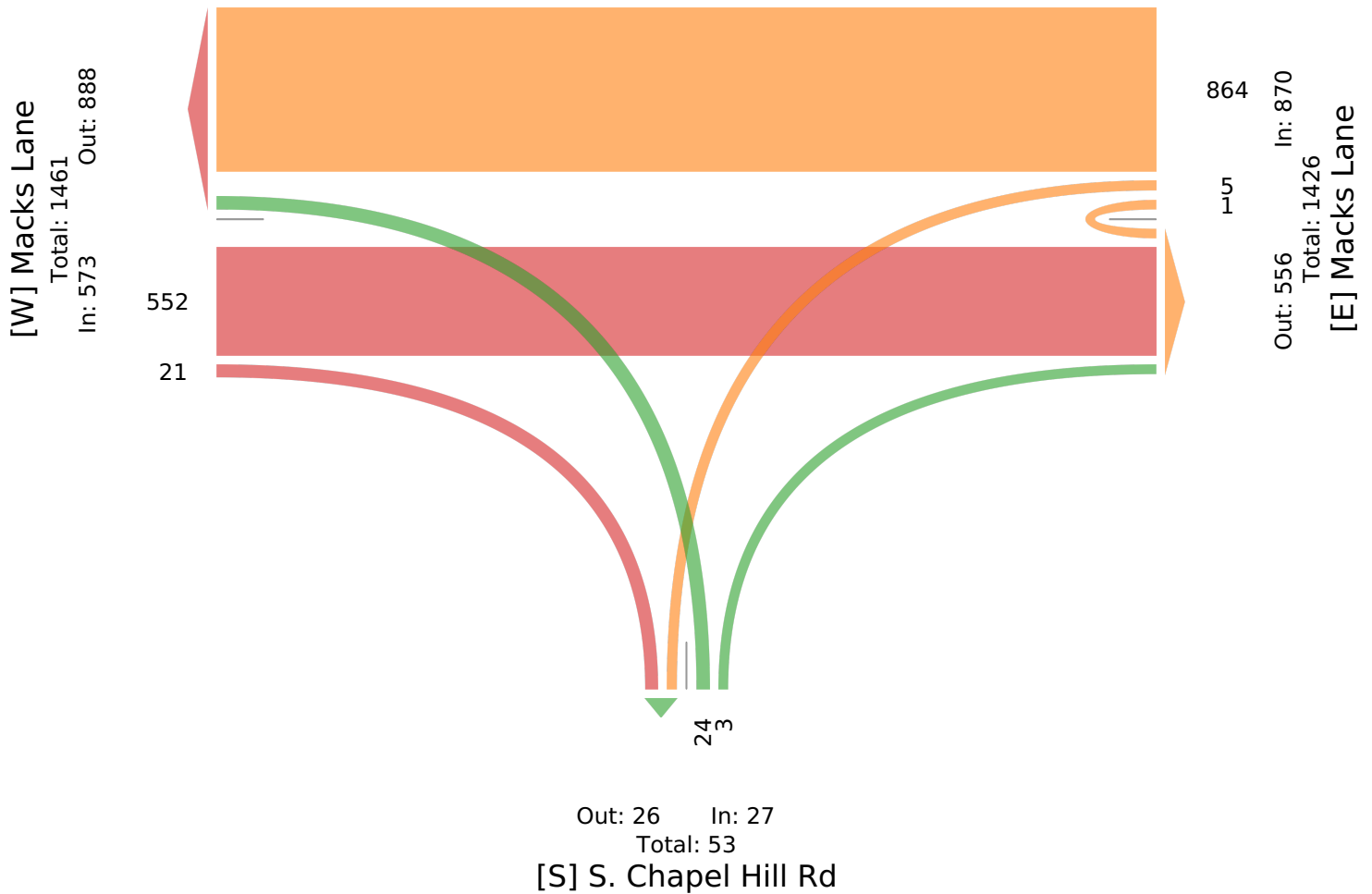
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 817105, Location: 41.695861, -73.968139, Site Code: 119-297



Provided by: Creighton Manning
Engineering, LLP
2 Winners Circle,
Albany, NY, 12205, US



119-297 Stewarts - Lloyd - TMC

Tue Mar 2, 2021

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 817105, Location: 41.695861, -73.968139, Site Code: 119-297



Provided by: Creighton Manning
Engineering, LLP
2 Winners Circle,
Albany, NY, 12205, US

Leg Direction	Macks Lane Eastbound						Macks Lane Westbound						S. Chapel Hill Rd Northbound						
Time	T	R	U	App	Ped*		L	T	U	App	Ped*		L	R	U	App	Ped*		Int
2021-03-02 4:30PM	67	2	0	69	0		0	116	0	116	0		1	0	0	1	0		186
4:45PM	68	1	0	69	0		1	103	0	104	0		3	1	0	4	0		177
5:00PM	77	4	0	81	0		0	110	1	111	0		2	1	0	3	0		195
5:15PM	78	4	0	82	0		0	117	0	117	0		4	1	0	5	0		204
Total	290	11	0	301	0		1	446	1	448	0		10	3	0	13	0		762
% Approach	96.3%	3.7%	0%	-	-		0.2%	99.6%	0.2%	-	-		76.9%	23.1%	0%	-	-		-
% Total	38.1%	1.4%	0%	39.5%	-		0.1%	58.5%	0.1%	58.8%	-		1.3%	0.4%	0%	1.7%	-		-
PHF	0.929	0.688	-	0.918	-		0.250	0.953	0.250	0.957	-		0.625	0.750	-	0.650	-		0.934
Lights	287	11	0	298	-		1	442	1	444	-		10	3	0	13	-		755
% Lights	99.0%	100%	0%	99.0%	-		100%	99.1%	100%	99.1%	-		100%	100%	0%	100%	-		99.1%
Articulated Trucks and Single-Unit Trucks	3	0	0	3	-		0	4	0	4	-		0	0	0	0	-		7
% Articulated Trucks and Single-Unit Trucks	1.0%	0%	0%	1.0%	-		0%	0.9%	0%	0.9%	-		0%	0%	0%	0%	-		0.9%
Buses	0	0	0	0	-		0	0	0	0	-		0	0	0	0	-		0
% Buses	0%	0%	0%	0%	-		0%	0%	0%	0%	-		0%	0%	0%	0%	-		0%
Bicycles on Road	0	0	0	0	-		0	0	0	0	-		0	0	0	0	-		0
% Bicycles on Road	0%	0%	0%	0%	-		0%	0%	0%	0%	-		0%	0%	0%	0%	-		0%
Pedestrians	-	-	-	-	0		-	-	-	-	0		-	-	-	-	0		-
% Pedestrians	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-
Bicycles on Crosswalk	-	-	-	-	0		-	-	-	-	0		-	-	-	-	0		-
% Bicycles on Crosswalk	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

119-297 Stewarts - Lloyd - TMC

Tue Mar 2, 2021

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

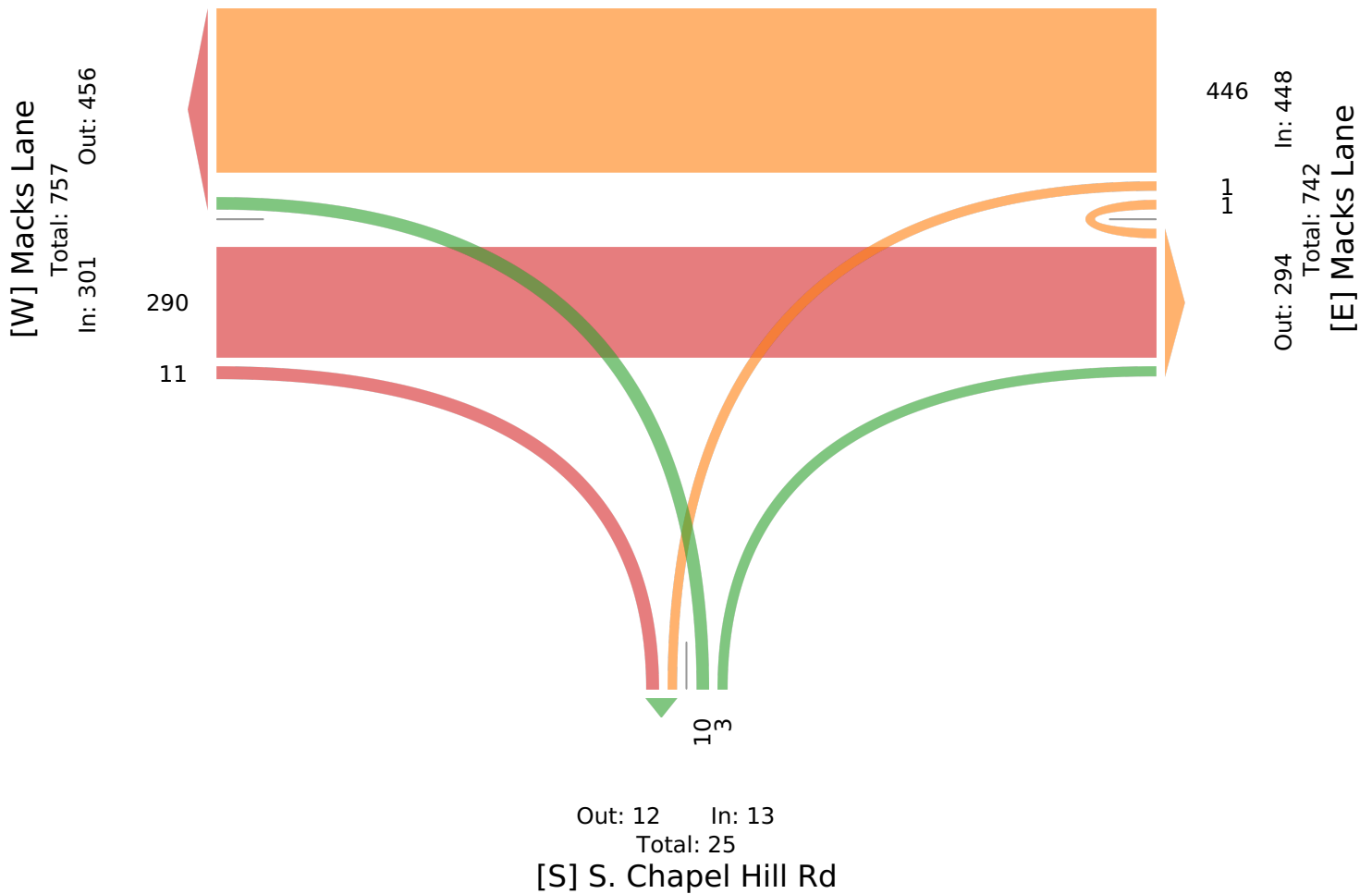
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 817105, Location: 41.695861, -73.968139, Site Code: 119-297



Provided by: Creighton Manning
Engineering, LLP
2 Winners Circle,
Albany, NY, 12205, US



Attachment C
Level of Service Reports

Stewarts – Chapel Hill Road
Town of Lloyd, New York

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	677	8	9	10	5	8	12	912	4	9	537	0
Future Volume (veh/h)	677	8	9	10	5	8	12	912	4	9	537	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1842	1900	1976	1976	1976	1624	1760	1900	1712	1759	1900
Adj Flow Rate, veh/h	760	0	0	11	5	9	13	1002	4	10	590	0
Adj No. of Lanes	2	1	0	0	1	0	1	2	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	12	0	0	0	0	17	8	0	11	8	0
Cap, veh/h	636	333	0	14	6	11	14	1869	7	12	959	0
Arrive On Green	0.18	0.00	0.00	0.02	0.02	0.02	0.01	0.55	0.55	0.01	0.55	0.00
Sat Flow, veh/h	3514	1842	0	801	364	655	1547	3416	14	1630	1759	0
Grp Volume(v), veh/h	760	0	0	25	0	0	13	490	516	10	590	0
Grp Sat Flow(s),veh/h/ln	1757	1842	0	1820	0	0	1547	1672	1757	1630	1759	0
Q Serve(g_s), s	19.0	0.0	0.0	1.4	0.0	0.0	0.9	19.7	19.7	0.6	24.1	0.0
Cycle Q Clear(g_c), s	19.0	0.0	0.0	1.4	0.0	0.0	0.9	19.7	19.7	0.6	24.1	0.0
Prop In Lane	1.00		0.00	0.44		0.36	1.00		0.01	1.00		0.00
Lane Grp Cap(c), veh/h	636	333	0	31	0	0	14	915	962	12	959	0
V/C Ratio(X)	1.20	0.00	0.00	0.81	0.00	0.00	0.93	0.54	0.54	0.85	0.61	0.00
Avail Cap(c_a), veh/h	636	333	0	156	0	0	118	915	962	124	959	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	43.0	0.0	0.0	51.4	0.0	0.0	52.0	15.2	15.2	52.1	16.3	0.0
Incr Delay (d2), s/veh	102.7	0.0	0.0	36.6	0.0	0.0	94.0	2.3	2.1	83.3	2.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.3	0.0	0.0	1.0	0.0	0.0	0.7	9.6	10.0	0.6	12.4	0.0
LnGrp Delay(d),s/veh	145.7	0.0	0.0	88.1	0.0	0.0	146.0	17.5	17.4	135.3	19.3	0.0
LnGrp LOS	F			F			F	B	B	F	B	
Approach Vol, veh/h	760			25			1019			600		
Approach Delay, s/veh	145.7			88.1			19.1			21.2		
Approach LOS	F			F			B			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	7.8	64.5	25.0		7.9	64.3	7.8					
Change Period (Y+Rc), s	7.0	7.0	6.0		7.0	7.0	6.0					
Max Green Setting (Gmax), s	8.0	43.0	19.0		8.0	43.0	9.0					
Max Q Clear Time (g_c+l1), s	2.6	21.7	21.0		2.9	26.1	3.4					
Green Ext Time (p_c), s	0.0	6.1	0.0		0.0	3.3	0.0					
Intersection Summary												
HCM 2010 Ctrl Delay	60.4											
HCM 2010 LOS	E											
Notes												

Intersection

Int Delay, s/veh 0.2

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations						
Traffic Vol, veh/h	0	16	7	928	556	5
Future Vol, veh/h	0	16	7	928	556	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	7	9	2
Mvmt Flow	0	18	8	1043	625	6

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	1687	628	631	0	-	0
Stage 1	628	-	-	-	-	-
Stage 2	1059	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	104	487	961	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	336	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	102	487	961	-	-	-
Mov Cap-2 Maneuver	102	-	-	-	-	-
Stage 1	525	-	-	-	-	-
Stage 2	336	-	-	-	-	-

Approach EB NB SB

HCM Control Delay, s	12.7	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h)	961	-	487	-	-
HCM Lane V/C Ratio	0.008	-	0.037	-	-
HCM Control Delay (s)	8.8	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection

Int Delay, s/veh 1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑		↓	
Traffic Vol, veh/h	0	685	17	0	9	153
Future Vol, veh/h	0	685	17	0	9	153
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	0	3	12	0	11	4
Mvmt Flow	0	825	20	0	11	184

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0 433 20
Stage 1	-	-	- 20 -
Stage 2	-	-	- 413 -
Critical Hdwy	-	-	- 6.765 6.26
Critical Hdwy Stg 1	-	-	- 5.565 -
Critical Hdwy Stg 2	-	-	- 5.965 -
Follow-up Hdwy	-	-	- 3.6045 3.338
Pot Cap-1 Maneuver	0	-	0 546 1051
Stage 1	0	-	0 978 -
Stage 2	0	-	0 615 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- 546 1051
Mov Cap-2 Maneuver	-	-	- 546 -
Stage 1	-	-	- 978 -
Stage 2	-	-	- 615 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	1000
HCM Lane V/C Ratio	-	-	0.195
HCM Control Delay (s)	-	-	9.5
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.7

Intersection

Int Delay, s/veh	0.3					
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	11	3	682	13	4	166
Future Vol, veh/h	11	3	682	13	4	166
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	4	0	0	5
Mvmt Flow	13	4	802	15	5	195

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1015	810	0	0	817
Stage 1	810	-	-	-	-
Stage 2	205	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	266	383	-	-	820
Stage 1	441	-	-	-	-
Stage 2	834	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	264	383	-	-	820
Mov Cap-2 Maneuver	264	-	-	-	-
Stage 1	441	-	-	-	-
Stage 2	828	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	18.5	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	NWL	SWL	SWT
Capacity (veh/h)	-	-	283	820	-
HCM Lane V/C Ratio	-	-	0.058	0.006	-
HCM Control Delay (s)	-	-	18.5	9.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

HCM 6th Signalized Intersection Summary 119-297 Stewarts - Lloyd

4: US Route 9W & Chapel Hill Rd/Macks Ln
2021 Existing_PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	316	17	50	24	18	43	16	662	9	38	946	0
Future Volume (veh/h)	316	17	50	24	18	43	16	662	9	38	946	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1722	1900	1976	1976	1976	1648	1781	1900	1737	1781	1900
Adj Flow Rate, veh/h	412	0	0	26	20	32	18	727	10	42	1040	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	12	0	0	0	0	17	8	0	11	8	0
Cap, veh/h	492	240	0	34	26	41	20	1798	25	52	971	0
Arrive On Green	0.14	0.00	0.00	0.06	0.06	0.06	0.01	0.53	0.53	0.03	0.54	0.00
Sat Flow, veh/h	3534	1722	0	604	465	743	1570	3418	47	1654	1781	0
Grp Volume(v), veh/h	412	0	0	78	0	0	18	360	377	42	1040	0
Grp Sat Flow(s),veh/h/ln	1767	1722	0	1812	0	0	1570	1692	1773	1654	1781	0
Q Serve(g_s), s	11.9	0.0	0.0	4.5	0.0	0.0	1.2	13.4	13.4	2.6	57.2	0.0
Cycle Q Clear(g_c), s	11.9	0.0	0.0	4.5	0.0	0.0	1.2	13.4	13.4	2.6	57.2	0.0
Prop In Lane	1.00		0.00	0.33		0.41	1.00		0.03	1.00		0.00
Lane Grp Cap(c), veh/h	492	240	0	101	0	0	20	890	933	52	971	0
V/C Ratio(X)	0.84	0.00	0.00	0.77	0.00	0.00	0.92	0.40	0.40	0.81	1.07	0.00
Avail Cap(c_a), veh/h	640	312	0	155	0	0	120	890	933	126	971	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.0	0.0	0.0	48.9	0.0	0.0	51.8	15.0	15.0	50.5	23.9	0.0
Incr Delay (d2), s/veh	7.5	0.0	0.0	11.9	0.0	0.0	74.2	1.4	1.3	24.7	50.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	0.0	2.3	0.0	0.0	0.9	5.0	5.2	1.4	34.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.6	0.0	0.0	60.8	0.0	0.0	126.0	16.3	16.3	75.3	73.9	0.0
LnGrp LOS	D	A	A	E	A	A	F	B	B	E	F	A
Approach Vol, veh/h		412			78			755			1082	
Approach Delay, s/veh		51.6			60.8			18.9			73.9	
Approach LOS		D			E			B			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.3	62.2		20.6	8.3	64.2		11.9				
Change Period (Y+Rc), s	7.0	7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s	8.0	43.0		19.0	8.0	43.0		9.0				
Max Q Clear Time (g_c+l1), s	4.6	15.4		13.9	3.2	59.2		6.5				
Green Ext Time (p_c), s	0.0	4.4		0.7	0.0	0.0		0.1				

Intersection Summary

HCM 6th Ctrl Delay 51.7
HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.

Intersection

Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	8	10	687	0	984
Future Vol, veh/h	1	8	10	687	0	984
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	3	3	0
Mvmt Flow	1	9	11	739	0	1058

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1290	529	1058	0	-	0
Stage 1	529	-	-	-	-	-
Stage 2	761	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	182	554	666	-	-	-
Stage 1	595	-	-	-	-	-
Stage 2	465	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	177	554	666	-	-	-
Mov Cap-2 Maneuver	177	-	-	-	-	-
Stage 1	578	-	-	-	-	-
Stage 2	465	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.2	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	666	-	448	-	-
HCM Lane V/C Ratio	0.016	-	0.022	-	-
HCM Control Delay (s)	10.5	0	13.2	-	-
HCM Lane LOS	B	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection

Int Delay, s/veh 11.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑		↓	
Traffic Vol, veh/h	0	352	34	0	34	598
Future Vol, veh/h	0	352	34	0	34	598
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	0	3	12	0	11	4
Mvmt Flow	0	424	41	0	41	720

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 253 41
Stage 1	-	-	- 41 -
Stage 2	-	-	- 212 -
Critical Hdwy	-	-	- 6.765 6.26
Critical Hdwy Stg 1	-	-	- 5.565 -
Critical Hdwy Stg 2	-	-	- 5.965 -
Follow-up Hdwy	-	-	- 3.6045 3.338
Pot Cap-1 Maneuver	0	-	- 0 703 1023
Stage 1	0	-	- 0 957 -
Stage 2	0	-	- 0 780 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- 703 1023
Mov Cap-2 Maneuver	-	-	- 703 -
Stage 1	-	-	- 957 -
Stage 2	-	-	- 780 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	19.1
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	999
HCM Lane V/C Ratio	-	-	0.762
HCM Control Delay (s)	-	-	19.1
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	7.6

Intersection

Int Delay, s/veh	0.3					
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	13	4	348	15	1	631
Future Vol, veh/h	13	4	348	15	1	631
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	14	4	374	16	1	678

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1062	382	0	0	390
Stage 1	382	-	-	-	-
Stage 2	680	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	250	670	-	-	1180
Stage 1	694	-	-	-	-
Stage 2	507	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	250	670	-	-	1180
Mov Cap-2 Maneuver	250	-	-	-	-
Stage 1	694	-	-	-	-
Stage 2	506	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	18.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	NWL	SWL	SWT
Capacity (veh/h)	-	-	293	1180	-
HCM Lane V/C Ratio	-	-	0.062	0.001	-
HCM Control Delay (s)	-	-	18.1	8.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

HCM 6th Signalized Intersection Summary 119-297 Stewarts - Lloyd

4: US Route 9W & Chapel Hill Rd/Macks Ln
2022 No-Build_AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	695	73	9	98	35	58	17	970	4	100	152	0
Future Volume (veh/h)	695	73	9	98	35	58	17	970	4	100	152	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1722	1900	1976	1976	1976	1648	1781	1900	1737	1781	1900
Adj Flow Rate, veh/h	830	0	0	108	38	49	19	1066	4	110	167	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	12	0	0	0	0	17	8	0	11	8	0
Cap, veh/h	640	312	0	87	31	40	21	1416	5	126	842	0
Arrive On Green	0.18	0.00	0.00	0.09	0.09	0.09	0.01	0.41	0.41	0.08	0.47	0.00
Sat Flow, veh/h	3534	1722	0	1020	359	463	1570	3458	13	1654	1781	0
Grp Volume(v), veh/h	830	0	0	195	0	0	19	522	548	110	167	0
Grp Sat Flow(s), veh/h/ln	1767	1722	0	1842	0	0	1570	1692	1779	1654	1781	0
Q Serve(g_s), s	19.0	0.0	0.0	9.0	0.0	0.0	1.3	27.6	27.6	6.9	5.7	0.0
Cycle Q Clear(g_c), s	19.0	0.0	0.0	9.0	0.0	0.0	1.3	27.6	27.6	6.9	5.7	0.0
Prop In Lane	1.00		0.00	0.55		0.25	1.00		0.01	1.00		0.00
Lane Grp Cap(c), veh/h	640	312	0	158	0	0	21	693	729	126	842	0
V/C Ratio(X)	1.30	0.00	0.00	1.24	0.00	0.00	0.91	0.75	0.75	0.87	0.20	0.00
Avail Cap(c_a), veh/h	640	312	0	158	0	0	120	693	729	126	842	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	43.0	0.0	0.0	48.0	0.0	0.0	51.7	26.5	26.5	48.0	16.1	0.0
Incr Delay (d2), s/veh	145.3	0.0	0.0	148.5	0.0	0.0	70.0	7.4	7.1	44.2	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	20.9	0.0	0.0	10.6	0.0	0.0	0.9	11.7	12.2	4.3	2.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	188.3	0.0	0.0	196.5	0.0	0.0	121.8	33.9	33.5	92.2	16.7	0.0
LnGrp LOS	F	A	A	F	A	A	F	C	C	F	B	A
Approach Vol, veh/h	830			195			1089			277		
Approach Delay, s/veh	188.3			196.5			35.2			46.7		
Approach LOS	F			F			D			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	50.0		25.0	8.4	56.6		15.0				
Change Period (Y+Rc), s	7.0	7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s	8.0	43.0		19.0	8.0	43.0		9.0				
Max Q Clear Time (g_c+I1), s	8.9	29.6		21.0	3.3	7.7		11.0				
Green Ext Time (p_c), s	0.0	5.3		0.0	0.0	0.9		0.0				

Intersection Summary

HCM 6th Ctrl Delay 102.9

HCM 6th LOS F

Notes

User approved volume balancing among the lanes for turning movement.

Intersection										
Int Delay, s/veh	0.2									
Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations				↕			↑			
Traffic Vol, veh/h	0	16	7	1003	48	0	659	5	0	0
Future Vol, veh/h	0	16	7	1003	48	0	659	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	-	None	-	-
Storage Length	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	16974	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	17	8	1090	52	0	716	5	0	0
Major/Minor	Minor2		Major1		Major2					
Conflicting Flow All	1851	719	721	0	0	-	-	0		
Stage 1	719	-	-	-	-	-	-	-		
Stage 2	1132	-	-	-	-	-	-	-		
Critical Hdwy	6.42	6.22	4.12	-	-	-	-	-		
Critical Hdwy Stg 1	5.42	-	-	-	-	-	-	-		
Critical Hdwy Stg 2	5.42	-	-	-	-	-	-	-		
Follow-up Hdwy	3.518	3.318	2.218	-	-	-	-	-		
Pot Cap-1 Maneuver	82	428	881	-	-	0	-	-		
Stage 1	483	-	-	-	-	0	-	-		
Stage 2	308	-	-	-	-	0	-	-		
Platoon blocked, %				-	-	-	-	-		
Mov Cap-1 Maneuver	80	428	881	-	-	-	-	-		
Mov Cap-2 Maneuver	80	-	-	-	-	-	-	-		
Stage 1	471	-	-	-	-	-	-	-		
Stage 2	308	-	-	-	-	-	-	-		
Approach	EB		NB		SB					
HCM Control Delay, s	13.8		0.1		0					
HCM LOS	B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBT	SBR				
Capacity (veh/h)	881	-	-	428	-	-				
HCM Lane V/C Ratio	0.009	-	-	0.041	-	-				
HCM Control Delay (s)	9.1	0	-	13.8	-	-				
HCM Lane LOS	A	A	-	B	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	-	-				

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑		↓	↓
Traffic Vol, veh/h	0	758	68	0	20	159
Future Vol, veh/h	0	758	68	0	20	159
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	0	3	12	0	11	4
Mvmt Flow	0	913	82	0	24	192
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	539	82
Stage 1	-	-	-	-	82	-
Stage 2	-	-	-	-	457	-
Critical Hdwy	-	-	-	-	6.765	6.26
Critical Hdwy Stg 1	-	-	-	-	5.565	-
Critical Hdwy Stg 2	-	-	-	-	5.965	-
Follow-up Hdwy	-	-	-	-	3.6045	3.338
Pot Cap-1 Maneuver	0	-	-	0	469	971
Stage 1	0	-	-	0	916	-
Stage 2	0	-	-	0	584	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	469	971
Mov Cap-2 Maneuver	-	-	-	-	469	-
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	584	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		10		
HCM LOS				B		
Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2		
Capacity (veh/h)	-	-	469	971		
HCM Lane V/C Ratio	-	-	0.051	0.197		
HCM Control Delay (s)	-	-	13.1	9.6		
HCM Lane LOS	-	-	B	A		
HCM 95th %tile Q(veh)	-	-	0.2	0.7		

Intersection						
Int Delay, s/veh	0					
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑↱			↑		↱
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.319
Pot Cap-1 Maneuver	-	-	0	-	0	-
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	NB		SB		SW	
HCM Control Delay, s	0		0		0	
HCM LOS					A	
Minor Lane/Major Mvmt	NBT	NBR	SBT	SWLn1		
Capacity (veh/h)		-	-	-	-	
HCM Lane V/C Ratio		-	-	-	-	
HCM Control Delay (s)		-	-	-	0	
HCM Lane LOS		-	-	-	A	
HCM 95th %tile Q(veh)		-	-	-	-	

Intersection						
Int Delay, s/veh	0.3					
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	11	3	755	14	4	215
Future Vol, veh/h	11	3	755	14	4	215
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	3	821	15	4	234
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1071	829	0	0	836	0
Stage 1	829	-	-	-	-	-
Stage 2	242	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	244	370	-	-	798	-
Stage 1	429	-	-	-	-	-
Stage 2	798	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	243	370	-	-	798	-
Mov Cap-2 Maneuver	243	-	-	-	-	-
Stage 1	429	-	-	-	-	-
Stage 2	793	-	-	-	-	-
Approach	NW	NE	SW			
HCM Control Delay, s	19.6	0	0.2			
HCM LOS	C					
Minor Lane/Major Mvmt	NET	NERNWLn1	SWL	SWT		
Capacity (veh/h)	-	-	262	798	-	
HCM Lane V/C Ratio	-	-	0.058	0.005	-	
HCM Control Delay (s)	-	-	19.6	9.5	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	0.2	0	-	

HCM 6th Signalized Intersection Summary 119-297 Stewarts - Lloyd

4: US Route 9W & Chapel Hill Rd/Macks Ln
2022 No-Build_PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	331	96	52	136	60	105	30	724	9	152	986	0
Future Volume (veh/h)	331	96	52	136	60	105	30	724	9	152	986	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1722	1900	1976	1976	1976	1648	1781	1900	1737	1781	1900
Adj Flow Rate, veh/h	263	246	57	149	66	100	33	796	10	167	1084	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	12	0	0	0	0	17	8	0	11	8	0
Cap, veh/h	320	245	57	74	33	50	39	1402	18	126	821	0
Arrive On Green	0.18	0.18	0.18	0.09	0.09	0.09	0.02	0.41	0.41	0.08	0.46	0.00
Sat Flow, veh/h	1767	1352	313	865	383	580	1570	3423	43	1654	1781	0
Grp Volume(v), veh/h	263	0	303	315	0	0	33	394	412	167	1084	0
Grp Sat Flow(s),veh/h/ln	1767	0	1666	1828	0	0	1570	1692	1774	1654	1781	0
Q Serve(g_s), s	15.0	0.0	19.0	9.0	0.0	0.0	2.2	18.8	18.8	8.0	48.4	0.0
Cycle Q Clear(g_c), s	15.0	0.0	19.0	9.0	0.0	0.0	2.2	18.8	18.8	8.0	48.4	0.0
Prop In Lane	1.00		0.19	0.47		0.32	1.00		0.02	1.00		0.00
Lane Grp Cap(c), veh/h	320	0	301	157	0	0	39	693	726	126	821	0
V/C Ratio(X)	0.82	0.00	1.01	2.01	0.00	0.00	0.85	0.57	0.57	1.32	1.32	0.00
Avail Cap(c_a), veh/h	320	0	301	157	0	0	120	693	726	126	821	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.4	0.0	43.0	48.0	0.0	0.0	51.0	23.9	23.9	48.5	28.3	0.0
Incr Delay (d2), s/veh	15.7	0.0	53.2	476.3	0.0	0.0	36.5	3.4	3.2	190.9	152.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	0.0	12.0	24.8	0.0	0.0	1.2	7.6	8.0	9.9	53.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.1	0.0	96.2	524.3	0.0	0.0	87.5	27.2	27.1	239.4	180.9	0.0
LnGrp LOS	E	A	F	F	A	A	F	C	C	F	F	A
Approach Vol, veh/h	566			315			839			1251		
Approach Delay, s/veh	78.0			524.3			29.5			188.7		
Approach LOS	E			F			C			F		
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	15.0	50.0	25.0		9.6	55.4	15.0					
Change Period (Y+Rc), s	7.0	7.0	6.0		7.0	7.0	6.0					
Max Green Setting (Gmax), s	8.0	43.0	19.0		8.0	43.0	9.0					
Max Q Clear Time (g_c+I1), s	10.0	20.8	21.0		4.2	50.4	11.0					
Green Ext Time (p_c), s	0.0	4.6	0.0		0.0	0.0	0.0					

Intersection Summary

HCM 6th Ctrl Delay 158.2

HCM 6th LOS F

Notes

User approved volume balancing among the lanes for turning movement.

Intersection											
Int Delay, s/veh	0.2										
Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR	
Lane Configurations			↕				↑				
Traffic Vol, veh/h	0	9	10	770	60	0	1137	1	0	0	
Future Vol, veh/h	0	9	10	770	60	0	1137	1	0	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	-	None	-	-	None	-	-	
Storage Length	0	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	0	-	-	0	-	-	0	-	16974	-	
Grade, %	0	-	-	0	-	-	0	-	0	-	
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	
Mvmt Flow	0	10	11	837	65	0	1236	1	0	0	
Major/Minor	Minor2		Major1		Major2						
Conflicting Flow All	2129	1237	1237	0	0	-	-	0			
Stage 1	1237	-	-	-	-	-	-	-			
Stage 2	892	-	-	-	-	-	-	-			
Critical Hdwy	6.42	6.22	4.12	-	-	-	-	-			
Critical Hdwy Stg 1	5.42	-	-	-	-	-	-	-			
Critical Hdwy Stg 2	5.42	-	-	-	-	-	-	-			
Follow-up Hdwy	3.518	3.318	2.218	-	-	-	-	-			
Pot Cap-1 Maneuver	55	215	563	-	-	0	-	-			
Stage 1	274	-	-	-	-	0	-	-			
Stage 2	400	-	-	-	-	0	-	-			
Platoon blocked, %				-	-			-			
Mov Cap-1 Maneuver	53	215	563	-	-	-	-	-			
Mov Cap-2 Maneuver	53	-	-	-	-	-	-	-			
Stage 1	263	-	-	-	-	-	-	-			
Stage 2	400	-	-	-	-	-	-	-			
Approach	EB		NB		SB						
HCM Control Delay, s	28.4		0.1		0						
HCM LOS	D										
Minor Lane/Major Mvmt			NBL	NBT	NBR	EBLn1	SBT	SBR			
Capacity (veh/h)	563		-	-	165	-	-				
HCM Lane V/C Ratio	0.019		-	-	0.066	-	-				
HCM Control Delay (s)	11.5		0	-	28.4	-	-				
HCM Lane LOS	B		A	-	D	-	-				
HCM 95th %tile Q(veh)	0.1		-	-	0.2	-	-				

Intersection						
Int Delay, s/veh	13.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑		↓	↓
Traffic Vol, veh/h	0	417	106	0	58	633
Future Vol, veh/h	0	417	106	0	58	633
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	0	3	12	0	11	4
Mvmt Flow	0	502	128	0	70	763
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	379	128
Stage 1	-	-	-	-	128	-
Stage 2	-	-	-	-	251	-
Critical Hdwy	-	-	-	-	6.765	6.26
Critical Hdwy Stg 1	-	-	-	-	5.565	-
Critical Hdwy Stg 2	-	-	-	-	5.965	-
Follow-up Hdwy	-	-	-	-	3.6045	3.338
Pot Cap-1 Maneuver	0	-	-	0	589	916
Stage 1	0	-	-	0	873	-
Stage 2	0	-	-	0	745	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	589	916
Mov Cap-2 Maneuver	-	-	-	-	589	-
Stage 1	-	-	-	-	873	-
Stage 2	-	-	-	-	745	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		23.9		
HCM LOS				C		
Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2		
Capacity (veh/h)	-	-	589	916		
HCM Lane V/C Ratio	-	-	0.119	0.833		
HCM Control Delay (s)	-	-	11.9	25		
HCM Lane LOS	-	-	B	D		
HCM 95th %tile Q(veh)	-	-	0.4	9.9		

Intersection						
Int Delay, s/veh	0					
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑↱			↑		↱
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.319
Pot Cap-1 Maneuver	-	-	0	-	0	-
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	NB		SB		SW	
HCM Control Delay, s	0		0		0	
HCM LOS					A	
Minor Lane/Major Mvmt	NBT	NBR	SBTSWLn1			
Capacity (veh/h)		-	-	-	-	
HCM Lane V/C Ratio		-	-	-	-	
HCM Control Delay (s)		-	-	-	0	
HCM Lane LOS		-	-	-	A	
HCM 95th %tile Q(veh)		-	-	-	-	

Intersection						
Int Delay, s/veh	0.3					
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	14	4	416	15	1	722
Future Vol, veh/h	14	4	416	15	1	722
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	4	452	16	1	785
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1247	460	0	0	468	0
Stage 1	460	-	-	-	-	-
Stage 2	787	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	192	601	-	-	1094	-
Stage 1	636	-	-	-	-	-
Stage 2	449	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	192	601	-	-	1094	-
Mov Cap-2 Maneuver	192	-	-	-	-	-
Stage 1	636	-	-	-	-	-
Stage 2	448	-	-	-	-	-
Approach	NW	NE	SW			
HCM Control Delay, s	22.4	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NET	NERNWLn1	SWL	SWT		
Capacity (veh/h)	-	-	226	1094	-	
HCM Lane V/C Ratio	-	-	0.087	0.001	-	
HCM Control Delay (s)	-	-	22.4	8.3	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	0.3	0	-	

HCM 6th Signalized Intersection Summary 119-297 Stewarts - Lloyd

4: US Route 9W & Chapel Hill Rd/Macks Ln
2022 Build_AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	725	73	9	98	35	58	17	951	4	100	565	0
Future Volume (veh/h)	725	73	9	98	35	58	17	951	4	100	565	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1722	1900	1976	1976	1976	1648	1781	1900	1737	1781	1900
Adj Flow Rate, veh/h	863	0	0	108	38	49	19	1045	4	110	621	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	12	0	0	0	0	17	8	0	11	8	0
Cap, veh/h	640	312	0	87	31	40	21	1416	5	126	842	0
Arrive On Green	0.18	0.00	0.00	0.09	0.09	0.09	0.01	0.41	0.41	0.08	0.47	0.00
Sat Flow, veh/h	3534	1722	0	1020	359	463	1570	3458	13	1654	1781	0
Grp Volume(v), veh/h	863	0	0	195	0	0	19	511	538	110	621	0
Grp Sat Flow(s),veh/h/ln	1767	1722	0	1842	0	0	1570	1692	1779	1654	1781	0
Q Serve(g_s), s	19.0	0.0	0.0	9.0	0.0	0.0	1.3	26.8	26.8	6.9	29.6	0.0
Cycle Q Clear(g_c), s	19.0	0.0	0.0	9.0	0.0	0.0	1.3	26.8	26.8	6.9	29.6	0.0
Prop In Lane	1.00		0.00	0.55		0.25	1.00		0.01	1.00		0.00
Lane Grp Cap(c), veh/h	640	312	0	158	0	0	21	693	729	126	842	0
V/C Ratio(X)	1.35	0.00	0.00	1.24	0.00	0.00	0.91	0.74	0.74	0.87	0.74	0.00
Avail Cap(c_a), veh/h	640	312	0	158	0	0	120	693	729	126	842	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	43.0	0.0	0.0	48.0	0.0	0.0	51.7	26.2	26.2	48.0	22.4	0.0
Incr Delay (d2), s/veh	167.4	0.0	0.0	148.5	0.0	0.0	70.0	6.9	6.6	44.2	5.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	22.9	0.0	0.0	10.6	0.0	0.0	0.9	11.3	11.9	4.3	12.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	210.4	0.0	0.0	196.5	0.0	0.0	121.8	33.1	32.8	92.2	28.2	0.0
LnGrp LOS	F	A	A	F	A	A	F	C	C	F	C	A
Approach Vol, veh/h	863			195			1068			731		
Approach Delay, s/veh	210.4			196.5			34.6			37.8		
Approach LOS	F			F			C			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	50.0		25.0	8.4	56.6		15.0				
Change Period (Y+Rc), s	7.0	7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s	8.0	43.0		19.0	8.0	43.0		9.0				
Max Q Clear Time (g_c+I1), s	8.9	28.8		21.0	3.3	31.6		11.0				
Green Ext Time (p_c), s	0.0	5.3		0.0	0.0	2.9		0.0				

Intersection Summary

HCM 6th Ctrl Delay 99.6

HCM 6th LOS F

Notes

User approved volume balancing among the lanes for turning movement.

Intersection										
Int Delay, s/veh	2.1									
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑↑			↑			↑		
Traffic Vol, veh/h	0	748	14	0	68	0	0	157	0	0
Future Vol, veh/h	0	748	14	0	68	0	0	157	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None	-	-
Storage Length	-	-	-	-	-	-	100	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	83	83	92	92	83	83	92	83	92	92
Heavy Vehicles, %	0	3	2	2	12	0	2	4	2	2
Mvmt Flow	0	901	15	0	82	0	0	189	0	0
Major/Minor	Major1		Major2		Minor2		Minor1			
Conflicting Flow All	-	0	0	-	-	0	533	82	-	458
Stage 1	-	-	-	-	-	-	82	-	-	-
Stage 2	-	-	-	-	-	-	451	-	-	-
Critical Hdwy	-	-	-	-	-	-	7.465	6.26	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.265	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.665	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	3.6045	3.338	-	3.319
Pot Cap-1 Maneuver	0	-	-	0	-	0	427	971	0	551
Stage 1	0	-	-	0	-	0	902	-	0	-
Stage 2	0	-	-	0	-	0	539	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	394	971	-	551
Mov Cap-2 Maneuver	-	-	-	-	-	-	394	-	-	-
Stage 1	-	-	-	-	-	-	902	-	-	-
Stage 2	-	-	-	-	-	-	498	-	-	-
Approach	EB		WB		SB		NW			
HCM Control Delay, s	0		0		10.2		12.1			
HCM LOS					B		B			
Minor Lane/Major Mvmt	NWLn1	EBT	EBR	WBT	SBLn1	SBLn2				
Capacity (veh/h)	551	-	-	-	394	971				
HCM Lane V/C Ratio	0.077	-	-	-	0.061	0.195				
HCM Control Delay (s)	12.1	-	-	-	14.7	9.6				
HCM Lane LOS	B	-	-	-	B	A				
HCM 95th %tile Q(veh)	0.2	-	-	-	0.2	0.7				

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑	
Traffic Vol, veh/h	0	21	0	976	602	25
Future Vol, veh/h	0	21	0	976	602	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	0	1061	654	27
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	668	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	-	-	-	-
Pot Cap-1 Maneuver	0	457	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	457	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	13.3	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 457		-	-		
HCM Lane V/C Ratio	- 0.05		-	-		
HCM Control Delay (s)	- 13.3		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.2		-	-		

Intersection						
Int Delay, s/veh	3.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	15	0	31	8	0
Future Vol, veh/h	3	15	0	31	8	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	16	0	34	9	0
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	35	17	0	0	34	0
Stage 1	17	-	-	-	-	-
Stage 2	18	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	978	1062	-	-	1578	-
Stage 1	1006	-	-	-	-	-
Stage 2	1005	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	972	1062	-	-	1578	-
Mov Cap-2 Maneuver	972	-	-	-	-	-
Stage 1	1006	-	-	-	-	-
Stage 2	999	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.5	0		7.3		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	1046	1578	-	
HCM Lane V/C Ratio	-	-	0.019	0.006	-	
HCM Control Delay (s)	-	-	8.5	7.3	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

Intersection

Int Delay, s/veh 0

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑			↑		↑
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- - - 0
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.93
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.319
Pot Cap-1 Maneuver	-	- 0	- 0 -
Stage 1	-	- 0	- 0 -
Stage 2	-	- 0	- 0 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - -
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

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

Minor Lane/Major Mvmt	NBT	NBR	SBT	SWLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	-

Intersection						
Int Delay, s/veh	0.6					
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	21	7	755	22	4	213
Future Vol, veh/h	21	7	755	22	4	213
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	8	821	24	4	232
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1073	833	0	0	845	0
Stage 1	833	-	-	-	-	-
Stage 2	240	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	244	369	-	-	792	-
Stage 1	427	-	-	-	-	-
Stage 2	800	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	243	369	-	-	792	-
Mov Cap-2 Maneuver	243	-	-	-	-	-
Stage 1	427	-	-	-	-	-
Stage 2	795	-	-	-	-	-
Approach	NW	NE	SW			
HCM Control Delay, s	20.3	0	0.2			
HCM LOS	C					
Minor Lane/Major Mvmt	NET	NERNWLn1	SWL	SWT		
Capacity (veh/h)	-	-	266	792	-	
HCM Lane V/C Ratio	-	-	0.114	0.005	-	
HCM Control Delay (s)	-	-	20.3	9.6	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	0.4	0	-	

Intersection										
Int Delay, s/veh	0.3									
Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations				↕			↑			
Traffic Vol, veh/h	0	19	39	984	48	0	668	5	0	0
Future Vol, veh/h	0	19	39	984	48	0	668	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	-	None	-	-
Storage Length	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	16974	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	21	42	1070	52	0	726	5	0	0
Major/Minor	Minor2		Major1		Major2					
Conflicting Flow All	1909	729	731	0	0	-	-	0		
Stage 1	729	-	-	-	-	-	-	-		
Stage 2	1180	-	-	-	-	-	-	-		
Critical Hdwy	6.42	6.22	4.12	-	-	-	-	-		
Critical Hdwy Stg 1	5.42	-	-	-	-	-	-	-		
Critical Hdwy Stg 2	5.42	-	-	-	-	-	-	-		
Follow-up Hdwy	3.518	3.318	2.218	-	-	-	-	-		
Pot Cap-1 Maneuver	75	423	873	-	-	0	-	-		
Stage 1	477	-	-	-	-	0	-	-		
Stage 2	292	-	-	-	-	0	-	-		
Platoon blocked, %				-	-	-	-	-		
Mov Cap-1 Maneuver	65	423	873	-	-	-	-	-		
Mov Cap-2 Maneuver	65	-	-	-	-	-	-	-		
Stage 1	415	-	-	-	-	-	-	-		
Stage 2	292	-	-	-	-	-	-	-		
Approach	EB		NB		SB					
HCM Control Delay, s	13.9		0.3		0					
HCM LOS	B									
Minor Lane/Major Mvmt	NBL		NBT	NBR	EBLn1	SBT	SBR			
Capacity (veh/h)	873		-	-	423	-	-			
HCM Lane V/C Ratio	0.049		-	-	0.049	-	-			
HCM Control Delay (s)	9.3		0	-	13.9	-	-			
HCM Lane LOS	A		A	-	B	-	-			
HCM 95th %tile Q(veh)	0.2		-	-	0.2	-	-			

HCM 6th Signalized Intersection Summary 119-297 Stewarts - Lloyd

4: US Route 9W & Chapel Hill Rd/Macks Ln
2022 Build_PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	358	96	52	136	60	105	30	709	9	152	1004	0
Future Volume (veh/h)	358	96	52	136	60	105	30	709	9	152	1004	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1722	1900	1976	1976	1976	1648	1781	1900	1737	1781	1900
Adj Flow Rate, veh/h	278	267	57	149	66	100	33	779	10	167	1103	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	12	0	0	0	0	17	8	0	11	8	0
Cap, veh/h	320	249	53	74	33	50	39	1401	18	126	821	0
Arrive On Green	0.18	0.18	0.18	0.09	0.09	0.09	0.02	0.41	0.41	0.08	0.46	0.00
Sat Flow, veh/h	1767	1376	294	865	383	580	1570	3422	44	1654	1781	0
Grp Volume(v), veh/h	278	0	324	315	0	0	33	385	404	167	1103	0
Grp Sat Flow(s),veh/h/ln	1767	0	1669	1828	0	0	1570	1692	1774	1654	1781	0
Q Serve(g_s), s	16.1	0.0	19.0	9.0	0.0	0.0	2.2	18.3	18.3	8.0	48.4	0.0
Cycle Q Clear(g_c), s	16.1	0.0	19.0	9.0	0.0	0.0	2.2	18.3	18.3	8.0	48.4	0.0
Prop In Lane	1.00		0.18	0.47		0.32	1.00		0.02	1.00		0.00
Lane Grp Cap(c), veh/h	320	0	302	157	0	0	39	693	726	126	821	0
V/C Ratio(X)	0.87	0.00	1.07	2.01	0.00	0.00	0.85	0.56	0.56	1.32	1.34	0.00
Avail Cap(c_a), veh/h	320	0	302	157	0	0	120	693	726	126	821	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.8	0.0	43.0	48.0	0.0	0.0	51.0	23.7	23.7	48.5	28.3	0.0
Incr Delay (d2), s/veh	21.7	0.0	72.4	476.3	0.0	0.0	36.5	3.2	3.1	190.9	162.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	13.6	24.8	0.0	0.0	1.2	7.4	7.8	9.9	55.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.5	0.0	115.4	524.3	0.0	0.0	87.5	26.9	26.8	239.4	190.9	0.0
LnGrp LOS	E	A	F	F	A	A	F	C	C	F	F	A
Approach Vol, veh/h	602			315			822			1270		
Approach Delay, s/veh	91.5			524.3			29.3			197.3		
Approach LOS	F			F			C			F		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	50.0		25.0	9.6	55.4		15.0				
Change Period (Y+Rc), s	7.0	7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s	8.0	43.0		19.0	8.0	43.0		9.0				
Max Q Clear Time (g_c+I1), s	10.0	20.3		21.0	4.2	50.4		11.0				
Green Ext Time (p_c), s	0.0	4.5		0.0	0.0	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay 164.5

HCM 6th LOS F

Notes

User approved volume balancing among the lanes for turning movement.

Intersection										
Int Delay, s/veh	0.4									
Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations				↕			↑			
Traffic Vol, veh/h	0	12	39	754	60	0	1147	1	0	0
Future Vol, veh/h	0	12	39	754	60	0	1147	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	-	None	-	-
Storage Length	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	16974	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	13	42	820	65	0	1247	1	0	0

Major/Minor	Minor2	Major1	Major2					
Conflicting Flow All	2185	1248	1248	0	0	-	-	0
Stage 1	1248	-	-	-	-	-	-	-
Stage 2	937	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	50	211	558	-	-	0	-	-
Stage 1	271	-	-	-	-	0	-	-
Stage 2	381	-	-	-	-	0	-	-
Platoon blocked, %				-	-	-	-	-
Mov Cap-1 Maneuver	43	211	558	-	-	-	-	-
Mov Cap-2 Maneuver	43	-	-	-	-	-	-	-
Stage 1	230	-	-	-	-	-	-	-
Stage 2	381	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	29.3	0.5	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBT	SBR
Capacity (veh/h)	558	-	-	162	-	-
HCM Lane V/C Ratio	0.076	-	-	0.087	-	-
HCM Control Delay (s)	12	0	-	29.3	-	-
HCM Lane LOS	B	A	-	D	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	-	-

Intersection										
Int Delay, s/veh	13.2									
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑↑			↑			↑		
Traffic Vol, veh/h	0	411	11	0	106	0	0	627	0	0
Future Vol, veh/h	0	411	11	0	106	0	0	627	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None	-	-
Storage Length	-	-	-	-	-	-	100	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	83	83	92	92	83	83	92	83	92	92
Heavy Vehicles, %	0	3	2	2	12	0	2	4	2	2
Mvmt Flow	0	495	12	0	128	0	0	755	0	0
Major/Minor	Major1		Major2		Minor2		Minor1			
Conflicting Flow All	-	0	0	-	-	0	376	128	-	254
Stage 1	-	-	-	-	-	-	128	-	-	-
Stage 2	-	-	-	-	-	-	248	-	-	-
Critical Hdwy	-	-	-	-	-	-	7.465	6.26	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.265	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.665	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	3.6045	3.338	-	3.319
Pot Cap-1 Maneuver	0	-	-	0	-	0	550	916	0	746
Stage 1	0	-	-	0	-	0	852	-	0	-
Stage 2	0	-	-	0	-	0	713	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	524	916	-	746
Mov Cap-2 Maneuver	-	-	-	-	-	-	524	-	-	-
Stage 1	-	-	-	-	-	-	852	-	-	-
Stage 2	-	-	-	-	-	-	679	-	-	-
Approach	EB		WB		SB		NW			
HCM Control Delay, s	0		0		23.4		10.1			
HCM LOS					C		B			
Minor Lane/Major Mvmt	NWLn1	EBT	EBR	WBT	SBLn1	SBLn2				
Capacity (veh/h)	746	-	-	-	524	916				
HCM Lane V/C Ratio	0.048	-	-	-	0.133	0.825				
HCM Control Delay (s)	10.1	-	-	-	12.9	24.4				
HCM Lane LOS	B	-	-	-	B	C				
HCM 95th %tile Q(veh)	0.2	-	-	-	0.5	9.6				

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑	
Traffic Vol, veh/h	0	41	0	746	1046	49
Future Vol, veh/h	0	41	0	746	1046	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	45	0	811	1137	53
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	1164	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	-	-	-	-
Pot Cap-1 Maneuver	0	236	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	236	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	23.8	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	236	-	-		
HCM Lane V/C Ratio	-	0.189	-	-		
HCM Control Delay (s)	-	23.8	-	-		
HCM Lane LOS	-	C	-	-		
HCM 95th %tile Q(veh)	-	0.7	-	-		

Intersection						
Int Delay, s/veh	3.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	14	0	29	6	0
Future Vol, veh/h	3	14	0	29	6	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	15	0	32	7	0
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	30	16	0	0	32	0
Stage 1	16	-	-	-	-	-
Stage 2	14	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	984	1063	-	-	1580	-
Stage 1	1007	-	-	-	-	-
Stage 2	1009	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	980	1063	-	-	1580	-
Mov Cap-2 Maneuver	980	-	-	-	-	-
Stage 1	1007	-	-	-	-	-
Stage 2	1005	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.5	0		7.3		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	1047	1580	-	
HCM Lane V/C Ratio	-	-	0.018	0.004	-	
HCM Control Delay (s)	-	-	8.5	7.3	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

Intersection						
Int Delay, s/veh	0					
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑↱			↑		↱
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.319
Pot Cap-1 Maneuver	-	-	0	-	0	-
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	NB		SB		SW	
HCM Control Delay, s	0		0		0	
HCM LOS					A	
Minor Lane/Major Mvmt	NBT	NBR	SBTSWLn1			
Capacity (veh/h)		-	-	-	-	
HCM Lane V/C Ratio		-	-	-	-	
HCM Control Delay (s)		-	-	-	0	
HCM Lane LOS		-	-	-	A	
HCM 95th %tile Q(veh)		-	-	-	-	

Intersection						
Int Delay, s/veh	0.7					
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	28	7	418	29	1	715
Future Vol, veh/h	28	7	418	29	1	715
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	8	454	32	1	777
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1249	470	0	0	486	0
Stage 1	470	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	191	594	-	-	1077	-
Stage 1	629	-	-	-	-	-
Stage 2	452	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	191	594	-	-	1077	-
Mov Cap-2 Maneuver	191	-	-	-	-	-
Stage 1	629	-	-	-	-	-
Stage 2	451	-	-	-	-	-
Approach	NW	NE	SW			
HCM Control Delay, s	24.6	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NET	NERNWLn1	SWL	SWT		
Capacity (veh/h)	-	-	221	1077	-	
HCM Lane V/C Ratio	-	-	0.172	0.001	-	
HCM Control Delay (s)	-	-	24.6	8.3	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	0.6	0	-	

HCM 6th Signalized Intersection Summary
119-297 Stewarts - Lloyd

4: US Route 9W & Chapel Hill Rd/Macks Ln
2022 Build w/ Imp_AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	725	73	9	98	35	58	17	951	4	100	565	0
Future Volume (veh/h)	725	73	9	98	35	58	17	951	4	100	565	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1722	1900	1976	1976	1976	1648	1781	1900	1737	1781	1900
Adj Flow Rate, veh/h	797	80	10	108	38	49	19	1045	4	110	621	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	12	0	0	0	0	17	8	0	11	8	0
Cap, veh/h	620	272	34	121	43	271	21	1416	5	126	842	0
Arrive On Green	0.18	0.18	0.18	0.09	0.09	0.09	0.01	0.41	0.41	0.08	0.47	0.00
Sat Flow, veh/h	3428	1501	188	1410	496	1675	1570	3458	13	1654	1781	0
Grp Volume(v), veh/h	797	0	90	146	0	49	19	511	538	110	621	0
Grp Sat Flow(s), veh/h/ln	1714	0	1688	1906	0	1675	1570	1692	1779	1654	1781	0
Q Serve(g_s), s	19.0	0.0	4.8	8.0	0.0	2.7	1.3	26.8	26.8	6.9	29.6	0.0
Cycle Q Clear(g_c), s	19.0	0.0	4.8	8.0	0.0	2.7	1.3	26.8	26.8	6.9	29.6	0.0
Prop In Lane	1.00		0.11	0.74		1.00	1.00		0.01	1.00		0.00
Lane Grp Cap(c), veh/h	620	0	306	163	0	271	21	693	729	126	842	0
V/C Ratio(X)	1.28	0.00	0.29	0.89	0.00	0.18	0.91	0.74	0.74	0.87	0.74	0.00
Avail Cap(c_a), veh/h	620	0	306	163	0	271	120	693	729	126	842	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	43.0	0.0	37.2	47.5	0.0	38.0	51.7	26.2	26.2	48.0	22.4	0.0
Incr Delay (d2), s/veh	140.1	0.0	0.5	41.4	0.0	0.3	70.0	6.9	6.6	44.2	5.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.8	0.0	2.0	5.6	0.0	1.1	0.9	11.3	11.9	4.3	12.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	183.1	0.0	37.7	89.0	0.0	38.3	121.8	33.1	32.8	92.2	28.2	0.0
LnGrp LOS	F	A	D	F	A	D	F	C	C	F	C	A
Approach Vol, veh/h		887			195			1068			731	
Approach Delay, s/veh		168.4			76.2			34.6			37.8	
Approach LOS		F			E			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	50.0		25.0	8.4	56.6		15.0				
Change Period (Y+Rc), s	7.0	7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s	8.0	43.0		19.0	8.0	43.0		9.0				
Max Q Clear Time (g_c+I1), s	8.9	28.8		21.0	3.3	31.6		10.0				
Green Ext Time (p_c), s	0.0	5.3		0.0	0.0	2.9		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			79.4									
HCM 6th LOS			E									

Intersection										
Int Delay, s/veh	0.3									
Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations				↕			↑			
Traffic Vol, veh/h	0	19	39	984	48	0	668	5	0	0
Future Vol, veh/h	0	19	39	984	48	0	668	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	-	None	-	-
Storage Length	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	16974	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	21	42	1070	52	0	726	5	0	0
Major/Minor	Minor2		Major1		Major2					
Conflicting Flow All	1909	729	731	0	0	-	-	0		
Stage 1	729	-	-	-	-	-	-	-		
Stage 2	1180	-	-	-	-	-	-	-		
Critical Hdwy	6.42	6.22	4.12	-	-	-	-	-		
Critical Hdwy Stg 1	5.42	-	-	-	-	-	-	-		
Critical Hdwy Stg 2	5.42	-	-	-	-	-	-	-		
Follow-up Hdwy	3.518	3.318	2.218	-	-	-	-	-		
Pot Cap-1 Maneuver	75	423	873	-	-	0	-	-		
Stage 1	477	-	-	-	-	0	-	-		
Stage 2	292	-	-	-	-	0	-	-		
Platoon blocked, %				-	-	-	-	-		
Mov Cap-1 Maneuver	65	423	873	-	-	-	-	-		
Mov Cap-2 Maneuver	65	-	-	-	-	-	-	-		
Stage 1	415	-	-	-	-	-	-	-		
Stage 2	292	-	-	-	-	-	-	-		
Approach	EB		NB		SB					
HCM Control Delay, s	13.9		0.3		0					
HCM LOS	B									
Minor Lane/Major Mvmt	NBL		NBT	NBR	EBLn1	SBT	SBR			
Capacity (veh/h)	873		-	-	423	-	-			
HCM Lane V/C Ratio	0.049		-	-	0.049	-	-			
HCM Control Delay (s)	9.3		0	-	13.9	-	-			
HCM Lane LOS	A		A	-	B	-	-			
HCM 95th %tile Q(veh)	0.2		-	-	0.2	-	-			

Intersection										
Int Delay, s/veh	2.1									
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑↑			↑			↑		
Traffic Vol, veh/h	0	748	14	0	68	0	0	157	0	0
Future Vol, veh/h	0	748	14	0	68	0	0	157	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None	-	-
Storage Length	-	-	-	-	-	-	100	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	83	83	92	92	83	83	92	83	92	92
Heavy Vehicles, %	0	3	2	2	12	0	2	4	2	2
Mvmt Flow	0	901	15	0	82	0	0	189	0	0
Major/Minor	Major1		Major2		Minor2		Minor1			
Conflicting Flow All	-	0	0	-	-	0	533	82	-	458
Stage 1	-	-	-	-	-	-	82	-	-	-
Stage 2	-	-	-	-	-	-	451	-	-	-
Critical Hdwy	-	-	-	-	-	-	7.465	6.26	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.265	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.665	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	3.6045	3.338	-	3.319
Pot Cap-1 Maneuver	0	-	-	0	-	0	427	971	0	551
Stage 1	0	-	-	0	-	0	902	-	0	-
Stage 2	0	-	-	0	-	0	539	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	394	971	-	551
Mov Cap-2 Maneuver	-	-	-	-	-	-	394	-	-	-
Stage 1	-	-	-	-	-	-	902	-	-	-
Stage 2	-	-	-	-	-	-	498	-	-	-
Approach	EB		WB		SB		NW			
HCM Control Delay, s	0		0		10.2		12.1			
HCM LOS					B		B			
Minor Lane/Major Mvmt	NWLn1	EBT	EBR	WBT	SBLn1	SBLn2				
Capacity (veh/h)	551	-	-	-	394	971				
HCM Lane V/C Ratio	0.077	-	-	-	0.061	0.195				
HCM Control Delay (s)	12.1	-	-	-	14.7	9.6				
HCM Lane LOS	B	-	-	-	B	A				
HCM 95th %tile Q(veh)	0.2	-	-	-	0.2	0.7				

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑	
Traffic Vol, veh/h	0	21	0	976	602	25
Future Vol, veh/h	0	21	0	976	602	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	0	1061	654	27
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	668	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	-	-	-	-
Pot Cap-1 Maneuver	0	457	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	457	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	13.3	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 457		-	-		
HCM Lane V/C Ratio	- 0.05		-	-		
HCM Control Delay (s)	- 13.3		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.2		-	-		

Intersection						
Int Delay, s/veh	3.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	15	0	31	8	0
Future Vol, veh/h	3	15	0	31	8	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	16	0	34	9	0
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	35	17	0	0	34	0
Stage 1	17	-	-	-	-	-
Stage 2	18	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	978	1062	-	-	1578	-
Stage 1	1006	-	-	-	-	-
Stage 2	1005	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	972	1062	-	-	1578	-
Mov Cap-2 Maneuver	972	-	-	-	-	-
Stage 1	1006	-	-	-	-	-
Stage 2	999	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.5	0		7.3		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	1046	1578	-	
HCM Lane V/C Ratio	-	-	0.019	0.006	-	
HCM Control Delay (s)	-	-	8.5	7.3	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

Intersection						
Int Delay, s/veh	0					
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑↱			↑		↱
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.319
Pot Cap-1 Maneuver	-	-	0	-	0	-
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	NB		SB		SW	
HCM Control Delay, s	0		0		0	
HCM LOS					A	
Minor Lane/Major Mvmt	NBT	NBR	SBTSWLn1			
Capacity (veh/h)		-	-	-	-	
HCM Lane V/C Ratio		-	-	-	-	
HCM Control Delay (s)		-	-	-	0	
HCM Lane LOS		-	-	-	A	
HCM 95th %tile Q(veh)		-	-	-	-	

Intersection						
Int Delay, s/veh	0.6					
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	21	7	755	22	4	213
Future Vol, veh/h	21	7	755	22	4	213
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	8	821	24	4	232
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1073	833	0	0	845	0
Stage 1	833	-	-	-	-	-
Stage 2	240	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	244	369	-	-	792	-
Stage 1	427	-	-	-	-	-
Stage 2	800	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	243	369	-	-	792	-
Mov Cap-2 Maneuver	243	-	-	-	-	-
Stage 1	427	-	-	-	-	-
Stage 2	795	-	-	-	-	-
Approach	NW	NE	SW			
HCM Control Delay, s	20.3	0	0.2			
HCM LOS	C					
Minor Lane/Major Mvmt	NET	NERNWLn1	SWL	SWT		
Capacity (veh/h)	-	-	266	792	-	
HCM Lane V/C Ratio	-	-	0.114	0.005	-	
HCM Control Delay (s)	-	-	20.3	9.6	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	0.4	0	-	

HCM 6th Signalized Intersection Summary
119-297 Stewarts - Lloyd

4: US Route 9W & Chapel Hill Rd/Macks Ln
2021 Build w/ Imp._PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	358	96	52	136	60	105	30	709	9	152	1004	0
Future Volume (veh/h)	358	96	52	136	60	105	30	709	9	152	1004	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1722	1900	1976	1976	1976	1648	1781	1900	1737	1781	1900
Adj Flow Rate, veh/h	393	105	57	149	66	100	33	779	10	167	1103	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	12	0	0	0	0	17	8	0	11	8	0
Cap, veh/h	484	148	80	113	50	271	39	1537	20	126	892	0
Arrive On Green	0.14	0.14	0.14	0.09	0.09	0.09	0.02	0.45	0.45	0.08	0.50	0.00
Sat Flow, veh/h	3428	1050	570	1324	586	1675	1570	3422	44	1654	1781	0
Grp Volume(v), veh/h	393	0	162	215	0	100	33	385	404	167	1103	0
Grp Sat Flow(s),veh/h/ln	1714	0	1620	1910	0	1675	1570	1692	1774	1654	1781	0
Q Serve(g_s), s	11.7	0.0	10.0	9.0	0.0	5.6	2.2	17.0	17.0	8.0	52.6	0.0
Cycle Q Clear(g_c), s	11.7	0.0	10.0	9.0	0.0	5.6	2.2	17.0	17.0	8.0	52.6	0.0
Prop In Lane	1.00		0.35	0.69		1.00	1.00		0.02	1.00		0.00
Lane Grp Cap(c), veh/h	484	0	229	164	0	271	39	760	797	126	892	0
V/C Ratio(X)	0.81	0.00	0.71	1.31	0.00	0.37	0.85	0.51	0.51	1.32	1.24	0.00
Avail Cap(c_a), veh/h	620	0	293	164	0	271	120	760	797	126	892	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	43.7	0.0	43.0	48.0	0.0	39.2	51.0	20.6	20.6	48.5	26.2	0.0
Incr Delay (d2), s/veh	6.3	0.0	5.5	177.6	0.0	0.8	36.5	2.4	2.3	190.9	116.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	0.0	4.2	12.3	0.0	2.4	1.2	6.7	7.0	9.9	48.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.1	0.0	48.5	225.6	0.0	40.1	87.5	23.0	22.9	239.4	142.4	0.0
LnGrp LOS	D	A	D	F	A	D	F	C	C	F	F	A
Approach Vol, veh/h		555			315			822			1270	
Approach Delay, s/veh		49.6			166.7			25.6			155.2	
Approach LOS		D			F			C			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	54.2		20.8	9.6	59.6		15.0				
Change Period (Y+Rc), s	7.0	7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s	8.0	43.0		19.0	8.0	43.0		9.0				
Max Q Clear Time (g_c+I1), s	10.0	19.0		13.7	4.2	54.6		11.0				
Green Ext Time (p_c), s	0.0	4.6		1.2	0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				100.6								
HCM 6th LOS				F								

Intersection										
Int Delay, s/veh	0.4									
Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations				↕			↑			
Traffic Vol, veh/h	0	12	39	754	60	0	1147	1	0	0
Future Vol, veh/h	0	12	39	754	60	0	1147	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	-	None	-	-
Storage Length	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	16974	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	13	42	820	65	0	1247	1	0	0

Major/Minor	Minor2		Major1		Major2			
Conflicting Flow All	2185	1248	1248	0	0	-	-	0
Stage 1	1248	-	-	-	-	-	-	-
Stage 2	937	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	50	211	558	-	-	0	-	-
Stage 1	271	-	-	-	-	0	-	-
Stage 2	381	-	-	-	-	0	-	-
Platoon blocked, %				-	-	-	-	-
Mov Cap-1 Maneuver	43	211	558	-	-	-	-	-
Mov Cap-2 Maneuver	43	-	-	-	-	-	-	-
Stage 1	230	-	-	-	-	-	-	-
Stage 2	381	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	29.3	0.5	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBT	SBR
Capacity (veh/h)	558	-	-	162	-	-
HCM Lane V/C Ratio	0.076	-	-	0.087	-	-
HCM Control Delay (s)	12	0	-	29.3	-	-
HCM Lane LOS	B	A	-	D	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	-	-

Intersection										
Int Delay, s/veh	13.2									
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑↑			↑			↑		
Traffic Vol, veh/h	0	411	11	0	106	0	0	627	0	0
Future Vol, veh/h	0	411	11	0	106	0	0	627	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None	-	-
Storage Length	-	-	-	-	-	-	100	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	83	83	92	92	83	83	92	83	92	92
Heavy Vehicles, %	0	3	2	2	12	0	2	4	2	2
Mvmt Flow	0	495	12	0	128	0	0	755	0	0
Major/Minor	Major1		Major2		Minor2		Minor1			
Conflicting Flow All	-	0	0	-	-	0	376	128	-	254
Stage 1	-	-	-	-	-	-	128	-	-	-
Stage 2	-	-	-	-	-	-	248	-	-	-
Critical Hdwy	-	-	-	-	-	-	7.465	6.26	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.265	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.665	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	3.6045	3.338	-	3.319
Pot Cap-1 Maneuver	0	-	-	0	-	0	550	916	0	746
Stage 1	0	-	-	0	-	0	852	-	0	-
Stage 2	0	-	-	0	-	0	713	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	524	916	-	746
Mov Cap-2 Maneuver	-	-	-	-	-	-	524	-	-	-
Stage 1	-	-	-	-	-	-	852	-	-	-
Stage 2	-	-	-	-	-	-	679	-	-	-
Approach	EB		WB		SB		NW			
HCM Control Delay, s	0		0		23.4		10.1			
HCM LOS					C		B			
Minor Lane/Major Mvmt	NWLn1	EBT	EBR	WBT	SBLn1	SBLn2				
Capacity (veh/h)	746	-	-	-	524	916				
HCM Lane V/C Ratio	0.048	-	-	-	0.133	0.825				
HCM Control Delay (s)	10.1	-	-	-	12.9	24.4				
HCM Lane LOS	B	-	-	-	B	C				
HCM 95th %tile Q(veh)	0.2	-	-	-	0.5	9.6				

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑	
Traffic Vol, veh/h	0	41	0	746	1046	49
Future Vol, veh/h	0	41	0	746	1046	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	45	0	811	1137	53
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	1164	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	-	-	-	-
Pot Cap-1 Maneuver	0	236	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	236	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	23.8	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 236		-	-		
HCM Lane V/C Ratio	- 0.189		-	-		
HCM Control Delay (s)	- 23.8		-	-		
HCM Lane LOS	- C		-	-		
HCM 95th %tile Q(veh)	- 0.7		-	-		

Intersection						
Int Delay, s/veh	3.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	14	0	29	6	0
Future Vol, veh/h	3	14	0	29	6	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	15	0	32	7	0
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	30	16	0	0	32	0
Stage 1	16	-	-	-	-	-
Stage 2	14	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	984	1063	-	-	1580	-
Stage 1	1007	-	-	-	-	-
Stage 2	1009	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	980	1063	-	-	1580	-
Mov Cap-2 Maneuver	980	-	-	-	-	-
Stage 1	1007	-	-	-	-	-
Stage 2	1005	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.5	0		7.3		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	1047	1580	-	
HCM Lane V/C Ratio	-	-	0.018	0.004	-	
HCM Control Delay (s)	-	-	8.5	7.3	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

Intersection						
Int Delay, s/veh	0					
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑↱			↑		↱
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.319
Pot Cap-1 Maneuver	-	-	0	-	0	-
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	NB		SB		SW	
HCM Control Delay, s	0		0		0	
HCM LOS					A	
Minor Lane/Major Mvmt	NBT	NBR	SBTSWLn1			
Capacity (veh/h)		-	-	-	-	
HCM Lane V/C Ratio		-	-	-	-	
HCM Control Delay (s)		-	-	-	0	
HCM Lane LOS		-	-	-	A	
HCM 95th %tile Q(veh)		-	-	-	-	

Intersection						
Int Delay, s/veh	0.7					
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	28	7	418	29	1	715
Future Vol, veh/h	28	7	418	29	1	715
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	8	454	32	1	777
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1249	470	0	0	486	0
Stage 1	470	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	191	594	-	-	1077	-
Stage 1	629	-	-	-	-	-
Stage 2	452	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	191	594	-	-	1077	-
Mov Cap-2 Maneuver	191	-	-	-	-	-
Stage 1	629	-	-	-	-	-
Stage 2	451	-	-	-	-	-
Approach	NW	NE	SW			
HCM Control Delay, s	24.6	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NET	NERNWLn1	SWL	SWT		
Capacity (veh/h)	-	-	221	1077	-	
HCM Lane V/C Ratio	-	-	0.172	0.001	-	
HCM Control Delay (s)	-	-	24.6	8.3	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	0.6	0	-	

HCM 6th Signalized Intersection Summary 119-297 Stewarts - Lloyd

4: US Route 9W & Chapel Hill Rd/Macks Ln
2022 Build w/ Imp SA_AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 				 	 	 	 	 	 	 	
Traffic Volume (veh/h)	725	73	9	98	35	58	17	951	4	100	565	0
Future Volume (veh/h)	725	73	9	98	35	58	17	951	4	100	565	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1722	1900	1976	1976	1976	1648	1781	1900	1737	1781	1900
Adj Flow Rate, veh/h	797	80	10	108	38	49	19	1045	4	110	621	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	12	0	0	0	0	17	8	0	11	8	0
Cap, veh/h	863	378	47	110	39	242	20	1089	4	110	1247	0
Arrive On Green	0.25	0.25	0.25	0.08	0.08	0.08	0.01	0.31	0.31	0.07	0.37	0.00
Sat Flow, veh/h	3428	1501	188	1410	496	1675	1570	3458	13	1654	3474	0
Grp Volume(v), veh/h	797	0	90	146	0	49	19	511	538	110	621	0
Grp Sat Flow(s),veh/h/ln	1714	0	1688	1906	0	1675	1570	1692	1779	1654	1692	0
Q Serve(g_s), s	20.4	0.0	3.8	6.9	0.0	2.3	1.1	26.7	26.7	6.0	12.8	0.0
Cycle Q Clear(g_c), s	20.4	0.0	3.8	6.9	0.0	2.3	1.1	26.7	26.7	6.0	12.8	0.0
Prop In Lane	1.00		0.11	0.74		1.00	1.00		0.01	1.00		0.00
Lane Grp Cap(c), veh/h	863	0	425	148	0	242	20	533	560	110	1247	0
V/C Ratio(X)	0.92	0.00	0.21	0.99	0.00	0.20	0.93	0.96	0.96	1.00	0.50	0.00
Avail Cap(c_a), veh/h	876	0	431	148	0	242	52	533	560	110	1247	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.8	0.0	26.6	41.4	0.0	33.9	44.4	30.3	30.3	42.0	22.0	0.0
Incr Delay (d2), s/veh	15.0	0.0	0.2	69.2	0.0	0.4	75.7	30.2	29.3	84.8	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	0.0	1.5	6.0	0.0	1.0	0.8	14.4	15.0	4.9	4.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.8	0.0	26.9	110.7	0.0	34.3	120.1	60.5	59.6	126.8	23.4	0.0
LnGrp LOS	D	A	C	F	A	C	F	E	E	F	C	A
Approach Vol, veh/h	887			195			1068			731		
Approach Delay, s/veh	45.7			91.5			61.1			39.0		
Approach LOS	D			F			E			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.0	35.3		28.7	8.2	40.2		13.0				
Change Period (Y+Rc), s	7.0	7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s	6.0	28.0		23.0	3.0	31.0		7.0				
Max Q Clear Time (g_c+I1), s	8.0	28.7		22.4	3.1	14.8		8.9				
Green Ext Time (p_c), s	0.0	0.0		0.3	0.0	3.5		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	52.8											
HCM 6th LOS	D											

Intersection										
Int Delay, s/veh	0.3									
Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations				↕			↑			
Traffic Vol, veh/h	0	19	39	984	48	0	668	5	0	0
Future Vol, veh/h	0	19	39	984	48	0	668	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	-	None	-	-
Storage Length	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	16974	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	21	42	1070	52	0	726	5	0	0
Major/Minor	Minor2		Major1		Major2					
Conflicting Flow All	1909	729	731	0	0	-	-	0		
Stage 1	729	-	-	-	-	-	-	-		
Stage 2	1180	-	-	-	-	-	-	-		
Critical Hdwy	6.42	6.22	4.12	-	-	-	-	-		
Critical Hdwy Stg 1	5.42	-	-	-	-	-	-	-		
Critical Hdwy Stg 2	5.42	-	-	-	-	-	-	-		
Follow-up Hdwy	3.518	3.318	2.218	-	-	-	-	-		
Pot Cap-1 Maneuver	75	423	873	-	-	0	-	-		
Stage 1	477	-	-	-	-	0	-	-		
Stage 2	292	-	-	-	-	0	-	-		
Platoon blocked, %				-	-	-	-	-		
Mov Cap-1 Maneuver	65	423	873	-	-	-	-	-		
Mov Cap-2 Maneuver	65	-	-	-	-	-	-	-		
Stage 1	415	-	-	-	-	-	-	-		
Stage 2	292	-	-	-	-	-	-	-		
Approach	EB		NB		SB					
HCM Control Delay, s	13.9		0.3		0					
HCM LOS	B									
Minor Lane/Major Mvmt	NBL		NBT	NBR	EBLn1	SBT	SBR			
Capacity (veh/h)	873		-	-	423	-	-			
HCM Lane V/C Ratio	0.049		-	-	0.049	-	-			
HCM Control Delay (s)	9.3		0	-	13.9	-	-			
HCM Lane LOS	A		A	-	B	-	-			
HCM 95th %tile Q(veh)	0.2		-	-	0.2	-	-			

Intersection										
Int Delay, s/veh	2.1									
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑↑			↑			↑		
Traffic Vol, veh/h	0	748	14	0	68	0	0	157	0	0
Future Vol, veh/h	0	748	14	0	68	0	0	157	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None	-	-
Storage Length	-	-	-	-	-	-	100	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	83	83	92	92	83	83	92	83	92	92
Heavy Vehicles, %	0	3	2	2	12	0	2	4	2	2
Mvmt Flow	0	901	15	0	82	0	0	189	0	0
Major/Minor	Major1		Major2		Minor2		Minor1			
Conflicting Flow All	-	0	0	-	-	0	533	82	-	458
Stage 1	-	-	-	-	-	-	82	-	-	-
Stage 2	-	-	-	-	-	-	451	-	-	-
Critical Hdwy	-	-	-	-	-	-	7.465	6.26	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.265	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.665	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	3.6045	3.338	-	3.319
Pot Cap-1 Maneuver	0	-	-	0	-	0	427	971	0	551
Stage 1	0	-	-	0	-	0	902	-	0	-
Stage 2	0	-	-	0	-	0	539	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	394	971	-	551
Mov Cap-2 Maneuver	-	-	-	-	-	-	394	-	-	-
Stage 1	-	-	-	-	-	-	902	-	-	-
Stage 2	-	-	-	-	-	-	498	-	-	-
Approach	EB		WB		SB		NW			
HCM Control Delay, s	0		0		10.2		12.1			
HCM LOS					B		B			
Minor Lane/Major Mvmt	NWLn1	EBT	EBR	WBT	SBLn1	SBLn2				
Capacity (veh/h)	551	-	-	-	394	971				
HCM Lane V/C Ratio	0.077	-	-	-	0.061	0.195				
HCM Control Delay (s)	12.1	-	-	-	14.7	9.6				
HCM Lane LOS	B	-	-	-	B	A				
HCM 95th %tile Q(veh)	0.2	-	-	-	0.2	0.7				

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	21	0	976	602	25
Future Vol, veh/h	0	21	0	976	602	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	0	1061	654	27
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	341	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	655	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	655	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.7	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	655	-	-		
HCM Lane V/C Ratio	-	0.035	-	-		
HCM Control Delay (s)	-	10.7	-	-		
HCM Lane LOS	-	B	-	-		
HCM 95th %tile Q(veh)	-	0.1	-	-		

Intersection						
Int Delay, s/veh	3.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	15	0	31	8	0
Future Vol, veh/h	3	15	0	31	8	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	16	0	34	9	0
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	35	17	0	0	34	0
Stage 1	17	-	-	-	-	-
Stage 2	18	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	978	1062	-	-	1578	-
Stage 1	1006	-	-	-	-	-
Stage 2	1005	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	972	1062	-	-	1578	-
Mov Cap-2 Maneuver	972	-	-	-	-	-
Stage 1	1006	-	-	-	-	-
Stage 2	999	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.5	0		7.3		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	1046	1578	-	
HCM Lane V/C Ratio	-	-	0.019	0.006	-	
HCM Control Delay (s)	-	-	8.5	7.3	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

Intersection						
Int Delay, s/veh	0					
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑↱			↑↑		↱
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	-
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	NB		SB		SW	
HCM Control Delay, s	0		0		0	
HCM LOS					A	
Minor Lane/Major Mvmt	NBT	NBR	SBTSWLn1			
Capacity (veh/h)		-	-	-	-	-
HCM Lane V/C Ratio		-	-	-	-	-
HCM Control Delay (s)		-	-	-	0	
HCM Lane LOS		-	-	-	A	
HCM 95th %tile Q(veh)		-	-	-	-	

Intersection						
Int Delay, s/veh	0.6					
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	21	7	755	22	4	213
Future Vol, veh/h	21	7	755	22	4	213
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	8	821	24	4	232
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1073	833	0	0	845	0
Stage 1	833	-	-	-	-	-
Stage 2	240	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	244	369	-	-	792	-
Stage 1	427	-	-	-	-	-
Stage 2	800	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	243	369	-	-	792	-
Mov Cap-2 Maneuver	243	-	-	-	-	-
Stage 1	427	-	-	-	-	-
Stage 2	795	-	-	-	-	-
Approach	NW	NE	SW			
HCM Control Delay, s	20.3	0	0.2			
HCM LOS	C					
Minor Lane/Major Mvmt	NET	NERNWLn1	SWL	SWT		
Capacity (veh/h)	-	-	266	792	-	
HCM Lane V/C Ratio	-	-	0.114	0.005	-	
HCM Control Delay (s)	-	-	20.3	9.6	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	0.4	0	-	

HCM 6th Signalized Intersection Summary 119-297 Stewarts - Lloyd

4: US Route 9W & Chapel Hill Rd/Macks Ln
2021 Build w/ Imp. SA_PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	358	96	52	136	60	105	30	709	9	152	1004	0
Future Volume (veh/h)	358	96	52	136	60	105	30	709	9	152	1004	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1722	1900	1976	1976	1976	1648	1781	1900	1737	1781	1900
Adj Flow Rate, veh/h	393	105	57	149	66	100	33	779	10	167	1103	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	12	0	0	0	0	17	8	0	11	8	0
Cap, veh/h	470	144	78	165	73	412	37	1000	13	200	1317	0
Arrive On Green	0.14	0.14	0.14	0.13	0.13	0.13	0.02	0.29	0.29	0.12	0.39	0.00
Sat Flow, veh/h	3428	1050	570	1324	586	1675	1570	3422	44	1654	3474	0
Grp Volume(v), veh/h	393	0	162	215	0	100	33	385	404	167	1103	0
Grp Sat Flow(s),veh/h/ln	1714	0	1620	1910	0	1675	1570	1692	1774	1654	1692	0
Q Serve(g_s), s	8.9	0.0	7.7	8.9	0.0	3.8	1.7	16.7	16.7	7.9	23.6	0.0
Cycle Q Clear(g_c), s	8.9	0.0	7.7	8.9	0.0	3.8	1.7	16.7	16.7	7.9	23.6	0.0
Prop In Lane	1.00		0.35	0.69		1.00	1.00		0.02	1.00		0.00
Lane Grp Cap(c), veh/h	470	0	222	239	0	412	37	495	518	200	1317	0
V/C Ratio(X)	0.84	0.00	0.73	0.90	0.00	0.24	0.88	0.78	0.78	0.84	0.84	0.00
Avail Cap(c_a), veh/h	471	0	223	239	0	412	59	495	518	207	1317	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.7	0.0	33.1	34.5	0.0	24.2	38.9	25.9	25.9	34.4	22.1	0.0
Incr Delay (d2), s/veh	12.4	0.0	11.5	33.1	0.0	0.3	54.5	11.5	11.0	24.2	6.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	3.6	6.2	0.0	1.5	1.2	7.6	7.9	4.3	9.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.1	0.0	44.6	67.6	0.0	24.5	93.5	37.4	37.0	58.6	28.6	0.0
LnGrp LOS	D	A	D	E	A	C	F	D	D	E	C	A
Approach Vol, veh/h		555			315			822			1270	
Approach Delay, s/veh		45.7			53.9			39.4			32.5	
Approach LOS		D			D			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.7	30.4		17.0	8.9	38.1		16.0				
Change Period (Y+Rc), s	7.0	7.0		6.0	7.0	7.0		6.0				
Max Green Setting (Gmax), s	10.0	23.0		11.0	3.0	30.0		10.0				
Max Q Clear Time (g_c+I1), s	9.9	18.7		10.9	3.7	25.6		10.9				
Green Ext Time (p_c), s	0.0	1.8		0.0	0.0	2.6		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				39.2								
HCM 6th LOS				D								

Intersection										
Int Delay, s/veh	0.4									
Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations			↕				↑			
Traffic Vol, veh/h	0	12	39	754	60	0	1147	1	0	0
Future Vol, veh/h	0	12	39	754	60	0	1147	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	-	None	-	-
Storage Length	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	16974	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	13	42	820	65	0	1247	1	0	0
Major/Minor	Minor2		Major1		Major2					
Conflicting Flow All	2185	1248	1248	0	0	-	-	0		
Stage 1	1248	-	-	-	-	-	-	-		
Stage 2	937	-	-	-	-	-	-	-		
Critical Hdwy	6.42	6.22	4.12	-	-	-	-	-		
Critical Hdwy Stg 1	5.42	-	-	-	-	-	-	-		
Critical Hdwy Stg 2	5.42	-	-	-	-	-	-	-		
Follow-up Hdwy	3.518	3.318	2.218	-	-	-	-	-		
Pot Cap-1 Maneuver	50	211	558	-	-	0	-	-		
Stage 1	271	-	-	-	-	0	-	-		
Stage 2	381	-	-	-	-	0	-	-		
Platoon blocked, %				-	-	-	-	-		
Mov Cap-1 Maneuver	43	211	558	-	-	-	-	-		
Mov Cap-2 Maneuver	43	-	-	-	-	-	-	-		
Stage 1	230	-	-	-	-	-	-	-		
Stage 2	381	-	-	-	-	-	-	-		
Approach	EB		NB		SB					
HCM Control Delay, s	29.3		0.5		0					
HCM LOS	D									
Minor Lane/Major Mvmt	NBL		NBT	NBR	EBLn1	SBT	SBR			
Capacity (veh/h)	558		-	-	162	-	-			
HCM Lane V/C Ratio	0.076		-	-	0.087	-	-			
HCM Control Delay (s)	12		0	-	29.3	-	-			
HCM Lane LOS	B		A	-	D	-	-			
HCM 95th %tile Q(veh)	0.2		-	-	0.3	-	-			

Intersection										
Int Delay, s/veh	13.2									
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑↑			↑			↑		
Traffic Vol, veh/h	0	411	11	0	106	0	0	627	0	0
Future Vol, veh/h	0	411	11	0	106	0	0	627	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None	-	-
Storage Length	-	-	-	-	-	-	100	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	83	83	92	92	83	83	92	83	92	92
Heavy Vehicles, %	0	3	2	2	12	0	2	4	2	2
Mvmt Flow	0	495	12	0	128	0	0	755	0	0
Major/Minor	Major1		Major2		Minor2		Minor1			
Conflicting Flow All	-	0	0	-	-	0	376	128	-	254
Stage 1	-	-	-	-	-	-	128	-	-	-
Stage 2	-	-	-	-	-	-	248	-	-	-
Critical Hdwy	-	-	-	-	-	-	7.465	6.26	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.265	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.665	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	3.6045	3.338	-	3.319
Pot Cap-1 Maneuver	0	-	-	0	-	0	550	916	0	746
Stage 1	0	-	-	0	-	0	852	-	0	-
Stage 2	0	-	-	0	-	0	713	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	524	916	-	746
Mov Cap-2 Maneuver	-	-	-	-	-	-	524	-	-	-
Stage 1	-	-	-	-	-	-	852	-	-	-
Stage 2	-	-	-	-	-	-	679	-	-	-
Approach	EB		WB		SB		NW			
HCM Control Delay, s	0		0		23.4		10.1			
HCM LOS					C		B			
Minor Lane/Major Mvmt	NWLn1	EBT	EBR	WBT	SBLn1	SBLn2				
Capacity (veh/h)	746	-	-	-	524	916				
HCM Lane V/C Ratio	0.048	-	-	-	0.133	0.825				
HCM Control Delay (s)	10.1	-	-	-	12.9	24.4				
HCM Lane LOS	B	-	-	-	B	C				
HCM 95th %tile Q(veh)	0.2	-	-	-	0.5	9.6				

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	41	0	746	1046	49
Future Vol, veh/h	0	41	0	746	1046	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	45	0	811	1137	53
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	595	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	447	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	447	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	13.9	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	447	-	-		
HCM Lane V/C Ratio	-	0.1	-	-		
HCM Control Delay (s)	-	13.9	-	-		
HCM Lane LOS	-	B	-	-		
HCM 95th %tile Q(veh)	-	0.3	-	-		

Intersection						
Int Delay, s/veh	3.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	14	0	29	6	0
Future Vol, veh/h	3	14	0	29	6	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	15	0	32	7	0
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	30	16	0	0	32	0
Stage 1	16	-	-	-	-	-
Stage 2	14	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	984	1063	-	-	1580	-
Stage 1	1007	-	-	-	-	-
Stage 2	1009	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	980	1063	-	-	1580	-
Mov Cap-2 Maneuver	980	-	-	-	-	-
Stage 1	1007	-	-	-	-	-
Stage 2	1005	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	8.5	0	7.3			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	1047	1580	-	
HCM Lane V/C Ratio	-	-	0.018	0.004	-	
HCM Control Delay (s)	-	-	8.5	7.3	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

Intersection

Int Delay, s/veh 0

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑			↑↑		↑
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- - - 0
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.94
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.32
Pot Cap-1 Maneuver	-	- 0	- 0 -
Stage 1	-	- 0	- 0 -
Stage 2	-	- 0	- 0 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - -
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

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

Minor Lane/Major Mvmt	NBT	NBR	SBT	SWLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	-

Intersection						
Int Delay, s/veh	0.7					
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	28	7	418	29	1	715
Future Vol, veh/h	28	7	418	29	1	715
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	8	454	32	1	777
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1249	470	0	0	486	0
Stage 1	470	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	191	594	-	-	1077	-
Stage 1	629	-	-	-	-	-
Stage 2	452	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	191	594	-	-	1077	-
Mov Cap-2 Maneuver	191	-	-	-	-	-
Stage 1	629	-	-	-	-	-
Stage 2	451	-	-	-	-	-
Approach	NW	NE	SW			
HCM Control Delay, s	24.6	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NET	NERNWLn1	SWL	SWT		
Capacity (veh/h)	-	-	221	1077	-	
HCM Lane V/C Ratio	-	-	0.172	0.001	-	
HCM Control Delay (s)	-	-	24.6	8.3	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	0.6	0	-	