North Mason Street Permanent Project Study

Harrisonburg, Virginia

PREPARED FOR

Harrisonburg Rockingham Metropolitan Planning Organization (HRMPO) / Central Shenandoah Planning District Commission (CSPDC)

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Study Background and Overview

The Harrisonburg Rockingham Metropolitan Planning Organization (HRMPO) conducted the North Mason Street Permanent Project Study to develop a SMART SCALE-ready project to deliver permanent infrastructure improvements for the N Mason Street corridor. This permanent streetscape design builds upon a successful City of Harrisonburg Complete Streets Demonstration Project in Summer 2025.

Study Objective

This report presents results from the North Mason Street Permanent Project Study, which includes existing conditions documentation and analysis, future baseline conditions analysis, alternatives analysis, public engagement, and conceptual design for funding application development.

The Central Shenandoah Planning District Commission (CSPDC) and Harrisonburg Rockingham Metropolitan Planning Organization (HRMPO) had VHB conduct this study to develop a SMART SCALE-ready project for the N Mason Street corridor in Harrisonburg, Virginia. The study developed community-informed permanent streetscape design improvements for the corridor, which builds upon the City of Harrisonburg's N Mason Street Complete Street Demonstration Project in 2025.

North Mason Street Demonstration Project

The City of Harrisonburg conducted the one-month North Mason Street Complete Street Demonstration Project from July 2025 to August 2025. The project reimagined N Mason Street by reallocating existing roadway space to create new public spaces via the installation of temporary traffic control devices. Additional goals of the project included:

- Improve safety, particularly for pedestrians
- Ensure adequate capacity for traffic, supporting existing business and potential development

- Design with all modes of transportation in mind

The demonstration project was funded by a Community Connectors Program grant, a program administered by Smart Growth America that invests in communities that were physically divided by transportation infrastructure. In the case of N Mason Street, federal Urban Renewal funding in the 1960s demolished housing and rebuilt the corridor as a five-lane divided arterial. A complete streets academy project team demonstrated reconnection potential within the corridor through the installation of the following temporary strategies:

- Reduced the travel lanes on N Mason Street from four lanes to two lanes spanning from E Market Street to E Gay Street with unused travel lanes converted to community space
- Replaced traffic signals with roundabouts at the N Mason Street / E Elizabeth Street and N Mason Street / E Gay Street intersections
- Removed signal control at the N Mason Street / E Wolfe Street intersection
- Provided new crosswalks and crossing locations

The City of Harrisonburg conducted extensive public engagement before, during, and after the demonstration project to understand the community's perspective on the corridor, the temporary changes, and the best use of physical space. Respondents supported the following elements of the pilot:

- Slower and safer vehicle speeds
- Faster travel times through the corridor
- The E Gay Street roundabout
- Shorter pedestrian crossings
- New opportunities in the existing roadway space

Respondents expressed concerns about the following elements of the pilot:

- The E Elizabeth Street roundabout (too small)
- Difficulty of crossing at unsignalized intersections as a pedestrian
- Congestion at the E Wolfe Street intersection
- Challenges for emergency vehicles, trucks, and buses

The Demonstration Project was the first phase in establishing new transportation infrastructure on N Mason Street. The Demonstration Project's purpose and findings informed all stages of the Permeant Project Study, including the development of the intersection-specific and corridor-wide alternatives. Both **Appendix A** and the City of Harrisonburg's website[1] have additional information on the North Mason Street Complete Street Demonstration Project.

[1] https://harrisonburgva.gov/transportation-projects#NorthMasonStreetCompleteStreetDemonstrationProject

Study Stakeholders

CSPDC and HRMPO organized a multidisciplinary stakeholder group to participate in this study, including representatives from the City of Harrisonburg and VDOT. The stakeholder group met throughout the study period to review deliverables, provide feedback, and inform decisions. The stakeholder group consisted of the following representatives:

- Central Shenandoah Planning District Commission (CSPDC) / Harrisonburg Rockingham Metropolitan Planning Organization (HRMPO)
  - Zach Beard
  - Paula Melester
  - Ann Cundy
  - Garreth Bartholomew
- City of Harrisonburg
  - Jakob zumFelde
  - Tom Hartman
  - Timothy Mason
  - James Polhamus
  - Cheryl Spain
  - Gerald Gatobu
  - Thanh Dang
  - Nyrma Soffel
  - Max Irwin
  - Amy Snider
- Virginia Department of Transportation (VDOT)
  - Brad Reed
  - Adam Campbell
  - Don Komara
  - Jeremy Mason
  - Shane McCabe
- VHB
  - Chuck Conran
  - Wes Parker
  - Kento Carson

Study Area and Characteristics

The study area is the N Mason Street corridor, bound by the N Mason Street / N Main Street intersection to the north and the N Mason Street / E Market Street intersection to the south as shown in **Figure 1**. N Mason Street is oriented North-South and is designated as a major

collector roadway north of E Gay Street and a minor arterial roadway south of E Gay Street, both with a 25 MPH posted speed limit. The study area has a 2024 Average Annual Daily Traffic (AADT) of 6,300 vehicles per day (VPD). The study area encompasses six (6) intersections, of which, VHB developed alternative design concepts for five (5) intersections, as listed below and shown in Figure 1.

1. N Mason Street / E Elizabeth Street
2. N Mason Street / E Wolfe Street
3. N Mason Street / E Rock Street
4. N Mason Street / E Gay Street
5. N Mason Street / N Main Street
6. N Mason Street / E Market Street (traffic analysis only)

Figure 1 Study Area Map

Institutional, commercial, and residential land uses are within or adjacent to the study area with major destinations including the Rockingham County Administration Center, Rockingham County Fire and Rescue, and Valley Plaza Shopping Center. The study area is proximate to downtown Harrisonburg as well as James Madison University (JMU).

The N Mason Street has a four-foot median that divides the travel lanes. The number of travel lanes, roadway width, and pedestrian facilities fluctuate along the corridor. An 83-foot variable typical section exists between the N Main Street and E Wolfe Street intersections, tapering to 66 feet at its narrowest point between the E Wolfe Street and E Market Street intersections. A cross-section comprised of five lanes with two travel lanes per direction and a 12-foot dedicated left turn lane is provided for the N Mason Street approaches at the E Gay Street, E Rock Street, and E Wolfe Street intersections. Five-foot sidewalks are present on both sides north of E Elizabeth Street and on the west side south of E Elizabeth Street. **Figure 2** shows the existing 83-foot typical section for the N Mason Street corridor, representative of conditions at E Wolfe Street.

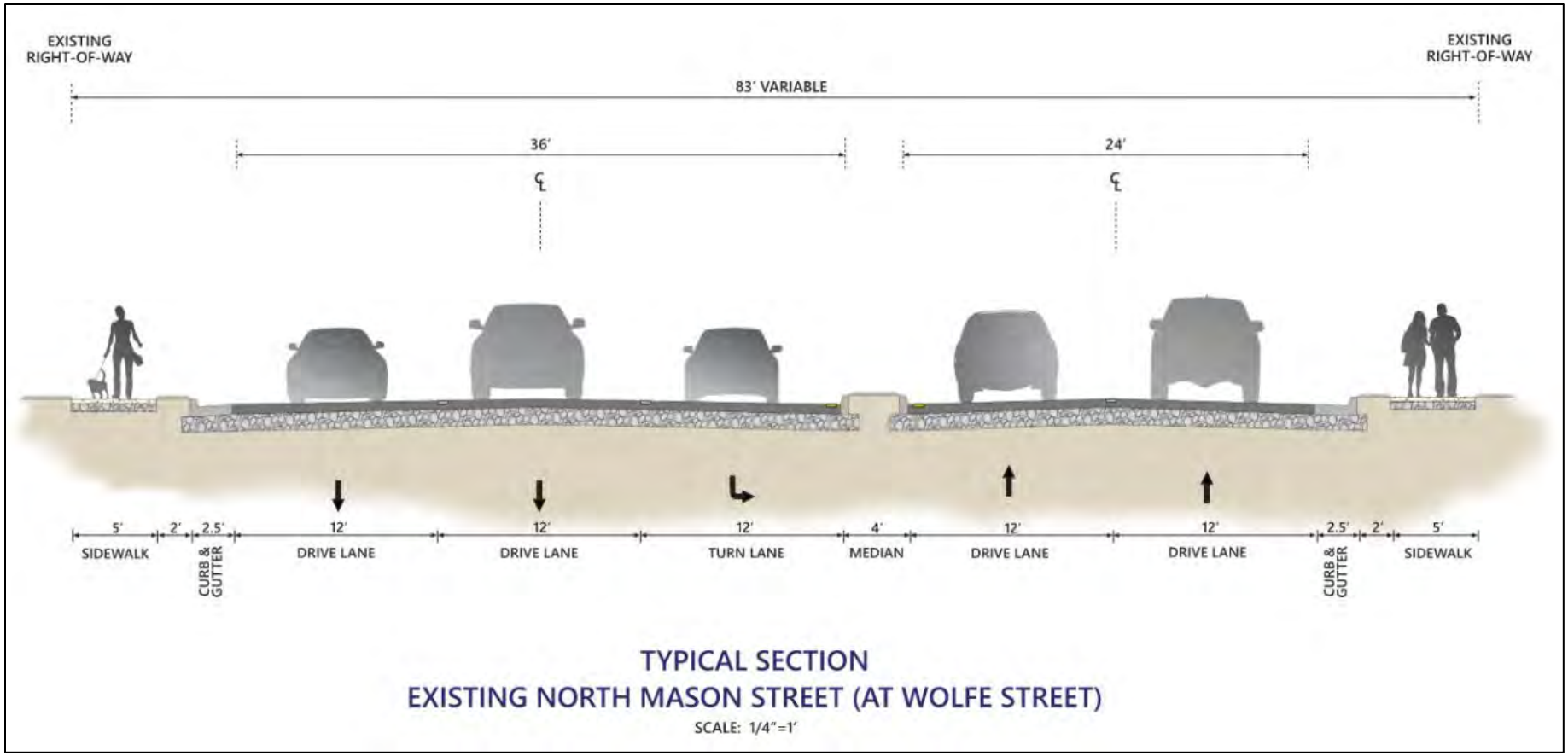


Figure 2 Existing N Mason Street Typical Section

2

Existing Conditions Analysis

VHB completed detailed analysis of the existing operating conditions to establish the baseline conditions of the study corridor and inform the development of proposed cross-section and intersection improvements.

Methodology

The City of Harrisonburg provided VHB with existing conditions *Synchro 11* models that included the six (6) study intersections, in addition to traffic data collection that comprised peak hour speed, vehicular volume, turning movement counts, bicycle/pedestrian counts, and heavy vehicle counts. The City collected this traffic data in September 2025 during two-hour periods corresponding to typical AM, mid-day, and PM peak hour conditions – all representative of typical weekday traffic.

VHB completed a detailed analysis of the study intersection existing operational performance by updating the *Synchro 11* models with AM and PM peak hour traffic data retrieved from the provided data. **Figure 3** displays the computed peak hour turning movement counts for the study intersections; the peak hours are 8:15-9:15 AM and 4:15-5:15 PM.

Control delay (seconds per vehicle) and 95th percentile queue length (feet) were selected as measures of effectiveness to quantitatively report the performance of each study intersection. Input and analysis methodologies were consistent with VDOT's *Traffic Operations and Safety Analysis Manual (TOSAM), Version 2.0*.

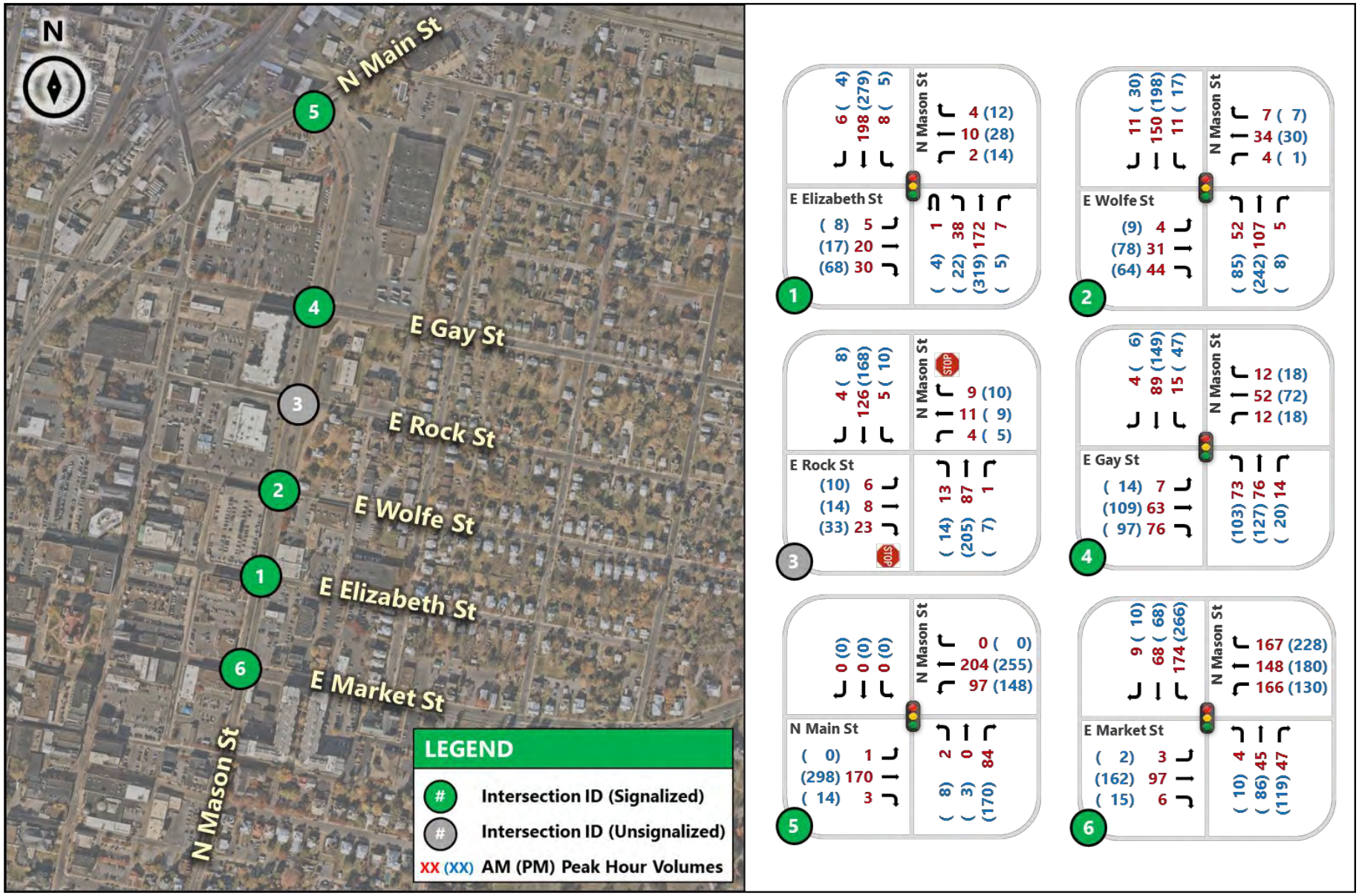


Figure 3 Existing Conditions Peak Hour Traffic Volumes

Results

Table 1-6 document the AM and PM peak hour operational performance findings for the study area intersections, including vehicle delay (seconds/vehicle), associated level of service (LOS), and queue length. **Appendix D** contains *Synchro* output reports. During AM and PM peak hours, no significant operational constraints were identified, with all intersections operating at LOS A/B except the N Mason Street / E Market Street intersection during the PM peak hour, which operates at LOS C.

Among individual turning movements, the greatest delays occurred at the northbound left/through movement at N Mason Street / N Main Street (AM peak: 45.0 sec, LOS D; PM peak: 44.7 sec, LOS D) and the eastbound left/through/right movement at N Mason Street / E Market Street during the PM peak (42.3 sec, LOS D). During the PM peak hour, the queue associated with the eastbound left / through / right movement at the intersection exceeds available storage and extends past the E Market Street / N Federal Street intersection. Although signalized intersections generally had minimal delays and queues, the two-way-stop-controlled (TWSC) N Mason Street / E Rock Street intersection exhibited the lowest overall intersection delay during AM and PM peak hours compared to its signalized counterparts.

N Mason Street / E Elizabeth Street

During AM and PM peak hours, no operational constraints were identified with all intersection movements operating at LOS A/B.

Table 1 N Mason Street / E Elizabeth Street Existing Operations

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Elizabeth Street	Left / Thru / Right	19.3	B	28
Westbound E Elizabeth Street	Left / Thru / Right	18.8	B	15
Northbound N Mason Street	Left / Thru	3.5	A	26
	Thru / Right	3.5	A	26
Southbound N Mason Street	Left / Thru	3.5	A	25
	Thru / Right	3.5	A	25
Intersection		**5.7**	**A**	
PM Peak Hour				
Eastbound E Elizabeth Street	Left / Thru / Right	17.5	B	31
Westbound E Elizabeth Street	Left / Thru / Right	18.3	B	35
Northbound N Mason Street	Left / Thru	4.7	A	43
	Thru / Right	4.7	A	43
Southbound N Mason Street	Left / Thru	4.5	A	35
	Thru / Right	4.5	A	35
Intersection		**7.1**	**A**	

N Mason Street / E Wolfe Street

During AM and PM peak hours, no operational constraints were identified with all intersection movements operating at LOS A/B.

Table 2 N Mason Street / E Wolfe Street Existing Operations

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Wolfe Street	Left / Thru / Right	15.8	B	35
Westbound E Wolfe Street	Left / Thru / Right	15.6	B	29
Northbound N Mason Street	Left	6.6	A	18
	Thru	7.9	A	27
	Thru / Right	7.9	A	27
Southbound N Mason Street	Left	7.5	A	6
	Thru	8.7	A	38
	Thru / Right	8.7	A	38
Intersection		**10.1**	**B**	
PM Peak Hour				
Eastbound E Wolfe Street	Left / Thru / Right	18.5	B	81
Westbound E Wolfe Street	Left / Thru / Right	16.0	B	27
Northbound N Mason Street	Left	6.1	A	34
	Thru	9.5	A	64
	Thru / Right	9.5	A	64
Southbound N Mason Street	Left	10.9	B	11
	Thru	12.7	B	11
	Thru / Right	12.7	B	61
Intersection		**12.2**	**B**	

N Mason Street / E Rock Street

During AM and PM peak hours, no operational constraints were identified with all intersection movements operating at LOS A/B. Northbound and southbound through movements had no delay or queue lengths due to free-flow conditions.

Table 3 N Mason Street / E Rock Street Existing Operations

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Rock Street	Left / Thru / Right	10.0	B	5
Westbound E Rock Street	Left / Thru / Right	10.6	B	2.5
Northbound N Mason Street	Left	7.6	A	0
	Thru	-	(-)	0
	Thru / Right	-	(-)	0
Southbound N Mason Street	Left	7.4	A	0
	Thru	-	(-)	0
	Thru / Right	-	(-)	0
Intersection		**2.6**	**A**	
PM Peak Hour				
Eastbound E Rock Street	Left / Thru / Right	11.2	B	10
Westbound E Rock Street	Left / Thru / Right	11.9	B	5
Northbound N Mason Street	Left	7.7	A	0
	Thru	-	(-)	0
	Thru / Right	-	(-)	0
Southbound N Mason Street	Left	7.8	A	0
	Thru	-	(-)	0
	Thru / Right	-	(-)	0
Intersection		**2.3**	**A**	

- (-) Denotes 0 Seconds of Delay Due to Free Flow Movement

N Mason Street / E Gay Street

During AM and PM peak hours, no operational constraints were identified with all intersection movements operating at LOS B/C.

Table 4 N Mason Street / E Gay Street Existing Operations

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Gay Street	Left	15.5	B	9
	Thru / Right	19.1	B	93
Westbound E Gay Street	Left	15.5	B	12
	Thru / Right	16.6	B	54
Northbound N Mason Street	Left	14.9	B	49
	Thru	15.3	B	35
	Thru / Right	15.3	B	35
Southbound N Mason Street	Left	16.0	B	15
	Thru	17.6	B	41
	Thru / Right	17.6	B	41
Intersection		**16.8**	**B**	
PM Peak Hour				
Eastbound E Gay Street	Left	15.8	B	15
	Thru / Right	20.6	C	161
Westbound E Gay Street	Left	16.2	B	18
	Thru / Right	17.6	B	78
Northbound N Mason Street	Left	17.5	B	74
	Thru	19.3	B	63
	Thru / Right	19.3	B	63
Southbound N Mason Street	Left	17.9	B	39
	Thru	21.2	C	72
	Thru / Right	21.2	C	72
Intersection		**19.3**	**B**	

N Mason Street / N Main Street

During AM and PM peak hours, no operational constraints were identified, with all intersection movements operating at LOS A/B except for the northbound left/through movement, which operates at LOS D during both peak periods. The northbound right movement experiences no delay or queue due to free-flow conditions provided by the slip lane onto N Main Street. No peak hour volume was counted on the southbound NAPA Auto Parts driveway; therefore, no movement delay or queue occurs at this approach.

Table 5 N Mason Street / N Main Street Existing Operations

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound N Main Street	Left / Thru	3.5	A	67
	Right	-	(-)	0
Westbound N Main Street	Left	2.0	A	18
	Thru / Right	1.2	A	36
Northbound N Mason Street	Left / Thru	45.0	D	8
	Right	0.1	A	0
Southbound NAPA Auto Parts Driveway	Left / Thru / Right	-	(-)	0
Intersection		**2.4**	**A**	
PM Peak Hour				
Eastbound N Main Street	Left / Thru	4.5	A	120
	Right	-	(-)	0
Westbound N Main Street	Left	2.6	A	26
	Thru / Right	1.5	A	45
Northbound N Mason Street	Left / Thru	44.7	D	24
	Right	0.2	A	0
Southbound NAPA Auto Parts Driveway	Left / Thru / Right	-	(-)	0
Intersection		**2.6**	**A**	

- (-) Denotes 0 Seconds of Delay Due to Free Flow Movement or Absence of Traffic Volume

N Mason Street / E Market Street

All intersection movements operate at LOS A/B/C during AM and PM peak hours except for the eastbound left/through/right movement, which operates at LOS D during the PM peak. The queue associated with this movement exceeds available storage and extends past the E Market Street / N Federal Street intersection during the PM peak.

Table 6 N Mason Street / E Market Street Existing Operations

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Market Street	Left / Thru / Right	25.0	C	105
Westbound E Market Street	Left	18.8	B	118
	Thru	12.3	B	100
	Right	6.6	A	20
Northbound N Mason Street	Left	17.3	B	6
	Thru / Right	33.7	C	92
Southbound N Mason Street	Left / Thru	21.3	C	108
	Thru / Right	22.7	C	63
Intersection		**19.4**	**B**	
PM Peak Hour				
Eastbound E Market Street	Left / Thru / Right	40.0	D	#233
Westbound E Market Street	Left	25.4	C	107
	Thru	19.4	B	139
	Right	9.3	A	28
Northbound N Mason Street	Left	15.3	B	11
	Thru / Right	42.3	D	194
Southbound N Mason Street	Left / Thru	29.2	C	165
	Thru / Right	19.6	B	63
Intersection		**28.6**	**C**	

3

Future Transportation Demand Sensitivity Analysis

VHB accounted for potential future transportation demand by utilizing a traffic forecasting methodology to grow existing volumes to a 2050 study year to conduct a traffic sensitivity analysis. VHB then conducted a No Build 2050 operations analysis with that volume to identify constraints in existing intersection designs under sensitivity analysis transportation demand. The No Build 2050 operations results are then used as a baseline to evaluate the operational benefits of potential roadway improvements.

Traffic Sensitivity Analysis

VHB conducted a traffic sensitivity analysis for the study area to provide an understanding of the baseline future traffic conditions as a starting point for the build alternative concepts. A 2050 "Design Year" was identified by the study work group to ensure adequate capacity for traffic, supporting existing business, and potential future development.

Growth Rate Data Sources

A variety of sources were compiled to determine appropriate traffic forecasts for the study area including historical traffic counts and growth trends, travel demand models (TDMs), and active development projects (e.g., residential, commercial, hospitality). VHB reviewed and analyzed these various sources, presented them to the study stakeholder group, and identified a consensus forecasting methodology.

Historical Traffic Count Data

Historical traffic count data were sourced from official VDOT historical AADT counts. Per VDOT policy, 2020 and 2021 were excluded from the linear regression calculation due to COVID-impacted traffic counts. Significant development and regression trends between years were

identified, outliers were removed, and a linear regression was performed to produce linear growth rates for segments throughout the study area.

Table 7 displays eight (8) years (spanning from 2000 to 2024) of historical field-counted AADT that were used to compute an annual growth rate from those AADT values via linear regression. Years with AADT values derived via growth calculations rather than field counts were excluded from the linear regression calculation.

Table 7 VDOT Historical AADT and Linear Regression Annual Growth Rate

Location	VDOT Historical AADT[1]								VDOT Historical Linear Regression Annual Growth Rate[2]
	2000	2003	2006	2009	2012	2015	2018	2024	
N Mason Street	7,134	6,211	6,721	7,257	7,188	7,328	6,943	6,306	**-0.07%**

[1] Linear regression annual growth rate derived from field-counted years of VDOT historical AADT.
[2] 2020 and 2021 excluded due to VDOT policy to consider 2020 and 2021 traffic data an outlier due to Covid-19 impacts, and thus not include within trend analysis.

Pathways for Planning Forecast

VDOT's Pathways for Planning (P4P) web tool contains the official VDOT trend analysis for volume forecasts. This trend analysis is derived from the historical AADT linear regression calculations; however, if the linear regression calculations compute an annual growth rate less than 0.50%, then 0.50% is utilized as the minimum value. **Table 8** displays the P4P linear annual growth rate for the study area. The N Mason Street segment has a linear annual growth rate of 0.50% due to the calculated rates being less than 0.50%.

Table 8 VDOT Linear Regression Annual Growth Rate Forecasts, P4P

Location	VDOT P4P Linear Regression Annual Growth Rate[1]	VDOT P4P AADT Traffic Forecasts			
		2035	2040	2045	2050
N Mason Street	**0.50%**	6,653	6,810	6,968	7,126

[1] VDOT policy to have a minimum annual growth rate of 0.50%.

Travel Demand Model

A Travel Demand Model (TDM) utilizes anticipated changes to land use and transportation infrastructure to project future traffic volumes. These models are regional, accounting for origin-destination attraction within an urbanized area. The TDM modelers typically source anticipated land use changes from Comprehensive Plans; within the TDM, these land use changes are modeled as changes to employee population, college enrollment, residential population, and residential households.

Although the study area is within a MPO's boundaries and is thus included within a TDM, the City and MPO decided to utilize a general traffic sensitivity analysis in this study to account for the potential for future traffic growth along the N Mason Street corridor.

Previous Transportation Studies

There are no recently completed transportation studies within the study limits that developed a traffic growth rate.

Active Development Projects

There are no approved development projects within the study area. While several properties have development potential, there are not specific proposed uses for which traffic forecasts could be developed. A general growth rate will capture the potential for future growth.

Growth Rate Recommendation

Table 9 synthesizes the various traffic growth rate data sources for the N Mason Street roadway segment. While the historical trend analysis indicates that the study area is experiencing a steady decline in traffic volume, it is VDOT policy to utilize at least a 0.50% annual growth rate. After discussions with CSPDC/HRMPO and the City of Harrisonburg, it was determined that VHB will apply a study-wide 1.0% annual, linear growth rate that will appropriately account for potential future land use growth.

The 1.0% annual growth rate applied linearly over a 25-year period (2025 counts to 2050 design year) results in a 1.25 (25%) growth factor. This was applied to the existing 2025 peak hour volumes to generate projected 2050 volumes.

Appendix B contains the network traffic volumes associated with each step of the traffic forecasting methodology. **Figure 4** displays the 2050 design year traffic volumes used for intersection capacity analysis.

Table 9 Recommended Growth Rates

Location	VDOT Historical Linear Regression Annual Growth Rate (2000-2024)[1]	VDOT P4P Linear Regression Annual Growth Rate[2]	Recommended Linear Annual Growth Rate	2050 "Design Year" AADT Forecast Based Upon Recommended Growth Rate
N Mason Street	**-0.07%**	**0.50%**	**1.0%**	**7,946**

[1] Linear regression annual growth rate derived from field-counted years of VDOT historical AADT.
[2] VDOT policy to have a minimum annual growth rate of 0.50%.

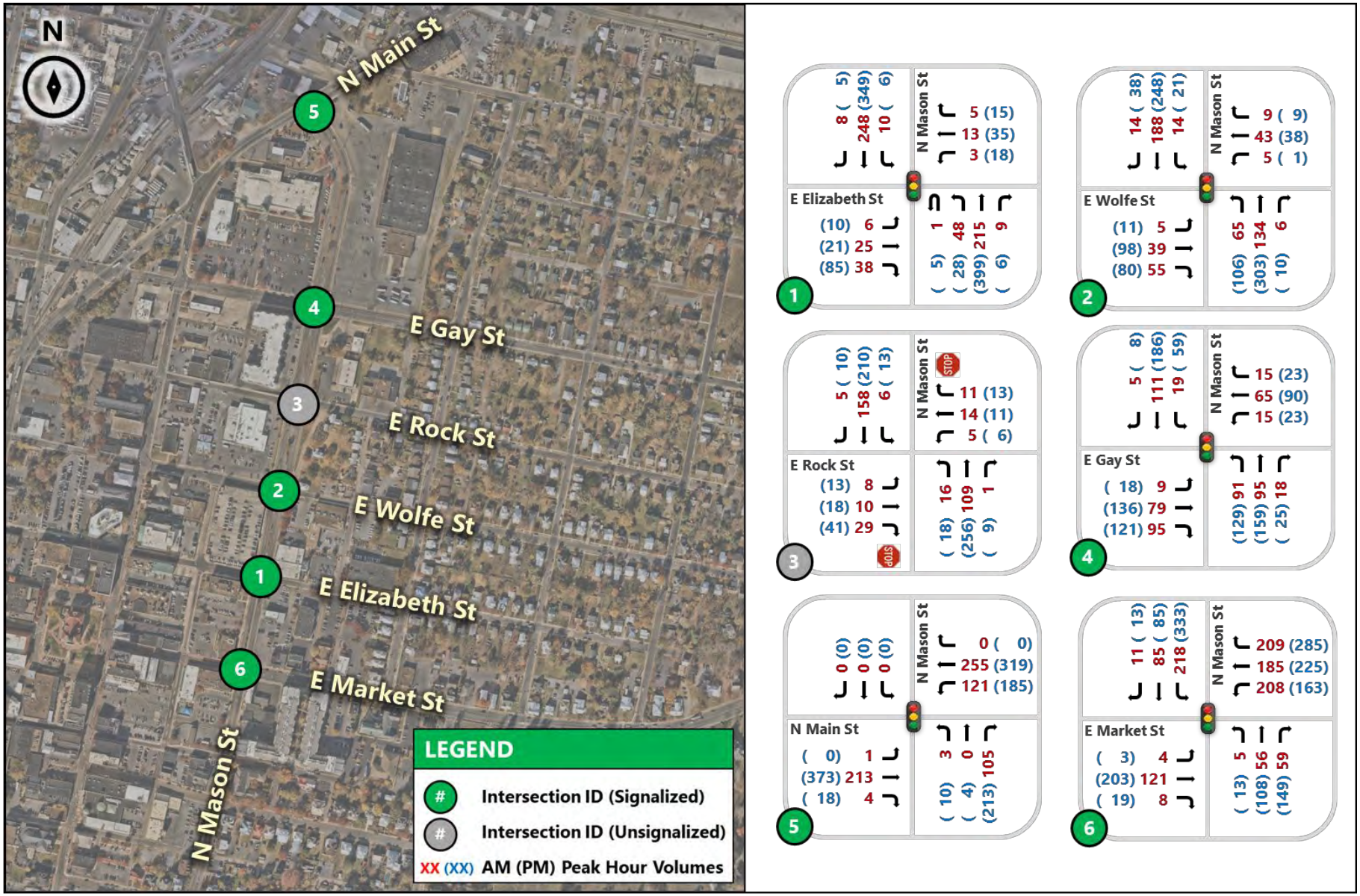


Figure 4 Traffic Sensitivity Volumes

Future Baseline Conditions Analysis

VHB completed a detailed analysis of the future condition intersection operational performance by modeling the AM and PM peak hour conditions in *Synchro 11* software without any proposed roadway improvements.

The existing conditions *Synchro* models were used as a basis to develop the No-Build models for the AM and PM peak hour conditions. The models were updated with the projected 2050 No-Build traffic volumes. Traffic signal cycle lengths were assumed to be consistent with existing conditions, while splits and offsets were optimized. No-Build inputs and analysis methodologies were applied consistently with VDOT's *Traffic Operations and Safety Analysis Manual (TOSAM)*.

Table 10 summarizes the change in overall intersection delay between existing conditions and future baseline conditions. Although all intersections experienced an increase in delay during both AM and PM peak hours, the increases were generally minimal except at the N Mason Street / E Market Street intersection, where intersection delay increased by 11.8 seconds during the PM peak. This is reflected in the operational constraints identified in the N Mason Street / E Market Street narrative of this report section.

Table 11-16 document the AM and PM peak hour operational performance findings for each of the six (6) study intersections, including movement delay (seconds), LOS, and queuing metrics. **Appendix D** contains *Synchro* output reports.

Table 10 Change in Intersection Delay from Existing Conditions to Future Baseline Conditions

Intersection	Intersection Delay (sec)					
	AM Peak Hour			PM Peak Hour		
	Existing Conditions	Future Baseline Conditions	Δ from Existing Conditions	Existing Conditions	Future Baseline Conditions	Δ from Existing Conditions
N Mason Street / E Elizabeth Street	5.7	5.9	**+0.2**	7.1	7.3	**+0.2**
N Mason Street / E Wolfe Street	10.1	10.6	**+0.5**	12.2	13.4	**+1.2**
N Mason Street / E Rock Street	2.6	2.6	**0**	2.3	2.4	**+0.1**
N Mason Street / E Gay Street	16.8	17.4	**+0.6**	19.3	20.9	**+1.6**
N Mason Street / N Main Street	2.4	2.6	**+0.2**	2.6	4.0	**+1.4**
N Mason Street / E Market Street	19.4	22	**+2.6**	28.6	40.4	**+11.8**

N Mason Street / E Elizabeth Street

No operational constraints were identified in the traffic sensitivity analysis scenario (**Table 11**) with the overall intersection delay increasing by just 0.2 seconds during AM and PM peak hours.

Table 11 N Mason Street / E Elizabeth Street Future Baseline Operations

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Elizabeth Street	Left / Thru / Right	19.5	B	32
Westbound E Elizabeth Street	Left / Thru / Right	18.8	B	18
Northbound N Mason Street	Left / Thru	3.7	A	33
	Thru / Right	3.7	A	33
Southbound N Mason Street	Left / Thru	3.6	A	32
	Thru / Right	3.6	A	32
Intersection		**5.9**	**A**	
PM Peak Hour				
Eastbound E Elizabeth Street	Left / Thru / Right	17.5	B	38
Westbound E Elizabeth Street	Left / Thru / Right	18.3	B	41
Northbound N Mason Street	Left / Thru	5	A	56
	Thru / Right	5	A	56
Southbound N Mason Street	Left / Thru	4.7	A	45
	Thru / Right	4.7	A	45
Intersection		**7.3**	**A**	

N Mason Street / E Wolfe Street

No operational constraints were identified in the traffic sensitivity analysis scenario (**Table 12**) with the overall intersection delay increasing by just 0.5 seconds during the AM peak hour and just 1.2 seconds during the PM peak hour.

Table 12 N Mason Street / E Wolfe Street Future Baseline Operations

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Wolfe Street	Left / Thru / Right	17.5	B	43
Westbound E Wolfe Street	Left / Thru / Right	17.2	B	36
Northbound N Mason Street	Left	5.6	A	22
	Thru	7.6	A	34
	Thru / Right	7.6	A	34
Southbound N Mason Street	Left	8	A	8
	Thru	9.3	A	47
	Thru / Right	9.3	A	47
Intersection		**10.6**	**B**	
PM Peak Hour				
Eastbound E Wolfe Street	Left / Thru / Right	19.1	B	111
Westbound E Wolfe Street	Left / Thru / Right	15.7	B	34
Northbound N Mason Street	Left	7.1	A	46
	Thru	10.9	B	86
	Thru / Right	10.9	B	86
Southbound N Mason Street	Left	12.2	B	14
	Thru	14.5	B	84
	Thru / Right	14.5	B	84
Intersection		**13.4**	**B**	

N Mason Street / E Rock Street

No operational constraints were identified in the traffic sensitivity analysis scenario (**Table 13**) with the overall intersection delay increasing by 0 seconds during the AM peak hour and just 0.1 seconds during the PM peak hour.

Table 13 N Mason Street / E Rock Street Future Baseline Operations

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Rock Street	Left / Thru / Right	10.2	B	5
Westbound E Rock Street	Left / Thru / Right	10.7	B	5
Northbound N Mason Street	Left	7.6	A	0
	Thru	-	(-)	0
	Thru / Right	-	(-)	0
Southbound N Mason Street	Left	7.4	A	0
	Thru	-	(-)	0
	Thru / Right	-	(-)	0
Intersection		**2.6**	**A**	
PM Peak Hour				
Eastbound E Rock Street	Left / Thru / Right	11.8	B	10
Westbound E Rock Street	Left / Thru / Right	12.4	B	5
Northbound N Mason Street	Left	7.8	A	0
	Thru	-	(-)	0
	Thru / Right	-	(-)	0
Southbound N Mason Street	Left	7.8	A	0
	Thru	-	(-)	0
	Thru / Right	-	(-)	0
Intersection		**2.4**	**A**	

- (-) Denotes 0 Seconds of Delay Due to Free Flow Movement

N Mason Street / E Gay Street

As shown in **Table 14,** no operational constraints were identified in the traffic sensitivity analysis scenario with the overall intersection delay increasing by just 0.6 seconds during the AM peak hour and just 1.6 seconds during the PM peak hour. Queues remained within existing storage lengths except for the northbound left turn during the PM peak hour (98-foot queue compared to 90-foot storage length).

Table 14 N Mason Street / E Gay Street Future Baseline Operations

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Gay Street	Left	15.1	B	11
	Thru / Right	19	B	114
Westbound E Gay Street	Left	15.5	B	7
	Thru / Right	16.7	B	65
Northbound N Mason Street	Left	15.6	B	60
	Thru	16.1	B	44
	Thru / Right	16.1	B	44
Southbound N Mason Street	Left	16.5	B	19
	Thru	18.6	B	50
	Thru / Right	18.6	B	50
Intersection		**17.4**	**B**	
PM Peak Hour				
Eastbound E Gay Street	Left	16.3	B	19
	Thru / Right	22.2	C	207
Westbound E Gay Street	Left	16.9	B	22
	Thru / Right	18.4	B	96
Northbound N Mason Street	Left	18.7	B	98
	Thru	20.7	C	83
	Thru / Right	20.7	C	83
Southbound N Mason Street	Left	19.5	B	51
	Thru	23.5	C	95
	Thru / Right	23.5	C	95
Intersection		**20.9**	**C**	

N Mason Street / N Main Street

As shown in **Table 15**, no operational constraints were identified in the traffic sensitivity analysis scenario with the overall intersection delay increasing by just 0.2 seconds during the AM peak hour and just 0.4 seconds during the PM peak hour. During both peak hours, the northbound left/thru movement operates at LOS D with minimal queuing – one vehicle length.

Table 15 N Mason Street / N Main Street Future Baseline Operations

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound N Main Street	Left / Thru	3.8	A	85
	Right	-	(-)	0
Westbound N Main Street	Left	2.0	A	22
	Thru / Right	1.3	A	45
Northbound N Mason Street	Left / Thru	44.9	D	10
	Right	-	(-)	0
Southbound NAPA Auto Parts Driveway	Left / Thru / Right	-	(-)	0
Intersection		**2.6**	**A**	
PM Peak Hour				
Eastbound N Main Street	Left / Thru	5.0	A	171
	Right	-	(-)	0
Westbound N Main Street	Left	2.9	A	37
	Thru / Right	-	(-)	66
Northbound N Mason Street	Left / Thru	44.6	D	27
	Right	-	(-)	0
Southbound NAPA Auto Parts Driveway	Left / Thru / Right	-	(-)	0
Intersection		**4.0**	**A**	

- (-) Denotes 0 Seconds of Delay Due to Free Flow Movement or Absence of Traffic Volume

N Mason Street / E Market Street

As shown in **Table 16,** in the traffic sensitivity analysis scenario this intersection's delay worsened during the PM peak hour, operating at LOS D compared to LOS C in existing conditions. The overall intersection delay increased by 2.6 seconds during the AM peak hour and 11.8 seconds during the PM peak hour. VHB identified the following operational constraints:

- The northbound thru / right movement operates at LOS D and LOS E during the AM and PM peak hour respectively, and associated queue lengths (312 feet) extend past the S Mason Street / E Water Street intersection during the PM peak hour.
- The eastbound approach operates at LOS D, and the associated queue length (251 feet) extends past the E Market Street / S Federal Street intersection during the PM peak hour.
- The southbound left movement operates at LOS E during the PM peak hour, and associated queue lengths (278 feet) extend past the N Mason Street / E Elizabeth intersection during the PM peak hour. As such, two southbound lane on N Mason Street between E Elizabeth Street and E Market Street are important in future design to accommodate queue lengths.
- Queue lengths associated with the westbound left movement (154 feet) extend past the available storage length.

Table 16 Future Baseline Operations - N Mason Street / E Market Street

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Market Street	Left / Thru / Right	30.8	C	134
Westbound E Market Street	Left	21.5	C	143
	Thru	14.4	B	120
	Right	6.8	A	19
Northbound N Mason Street	Left	17.5	B	9
	Thru / Right	38.0	D	#141
Southbound N Mason Street	Left / Thru	23.2	C	168
	Thru / Right	22.9	C	90
Intersection		**22.0**	**C**	
PM Peak Hour				
Eastbound E Market Street	Left / Thru / Right	42	D	#251
Westbound E Market Street	Left	32.9	C	#154
	Thru	22.8	C	170
	Right	10.7	B	28
Northbound N Mason Street	Left	15.4	B	15
	Thru / Right	60.6	**E**	#312
Southbound N Mason Street	Left / Thru	58.0	**E**	#278
	Thru / Right	19.6	B	82
Intersection		**40.4**	**D**	

4

Alternatives Analysis

The study's alternatives analysis comprised two distinct elements: corridor-wide cross-section design and intersection-specific design. In partnership with the stakeholder group, VHB developed, evaluated, and refined cross-section and intersection alternatives.

Corridor Cross-Section Alternatives Analysis

VHB evaluated two (2) typical section design options for the N Mason Street study corridor, the Open Space corridor treatment and the Wide Median corridor treatment. City of Harrisonburg Department of Public Works staff originally developed the vision for these two concepts, which VHB then refined throughout this study process. Both cross-sections reconfigure the existing right-of-way by reducing each direction of travel from the existing two through lanes to one through lane. In both alternatives, left turn lanes are provided at identified intersections and new bicycle facilities are introduced. Both cross-section designs can be combined and integrated into any intersection alternative designs, so the alternative analysis for the corridor preferred design is independent of the intersection analysis.

Both designs have the same vehicular capacity and meet the three design objectives for the corridor – namely, improved safety (particularly for pedestrians), adequate capacity for traffic to support existing business and potential development, and complete street design that accommodates all road users. In an urban corridor, capacity is controlled by intersection design – the intersection alternatives analysis section of this report will document that a single through lane per direction provides sufficient vehicular capacity to support the corridor. Evaluation and comparison of the two alternatives is thus largely driven by public engagement, which is documented in the next chapter of this report.

Open Space Corridor Treatment

The Open Space corridor treatment proposes consolidating all vehicular traffic to the west side of the corridor (i.e., the existing southbound travel lanes), within a 36-foot, three-lane pavement section. North of E Wolfe Street, the east side of the corridor (i.e., the existing northbound travel lanes) would be repurposed as a 10-foot shared use path (SUP) and a wide-open space – with

exact use of that space to be determined during future detailed design. This cross-section design implements 2017 City of Harrisonburg Bicycle and Pedestrian Plan's vision, which recommends a new SUP on N Mason Street between N Main Street and E Wolfe Street, providing a connection between the future Northend Greenway and the existing SUP on Federal Street. In this concept, the open space is on the east side of N Mason Street – a reversal from the Summer 2025 Demonstration Project. Locating the open space on the east side connects it to the Northeast Neighborhood as well as existing open space between E Wolfe Street and E Rock Street.

Figure 5 displays the proposed 83-foot Open Space typical section, which, from west to east, includes a 5-foot sidewalk, a 2-foot buffer, a 2.5-foot curb and gutter, a 12-foot through lane, a 12-foot left turn lane, a 12-foot through lane, a 2.5-foot curb and gutter, a 5-foot planting strip, a 10-foot shared-use path, and a 20-foot open space. This typical section is applicable from N Main Street to E Wolfe Street. South of E Wolfe Street, the N Mason Street right-of-way narrows in width, and the proposed shared use path is swapped with a proposed sidewalk.

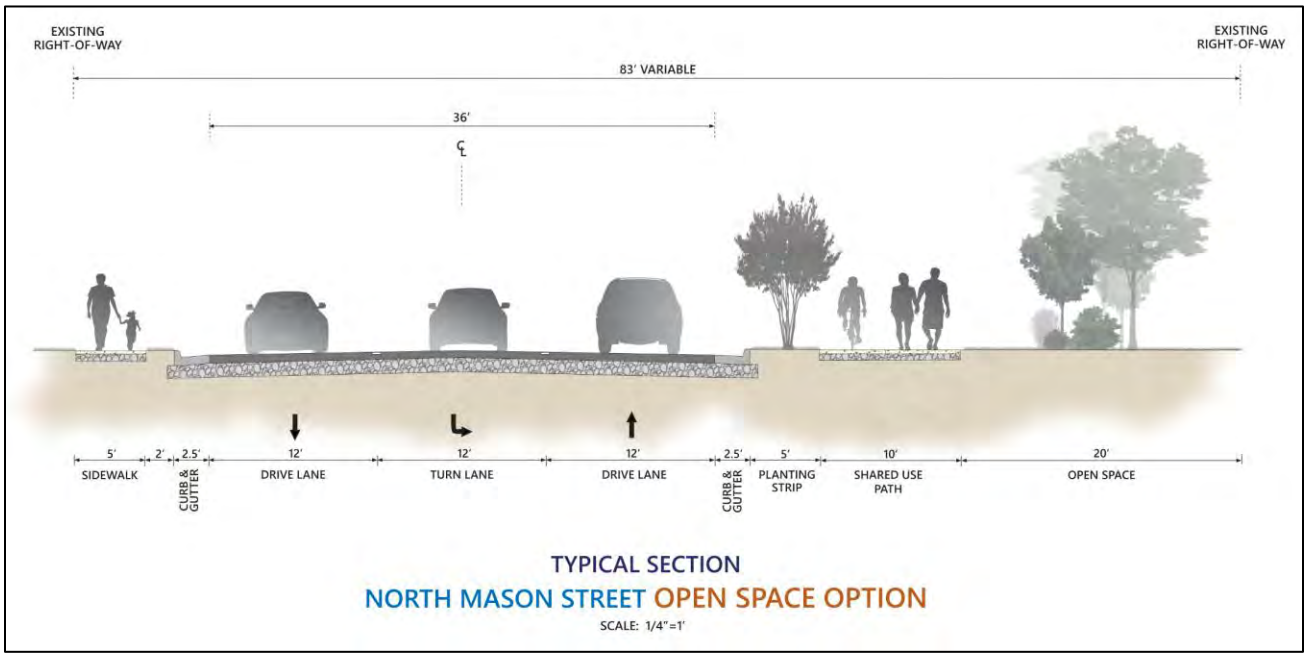


Figure 5 Open Space Corridor Treatment

Wide Median Corridor Treatment

The Wide Median corridor treatment proposes maintaining the median-divided boulevard style roadway, with one vehicular travel lane plus bike lane on either side of a widened, landscaped median. This concept physically separates pedestrian and bicycle traffic; however, it does not directly implement the vision in the 2017 City of Harrisonburg Bicycle and Pedestrian Plan, nor does it restore right-of-way to community "non-transportation" use.

Figure 6 displays the proposed 83-foot Wide Median typical section, which, from west to east includes a 5-foot sidewalk, a 2-foot buffer, a 2.5-foot curb and gutter, a 6-foot bike lane, a 2-foot bike lane paint buffer, a 11-foot through lane, a 12-foot left turn lane, a 14-foot median, an 11-foot through lane, a 2-foot bike lane paint buffer, a 6-foot bike lane, a 2.5-foot curb and gutter, a 2-foot buffer, and a 5-foot sidewalk. This typical section is applicable from N Main Street to E

Wolfe Street. South of E Wolfe Street, the N Mason Street right-of-way narrows in width, and the proposed bike lanes are removed.

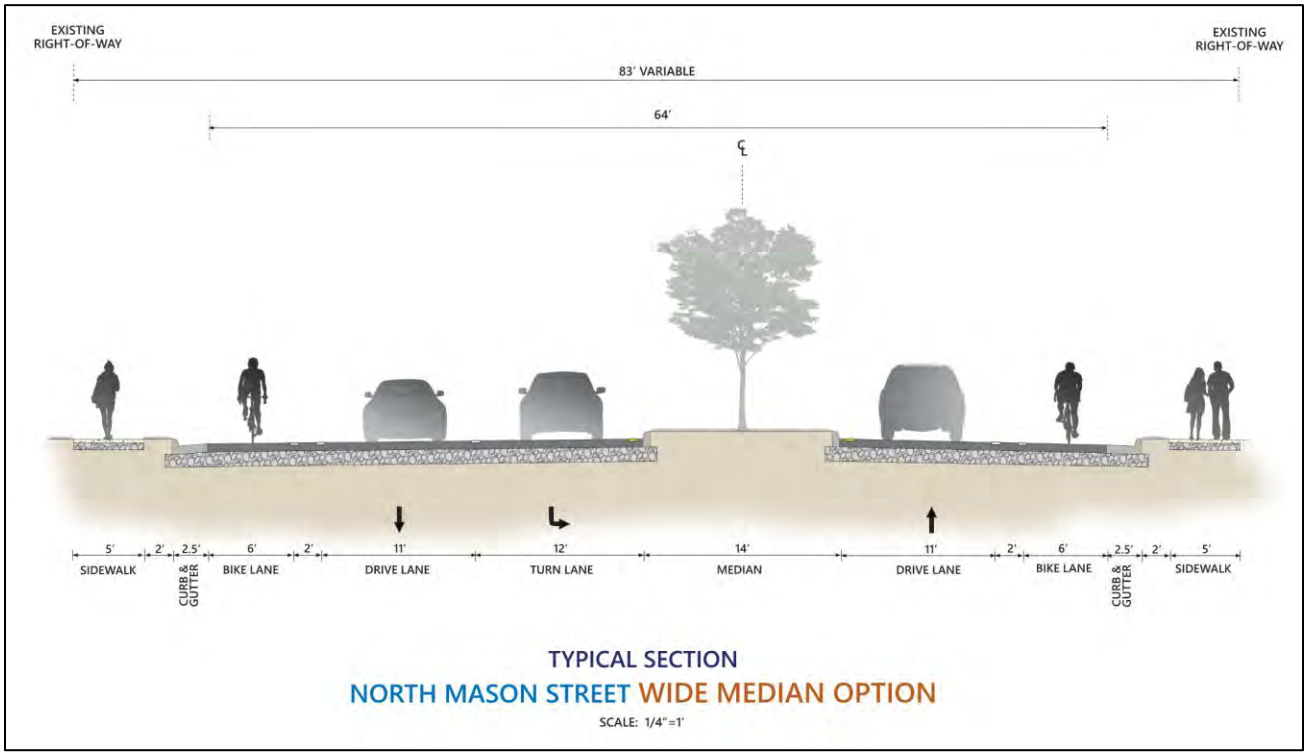


Figure 6 Wide Median Corridor Treatment

Intersection Alternatives Analysis

Building on the lessons learned from the North Mason Complete Streets Demonstration Project, VHB and the stakeholder group identified initial concept designs for each of the five (5) alternatives intersections. These initial concept designs vary in intersection control (e.g., signal control, stop control, roundabout) and the presence of turn lanes. VHB screened the concept designs via VDOT's Virginia Junction Screening Tool (VJuST) to determine high-level impacts on traffic operations (i.e., volume to capacity ratio), pedestrian accommodations, road user safety (i.e., number of conflict points), and relative cost order of magnitude. The impacts on traffic operations were calculated using the AM and PM peak hour sensitivity demand traffic volumes. This planning-level concept screening is documented in the following report sections.

VHB presented the VJuST results for the initial intersection alternative concepts at the January 16th, 2026, Stakeholder Technical Meeting. During this meeting, the study work group reached consensus on two (2) intersection-specific alternatives per intersection for additional evaluation. Each of these intersection-specific alternatives could be paired with either Corridor Treatment alternative; thus, a total of four design combinations were identified for each intersection. These sketches are shown in the following report sections.

Following this consensus, VHB advanced alternative evaluation, including traffic capacity analysis and concept sketch development. To evaluate traffic capacity, VHB used the appropriate traffic capacity software (i.e., SIDRA for roundabouts, Synchro for all other intersection control types) with AM and PM peak hour sensitivity demand traffic. This evaluation was conducted with the

presumption that intersection impacts are isolated (i.e., traffic models were not prepared for every combination of alternatives at each study intersection). The projected traffic operations results associated with each advanced alternative are detailed in the following report sections.

N Mason Street / E Elizabeth Street

VHB and the stakeholders identified seven (7) preliminary design concepts for this intersection, which are listed in **Table 17** alongside their VJuST planning-level concept screening findings. The project team advanced two alternatives for detailed analysis: Signal Control with No Left Turn Lanes and No Signal Control with Right-In/Right-Out (RIRO) Access. The Signal Control with No Left Turn Lanes alternative was selected as it most closely matched the existing conditions of the intersection, and the project team concluded the lack of left turn lanes was reasonable given the minimal left turning volumes in future sensitivity demand traffic volumes. The single-lane roundabout alternative was not advanced due to negative public feedback received during the North Mason Complete Street Demonstration Project – the public and the fire department noted challenges with the relatively small size. Removing signal control with full access options were not advanced due to stop-control sight distance issues on the E Elizabeth Street approaches. The No Signal Control with RIRO Access alternative was thus selected as it would mitigate the sight distance issues, improve traffic operations by providing free-flow conditions for northbound and southbound N Mason Street approaches, and reduce long-term maintenance costs by removing a potentially unneeded traffic signal. The design vehicles for all movements at this intersection are City of Harrisonburg Fire Department ladder trucks and SU-40 box trucks.

Table 17 N Mason Street / E Elizabeth Street Concept Design VJuST Screening

	Intersection Design Concept	Maximum V/C		Pedestrian Accommodation Compared to Signal	Number of Conflict Points	Planning Level Cost
		AM	PM			
1	Signal Control with Left Turn Lanes	0.25	0.34		48	$
2	**Signal Control with No Left Turn Lanes ★**	0.26	0.38		48	$
3	Single-Lane Roundabout	0.22	0.33		8	$$
4	No Signal Control with Left Turn Lanes	0.14	0.23		48	$
5	No Signal Control with No Left Turn Lanes	0.14	0.24		48	$
6	Signal Control with RIRO Access	0.22	0.34		48	$
7	**No Signal Control with RIRO Access★**	0.14	0.23		48	$

★ Design Concept Advanced for Additional Evaluation

Table 18 summarizes AM and PM peak intersection delay and level of service for the future traffic volume sensitivity baseline conditions with existing intersection design and the two advanced alternative concepts. Both alternatives operate at LOS A, indicating that there is

adequate vehicle capacity with a single through lane in each direction and the associated intersection control, presence of turn lanes, and allowed movements. Detailed operation results for each alternative are provided in the following sections.

Table 18 Intersection Design Alternatives Comparison – N Mason Street / E Elizabeth Street

Alternative	AM Peak Hour		PM Peak Hour	
	Intersection Delay (sec)	Level of Service (LOS)	Intersection Delay (sec)	Level of Service (LOS)
Traffic Sensitivity Baseline Conditions	5.9	A	7.3	A
Signal Control with No Left Turn Lanes	6.7	A	8.9	A
No Signal Control with RIRO Access	1.4	A	2.0	A

Signal Control with No Left Turn Lanes

Figure 7 and **Figure 8** depict this proposed intersection alternative with the Open Space option and Wide Median option, respectively. Due to the southbound N Mason Street queue lengths at E Market Street, a second southbound travel lane opens north of E Elizabeth Street. As shown in **Table 19**, the intersection operation results for the proposed alternative in future traffic volume sensitivity conditions indicate no operational constraints. The overall intersection delay increases by just 0.8- and 1.6-seconds during AM and PM peak hours, respectively.

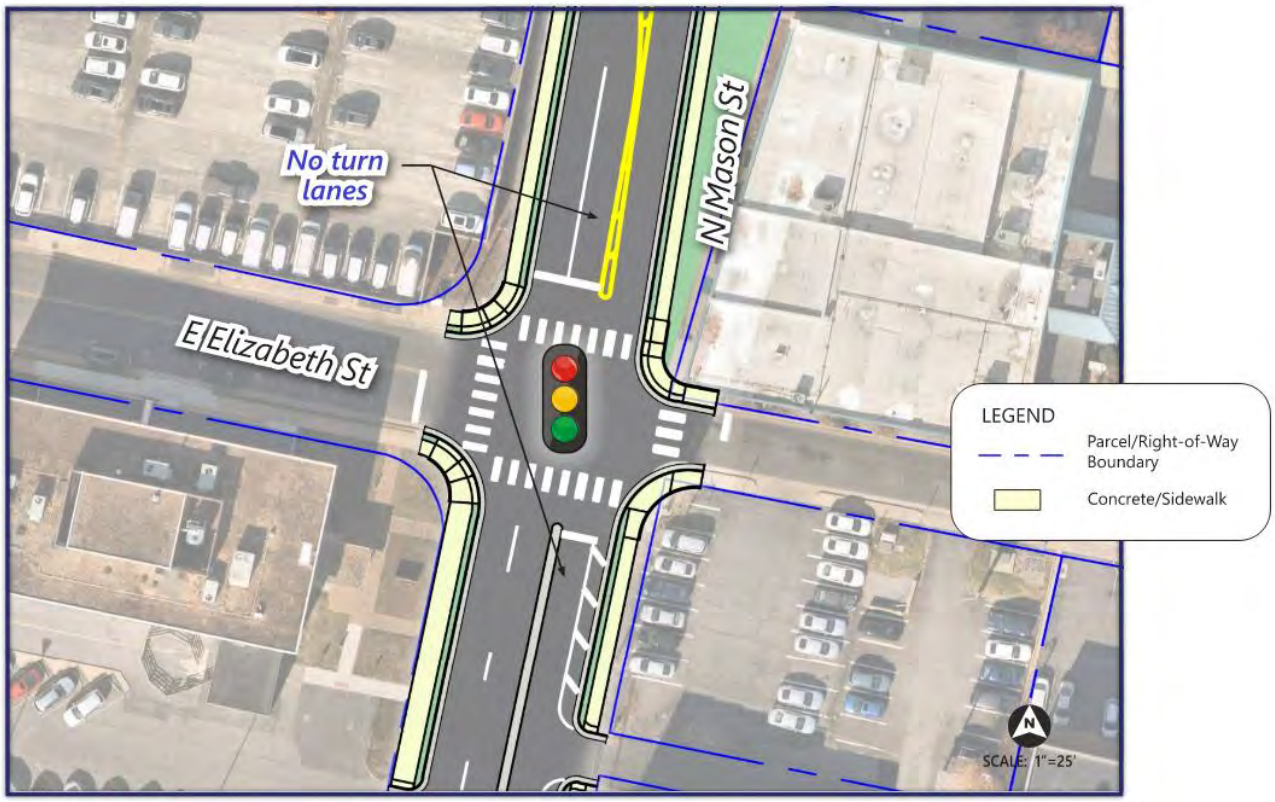


Figure 7 N Mason Street / E Elizabeth Street Signal Control with No Left Turn Lanes – Open Space

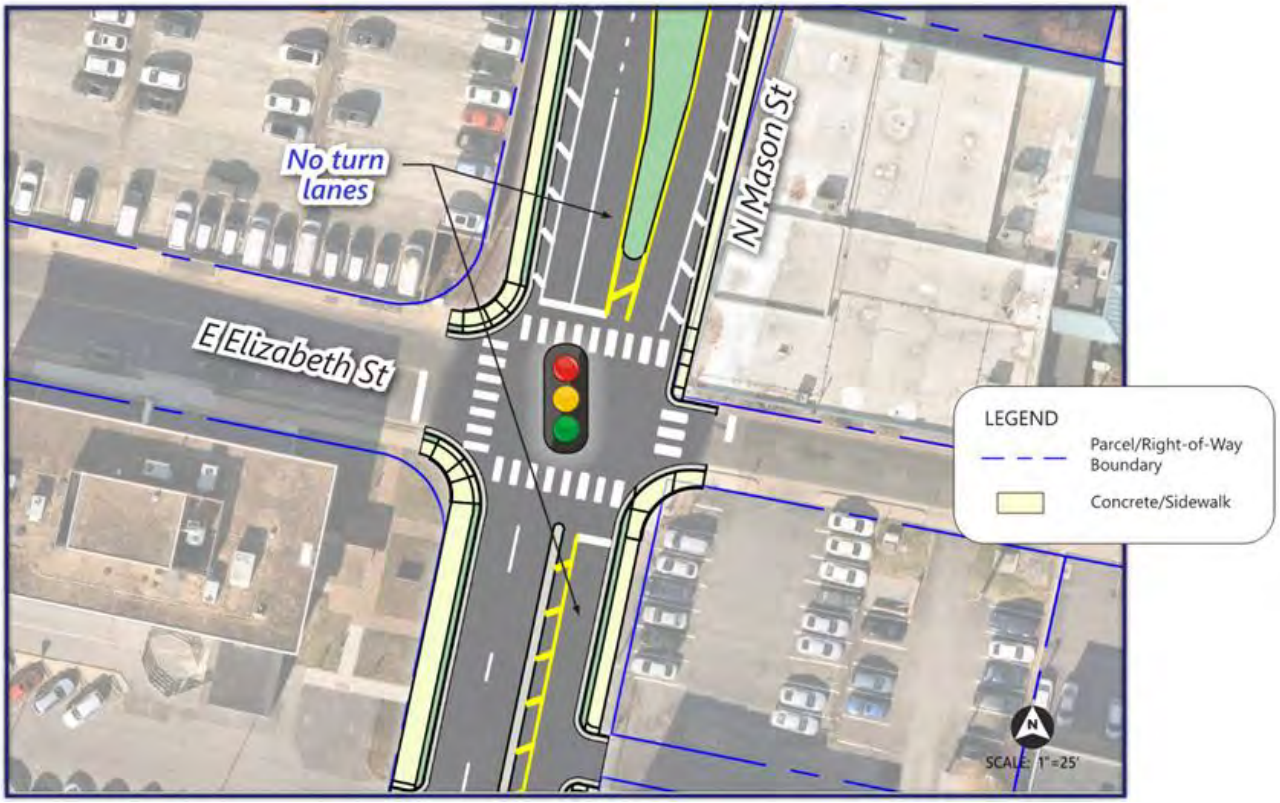


Figure 8 N Mason Street / E Elizabeth Street Signal Control with No Left Turn Lanes – Wide Median

Table 19 N Mason Street / E Elizabeth Street Signal with No Left Turn Lanes

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Elizabeth Street	Left / Thru / Right	19.5	B	32
Westbound E Elizabeth Street	Left / Thru / Right	18.8	B	18
Northbound N Mason Street	Left / Thru / Right	4.7	A	78
Southbound N Mason Street	Left / Thru	4.5	A	74
	Thru / Right	4.5	A	74
Intersection		**6.7**	**A**	
PM Peak Hour				
Eastbound E Elizabeth Street	Left / Thru / Right	17.6	B	38
Westbound E Elizabeth Street	Left / Thru / Right	18.4	B	41
Northbound N Mason Street	Left / Thru / Right	7.3	A	147
Southbound N Mason Street	Left / Thru	6.1	A	110
	Thru / Right	6.1	A	110
Intersection		**8.9**	**A**	

No Signal Control with RIRO Access

This alternative implements two-way stop control (TWSC) on the eastbound and westbound approaches on E Elizabeth Street and removes signalization for the northbound and southbound through movements on N Mason Street. The median on N Mason Street extends into the intersection to restrict vehicular movements but has openings at marked crosswalks to accommodate pedestrian and cyclist crossings. The extension of the median restricts left turning movements and converts both E Elizabeth Street approaches to RIRO access only.

Figure 9 and **Figure 10** depict this proposed intersection alternative with the Open Space option and Wide Median option, respectively. Because left turns are restricted at this intersection, left turning traffic is projected to reroute to the N Mason Street / E Wolfe Street and N Mason Street / E Market Street intersections. **Figure 11** shows the associated change in traffic sensitivity demand volumes for AM and PM peak hours. These volume changes were accounted for in the operational analysis for this alternative.

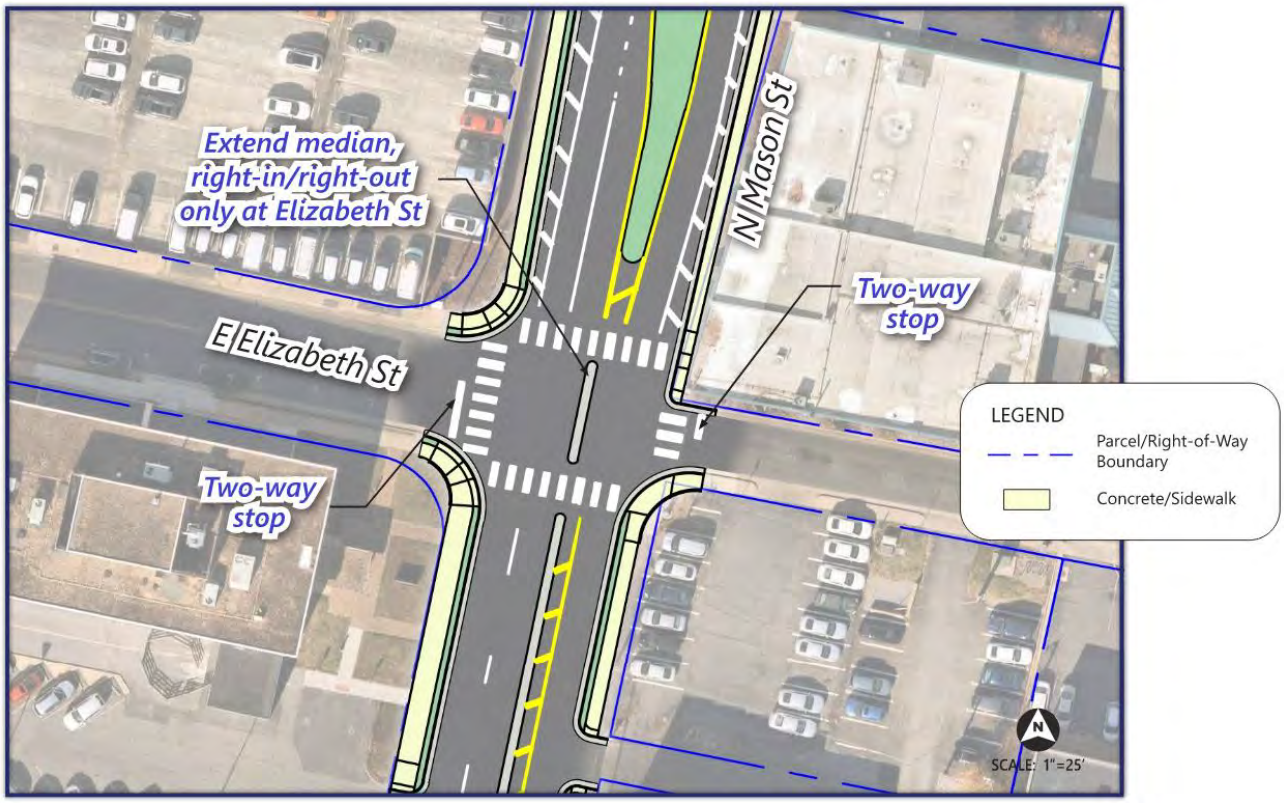


Figure 9 N Mason Street / E Elizabeth Street No Signal with Right Turns – Wide Median

As shown in **Table 20**, the intersection operation results for the proposed alternative in future build conditions indicate no operational constraints. The overall intersection delay decreases by 4.5- and 5.3-seconds during AM and PM peak hours, respectively, when compared to future traffic sensitivity baseline conditions. This reduction results from the conversion to free-flow conditions for northbound and southbound through movements.

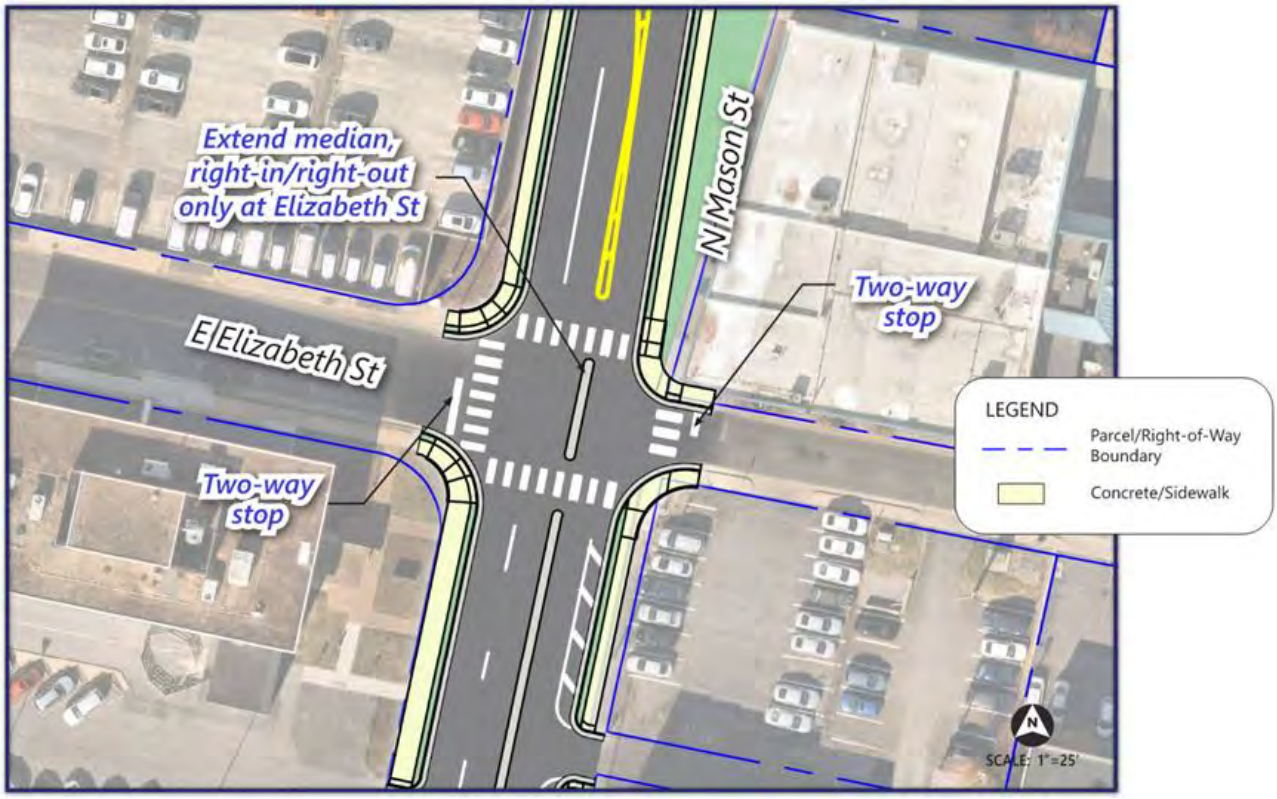


Figure 10 N Mason Street / E Elizabeth Street No Signal with Right Turns – Open Space

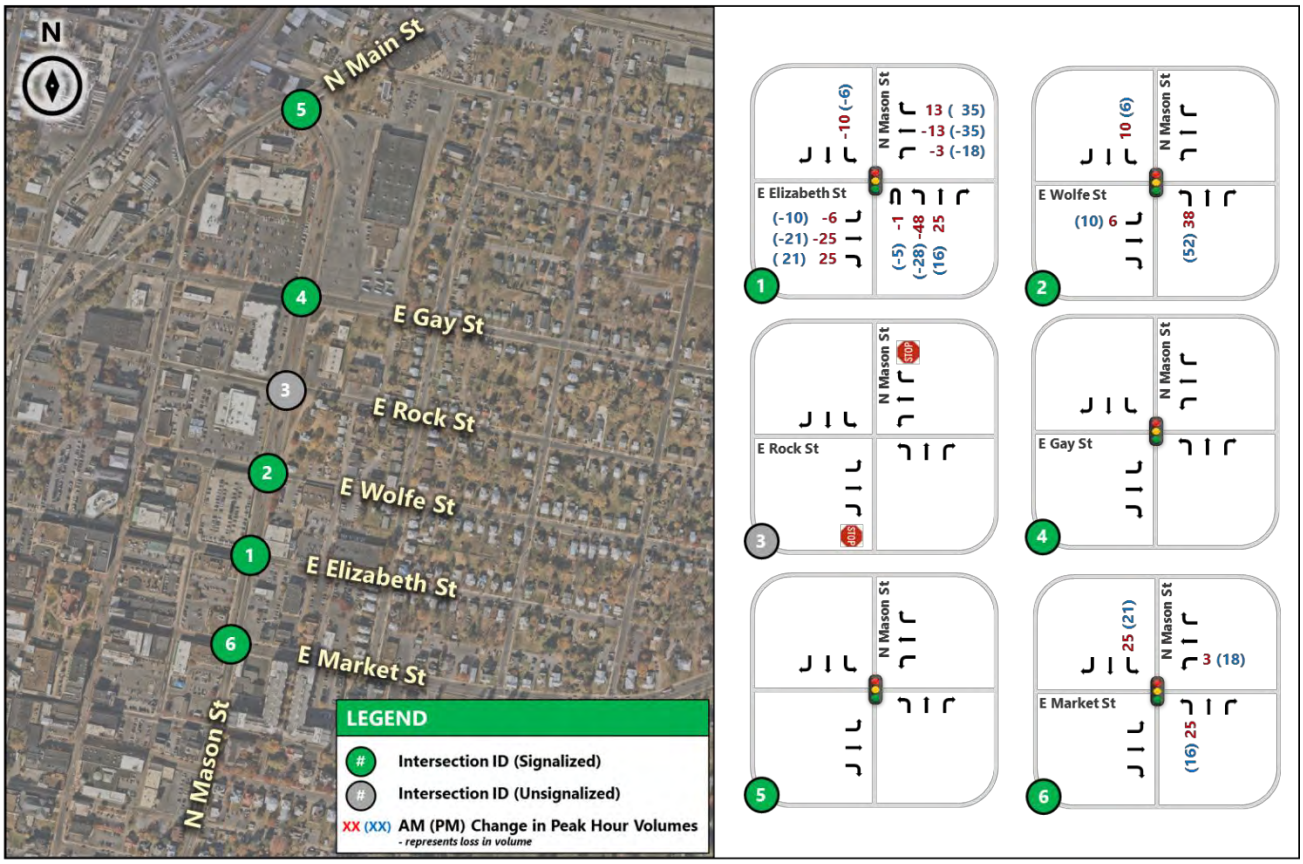


Figure 11 N Mason Street / E Elizabeth Street RIRO Access Rerouted Volumes

Table 20 N Mason Street / E Elizabeth Street No Signal with RIRO

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Elizabeth Street	Right	10.3	B	7.5
Westbound E Elizabeth Street	Right	9.9	A	2.5
Northbound N Mason Street	Thru / Right	-	(-)	0
Southbound N Mason Street	Thru	-	(-)	0
	Thru / Right	-	(-)	0
Intersection		**1.4**	**A**	
PM Peak Hour				
Eastbound E Elizabeth Street	Right	11.6	B	15
Westbound E Elizabeth Street	Right	11.8	B	7.5
Northbound N Mason Street	Thru / Right	-	(-)	0
Southbound N Mason Street	Thru	-	(-)	0
	Thru / Right	-	(-)	0
Intersection		**2.0**	**A**	

- (-) Denotes 0 Seconds of Delay Due to Free Flow Movement

N Mason Street / E Wolfe Street

VHB and the stakeholders identified five (5) preliminary design concepts for this intersection, which are listed in **Table 21** alongside their VJuST planning-level concept screening findings. During the North Mason Complete Streets Demonstration Project, the signal control at this intersection was removed and the public reported that it felt congested and made pedestrian crossings more challenging. The project team identified that this perceived congestion may have resulted from the absence of left turn lanes on N Mason Street and thus, alternatives including left turn lanes were advanced.

The stakeholder group selected the Signal Control with Left Turn Lanes and No Signal Control with Left Turn Lanes alternatives for further evaluation. The Signalized Intersection Control with Left Turn Lanes alternative was advanced as it most closely matches the existing conditions of the intersection and maintains signalized pedestrian crossings. The TWSC with Left Turn Lanes on alternative was advanced as it improve traffic operations by providing free-flow conditions for northbound and southbound N Mason Street approaches and reduce long-term maintenance costs by removing a potentially unneeded traffic signal. Further details about the advanced alternatives can be found in the following sections. The design vehicles for all movements at this intersection are City of Harrisonburg Fire Department ladder trucks and SU-40 box trucks.

Table 22 summarizes AM and PM peak intersection delay and level of service for the future traffic volume sensitivity baseline conditions with existing intersection design and the two advanced alternative concepts. Both alternatives operate at LOS A or B, indicating that there is adequate vehicle capacity with a single through lane in each direction and the tested intersection control. Detailed operation results for each alternative are provided in the following sections.

Table 21 N Mason Street / E Wolfe Street Concept Design VJuST Screening

	Intersection Design Concept	Maximum V/C		Pedestrian Accommodation Compared to Signal	Number of Conflict Points	Planning Level Cost
		AM	PM			
1	**Signal Control with Left Turns Lanes★**	0.25	0.39		48	$
2	Signal Control with No Left Turn Lanes	0.25	0.46		48	$
3	One-Lane Roundabout	0.18	0.35		8	$$
4	**No Signal Control with Left Turn Lanes★**	0.16	0.51		48	$
5	No Signal Control with No Left Turn Lanes	0.16	0.52		48	$

★ Design Concept Advanced for Additional Evaluation

Table 22 Intersection Design Alternatives Comparison – N Mason Street / E Wolfe Street

Alternative	AM Peak Hour		PM Peak Hour	
	Intersection Delay (sec)	Level of Service (LOS)	Intersection Delay (sec)	Level of Service (LOS)
Traffic Sensitivity Baseline Conditions	10.6	B	13.4	B
Signal Control with Left Turn Lanes	11.3	B	15.6	B
No Signal Control with Left Turn Lanes	4.7	A	8.6	A

Signal Control with Left Turn Lanes

This alternative maintains signal control for the intersection and includes dedicated left turn lanes for the northbound and southbound approaches on N Mason Street. The existing protected / permissive left-turn signal phasing for northbound and southbound left turns is converted to permissive phasing to improve intersection capacity.

Figure 12 and **Figure 13** depict this proposed intersection alternative with the Open Space option and Wide Median option, respectively. As previously discussed in the corridor alternatives section, the proposed SUP or bike lanes on N Mason Street terminate at E Wolfe Street, with a one-block proposed connection on E Wolfe Street to the existing Federal Street SUP. As shown in **Table 23**, the intersection operation results for the proposed alternative in future traffic sensitivity conditions indicate no operational constraints. The overall intersection delay decreases by 3.2- and 3.3-seconds during AM and PM peak hours, respectively, when compared to future traffic sensitivity baseline conditions.

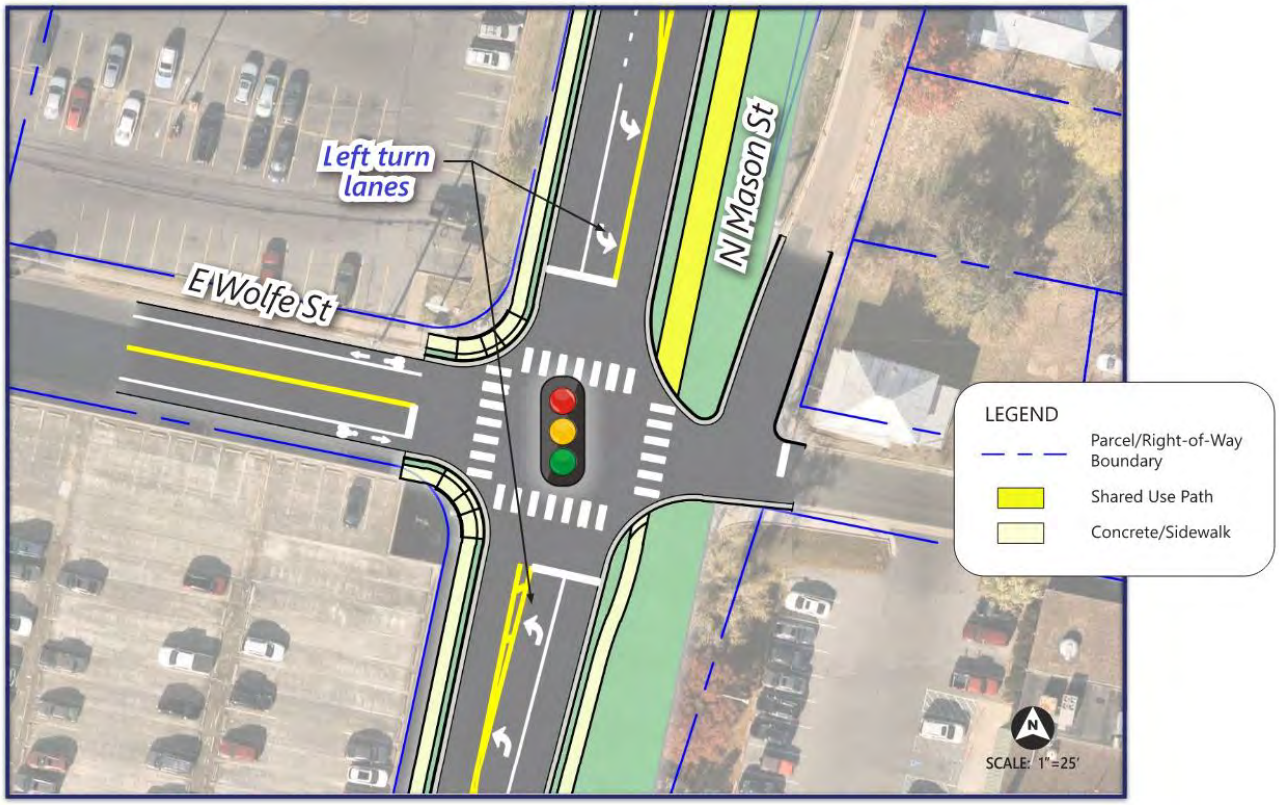


Figure 12 N Mason Street / E Wolfe Street Signalized Intersection – Open Space

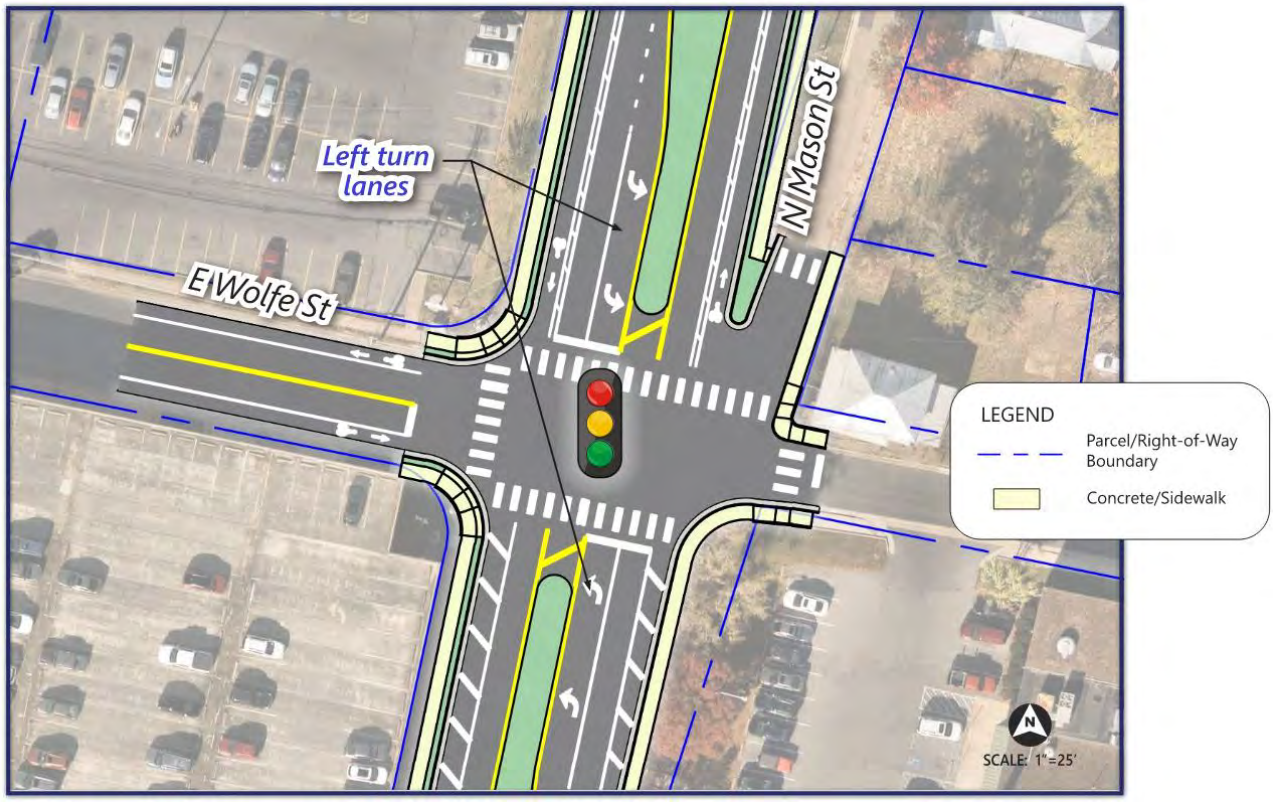


Figure 13 N Mason Street / E Wolfe Street Signalized Intersection – Wide Median

Table 23 N Mason Street / E Wolfe Street Signal Control with Left Turn Lanes

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Wolfe Street	Left / Thru / Right	19.6	B	52
Westbound E Wolfe Street	Left / Thru / Right	19.1	B	41
Northbound N Mason Street	Left	5.3	A	23
	Thru / Right	7.6	A	73
Southbound N Mason Street	Left	7.5	A	8
	Thru / Right	9.7	A	107
Intersection		**11.3**	**B**	
PM Peak Hour				
Eastbound E Wolfe Street	Left / Thru / Right	22.9	C	144
Westbound E Wolfe Street	Left / Thru / Right	18.7	B	100
Northbound N Mason Street	Left	7.6	A	49
	Thru / Right	13.1	B	210
Southbound N Mason Street	Left	10.9	B	15
	Thru / Right	16.4	B	205
Intersection		**15.6**	**B**	

No Signal Control with Left Turn Lanes

This alternative implements two-way stop control (TWSC) on the eastbound and westbound approaches of E Wolfe Street and removes signalization for northbound and southbound through movements on N Mason Street. Dedicated left turn lanes are included for the northbound and southbound approaches on N Mason Street.

Figure 14 and **Figure 15** depict the proposed N Mason Street / E Wolfe Street intersection alternative with the Open Space option and Wide Median option, respectively. As previously discussed in the corridor alternatives section, the proposed SUP or bike lanes on N Mason Street terminate at E Wolfe Street, with a one-block proposed connection on E Wolfe Street to the existing Federal Street SUP. As shown in **Table 24**, the intersection operation results for the proposed alternative in future traffic sensitivity conditions show that the overall intersection delay decreases by 5.9- and 4.8-seconds during AM and PM peak hours, respectively, when compared to future traffic sensitivity baseline conditions. This reduction results from free-flow conditions for northbound and southbound through movements; however, the eastbound approach operates at LOS D during the PM peak hour under stop control. This an acceptable peak hour level of service, but a degradation from LOS C under signal control.

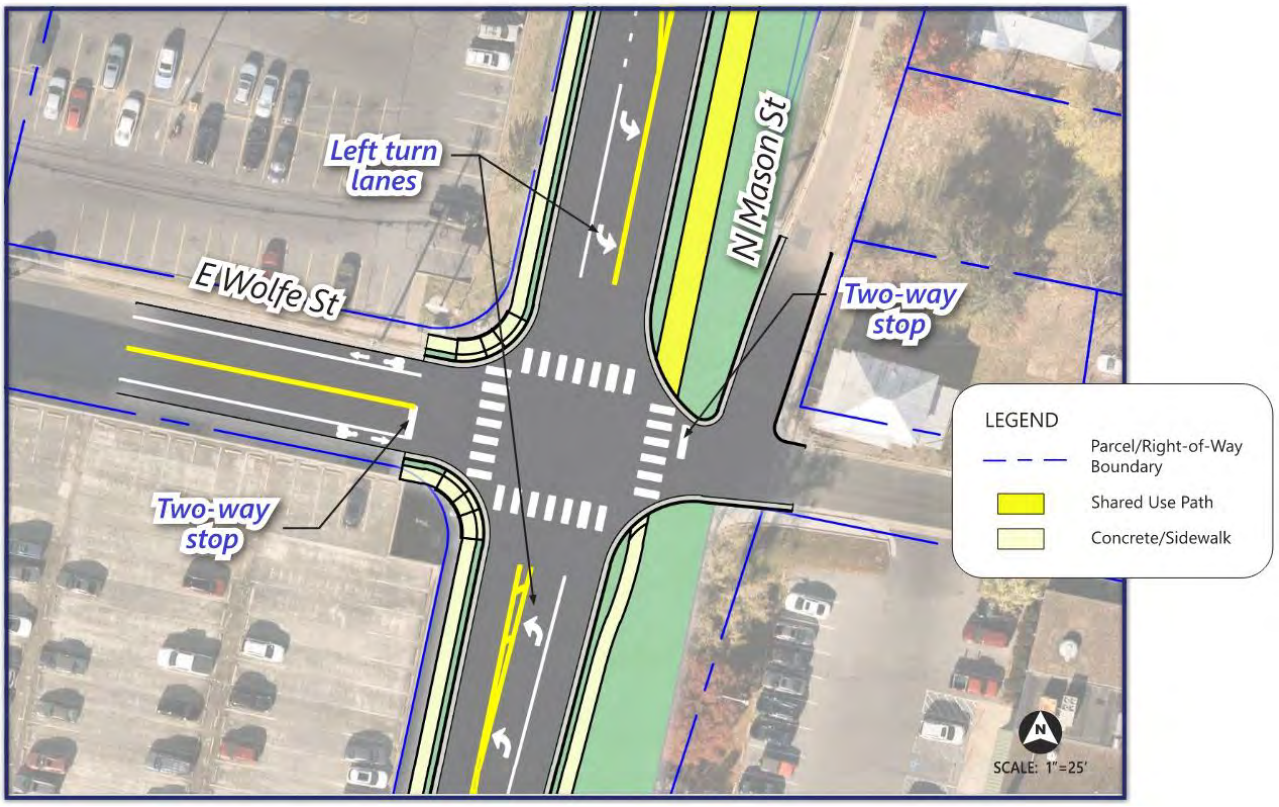


Figure 14 N Mason Street / E Wolfe Street Unsignalized Intersection – Open Space

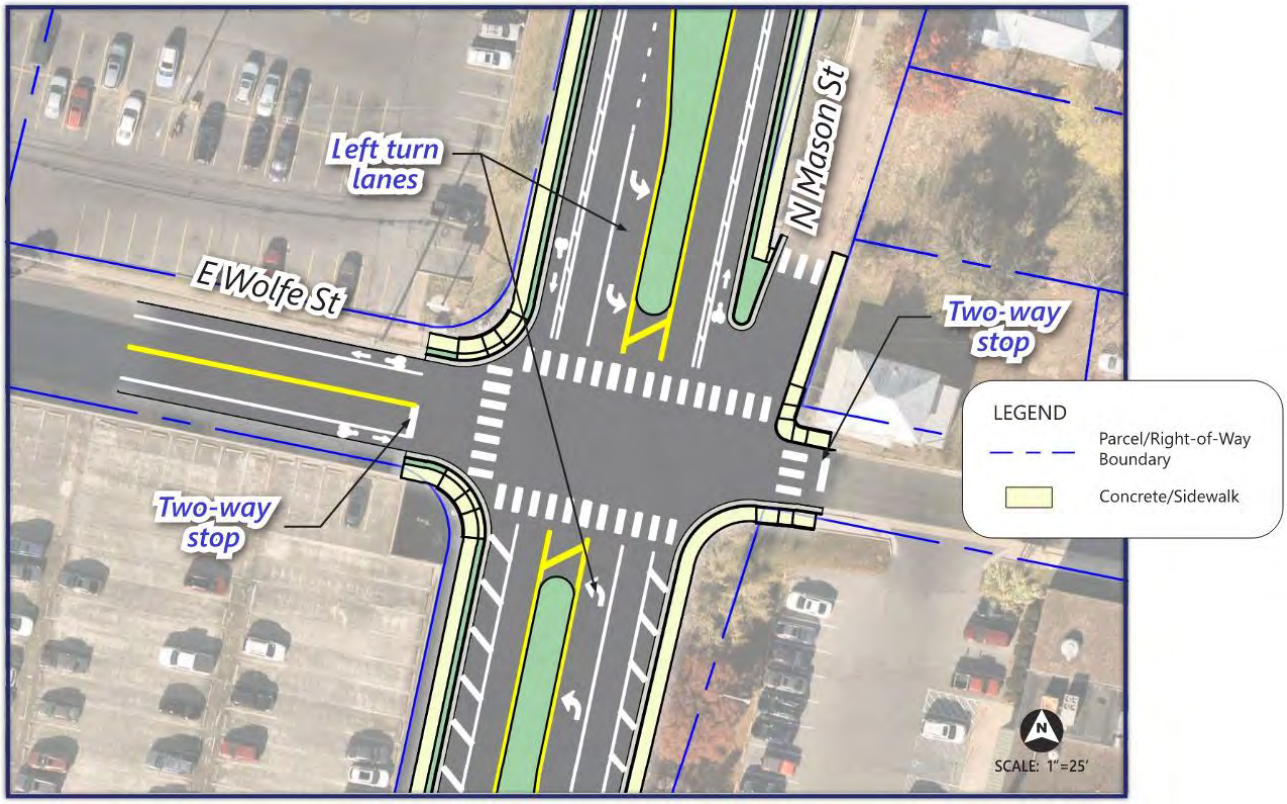


Figure 15 N Mason Street / E Wolfe Street Unsignalized Intersection – Wide Median

Table 24 N Mason Street / E Wolfe Street Unsignalized Intersection with Left Turn Lanes

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Wolfe Street	Left / Thru / Right	12.7	B	17.5
Westbound E Wolfe Street	Left / Thru / Right	14.5	B	12.5
Northbound N Mason Street	Left	7.8	A	5
	Thru / Right	-	(-)	0
Southbound N Mason Street	Left	7.5	A	12.5
	Thru / Right	-	(-)	0
Intersection		**4.7**	**A**	
PM Peak Hour				
Eastbound E Wolfe Street	Left / Thru / Right	32.5	D	100
Westbound E Wolfe Street	Left / Thru / Right	22.4	C	17.5
Northbound N Mason Street	Left	8.2	A	7.5
	Thru / Right	-	(-)	0
Southbound N Mason Street	Left	8.1	A	2.5
	Thru / Right	-	(-)	0
Intersection		**8.6**	**A**	

- (-) Denotes 0 Seconds of Delay Due to Free Flow Movement

N Mason Street / E Rock Street

VHB and the stakeholders identified five (5) preliminary design concepts for this intersection, which are listed in **Table 25** alongside their VJuST planning-level concept screening findings. Due to the existing TWSC condition at this intersection, relatively low E Rock Street traffic volumes, and minimal vehicle delay, the project team concluded that this intersection should remain a TWSC rather than introduce a new traffic signal or roundabout. The stakeholder group selected the TWSC with Left Turn Lanes and the TWSC with No Left Turn Lanes as the two concept designs for additional evaluation. The design vehicles for all movements at this intersection are City of Harrisonburg Fire Department ladder trucks and SU-40 box trucks.

Table 26 summarizes AM and PM peak intersection delay and level of service for the future traffic volume sensitivity baseline conditions with existing intersection design and the two advanced alternative concepts. Both alternatives operate at LOS A, indicating that there is adequate vehicle capacity with a single through lane in each direction and the associated intersection control. Detailed operation results for each alternative are provided in the following sections.

Table 25 N Mason Street / E Rock Street Concept Design VJuST Screening

	Intersection Design Concept	Maximum V/C		Pedestrian Accommodation Compared to Signal	Number of Conflict Points	Planning Level Cost
		AM	PM			
1	Signal Control with Left Turn Lanes	0.15	0.23		48	$
2	Signal Control with No Left Turn Lanes	0.15	0.25		48	$
3	Single-Lane Roundabout	0.14	0.22		8	$$
4	**No Signal Control with Left Turn Lanes★**	0.09	0.14		48	$
5	**No Signal Control with No Left Turn Lanes★**	0.09	0.14		48	$

★ Design Concept Advanced for Additional Evaluation

Table 26 Intersection Design Alternatives Comparison – N Mason Street / E Rock Street

Alternative	AM Peak Hour		PM Peak Hour	
	Intersection Delay (sec)	Level of Service (LOS)	Intersection Delay (sec)	Level of Service (LOS)
Traffic Sensitivity Baseline Conditions	2.6	A	2.4	A
No Signal Control with Left Turn Lanes	2.7	A	2.5	A
No Signal Control with No Left Turn Lanes	2.7	A	2.5	A

No Signal Control with Left Turn Lanes

This alternative maintains TWSC on the eastbound and westbound approaches of E Rock Street and includes dedicated left turn lanes for the northbound and southbound approaches on N Mason Street. The dedicated left turn lanes improve safety and mobility and help accommodate fire truck movements towards the fire station east of the intersection on E Rock Street.

Figure 16 and **Figure 17** depict this proposed intersection alternative with the Open Space option and Wide Median option, respectively. **Table 27** documents the intersection operation results for the proposed alternative in the future traffic sensitivity condition. No operational constraints were identified, with the overall intersection delay increasing by just 0.1 seconds during AM and PM peak hours when compared to future traffic sensitivity baseline conditions.

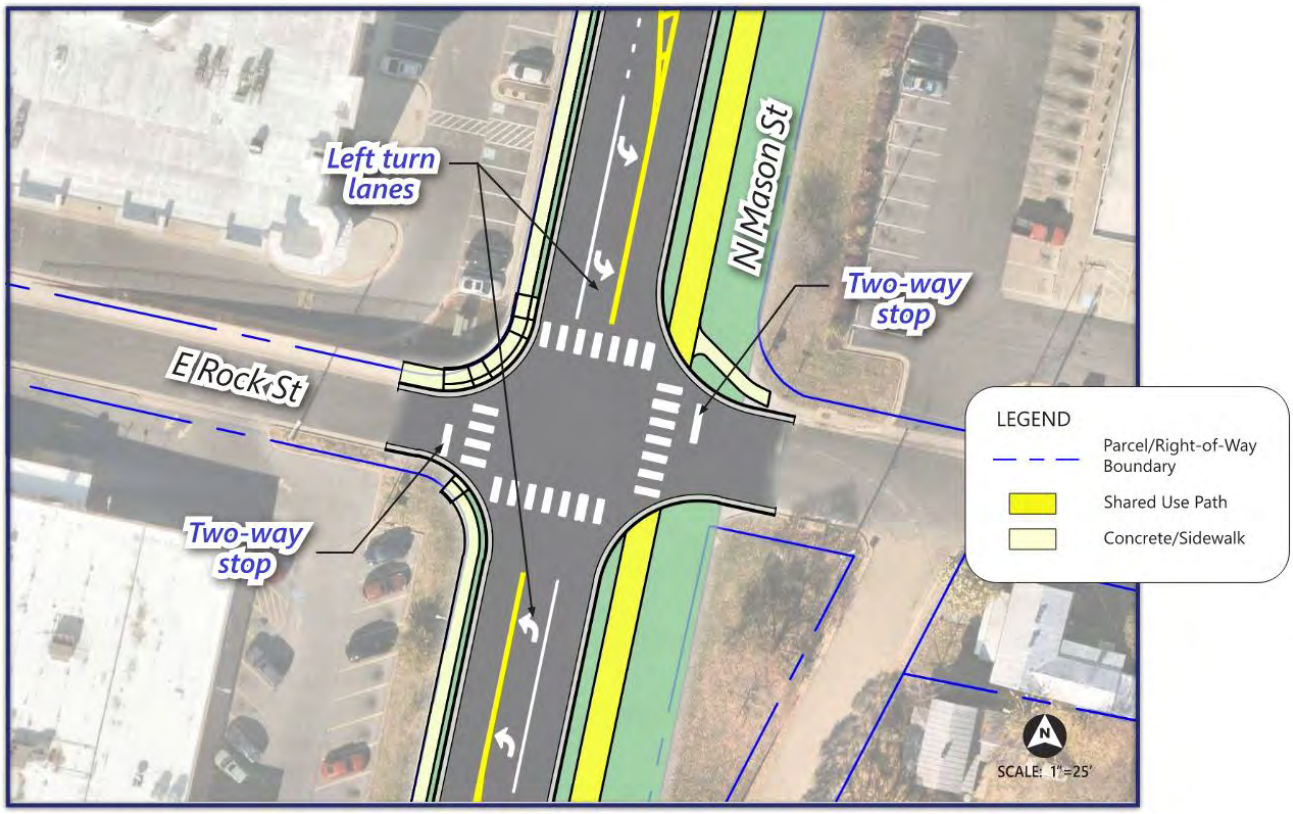


Figure 16 N Mason Street / E Rock Street TWSC with Left Turn Lanes – Open Space

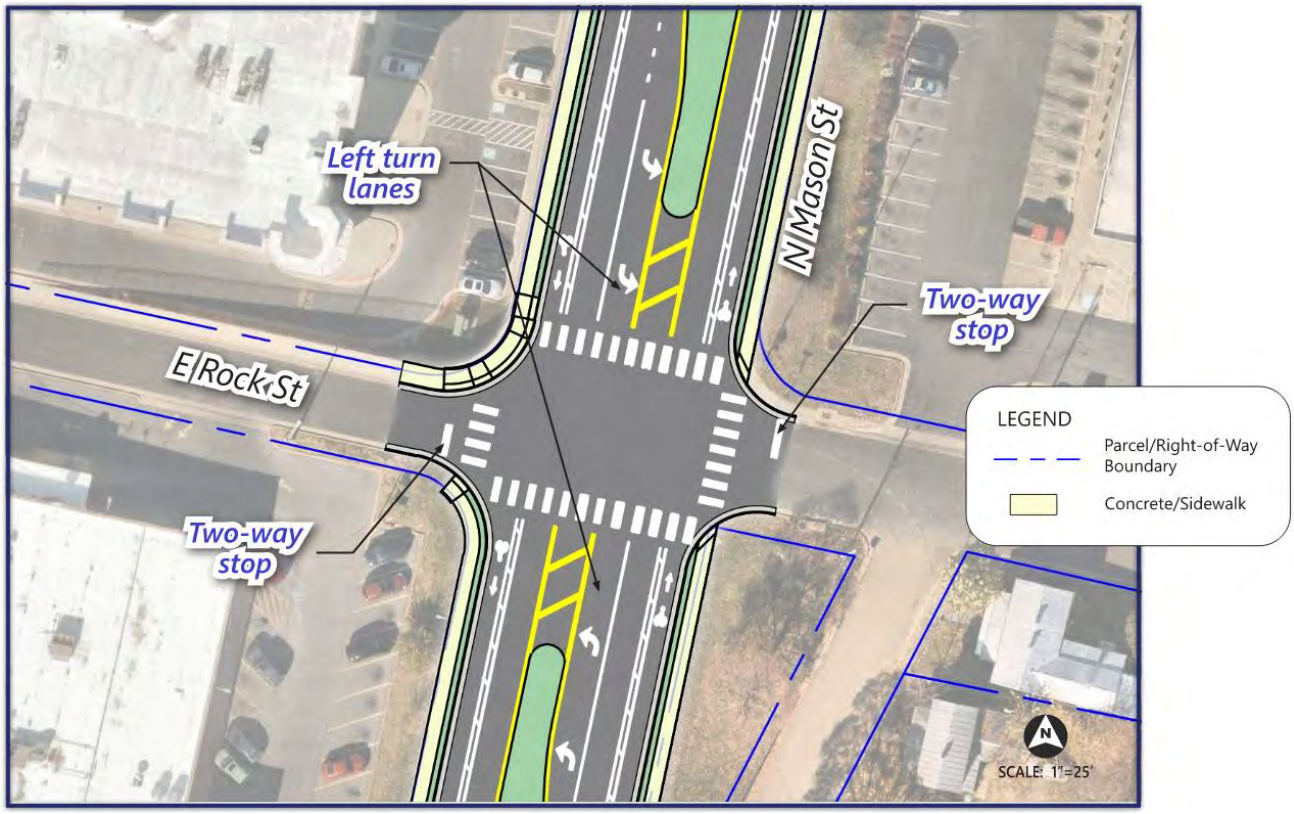


Figure 17 N Mason Street / E Rock Street TWSC with Left Turn Lanes – Wide Median

Table 27 N Mason Street / E Rock Street TWSC with Left Turn Lanes

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Rock Street	Left / Thru / Right	10.5	B	5
Westbound E Rock Street	Left / Thru / Right	10.9	B	5
Northbound N Mason Street	Left	7.6	A	0
	Thru / Right	-	(-)	0
Southbound N Mason Street	Left	7.4	A	0
	Thru / Right	-	(-)	0
Intersection		**2.7**	**A**	
PM Peak Hour				
Eastbound E Rock Street	Left / Thru / Right	12.6	B	12.5
Westbound E Rock Street	Left / Thru / Right	13	B	5
Northbound N Mason Street	Left	7.8	A	0
	Thru / Right	-	(-)	0
Southbound N Mason Street	Left	7.8	A	0
	Thru / Right	-	(-)	0
Intersection		**2.5**	**A**	

No Signal Control with No Left Turn Lanes

This alternative maintains TWSC on the eastbound and westbound approaches of E Rock Street and does not include dedicated left turn lanes for the northbound and southbound approaches of N Mason Street. Left turns from N Mason Street would instead be shared with through movements.

Figure 18 and **Figure 19** depict the proposed intersection alternative with the Open Space option and Wide Median option, respectively. As shown in **Table 28**, the intersection operation results for the proposed alternative in future traffic sensitivity conditions indicate no operational constraints. The overall intersection delay increases by just 0.1 seconds during both AM and PM peak hours when compared to future traffic sensitivity baseline conditions.

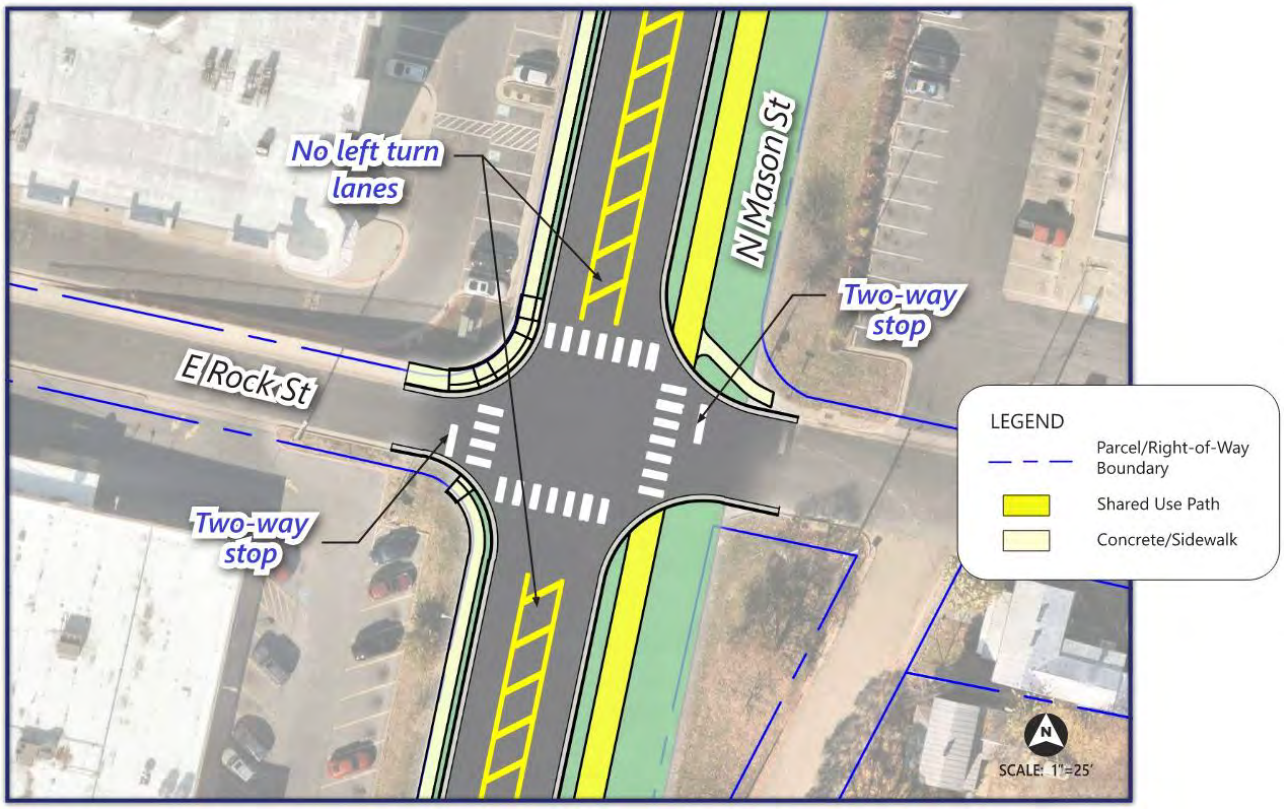


Figure 18 N Mason Street / E Rock Street TWSC with No Left Turn Lane – Open Space

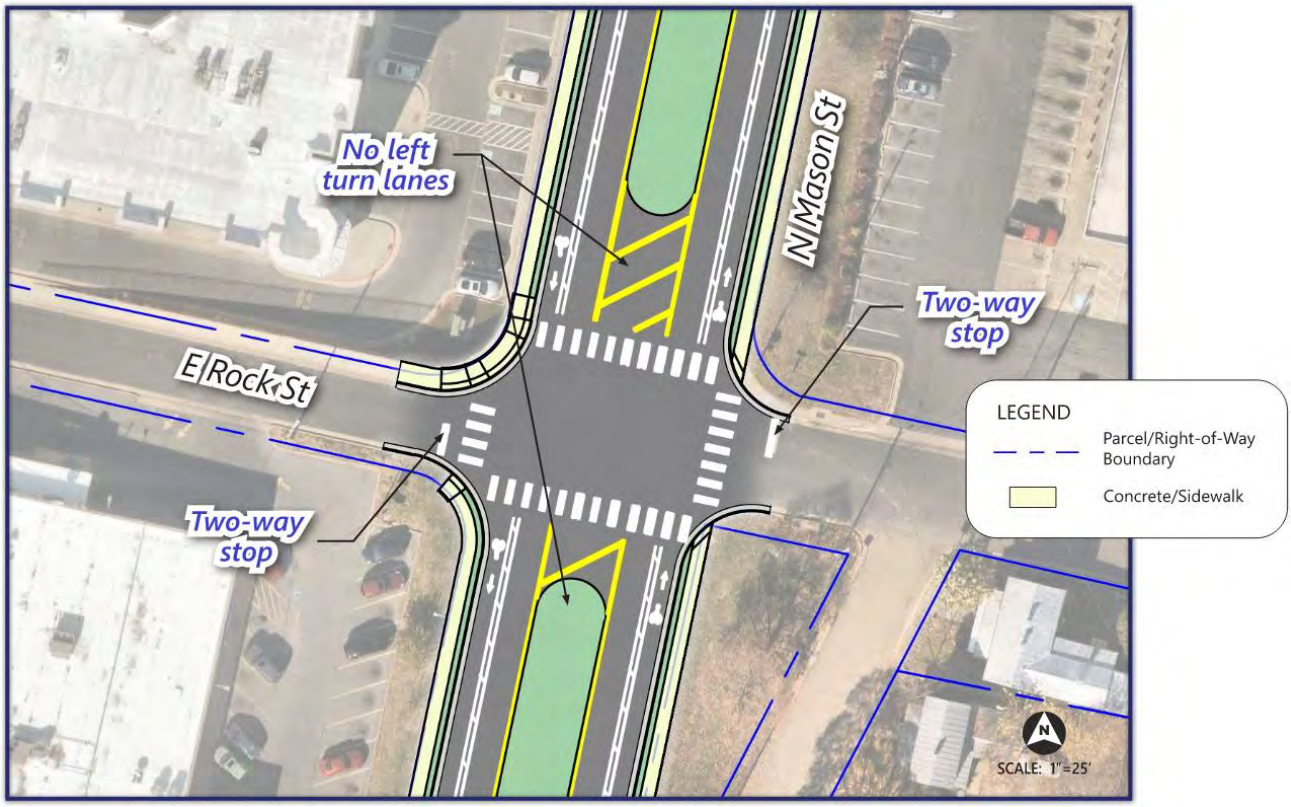


Figure 19 N Mason Street / E Rock Street TWSC with No Left Turn Lane – Wide Median

Table 28 N Mason Street / E Rock Street TWSC with No Left Turn Lanes

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Rock Street	Left / Thru / Right	10.5	B	5
Westbound E Rock Street	Left / Thru / Right	10.9	B	5
Northbound N Mason Street	Left / Thru / Right	1.0	A	0
Southbound N Mason Street	Left / Thru / Right	0.3	A	0
Intersection		**2.7**	**A**	
PM Peak Hour				
Eastbound E Rock Street	Left / Thru / Right	12.6	B	12.5
Westbound E Rock Street	Left / Thru / Right	13.1	B	5
Northbound N Mason Street	Left / Thru / Right	0.5	A	0
Southbound N Mason Street	Left / Thru / Right	0.4	A	0
Intersection		**2.5**	**A**	

N Mason Street / E Gay Street

VHB and the stakeholders identified five (5) preliminary design concepts for this intersection, which are listed in **Table 29** alongside their VJuST planning-level concept screening findings. The project team advanced the Signalized Intersection Control with Left Turn Lanes alternative as it closely matched the existing condition of the intersection. Additionally, due to positive feedback received regarding the Single-Lane Roundabout implemented during the North Mason Complete Streets Demonstration Project, the project team advanced the Single-Lane Roundabout alternative. Signal removal was determined not to be viable due to PM peak hour volume/capacity ratio and pedestrian accommodations.

Table 29 N Mason Street / E Gay Street Design Concept VJuST Screening

	Intersection Design Concepts	Maximum V/C		Pedestrian Accommodation Compared to Signal	Number of Conflict Points	Planning Level Cost
		AM	PM			
1	**Signal Control with Left Turn Lanes★**	0.27	0.31		48	$
2	Signal Control with No Left Turn Lanes	0.27	0.31		48	$
3	**Single-Lane Roundabout★**	0.18	0.29		8	$$
4	No Signal Control with Left Turn Lanes	0.29	0.69		48	$
5	No Signal Control with No Left Turn Lanes	0.30	0.70		48	$

★ Design Concept Advanced for Additional Evaluation

The design vehicles for the east leg of E Gay Street are City of Harrisonburg Fire Department ladder trucks and SU-40 box trucks, and the design vehicles for all other movements at this intersection are ladder trucks and WB-67 tractor-trailers. The proposed design concepts at this intersection were also considered in conjunction with the under-design roadway reconfiguration on E Gay Street, which is converting the four-lane typical section to a three-lane typical section with bike lanes.

Table 30 summarizes AM and PM peak intersection delay and level of service for the future traffic volume sensitivity baseline conditions with existing intersection design and the two advanced alternative concepts. Both alternatives show operational improvements over baseline conditions, with the Single-Lane Roundabout alternative achieving LOS A during both peak periods and the Signal Control alternative improving to LOS A during the AM peak and LOS B during the PM peak. Detailed operation results for each alternative are provided in the following sections. The Signal Control alternative improves operations due to conversion of existing protected / permissive left-turn signal phasing on all four approaches to permissive phasing to improve intersection capacity.

Table 30 Intersection Design Alternatives Comparison – N Mason Street / E Gay Street

Alternative	AM Peak Hour		PM Peak Hour	
	Intersection Delay (sec)	Level of Service (LOS)	Intersection Delay (sec)	Level of Service (LOS)
Traffic Sensitivity Baseline Conditions	17.4	B	20.9	C
Signal Control with Left Turn Lanes	9.0	A	11.2	B
Single-Lane Roundabout	2.6	A	3.6	A

Signal Control with Left Turn Lanes

This alternative maintains signal control for the intersection and includes dedicated left turn lanes for the northbound and southbound approaches on N Mason Street. The protected / permissive left-turn signal phasing for all four left turns is converted to permissive phasing.

Figure 20 and **Figure 21** depict the proposed intersection alternative with the Open Space option and Wide Median option, respectively. These sketches also show the under-design roadway reconfiguration on E Gay Street. **Table 31** documents the intersection operation results for the proposed alternative in the future traffic sensitivity condition. No operational constraints were identified, with the overall intersection delay reducing by 8.4- and 9.7-seconds during AM and PM peak hours, respectively, when compared to future traffic sensitivity baseline conditions. This delay improvement is due to the change in left turn phasing.

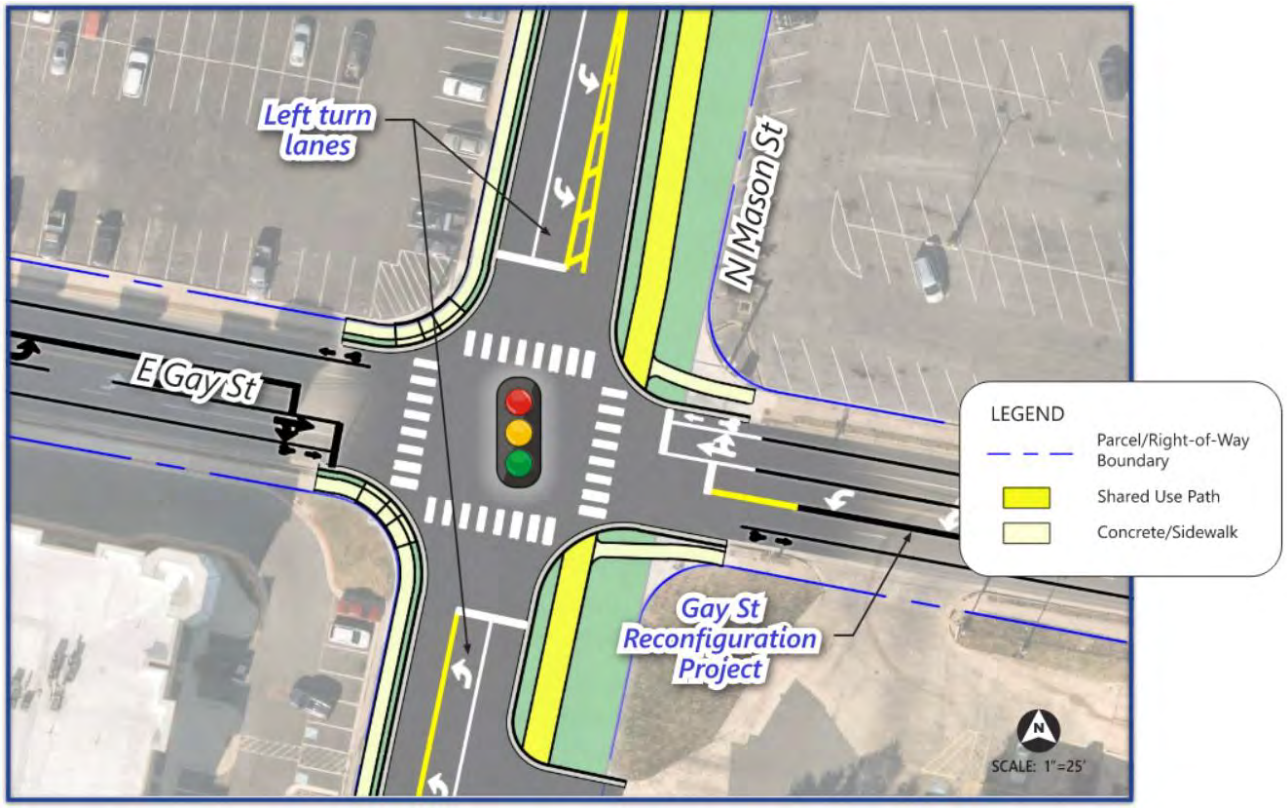


Figure 20 N Mason Street / E Gay Street Signalized Intersection – Open Space

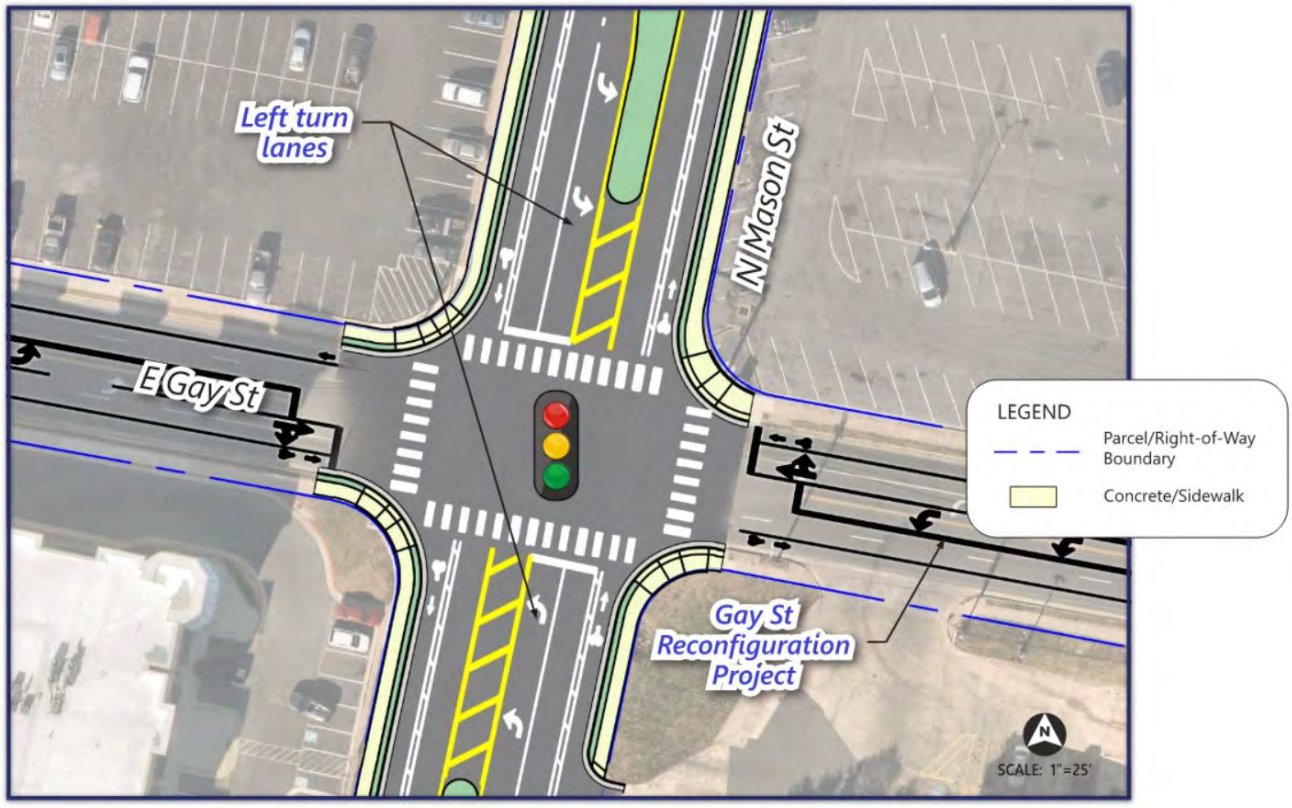


Figure 21 N Mason Street / E Gay Street Signalized Intersection – Wide Median

Table 31 N Mason Street / E Gay Street Signal with Left Turn Lanes

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Gay Street	Left	9.2	A	8
	Thru / Right	10.5	B	54
Westbound E Gay Street	Left	10.4	B	5
	Thru / Right	8.9	A	31
Northbound N Mason Street	Left	9.1	A	41
	Thru / Right	7.9	A	44
Southbound N Mason Street	Left	8.4	A	13
	Thru / Right	8.0	A	45
Intersection		**9.0**	**A**	
PM Peak Hour				
Eastbound E Gay Street	Left	11.2	B	5
	Thru / Right	12.5	B	114
Westbound E Gay Street	Left	14.2	B	18
	Thru / Right	10.4	B	53
Northbound N Mason Street	Left	12.7	B	70
	Thru / Right	9.8	A	85
Southbound N Mason Street	Left	11.4	B	35
	Thru / Right	9.9	A	91
Intersection		**11.2**	**B**	

Single-Lane Roundabout

This alternative builds upon the successful roundabout implemented during the Demonstration Project. The proposed single-lane roundabout is a compact 110-foot diameter that accommodates WB-67s, school buses, and fire department ladder trucks. The conceptual design includes marked pedestrian crossings, on-street bicycle facilities that transition to shared-use paths within the roundabout, and a central truck apron to accommodate larger turning vehicles. Existing commercial driveways are maintained in a partial access configuration.

Figure 22 depicts the proposed roundabout with the Open Space corridor option; a separate sketch was not developed for the roundabout with the Wide Median corridor option as the physical characteristics and placement of the roundabout remain essentially the same. **Table 32** documents the projected intersection operational results computed from SIDRA for the proposed alternative in the future traffic sensitivity condition. The overall intersection delay reduces by 14.8 seconds and 17.3 seconds during AM and PM peak hours, respectively, when compared to future baseline traffic sensitivity conditions.

Figure 22 N Mason Street / E Gay Street Single-Lane Roundabout – Open Space Option

Table 32 N Mason Street / E Gay Street Single-Lane Roundabout

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Gay Street	Left / Thru / Right	2.0	A	29.2
Westbound E Gay Street	Left / Thru / Right	2.6	A	15.7
Northbound N Mason Street	Left / Thru / Right	3.5	A	34.1
Southbound N Mason Street	Left / Thru / Right	2.1	A	19.6
Intersection		**2.6**	**A**	
PM Peak Hour				
Eastbound E Gay Street	Left / Thru / Right	3.1	A	53.3
Westbound E Gay Street	Left / Thru / Right	3.6	A	26.7
Northbound N Mason Street	Left / Thru / Right	4.2	A	59
Southbound N Mason Street	Left / Thru / Right	3.4	A	44.9
Intersection		**3.6**	**A**	

To ensure the roundabout alternative would accommodate unforeseen growth from future development in the northern portion of the corridor, a 100% growth factor (i.e., volumes doubled) was applied on top of the already grown future traffic sensitivity condition peak hour volumes at the N Mason Street / E Gay Street intersection. **Table 33** documents the projected intersection operational results computed from SIDRA for the proposed alternative under these volumes. With volumes doubled, all roundabout approaches still operate at LOS C or better in the PM peak hour. 95th percentile queue lengths in the PM peak hour indicate relatively long eastbound and northbound queues, however, SIDRA tends to conservatively estimate queue length, and the delay results indicate plenty of vehicular capacity to accommodate demand, even under this aggressive volume sensitivity test.

Table 33 N Mason Street / E Gay Street Single-Lane Roundabout +100% Volume

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound E Gay Street	Left / Thru / Right	3.8	A	86.7
Westbound E Gay Street	Left / Thru / Right	4.7	A	47.2
Northbound N Mason Street	Left / Thru / Right	5.2	A	102.2
Southbound N Mason Street	Left / Thru / Right	3.9	A	55.7
Intersection		**4.4**	**A**	
PM Peak Hour				
Eastbound E Gay Street	Left / Thru / Right	27.7	C	480.3
Westbound E Gay Street	Left / Thru / Right	10.2	B	125.8
Northbound N Mason Street	Left / Thru / Right	21.2	C	450.9
Southbound N Mason Street	Left / Thru / Right	13.1	B	247.8
Intersection		**19.4**	**B**	

N Mason Street / N Main Street

VHB and the stakeholders identified five (5) preliminary design concepts for this intersection, which are listed in **Table 34** alongside their VJuST planning-level concept screening findings. In conceptual designs from the Northend Greenway Shared Use Path Feasibility Study, the eastbound right-turn slip lane from N Main Street onto N Mason Street was removed; this movement is also very low volume (less than 20 peak hour vehicles). There is also very low northbound left turn volume (less than 10 peak hour vehicles), which makes the traffic signal control unnecessary from a vehicular operations standpoint. Northend Greenway plans also include a proposed Pedestrian Hybrid Beacon for the N Main Street trail crossing, which would provide a controlled pedestrian/bicyclist crossing. Consequently, the project team advanced the Signal Control with Northbound Channelized Right Turn and No Signal Control with Northbound Channelized Right Turn alternatives. The design vehicles for all roadway-to-roadway turning movements at this intersection are City of Harrisonburg Fire Department ladder trucks and WB-67 tractor-trailers.

Table 34 N Mason Street / N Main Street Design Concepts VJuST Screening

	Intersection Design Concepts	Maximum V/C		Pedestrian Accommodation Compared to Signal	Number of Conflict Points	Planning Level Cost
		AM	PM			
1	Signal Control with All Channelized Right Turns	0.24	0.37		48	$
2	**Signal Control with Northbound Channelized Right Turn★**	0.24	0.41		48	$
3	Single-Lane Roundabout	0.28	0.38		8	$$
4	**No Signal Control with Northbound Channelized Right Turn★**	0.14	0.32		48	$
5	No Signal Control with No Channelized Right Turns	0.14	0.37		48	$

★ Design Concept Advanced for Additional Evaluation

Table 35 summarizes AM and PM peak intersection delay and level of service for the future traffic volume sensitivity baseline conditions with existing intersection design and the two advanced alternative concepts. Both alternatives operate at LOS A, indicating that there is adequate vehicle capacity with the associated intersection control and presence of turn lanes. Detailed operation results for each alternative are provided in the following sections.

Table 35 Design Concept Alternatives Comparison – N Mason Street / N Main Street

Alternative	AM Peak Hour		PM Peak Hour	
	Intersection Delay (sec)	Level of Service (LOS)	Intersection Delay (sec)	Level of Service (LOS)
Future Baseline Conditions	2.6	A	4.0	A
Signal Control with NB Channelized Right Turn	1.6	A	2.6	A
TWSC with NB Channelized Right Turn	3.0	A	4.4	A

Signal Control with Northbound Channelized Right Turn Lane

This alternative maintains both intersection signalization and the northbound channelized right turn; however, it removes the eastbound channelized right turn lane onto N Mason Street. Additionally, a new marked pedestrian crossing is implemented across N Main Street. The protected/permissive left-turn signal phasing for the westbound left turn is converted to permissive phasing to improve intersection efficiency. **Figure 23** and **Figure 24** depict the proposed intersection alternative with the Open Space option and Wide Median option, respectively. **Table 36** documents the intersection operation results for the proposed alternative in the future traffic sensitivity condition. The overall intersection delay is reduced by 1.0- and 1.4-seconds during AM and PM peak hours, respectively, when compared to future traffic sensitivity baseline conditions, due to signal phasing change.

Table 36 N Mason Street / N Main Street Signalized Intersection

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound N Main Street	Left / Thru / Right	1.5	A	40
Westbound N Main Street	Left	1.3	A	25
	Thru / Right	1.5	A	45
Northbound N Mason Street	Left / Thru	43.8	D	10
	Right	-	(-)	0
SB NAPA Auto Parts Driveway	Left / Thru / Right	-	(-)	0
Intersection		**1.6**	**A**	
PM Peak Hour				
Eastbound N Main Street	Left / Thru / Right	1.9	A	83
Westbound N Main Street	Left	2.9	A	47
	Thru / Right	1.7	A	65
Northbound N Mason Street	Left / Thru	44.6	D	0
	Right	-	(-)	0
SB NAPA Auto Parts Driveway	Left / Thru / Right	-	(-)	0
Intersection		**4.0**	**A**	

- (-) Denotes 0 Seconds of Delay Due to Free Flow Movement or Absence of Traffic Volume

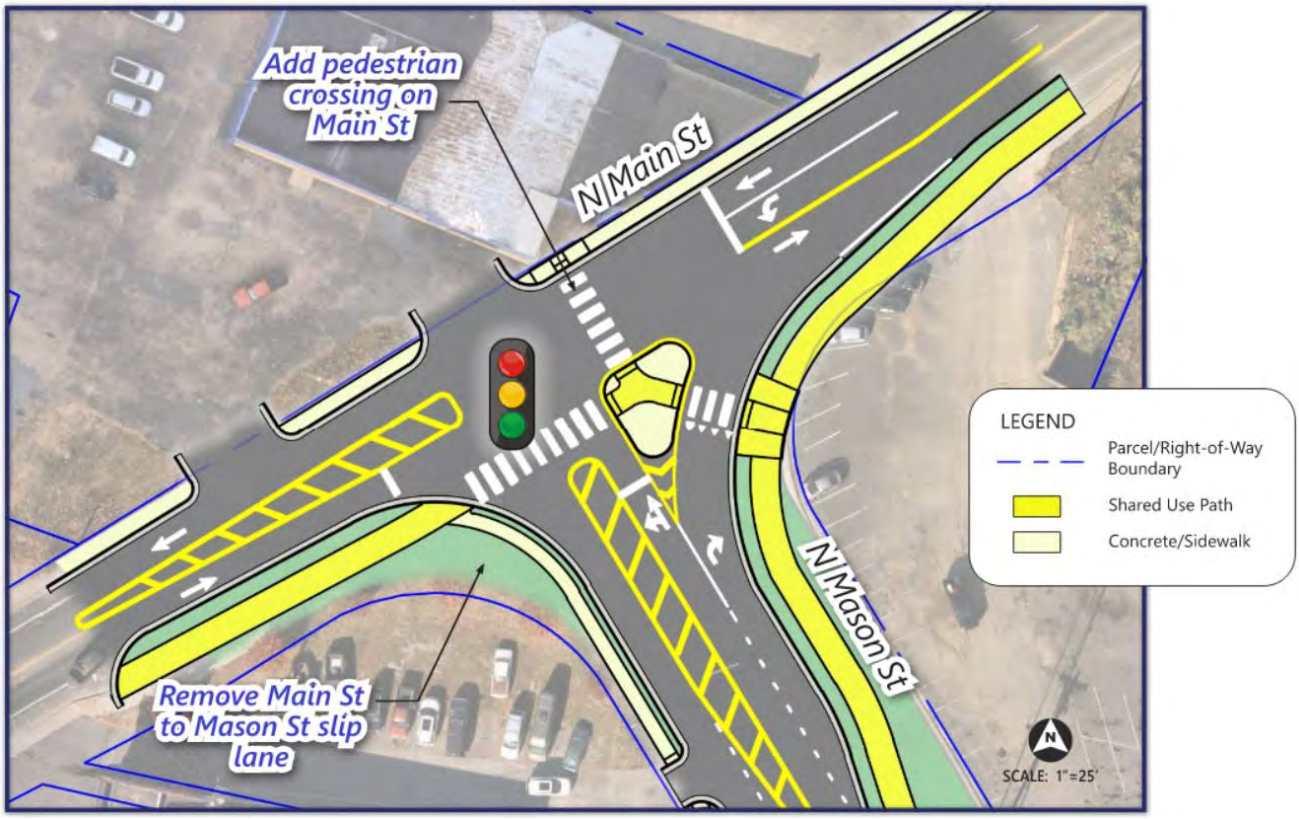


Figure 23 N Mason Street / N Main Street Signalized Intersection – Open Space

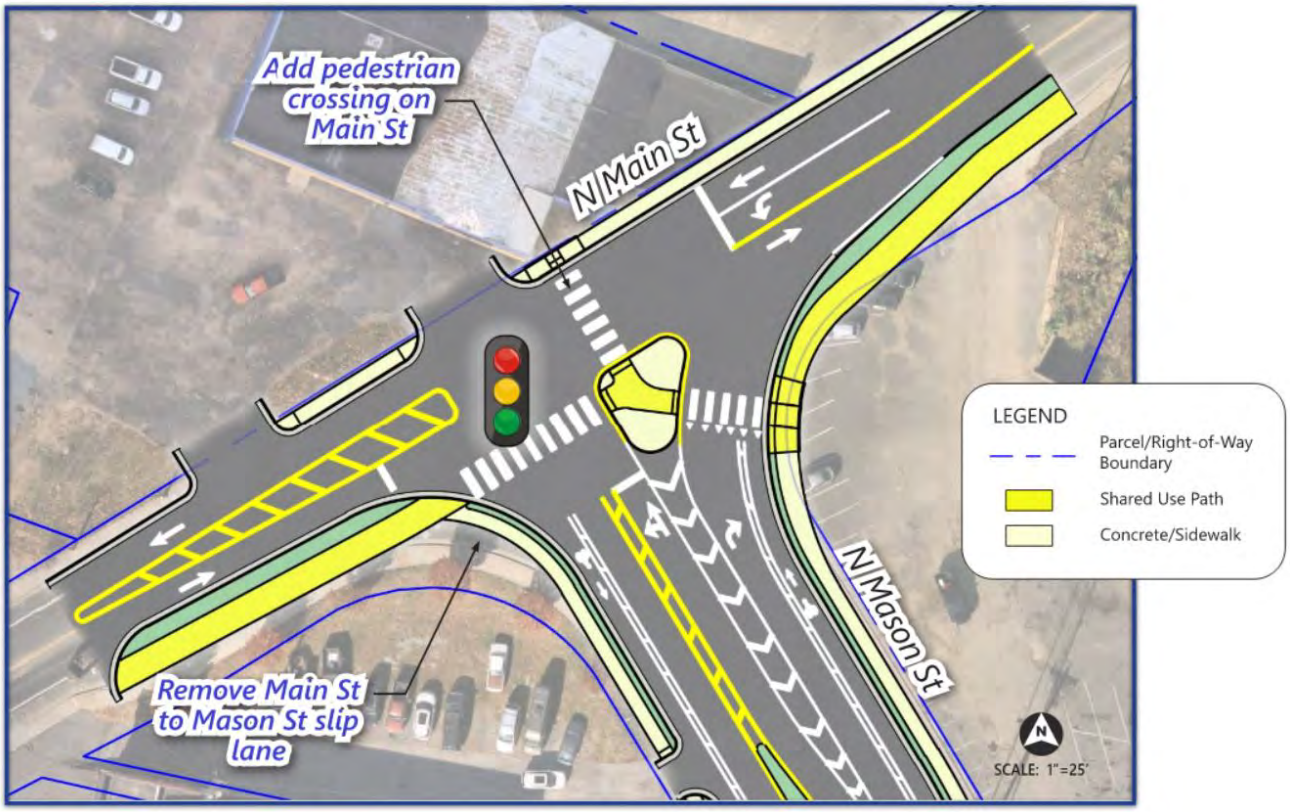


Figure 24 N Mason Street / N Main Street Signalized Intersection – Wide Median

TWSC with Northbound Channelized Right Turn Lane

This alternative removes signal control for westbound and eastbound traffic on N Main Street and implements stop control for northbound N Mason Street traffic. Due to sight distance safety concerns caused by a building, the southbound NAPA Auto Parts driveway approach is converted to inbound traffic only with exiting vehicles rerouted to the existing western driveway. Like the previous alternative, a marked pedestrian crossing is implemented across N Main Street and the eastbound channelized right turn onto N Mason Street is removed while the northbound channelized right turn onto N Main Street is maintained.

Figure 25 and **Figure 26** depict the proposed intersection alternative with the Open Space option and Wide Median option, respectively. **Table 37** documents the intersection operation results for the proposed alternative in the future traffic sensitivity condition. No operational constraints were identified, with the overall intersection delay increasing by just 0.4 seconds during AM and PM peak hours when compared to future baseline traffic sensitivity conditions, despite the removal of signal control.

Table 37 N Mason Street / N Main Street TWSC Intersection

Approach	Movement	Movement Delay (sec)	Level of Service	95th Queue (feet)
AM Peak Hour				
Eastbound N Main Street	Left / Thru / Right	-	(-)	7.5
Westbound N Main Street	Left	8.0	A	12.5
	Thru / Right	-	(-)	0
Northbound N Mason Street	Left / Thru	16.0	C	0
	Right	10.3	B	0
Intersection		**3.0**	**A**	
PM Peak Hour				
Eastbound N Main Street	Left / Thru / Right	-	(-)	0
Westbound N Main Street	Left	8.8	A	15
	Thru / Right	-	(-)	0
Northbound N Mason Street	Left / Thru	27.0	D	7.5
	Right	13.8	B	1.7
Intersection		**4.4**	**A**	

- (-) Denotes 0 Seconds of Delay Due to Free Flow Movement

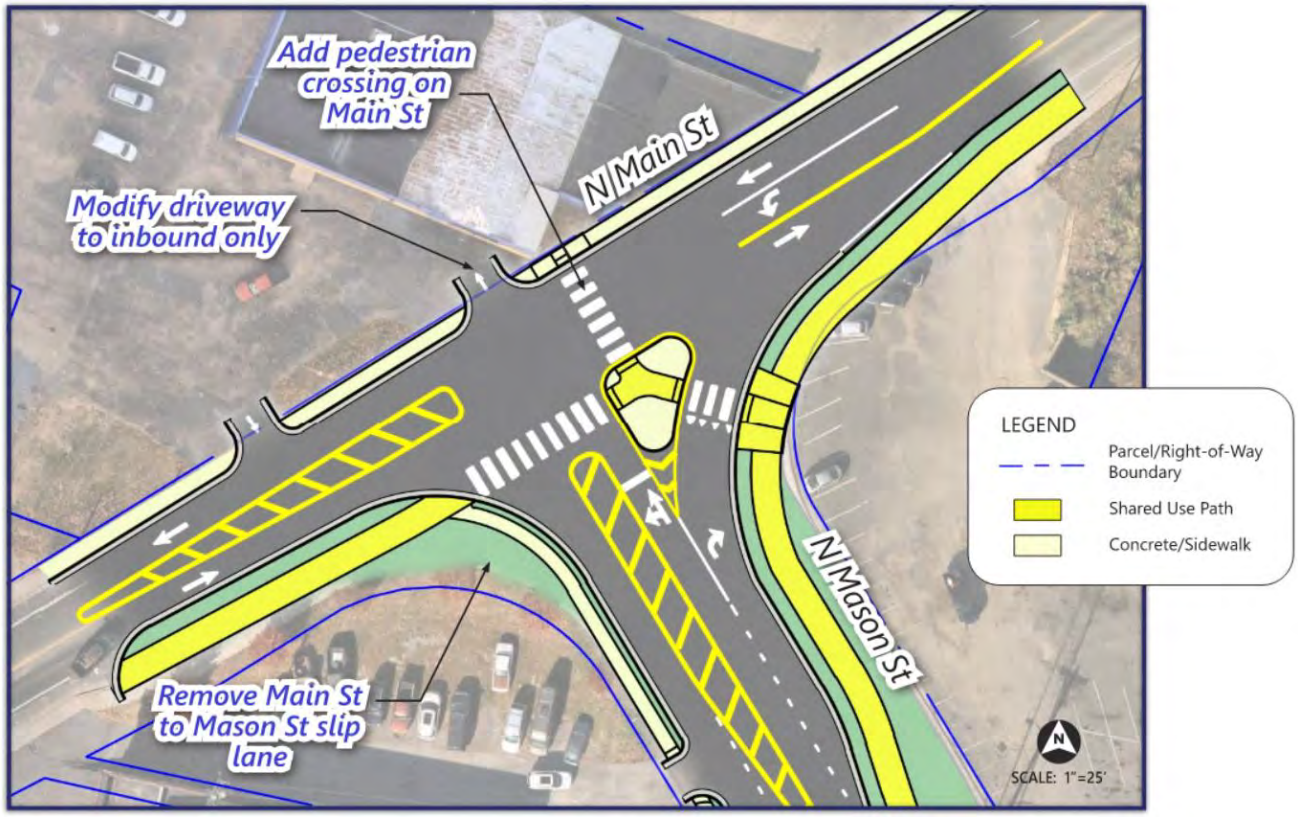


Figure 25 N Mason Street / N Main Street Unsignalized Intersection – Open Space

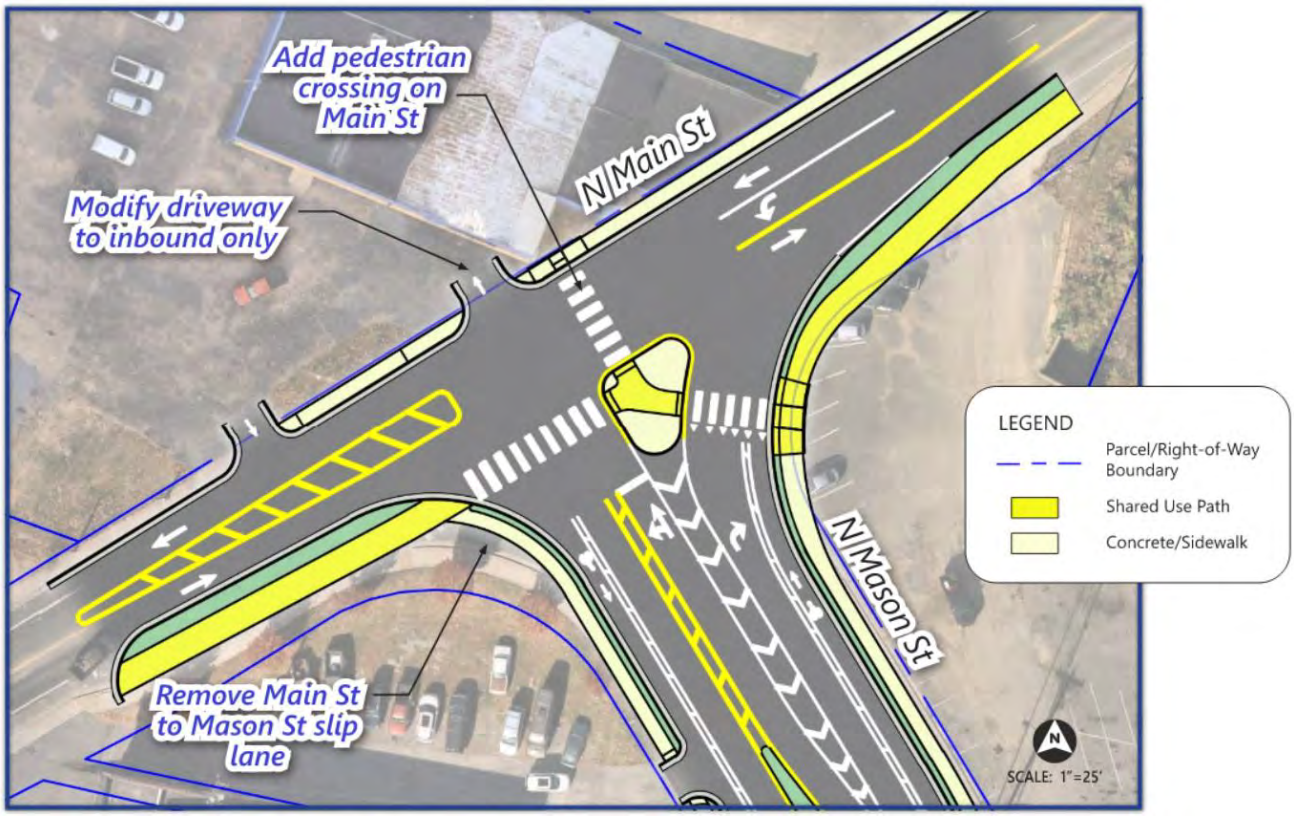


Figure 26 N Mason Street / N Main Street Unsignalized Intersection – Wide Median

5

Public Engagement

The project team conducted in-person public engagement in February 2026 to understand the community's perspective on proposed corridor typical section and intersection design alternatives. The feedback collected from public engagement informed the preferred alternative selection.

Public Feedback

The project team hosted an in-person public meeting on February 24, 2026, from 4:00 PM to 6:00 PM at Lucy F. Simms Continuing Education Center in the City of Harrisonburg. The objective of the meeting was to collect feedback on the proposed corridor typical section and intersection design alternatives for N Mason Street. During the meeting, participants shared 244 written comments with the project team. **Table 38** displays the number of comments associated with each alternative as well as general public feedback themes. **Appendix E** contains a more detailed analysis of public engagement feedback, including all open house comments.

Photo 1: Community Member adding Comment (Source: City of Harrisonburg)

Photo 2: City of Harrisonburg Public Works staff talking to Community Members (Source: City of Harrisonburg)

Table 38 Written Comments and Public Involvement Themes for Proposed Alternative

Topic Area	Option A	Option B	Public Involvement Feedback Themes
Typical Section	Wide Median – 13 comments	Open Space – 47 comments	Wide Median: Concerns with safety benefits. Comments pointed to the wide roadway and pedestrian crossing distances. Open Space: Preference for the increased safety this option presents for all road users.
N Mason Street / E Elizabeth Street	Signal Control with No Left Turn Lanes – 14 comments	No Signal Control with RIRO Access – 27 comments	Signal Control with No Left Turn Lanes: Supporters emphasized the speed management and pedestrian safety benefits of the signal. No Signal Control with RIRO Access: Conditional support if it meant that the E Wolfe Street intersection would be signalized. Concern with disrupting E Elizabeth Street through movements.
N Mason Street / E Wolfe Street	Signal Control with Left Turn Lanes – 24 comments	No Signal Control with Left Turn Lanes – 19 comments	Signal Control with Left Turn Lanes: Support for addressing the confusing alignment of Old Mason Street. No Signal Control with Left Turn Lanes: Concerns with pedestrian safety benefits. Comments emphasized the importance of a signalized pedestrian crossing.

Topic Area	Option A	Option B	Public Involvement Feedback Themes
N Mason Street / E Rock Street	No Signal Control with Left Turn Lanes – 20 comments	No Signal Control with No Left Turn Lanes – 9 comments	No Signal Control with Left Turn Lanes: Support for left turn lanes. Concerns for pedestrian safety, pointing to increased pedestrian crossing distances. No Signal Control with No Left Turn Lanes: Support for speed management and pedestrian safety benefits of no turn lanes.
N Mason Street / E Gay Street	Signal Control with Left Turn Lanes – 8 comments	Single-Lane Roundabout – 30 comments	Signal Control with Left Turn Lanes: Concerns with pedestrian safety. Single-Lane Roundabout: Overwhelming support for roundabout and perceived speed management and safety benefits.
N Mason Street / N Main Street	Signal Control with Northbound Channelized Right Turn Lane – 2 comments	No Signal Control with Northbound Channelized Right Turn Lane – 27 comments	Signal Control with Northbound Channelized Right Turn Lane: N/A – Meaningful takeaways are unable to be gathered due to the limited number of responses. No Signal Control with Northbound Channelized Right Turn Lane: Support for removing signal. Concerns with increased vehicle speeds if signal is removed.

6

Implementation Plan

The study stakeholder group recommended a set of improvement concepts based on the alternatives analysis and public engagement. Stakeholders identified these concepts as the "Preferred Alternative," a distinction related to funding priority and strategy. The following report section documents these improvements as well as Preferred Alternative preliminary engineering to prepare for Smart Scale funding application.

Funding Strategy

One of the primary transportation funding programs in Virginia is VDOT's biannual SMART SCALE. This needs-based, competitive funding program has two pots of funding – High Priority Projects (HPP) and District Grant Program (DGP). Improvements that are identified as the "Preferred Alternative" within a MPO planning study are eligible for both HPP and DGP funding, thereby increasing the odds of successful funding; otherwise, if improvements do not address a statewide or regionally significant need, they are only eligible for DGP funds.

Thus, the "Preferred Alternative" is a set of improvements supported by this study for near-term implementation. The study work group intends to seek near-term funding from VDOT's SMART SCALE program in the 2026 Round 7 application cycle.

Preferred Alternative Recommendation

The March Technical Meeting was held on March 6, 2026. During this meeting, VHB summarized findings to help inform the selection of preferred alternatives, including public feedback and high-level order of magnitude cost estimates. The purpose of this meeting was to identify a preferred typical section for the corridor as well as a preferred intersection treatment at each of the five (5) alternative design intersections.

The following preferred alternative selection summary tables include impacts to traffic operations, pedestrian and bicycle access, construction phase cost estimates, and public

feedback themes where applicable. Alternatives marked with a star (★) represent the preferred alternative for each intersection.

Corridor Typical Section

Table 39 includes a summary of the corridor typical section options considered for the N Mason Street corridor. The study work group selected the **Open Space Option** as the Preferred Alternative corridor typical section based on support expressed through public engagement and its consistency with the goals of the North Mason Complete Streets Demonstration Project and the City's 2017 Bicycle and Pedestrian Plan. The option supports the project's goals of improving safety, particularly for people walking, repurposing excess roadway lanes as community space, maintaining adequate traffic capacity, and designing the corridor for all transportation modes.

Figure 27 and **Figure 28** show the typical section of the Preferred Alternative corridor treatment option and how it is incorporated into the Preferred Alternative intersection alternatives.

Table 39 Corridor Typical Section Preferred Alternative Selection

Alternative	Planning-Level Cost Estimate	Public Feedback Themes
Open Space Option ★	$5.1 Million	47 Engagements. Preference for the increased safety this option presents for all road users.
Wide Median Option	$4.6 Million	13 Engagements. Concerns with safety benefits. Comments pointed to the wide roadway and pedestrian crossing distances.

Study Intersection Alternatives

N Mason Street / E Elizabeth Street

Table 40 includes a summary of the intersection alternatives considered for the N Mason Street / E Elizabeth Street intersection. The study work group preferred to retain signal control at the intersection due to the benefits for controlled pedestrian crossings, traffic calming, and east-west traffic flow – all of which were expressed during public engagement. Based on stakeholder feedback emphasizing access needs for the Harrisonburg Public Safety Building on E Elizabeth Street, the preferred alternative was modified to include a left turn lane on the northbound approach. This modification will reduce intersection delay by removing left-turning traffic from the northbound through lane.

Figure 27 and **Figure 28** show the Preferred Alternative with the dedicated northbound left turn lane update. The final Preferred Alternative for the N Mason Street / E Elizabeth Street intersection includes the following project features:

- Install a 12' dedicated left turn lane for the northbound approach (75-foot storage and 75-foot taper) with one 11' through lane in the northbound direction and two 11' through lanes in the southbound direction (the second lane opens with 75-foot storage and 75-foot taper)

- Construct new sidewalk and driveways on the east side of N Mason Street between E Market Street and E Elizabeth Street
- Trim the raised concrete median nose south of the intersection and replace with pavement markings
- Modify traffic signal heads
- Construct directional ADA complaint curb ramps

Table 40 N Mason Street / E Elizabeth Street Preferred Alternative Selection

Alternative	Change In Intersection Delay from Baseline (+/- s/veh)		Pedestrian and Bike	Public Feedback Themes
	AM	PM		
Signal Control with No Left Turn Lanes★	+0.8	+1.6	Same as Conventional	14 Engagements. Support for speed management and pedestrian safety benefits of the signal.
Signal Control with RIRO Access	-4.5	-5.3	Worse than Conventional	27 Engagements. Conditional support if it meant that the E Wolfe Street intersection would be signalized. Concern with disrupting E Elizabeth Street through movements.

N Mason Street / E Wolfe Street

Table 41 includes a summary of the intersection alternatives considered for the N Mason Street / E Wolfe Street intersection. The study work group selected the Signal Control with Left Turn Lanes alternative in response to public feedback, which showed a strong preference for maintaining signal control and signalized pedestrian crossings at the intersection. This alternative is projected to have negligible impacts on traffic operations during AM and PM peak hours compared to baseline conditions.

Figure 27 and **Figure 28** show the Preferred Alternative. The final Preferred Alternative for the N Mason Street / E Wolfe Street intersection includes the following project features:

- Install 12' dedicated left turn lanes (75-foot storage and 75-foot taper) for the northbound and southbound approaches with one 11' through lane in each direction
- Construct new sidewalk on the east side of N Mason Street between south of E Wolfe Street, with a new bus shelter midblock
- Construct new 10-foot shared use path on the east side of N Mason Street north of E Wolfe Street
- Restripe E Wolfe Street between N Federal Street and N Mason Street to include bike lanes
- Install new pedestrian signal pole in southeast quadrant

- Install new traffic signal pole in northeast quadrant
- Construct directional ADA complaint curb ramps

Table 41 N Mason Street / E Wolfe Street Preferred Alternative Selection

Alternative	Change In Intersection Delay from Baseline (+/- s/veh)		Pedestrian and Bike	Public Feedback Themes
	AM	PM		
Signal Control with Left Turn Lanes★	+0.7	+2.2	Same as Conventional	24 Engagements. Support for addressing the confusing alignment of Old Mason Street.
No Signal Control with Left Turn Lanes	-5.9	-4.8	Worse than Conventional	19 Engagements. Concerns with pedestrian safety benefits. Comments emphasized the importance of a signalized pedestrian crossing.

N Mason Street / E Rock Street

Table 42 includes a summary of the intersection alternatives considered for the N Mason Street / E Rock Street intersection. The study work group selected the No Signal Control with Left Turn Lanes alternative based on public feedback indicating a preference for retaining the existing left turn lanes. The dedicated left turn lanes provide safety and mobility improvements and they better accommodate fire truck movements to the fire station east of the intersection on E Rock Street. This alternative is projected to have negligible impacts on traffic operations during AM and PM peak hours compared to baseline conditions.

Figure 27 and **Figure 28** show the Preferred Alternative. The final Preferred Alternative for the N Mason Street / E Rock Street intersection includes the following project features:

- Install 12′ dedicated left turn lanes (75-foot storage and 75-foot taper) for northbound and southbound approaches with one 11′ through lane in each direction
- Construct new 10-foot shared use path on the east side of N Mason Street
- Construct directional ADA complaint curb ramps

Table 42 N Mason Street / E Rock Street Preferred Alternative Selection

Alternative	Change In Intersection Delay from Baseline (+/- s/veh)		Pedestrian and Bike	Public Feedback Themes
	AM	PM		
No Signal Control with Left Turn Lanes★	+0.1	+0.1	Worse than Conventional	20 Engagements. Support for left turn lanes. Concerns for pedestrian safety, pointing to increased pedestrian crossing distances.
No Signal Control with No Left Turn Lanes	+0.1	+0.1	Worse than Conventional	9 Engagements. Support for speed management and pedestrian safety benefits of no turn lanes.

N Mason Street / E Gay Street

Table 43 includes a summary of the intersection alternatives considered for the N Mason Street / E Gay Street intersection. The study work group selected the Single-Lane Roundabout alternative due to favorable feedback received during the North Mason Complete Streets Demonstration Project, support expressed during this study's public engagement, significant improvements to traffic operations, and enhanced safety through reduction of conflict points at the intersection.

Table 43 N Mason Street / E Gay Street Preferred Alternative Selection

Alternative	Change In Intersection Delay from Baseline (+/- s/veh)		Pedestrian and Bike	Number of Conflict Points	Planning Level Cost	Public Feedback Themes
	AM	PM				
Signal Control with Left Turn Lanes	-8.4	-9.7	Same as Conventional	48	$	8 Engagements. Concerns with pedestrian safety.
Single-Lane Roundabout ★	-14.8	-17.3	Worse than Conventional	8	$$	30 Engagements. Overwhelming support for roundabout and perceived speed management and safety benefits.

Figure 27 and **Figure 28** show the Preferred Alternative. The final Preferred Alternative for the N Mason Street / E Rock Street intersection includes the following project features:

- Install 110-foot diameter, single-lane roundabout with truck apron
- Transition under-design E Gay Street bike lanes to shared use path facilities within the roundabout

- Construct new 10-foot shared use path on the east side of N Mason Street
- Construct directional ADA complaint curb ramps
- Modify existing driveway accesses as follows:
  - Relocate existing 7-Eleven driveway on E Gay Street and convert both the Valley Plaza Shopping Center driveway and relocated 7-Eleven driveway to right-in / right-out configuration. These changes improve access spacing standards and safety conditions exiting the roundabout.
  - Convert existing full access driveway on E Gay Street for 351 N Mason Street to right-in / right-out configuration to meet access spacing standards and improve safety conditions exiting the roundabout.
- North of E Gay Street, install dedicated southbound left turn lanes (100-foot storage with 100-foot taper and 75-foot taper) at existing driveways that provide access into Valley Plaza Shopping Center

N Mason Street / N Main Street

Table 44 includes a summary of the intersection alternatives considered for the N Mason Street / N Main Street intersection. The study work group selected the No Signal Control with Northbound Channelized Right Turn alternative based on favorable public feedback for removing the N Main Street traffic signal. Following public engagement, the alternative was refined to relocate the proposed marked crosswalk from the east leg to the west leg of the intersection to eliminate the pedestrian conflict with the westbound left turn movement. This alternative is projected to have negligible impacts on traffic operations during AM and PM peak hours compared to baseline conditions.

Table 44 N Mason Street / N Main Street Preferred Alternative Selection

Alternative	Change In Intersection Delay from Baseline (+/- s/veh)		Pedestrian and Bike	Public Feedback Themes
	AM	PM		
Signal Control with Northbound Channelized Right Turn	-1.0	-1.4	Same as Conventional	2 Engagements. N/A – Meaningful takeaways are unable to be gathered due to the limited number of responses.
No Signal Control with Northbound Channelized Right Turn★	+0.4	+0.4	Worse than Conventional	27 Engagements. Support for removing signal. Concerns with increased vehicle speeds if signal is removed.

Figure 27 and **Figure 28** show the Preferred Alternative with the crosswalk location update. The final Preferred Alternative for the N Mason Street / N Main Street intersection includes the following project features:

- Remove existing traffic signal
- Convert the eastern NAPA Auto Parts driveway to be inbound-only. Rerouted exiting traffic will use the western NAPA Auto Parts driveway.
- Install a marked crosswalk across the west leg of N Main Street
- Remove the eastbound slip lane from N Main Street onto N Mason Street
- Construct new 10-foot shared use path on the east side of N Mason Street with future intent to connect to Northend Greenway
- Construct directional ADA complaint curb ramps
- Transition eastbound N Main Street bike lane to shared use path facility within the intersection

Preferred Alternative Summary

The study work group reached a consensus on a set of alternatives otherwise known as the "Preferred Alternative." **Table 45** summarizes the preferred alternative:

Table 45 Preferred Alternative Summary

Location	Preferred Alternative
Typical Section	Open Space
N Mason Street / E Elizabeth Street	Signal Control with Left Turn Lanes
N Mason Street / E Wolfe Street	Signal Control with Left Turn Lanes
N Mason Street / E Rock Street	TWSC with Left Turn Lanes
N Mason Street / E Gay Street	Single-Lane Roundabout
N Mason Street / N Main Street	TWSC with Northbound Channelized Right Turn

VHB developed a preliminary design sketch of the Preferred Alternative that meets VDOT SMART SCALE application requirements. **Figure 27** and **Figure 28** show the project sketch with the corridor typical section option and all study intersection designs integrated. A full PDF of the project sketch can also be found in **Appendix G**. This appendix also includes right-of-way summary sheets for the proposed right-of-way acquisition and easements.

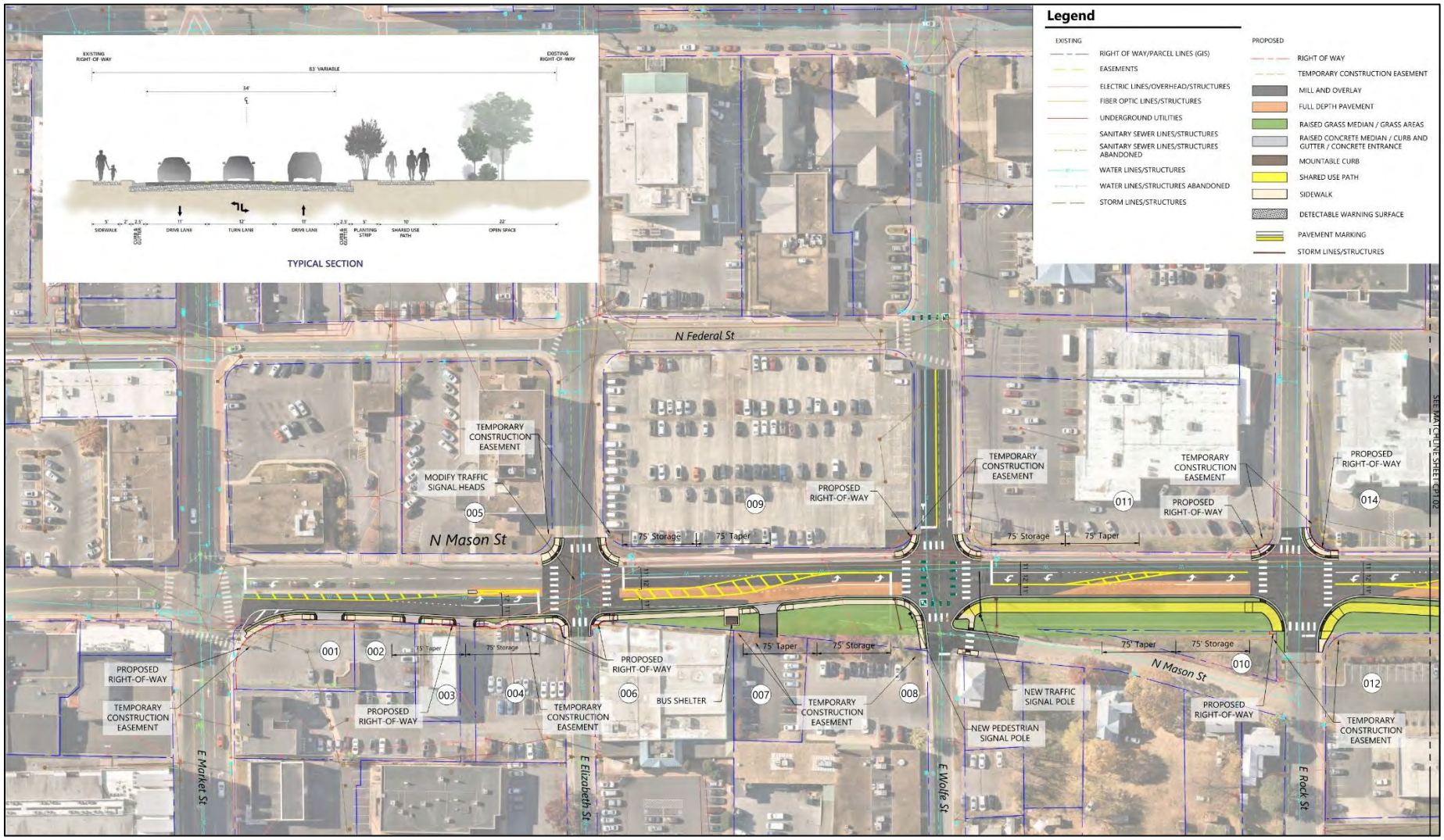


Figure 27 Preferred Alternative Design Sketch, Sheet 1 (E Market Street to E Rock Street)

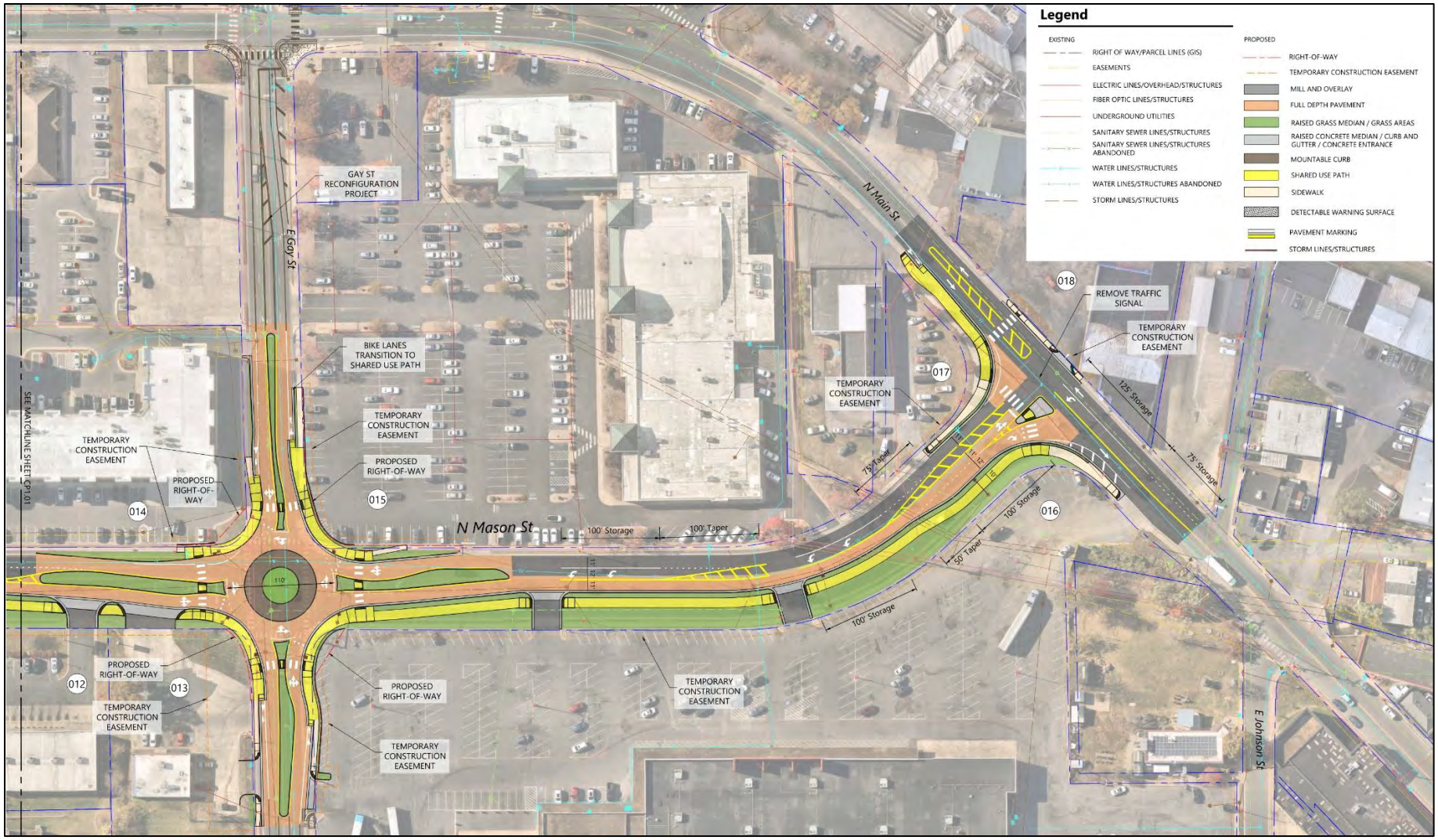


Figure 28 Preferred Alternative Design Sketch, Sheet 2 (E Gay Street to E Main Street)

Preferred Alternative Preliminary Cost Estimate

VHB prepared a preferred alternative preliminary cost estimate using VDOT pre-scoping cost estimation methodology. This includes an Engineer's Estimate of key construction items and quantities, as well as a Project Estimate within VDOT's Project Estimate Summary (PES). This project estimate includes appropriate contingency factors (35% based on assumption of a Tier 1, Non-Complex project, with a Most Likely Estimate range of risk in early project development), construction engineering inspection (CEI), and other VDOT cost estimate elements. **Table 46** details the preliminary cost estimate by project phase. **Appendix F** contains the complete Project Estimate and Engineer's Estimate. If the Preferred Alternative is submitted for SMART SCALE, VDOT will validate the estimate as well as apply appropriate inflation factors to escalate the estimate to the years of expected cost expenditure.

Table 46 Preferred Alternative Preliminary Cost Estimate

Project Phase	Preliminary Estimate
Preliminary Engineering (2026 Dollars, Non-Inflated)	$2,421,124
Right of Way and Utilities (2026 Dollars, Non-Inflated)	$1,134,230
Construction Bid Items (2026 Dollars, Non-Inflated)	$7,333,119
Construction Non-Bid Items (2026 Dollars, Non-Inflated)	$1,979,942
Total (2026 Dollars, Non-Inflated)	**$12,868,415**
Total Estimate with Anticipated Inflation	**$15,876,833**

North Mason Street Permanent Project

This North Mason Street Permanent Project Study identified a Preferred Alternative to support safer, more connected, and more community-oriented travel on N Mason Street. The following key takeaways summarize the study findings and recommended implementation actions:

- Community engagement and the success of the Demonstration Project support permanent improvements that enhance safety, maintain adequate vehicular capacity, and better accommodate walking, bicycling, and transit along N Mason Street.
- The study recommends a Preferred Alternative that includes the **Open Space** corridor treatment, which will prove three vehicular lanes, a shared use path, and new community space for public utilization.
- The study recommends a Preferred Alternative that includes targeted intersection improvements at E Elizabeth Street, E Wolfe Street, E Rock Street, E Gay Street, and N Main Street, including traffic signal improvements, left turn lanes, and a single-lane roundabout.
- The Preferred Alternative will repurpose excess roadway space, close key pedestrian and bicycle network gaps, improve crossings and accessibility, and address operational needs at major intersections while supporting the City's bicycle and pedestrian planning.
- The study work group intends for the Preferred Alternative to support a **VDOT SMART SCALE Round 7** funding application in 2026.

Appendix

Appendix Table of Contents

A North Mason Demonstration Project

B Traffic Sensitivity Memorandum

C Network Traffic Volumes

D Synchro and SIDRA Reports

E Open House Public Comments Anaysis

F Project Estimate and Engineer's Estimate

G Project Sketch and Right-of-Way Summary

A North Mason Demonstration Project

NORTH MASON DEMONSTRATION PROJECT

PROJECT SUMMARY

- One-month demonstration project: installed in early July, removed in early August
- Reconfigured from four travel lanes to two lanes spanning from East Market Street (US-33) to Gay Street
- Unused travel lanes became a space for walking, biking, rolling and social gathering (i.e. block party)
- Installed two temporary roundabouts and three new crosswalks
- Temporarily removed three traffic signals
- Studied traffic under the new conditions, collected speed and travel data and evaluated resident experiences

WHY THIS PROJECT?

Context

- Complete Streets Leadership Academy, Open House held in March
- Opportunity through Community Connectors grant

Purpose

- Demonstration Projects engage people
- Informs potential permanent project

DATA COLLECTED

Speed Limit is 25 miles per hour (mph)

Before Project: 34 mph

During Project: 26 mph

Travel times were improved by 10-15% and vehicle speeds dropped by 8 mph (85th percentile)

VEHICLE TRAFFIC ON NORTH MASON STREET

- Decreased 15% at Rock Street
- Decreased 25% at E. Market Street
- Truck traffic decreased at higher rate

Calculations are approximate, using available data

INTERSECTION COUNTS

- Pedestrian usage did not change
- Bicycle usage increased 25%

Calculations are approximate, using available data

NEW CROSSWALKS

- Accommodated existing crossings
- Provided new crossing locations

QUESTIONNAIRE

- Open July 7 - August 11
- Residents shared their thoughts and experiences
- 1500+ responses
- See page 2 for questionnaire summary

North Mason Street block party on July 12, 2025

NORTH MASON DEMONSTRATION PROJECT

PUBLIC OPINION VARIED:

Demonstrating this change temporarily...

- Was questioned by many residents, particularly as the temporary materials and design caused some confusion
- Was seen by many residents as an innovative and exciting way to reconsider the use of roadway space

Regarding permanent reconfiguration...

- Many residents view lane reduction as leading to congestion and failing to plan for growth
- Many residents see lane reduction as an opportunity to increase safety and desirability of North Mason Street

PUBLIC QUESTIONNAIRE FEEDBACK:

POSITIVES:

- Slower/safer vehicle speeds
- Faster travel times through corridor
- Gay Street roundabout worked well
- Shorter pedestrian crossing distances
- New opportunities in existing space

CONCERNS:

- Elizabeth Street roundabout was small, with other challenges as well
- Walking across street can be more difficult without pedestrian signals
- Wolfe Street intersection seemed congested at peak times
- Some challenges for emergency vehicles, trucks, and buses

NORTH MASON DEMONSTRATION PROJECT

WILL NORTH MASON STREET CHANGE?

- Community input collected over the past two years indicates a desire for change on North Mason Street
- If a permanent project is pursued, the design will be different, resulting from new opportunities and to address public feedback concerns
- The City has identified goals and principles for any potential permanent project, shown on the bottom right of this page
- The City will begin evaluating alternatives, and will seek public input on the options in early 2026

GOALS AND PRINCIPLES:

- Improve safety, particularly for people who are walking
- Reimagine North Mason Street by replacing some existing roadway space with new public space
- Ensure adequate capacity for traffic, supporting existing business and potential development
- Design with all modes of transportation in mind, including pedestrians, people biking, trucks (industrial and delivery), emergency vehicles and transit buses

B Traffic Sensitivity Memorandum

To: Jakob zumFelde, City of Harrisonburg
Zach Beard, Central Shenandoah PDC

Date: January 28, 2026

Project #: R034826.002

Memorandum

From: Chuck Conran, P.E.

Re: North Mason Permanent Project Study
Traffic Sensitivity Memorandum

North Mason Permanent Project Study Traffic Sensitivity Memorandum

Methodology

VHB conducted a traffic sensitivity analysis for the North Mason Permanent Project study based on established VDOT procedures, including the *Traffic Forecasting Guidebook* and *I&IM-TMPD-7.2*. These policy documents provide guidance and direction on the appropriate forecasting data sources, forecast years, and approval authority for a given study based on the type of study and study location.

The study area is within Harrisonburg, Virginia, which is part of the Harrisonburg Rockingham Metropolitan Planning Organization (HRMPO) and is thus covered by a Travel Demand Model (TDM). In this study, the study team conducted a sensitivity analysis focused on historical growth trends and the potential for future land use growth. The team synthesized data sources and recommended traffic growth rates based upon them. These traffic growth rates will be applied to existing conditions traffic data that was provided by the City of Harrisonburg and collected on various dates in September 2025. From this data, VHB computed network peak hours of 8:15-9:15 AM and 4:15-5:15 PM.

Traffic Sensitivity Design Year

VHB, CSPDC/HRMPO, and the City of Harrisonburg collaboratively identified a traffic sensitivity year for this study. The study team will evaluate a 2050 "Design Year" to validate that any study recommendations are accounting for future growth within the study area. One of the City's principals of a permanent Mason Street project is to "ensure adequate capacity for traffic, supporting existing business and potential development." The 2050 design year is consistent with policy within the VDOT *Roadway Design Manual (RDM)*.

Growth Rate Data Sources

Historical AADT Linear Regression

Table 1 displays eight (8) years (spanning from 2000 to 2024) of historical field-counted Average Annual Daily Traffic (AADT), as well as an annual growth rate computed from those AADT values via linear regression. Years with AADT values derived via growth calculations rather than field counts were excluded from the linear regression calculation. Additionally, per VDOT policy on how to manage 2020 and 2021 COVID-impacted traffic counts, the study team excluded those two years of AADT from the linear regression calculation.

As indicated in the far-right column, N Mason Street has experienced a declining volume trend based on field-counted years between 2000 and 2024.

Table 1 VDOT Historical Average Annual Daily Traffic (AADT) and Linear Regression Annual Growth Rate

Location	VDOT Historical AADT[1]								VDOT Historical Linear Regression Annual Growth Rate[2]
	2000	2003	2006	2009	2012	2015	2018	2024	
N Mason Street	7,134	6,211	6,721	7,257	7,188	7,328	6,943	6,306	**-0.07%**

[1] Linear regression annual growth rate derived from field-counted years of VDOT historical AADT.
[2] 2020 and 2021 excluded due to VDOT policy to consider 2020 and 2021 traffic data an outlier due to Covid-19 impacts, and thus not include within trend analysis.

Pathways for Planning Forecast

VDOT's Pathways for Planning web tool contains the official VDOT trend analysis for volume forecasts. This trend analysis is derived from the historical AADT linear regression calculations; however, if the linear regression calculations compute an annual growth rate less than 0.50%, then 0.50% is utilized as the minimum value. **Table 2** displays the Pathways for Planning linear annual growth rate for the study area; the N Mason Street segment has a linear annual growth rate of 0.50% due to the calculated rates being less than 0.50% (see Table 1).

Table 2 VDOT Linear Regression Annual Growth Rate Forecasts, Pathways for Planning (P4P)

Location	VDOT P4P Linear Regression Annual Growth Rate[1]	VDOT P4P AADT Traffic Forecasts			
		2035	2040	2045	2050
N Mason Street	**0.50%**	6,653	6,810	6,968	7,126

[1] VDOT policy to have a minimum annual growth rate of 0.50%.

Previous Transportation Studies

Previously completed transportation studies are a good reference point for establishing traffic growth rates, both as an additional data point and for maintaining consistency study-to-study within the same roadway network. There has not been a recently completed transportation study within the study limits of this study that developed a traffic growth rate; therefore, this data source is not available.

Trip Generation for Known Land Development Projects

There are no specific and approved development projects within the study area. While several properties have development potential, there are not specific proposed uses for which traffic forecasts could be developed. Instead, a general growth rate will capture the potential for future growth.

Travel Demand Model

The study area is within a MPO's boundaries and is thus included within a Travel Demand Model (TDM); however, the City and MPO decided to utilize a general traffic sensitivity analysis in this study to account for the potential for future traffic growth along the N Mason Street corridor.

Recommendation

Table 3 synthesizes the various traffic growth rate data sources for the N Mason Street roadway segment. While the historical trend analysis indicates that the study area is experiencing a steady decline in traffic volume, it is VDOT policy to utilize at least a 0.50% annual growth rate. After discussions with CSPDC/HRMPO and the City of Harrisonburg, it was determined that VHB will apply a study-wide 1.0% annual, linear growth rate that will appropriately account for potential future land use growth. The 1.0% annual growth rate applied linearly over a 25-year period (2025 counts to 2050 design year) results in a 1.25 (25%) growth factor. This was applied to the existing 2025 peak hour volumes to generate projected 2050 volumes.

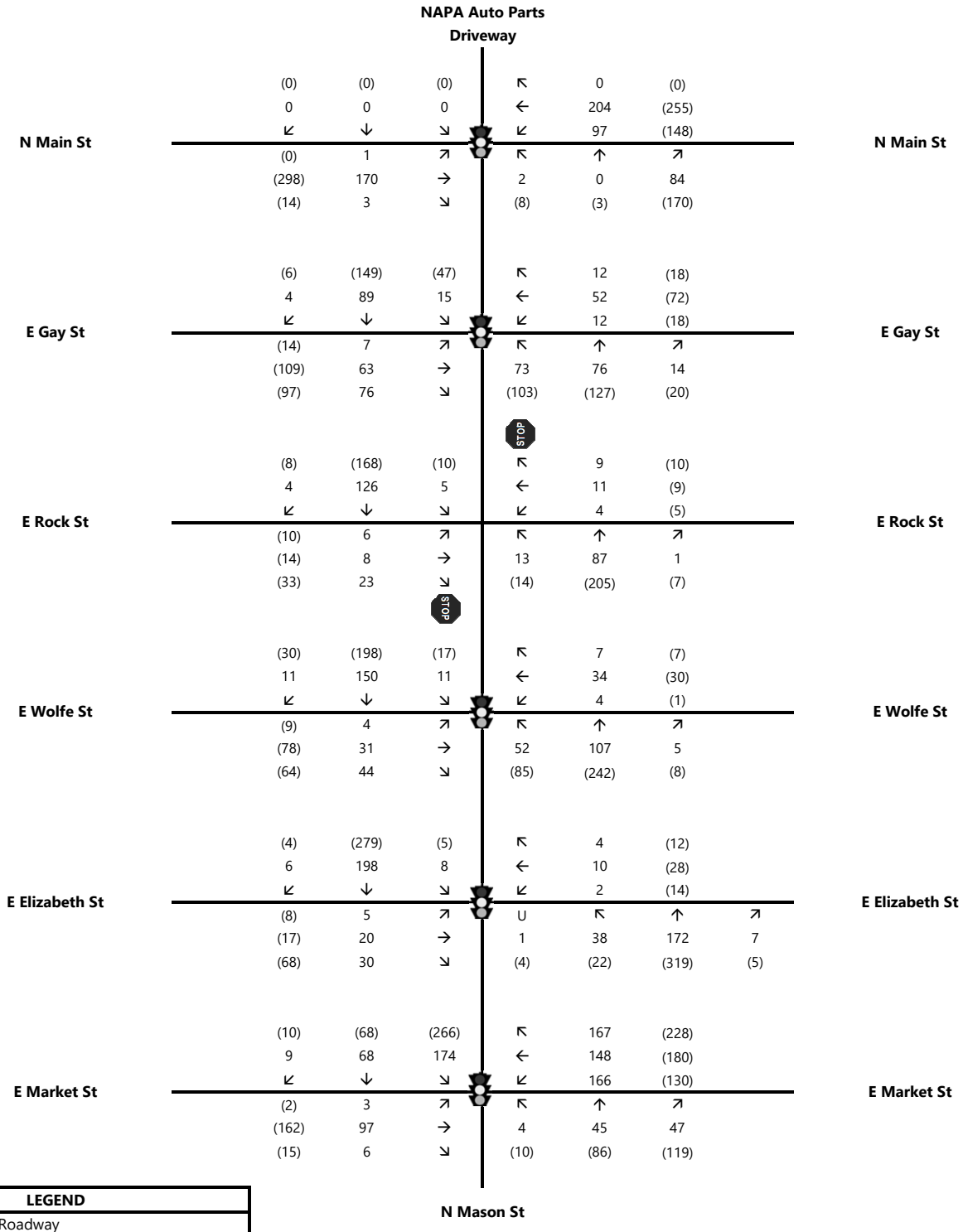
Table 3 Growth Rate Source Synthesis and Recommended Growth Rates

Location	VDOT Historical Linear Regression Annual Growth Rate (2000-2024)[1]	VDOT P4P Linear Regression Annual Growth Rate[2]	Recommended Linear Annual Growth Rate	2050 "Design Year" AADT Forecast Based Upon Recommended Growth Rate
N Mason Street	**-0.07%**	**0.50%**	**1.0%**	**7,946**

[1] Linear regression annual growth rate derived from field-counted years of VDOT historical AADT.
[2] VDOT policy to have a minimum annual growth rate of 0.50%.

Appendix A displays the projected 2050 intersection peak hour traffic volumes and volume growth between the 2050 design year and the 2025 base year.

C Network Traffic Volumes

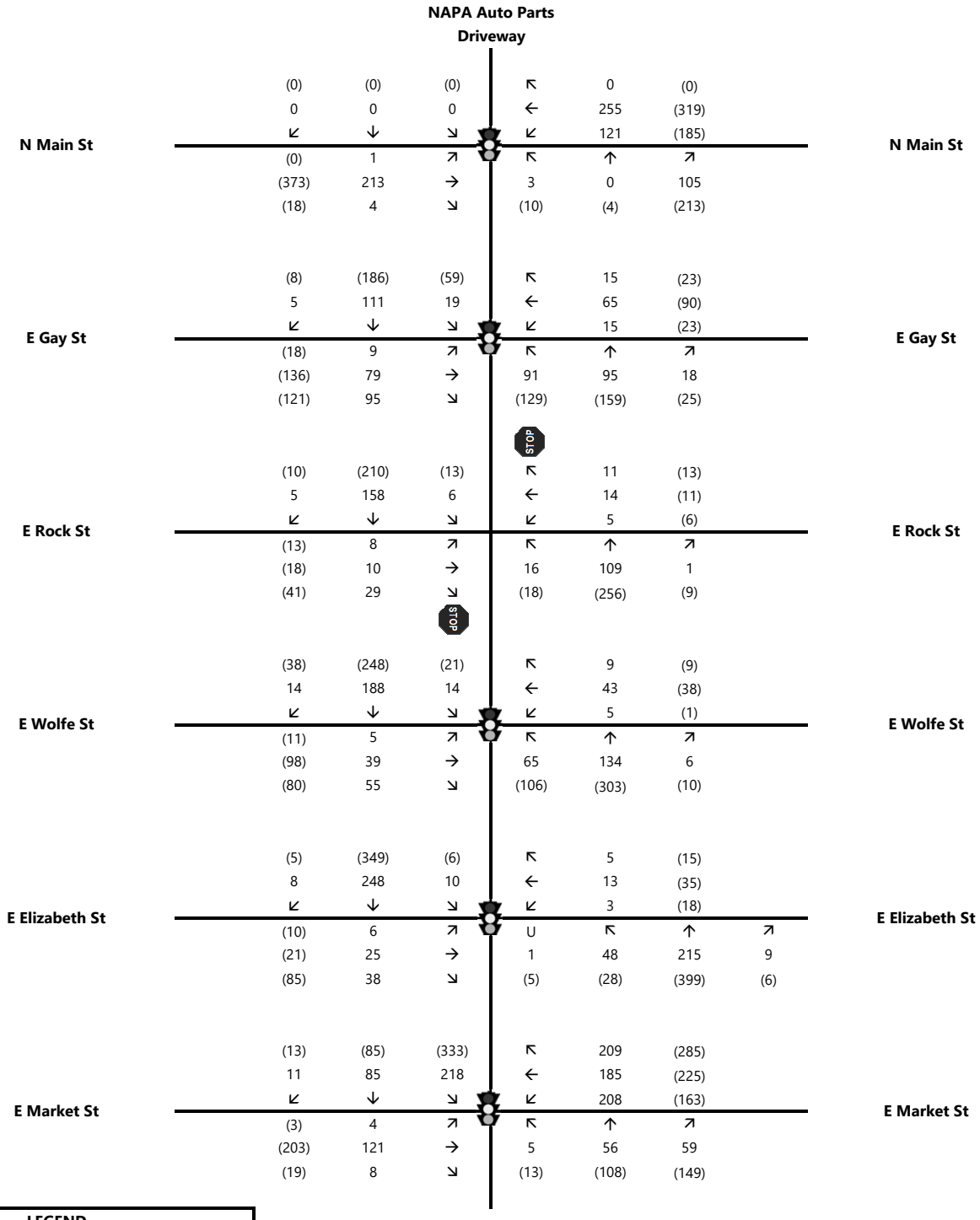


LEGEND	
—	Existing Roadway
STOP	Existing Stop Controlled Approach
	Existing Signalized Intersection
←	Turning Movement
XX	AM Peak Hour Turning Movement
(XX)	PM Peak Hour Turning Movement

vhb

Existing Conditions (2025) Traffic Volumes
AM Peak (8:15-9:15) / PM Peak (4:15-5:15)

N Mason St Study
Harrisonburg, VA

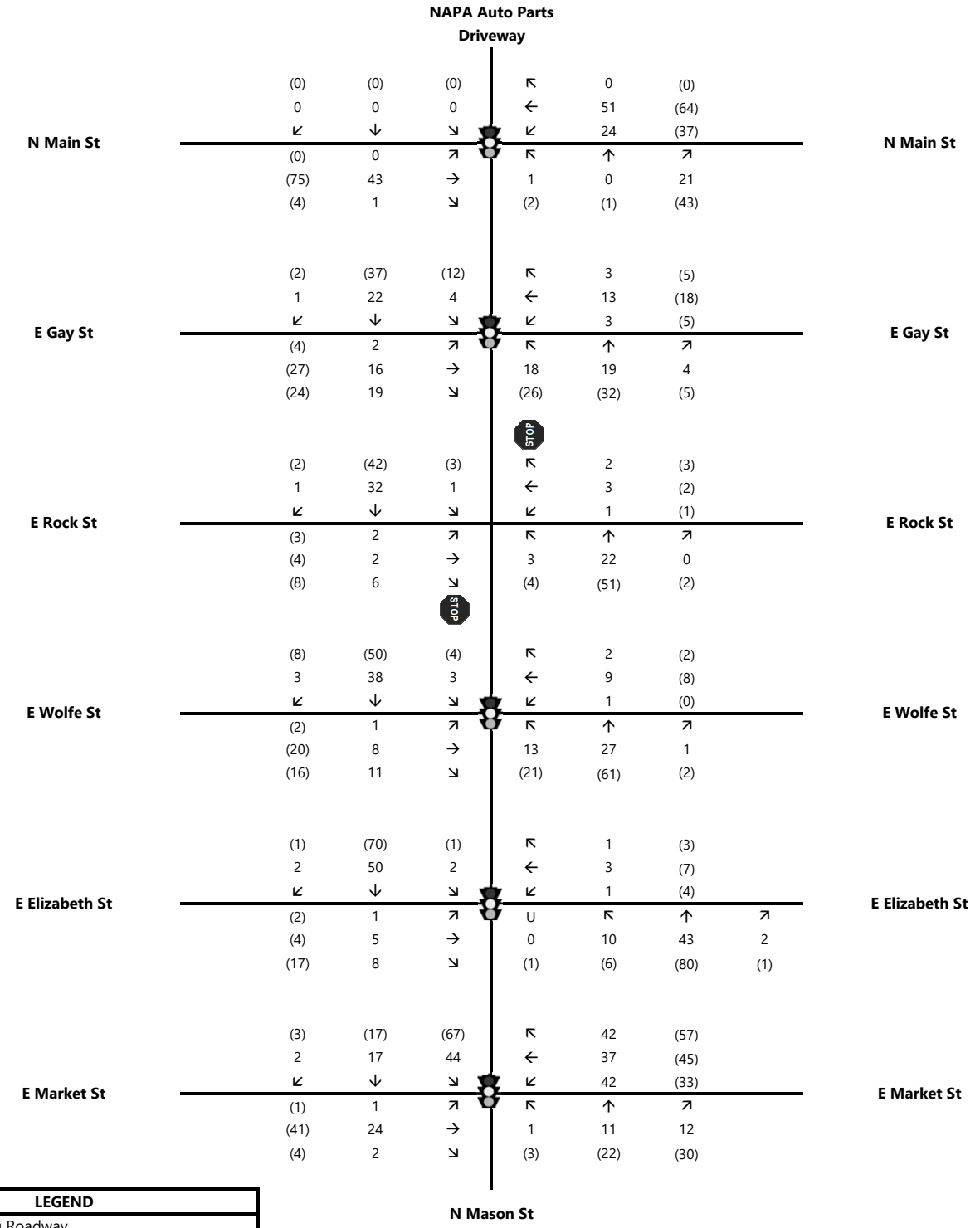


LEGEND	
—	Existing Roadway
STOP	Existing Stop Controlled Approach
	Existing Signalized Intersection
←	Turning Movement
XX	AM Peak Hour Turning Movement
(XX)	PM Peak Hour Turning Movement

vhb

No Build Conditions (2050) Traffic Volumes
AM Peak (8:15-9:15) / PM Peak (4:15-5:15)

N Mason St Study
Harrisonburg, VA

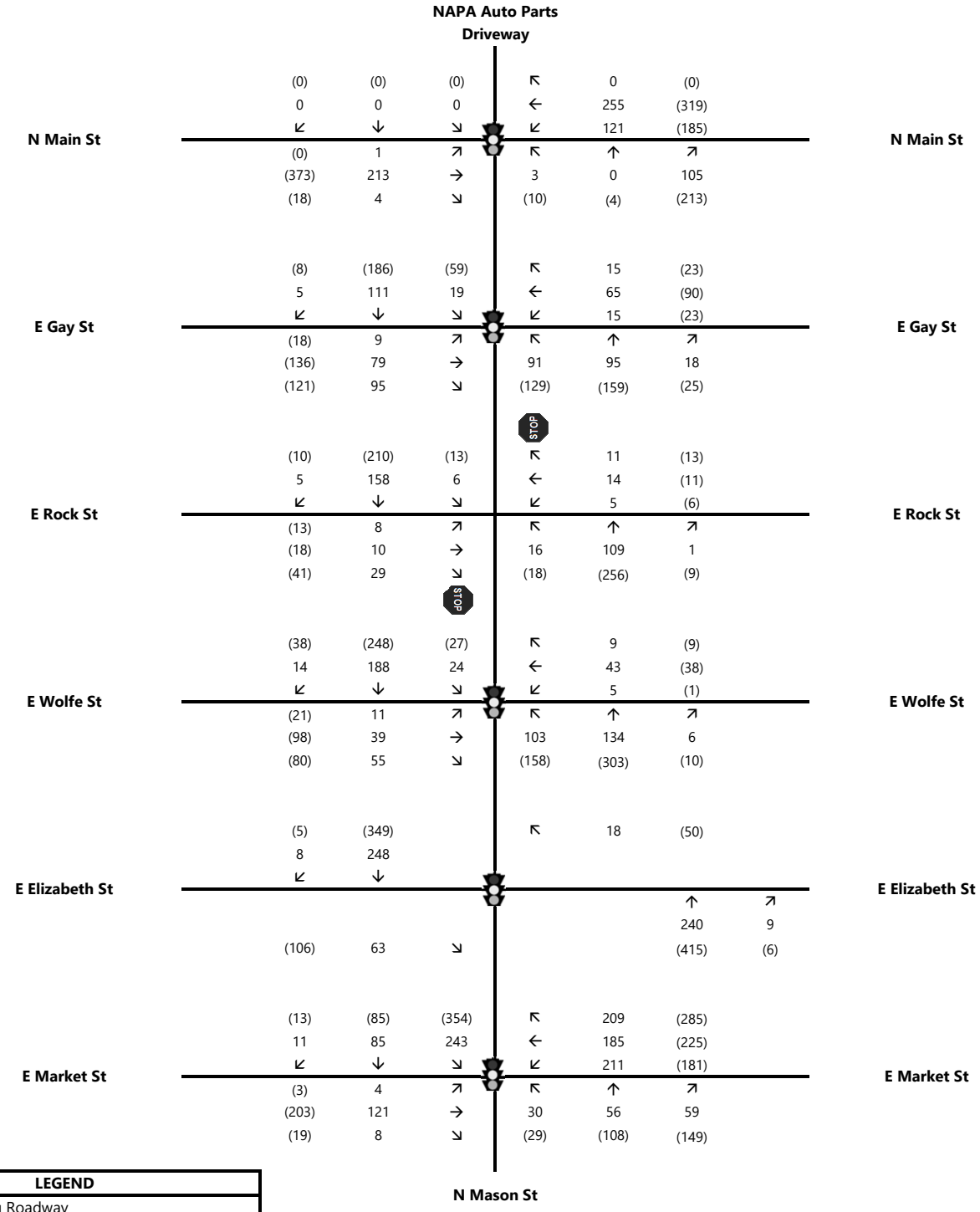


LEGEND	
—	Existing Roadway
STOP	Existing Stop Controlled Approach
	Existing Signalized Intersection
←	Turning Movement
XX	AM Peak Hour Turning Movement
(XX)	PM Peak Hour Turning Movement

vhb

Traffic Volume Growth (2025 to 2050)
AM Peak (8:15-9:15) / PM Peak (4:15-5:15)

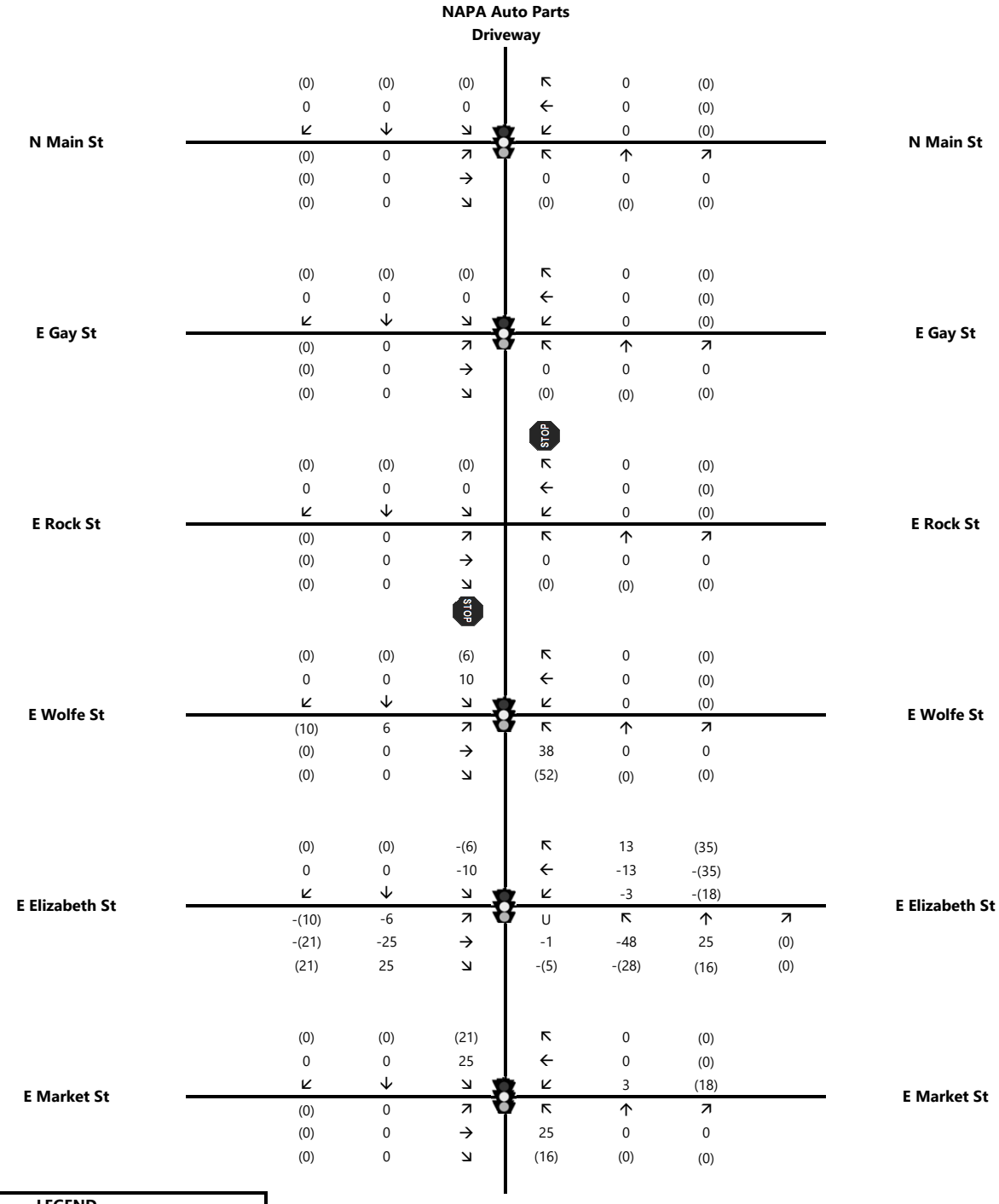
N Mason St Study
Harrisonburg, VA



LEGEND	
—	Existing Roadway
STOP	Existing Stop Controlled Approach
	Existing Signalized Intersection
←	Turning Movement
XX	AM Peak Hour Turning Movement
(XX)	PM Peak Hour Turning Movement

No Signal Control with Right-In/Right-Out Access
Elizabeth Street Alternative Traffic Volumes (2050)
AM Peak (8:15-9:15) / PM Peak (4:15-5:15)

N Mason St Study
Harrisonburg, VA



LEGEND	
—	Existing Roadway
STOP	Existing Stop Controlled Approach
	Existing Signalized Intersection
←	Turning Movement
XX	AM Peak Hour Turning Movement
(XX)	PM Peak Hour Turning Movement

No Signal Control with Right-In/Right-Out Access
Elizabeth Street Alternative Traffic Volume Change from No-Build
AM Peak (8:15-9:15) / PM Peak (4:15-5:15)

N Mason St Study
Harrisonburg, VA

D Synchro and SIDRA Reports

Existing Conditions

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	8	23	4	11	9	13	87	1	5	126	4
Future Vol, veh/h	6	8	23	4	11	9	13	87	1	5	126	4
Conflicting Peds, #/hr	7	0	2	2	0	7	5	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	90	-	-	90	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	0	13	0	0	9	11	0	3	0	0	7	0
Mvmt Flow	8	10	30	5	14	12	17	113	1	6	164	5

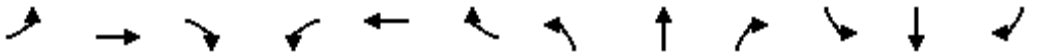
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	289	332	92	249	334	64	174	0	0	114	0	0
Stage 1	184	184	-	148	148	-	-	-	-	-	-	-
Stage 2	105	148	-	101	186	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.76	6.9	7.5	6.68	7.12	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.76	-	6.5	5.68	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.76	-	6.5	5.68	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.13	3.3	3.5	4.09	3.41	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	646	562	954	689	569	959	1415	-	-	1488	-	-
Stage 1	806	720	-	845	757	-	-	-	-	-	-	-
Stage 2	895	748	-	900	728	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	611	550	948	648	557	953	1408	-	-	1488	-	-
Mov Cap-2 Maneuver	611	550	-	648	557	-	-	-	-	-	-	-
Stage 1	792	714	-	835	748	-	-	-	-	-	-	-
Stage 2	851	739	-	854	721	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	10.6	1	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1408	-	-	761	679	1488	-	-
HCM Lane V/C Ratio	0.012	-	-	0.063	0.046	0.004	-	-
HCM Control Delay (s)	7.6	-	-	10	10.6	7.4	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	92	53	60	130	13	187
v/c Ratio	0.28	0.18	0.11	0.10	0.02	0.16
Control Delay	10.6	13.4	6.2	8.9	6.1	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	13.4	6.2	8.9	6.1	11.5
Queue Length 50th (ft)	4	5	6	6	1	8
Queue Length 95th (ft)	35	29	18	27	6	38
Internal Link Dist (ft)	210	279		282		301
Turn Bay Length (ft)			100		100	
Base Capacity (vph)	1364	1391	1173	2703	1182	2754
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.04	0.05	0.05	0.01	0.07

Intersection Summary

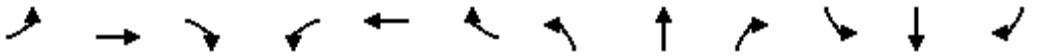


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	31	44	4	34	7	52	107	5	11	150	11
Future Volume (vph)	4	31	44	4	34	7	52	107	5	11	150	11
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.6			6.6		5.3	5.3		5.7	5.3	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.98		1.00	0.99		1.00	0.99	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1400			1453		1425	2703		1451	2753	
Flt Permitted		0.98			0.95		0.60	1.00		0.67	1.00	
Satd. Flow (perm)		1370			1392		895	2703		1023	2753	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	5	36	51	5	40	8	60	124	6	13	174	13
RTOR Reduction (vph)	0	41	0	0	6	0	0	2	0	0	4	0
Lane Group Flow (vph)	0	51	0	0	47	0	60	128	0	13	183	0
Confl. Peds. (#/hr)	2		7	7		2			4	4		
Confl. Bikes (#/hr)						4			2			2
Heavy Vehicles (%)	0%	0%	0%	25%	0%	0%	2%	7%	0%	0%	4%	9%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4			6			2		
Actuated Green, G (s)		5.8			5.8		17.7	15.4		15.5	14.5	
Effective Green, g (s)		5.8			5.8		17.7	15.4		15.5	14.5	
Actuated g/C Ratio		0.15			0.15		0.44	0.39		0.39	0.36	
Clearance Time (s)		6.6			6.6		5.3	5.3		5.7	5.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		199			202		428	1045		409	1002	
v/s Ratio Prot							c0.01	0.05		0.00	c0.07	
v/s Ratio Perm		c0.04			0.03		0.05			0.01		
v/c Ratio		0.26			0.23		0.14	0.12		0.03	0.18	
Uniform Delay, d1		15.1			15.0		6.4	7.9		7.5	8.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.7			0.6		0.2	0.1		0.0	0.1	
Delay (s)		15.8			15.6		6.6	7.9		7.5	8.7	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		15.8			15.6			7.5			8.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	39.8	Sum of lost time (s)	17.6
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	117	182	163	184	4	101	191	85
v/c Ratio	0.41	0.47	0.27	0.23	0.01	0.44	0.49	0.16
Control Delay	33.8	22.5	16.5	1.7	12.8	35.5	19.5	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	22.5	16.5	1.7	12.8	35.5	19.5	16.2
Queue Length 50th (ft)	47	54	45	0	1	41	56	20
Queue Length 95th (ft)	105	118	100	20	6	92	108	63
Internal Link Dist (ft)	206		720			306		303
Turn Bay Length (ft)		175		150	100			
Base Capacity (vph)	359	397	848	858	522	650	480	820
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.46	0.19	0.21	0.01	0.16	0.40	0.10

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	97	6	166	148	167	4	45	47	174	68	9
Future Volume (veh/h)	3	97	6	166	148	167	4	45	47	174	68	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.97	1.00		0.98
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	1136	1530	1530	1518	1530	1458	1530	1423	1458	1446	1518	1530
Adj Flow Rate, veh/h	3	107	5	182	163	114	4	49	52	191	75	3
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, %	33	0	0	1	0	6	0	9	6	7	1	0
Cap, veh/h	60	227	10	491	636	692	398	69	73	363	267	11
Arrive On Green	0.16	0.16	0.16	0.13	0.42	0.42	0.08	0.11	0.11	0.15	0.18	0.18
Sat Flow, veh/h	13	1433	66	1446	1530	1210	1457	622	660	1378	1448	58
Grp Volume(v), veh/h	115	0	0	182	163	114	4	0	101	191	0	78
Grp Sat Flow(s),veh/h/ln	1512	0	0	1446	1530	1210	1457	0	1282	1378	0	1506
Q Serve(g_s), s	0.0	0.0	0.0	6.5	4.4	2.8	0.1	0.0	4.8	7.5	0.0	2.8
Cycle Q Clear(g_c), s	4.4	0.0	0.0	6.5	4.4	2.8	0.1	0.0	4.8	7.5	0.0	2.8
Prop In Lane	0.03		0.04	1.00		1.00	1.00		0.51	1.00		0.04
Lane Grp Cap(c), veh/h	298	0	0	491	636	692	398	0	141	363	0	278
V/C Ratio(X)	0.39	0.00	0.00	0.37	0.26	0.16	0.01	0.00	0.71	0.53	0.00	0.28
Avail Cap(c_a), veh/h	390	0	0	508	797	819	557	0	485	477	0	761
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.2	0.0	0.0	18.4	12.1	6.5	17.3	0.0	27.1	20.1	0.0	22.2
Incr Delay (d2), s/veh	0.8	0.0	0.0	0.5	0.2	0.1	0.0	0.0	6.5	1.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.0	2.0	1.3	0.6	0.0	0.0	1.7	2.4	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.0	0.0	0.0	18.8	12.3	6.6	17.3	0.0	33.7	21.3	0.0	22.7
LnGrp LOS	C	A	A	B	B	A	B	A	C	C	A	C
Approach Vol, veh/h		115			459			105			269	
Approach Delay, s/veh		25.0			13.5			33.0			21.7	
Approach LOS		C			B			C			C	

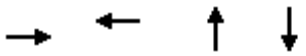
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	16.3	18.1	15.8	13.1		34.3	11.1	17.8				
Change Period (Y+Rc), s	* 8.1	* 8.1	* 6.1	* 6.1		* 8.1	* 6.1	* 6.1				
Max Green Setting (Gmax), s	* 8.9	* 14	* 15	* 24		* 33	* 12	* 32				
Max Q Clear Time (g_c+I1), s	8.5	6.4	9.5	6.8		6.4	2.1	4.8				
Green Ext Time (p_c), s	0.0	0.3	0.2	0.5		1.3	0.0	0.4				

Intersection Summary	
HCM 6th Ctrl Delay	19.4
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	63	18	251	244
v/c Ratio	0.25	0.08	0.13	0.11
Control Delay	12.5	16.4	4.0	4.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.5	16.4	4.0	4.0
Queue Length 50th (ft)	7	4	12	11
Queue Length 95th (ft)	28	15	26	25
Internal Link Dist (ft)	209	298	303	282
Turn Bay Length (ft)				
Base Capacity (vph)	362	345	1994	2132
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.17	0.05	0.13	0.11

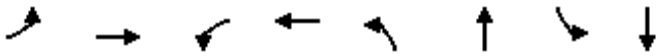
Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	5	20	30	2	10	4	1	38	172	7	8	198
Future Volume (vph)	5	20	30	2	10	4	1	38	172	7	8	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0				6.0			6.0
Lane Util. Factor		1.00			1.00				0.95			0.95
Frpb, ped/bikes		0.99			0.99				1.00			1.00
Flpb, ped/bikes		1.00			1.00				1.00			1.00
Frt		0.93			0.96				1.00			1.00
Flt Protected		1.00			0.99				0.99			1.00
Satd. Flow (prot)		1562			1628				3038			3041
Flt Permitted		0.96			0.95				0.88			0.94
Satd. Flow (perm)		1512			1555				2690			2876
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	6	23	34	2	11	5	1	44	198	8	9	228
RTOR Reduction (vph)	0	31	0	0	0	0	0	0	3	0	0	3
Lane Group Flow (vph)	0	32	0	0	18	0	0	0	248	0	0	241
Confl. Peds. (#/hr)	6		3	3		6		10		4	4	
Confl. Bikes (#/hr)			2			2						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	6%	0%	0%	6%
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		4			4				2			6
Permitted Phases	4			4			2	2			6	
Actuated Green, G (s)		4.5			4.5				28.5			28.5
Effective Green, g (s)		4.5			4.5				28.5			28.5
Actuated g/C Ratio		0.10			0.10				0.63			0.63
Clearance Time (s)		6.0			6.0				6.0			6.0
Vehicle Extension (s)		3.0			3.0				3.0			3.0
Lane Grp Cap (vph)		151			155				1703			1821
v/s Ratio Prot												
v/s Ratio Perm		c0.02			0.01				c0.09			0.08
v/c Ratio		0.21			0.12				0.15			0.13
Uniform Delay, d1		18.6			18.4				3.3			3.3
Progression Factor		1.00			1.00				1.00			1.00
Incremental Delay, d2		0.7			0.3				0.2			0.2
Delay (s)		19.3			18.8				3.5			3.5
Level of Service		B			B				A			A
Approach Delay (s)		19.3			18.8				3.5			3.5
Approach LOS		B			B				A			A

Intersection Summary			
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

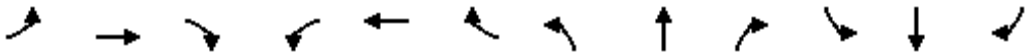
Movement	SBR
Lane Configurations	
Traffic Volume (vph)	6
Future Volume (vph)	6
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.87
Adj. Flow (vph)	7
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	10
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	17%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	8	159	14	74	84	103	17	107
v/c Ratio	0.03	0.45	0.05	0.21	0.18	0.09	0.04	0.17
Control Delay	13.1	19.3	13.3	18.2	11.0	12.7	11.3	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	19.3	13.3	18.2	11.0	12.7	11.3	20.9
Queue Length 50th (ft)	2	26	3	14	11	5	2	12
Queue Length 95th (ft)	9	93	12	54	49	35	15	41
Internal Link Dist (ft)		334		369		298		438
Turn Bay Length (ft)					90		75	
Base Capacity (vph)	810	1374	854	1414	920	2639	903	2949
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.12	0.02	0.05	0.09	0.04	0.02	0.04

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	63	76	12	52	12	73	76	14	15	89	4
Future Volume (veh/h)	7	63	76	12	52	12	73	76	14	15	89	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	1.00		0.99	0.98		0.98	0.98		0.98
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	1523	1577	1710	1603	1657	1377	1643	1617	1230	1617	1683	1710
Adj Flow Rate, veh/h	8	72	54	14	60	7	84	87	7	17	102	3
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	14	10	0	8	4	25	5	7	36	7	2	0
Cap, veh/h	338	135	101	288	248	29	416	560	44	370	455	13
Arrive On Green	0.01	0.16	0.16	0.02	0.17	0.17	0.07	0.19	0.19	0.02	0.14	0.14
Sat Flow, veh/h	1451	827	620	1527	1455	170	1565	2878	229	1540	3171	93
Grp Volume(v), veh/h	8	0	126	14	0	67	84	46	48	17	51	54
Grp Sat Flow(s),veh/h/ln	1451	0	1448	1527	0	1625	1565	1536	1571	1540	1599	1664
Q Serve(g_s), s	0.2	0.0	3.6	0.3	0.0	1.6	2.0	1.1	1.1	0.4	1.3	1.3
Cycle Q Clear(g_c), s	0.2	0.0	3.6	0.3	0.0	1.6	2.0	1.1	1.1	0.4	1.3	1.3
Prop In Lane	1.00		0.43	1.00		0.10	1.00		0.15	1.00		0.06
Lane Grp Cap(c), veh/h	338	0	237	288	0	277	416	299	306	370	230	239
V/C Ratio(X)	0.02	0.00	0.53	0.05	0.00	0.24	0.20	0.15	0.16	0.05	0.22	0.23
Avail Cap(c_a), veh/h	1107	0	1489	1087	0	1671	1205	1634	1672	1224	1702	1771
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	1.00
Uniform Delay (d), s/veh	15.5	0.0	17.3	15.4	0.0	16.2	14.7	15.1	15.1	15.9	17.1	17.1
Incr Delay (d2), s/veh	0.0	0.0	1.9	0.1	0.0	0.4	0.2	0.2	0.2	0.1	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	1.2	0.1	0.0	0.6	0.7	0.4	0.4	0.1	0.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.5	0.0	19.1	15.5	0.0	16.6	14.9	15.3	15.3	16.0	17.6	17.6
LnGrp LOS	B	A	B	B	A	B	B	B	B	B	B	B
Approach Vol, veh/h		134			81			178			122	
Approach Delay, s/veh		18.9			16.4			15.1			17.3	
Approach LOS		B			B			B			B	

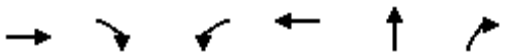
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	12.5	8.4	15.0	7.0	14.8	8.1	15.3
Change Period (Y+Rc), s	6.0	6.0	* 7.6	* 7.6	6.0	6.0	* 7.6	* 7.6
Max Green Setting (Gmax), s	26.0	48.0	* 24	* 46	26.0	48.0	* 24	* 46
Max Q Clear Time (g_c+I1), s	4.0	3.3	2.3	5.6	2.4	3.1	2.2	3.6
Green Ext Time (p_c), s	0.2	0.6	0.0	0.8	0.0	0.6	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	16.8
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBT	EBR	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	188	3	107	224	2	92
v/c Ratio	0.16	0.00	0.11	0.14	0.02	0.07
Control Delay	3.7	0.0	1.3	0.9	39.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.7	0.0	1.3	0.9	39.5	0.1
Queue Length 50th (ft)	18	0	0	0	1	0
Queue Length 95th (ft)	67	0	18	36	8	0
Internal Link Dist (ft)	561			475	271	
Turn Bay Length (ft)		100	100			
Base Capacity (vph)	1197	1454	1030	1594	119	1328
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.00	0.10	0.14	0.02	0.07

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	170	3	97	204	0	2	0	84	0	0	0
Future Volume (veh/h)	1	170	3	97	204	0	2	0	84	0	0	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	0.63		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	1710	1497	1710	1710	1670	1710	1710	1710	1617	1710	1710	1710
Adj Flow Rate, veh/h	1	187	0	107	224	0	2	0	0	0	0	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, %	0	16	0	0	3	0	0	0	7	0	0	0
Cap, veh/h	41	1120		1094	1447	0	82	0		0	5	0
Arrive On Green	0.75	0.75	0.00	0.05	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1	1496	1449	1629	1670	0	914	0	1370	0	1710	0
Grp Volume(v), veh/h	188	0	0	107	224	0	2	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1496	0	1449	1629	1670	0	914	0	1370	0	1710	0
Q Serve(g_s), s	0.0	0.0	0.0	1.3	1.9	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.2	0.0	0.0	1.3	1.9	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.01		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	1161	0		1094	1447	0	82	0		0	5	0
V/C Ratio(X)	0.16	0.00		0.10	0.15	0.00	0.02	0.00		0.00	0.00	0.00
Avail Cap(c_a), veh/h	1161	0		1193	1447	0	144	0		0	116	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	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	3.2	0.0	0.0	1.9	0.9	0.0	44.9	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3.5	0.0	0.0	2.0	1.2	0.0	45.0	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	A	A		A	A	A	D	A		A	A	A
Approach Vol, veh/h		188			331			2			0	
Approach Delay, s/veh		3.5			1.4			45.0			0.0	
Approach LOS		A			A			D				

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.6	73.3		6.1		83.9		6.1				
Change Period (Y+Rc), s	5.9	5.9		5.9		5.9		* 5.9				
Max Green Setting (Gmax), s	10.1	56.1		6.1		72.1		* 6.3				
Max Q Clear Time (g_c+I1), s	3.3	5.2		0.0		3.9		2.2				
Green Ext Time (p_c), s	0.1	1.3		0.0		1.5		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		2.4
HCM 6th LOS		A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	14	33	5	9	10	14	205	7	10	168	8
Future Vol, veh/h	10	14	33	5	9	10	14	205	7	10	168	8
Conflicting Peds, #/hr	9	0	1	1	0	9	7	0	0	0	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	90	-	-	90	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	20	0	0	0	2	14	0	3	0
Mvmt Flow	12	17	40	6	11	12	17	250	9	12	205	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	415	534	116	425	535	139	222	0	0	259	0	0
Stage 1	241	241	-	289	289	-	-	-	-	-	-	-
Stage 2	174	293	-	136	246	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.9	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.9	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.9	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.7	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	527	455	921	473	454	890	1359	-	-	1317	-	-
Stage 1	747	710	-	646	677	-	-	-	-	-	-	-
Stage 2	817	674	-	803	706	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	494	442	914	431	441	882	1350	-	-	1317	-	-
Mov Cap-2 Maneuver	494	442	-	431	441	-	-	-	-	-	-	-
Stage 1	733	699	-	638	668	-	-	-	-	-	-	-
Stage 2	776	665	-	741	695	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	11.9	0.5	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1350	-	-	648	554	1317	-	-
HCM Lane V/C Ratio	0.013	-	-	0.107	0.053	0.009	-	-
HCM Control Delay (s)	7.7	-	-	11.2	11.9	7.8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.2	0	-	-

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	165	42	92	272	18	248
v/c Ratio	0.48	0.12	0.20	0.21	0.04	0.32
Control Delay	18.5	13.5	7.7	10.0	7.5	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	13.5	7.7	10.0	7.5	16.3
Queue Length 50th (ft)	29	7	11	17	2	26
Queue Length 95th (ft)	81	27	34	64	11	61
Internal Link Dist (ft)	210	279		282		301
Turn Bay Length (ft)			100		100	
Base Capacity (vph)	1343	1424	873	2766	870	2714
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.03	0.11	0.10	0.02	0.09

Intersection Summary

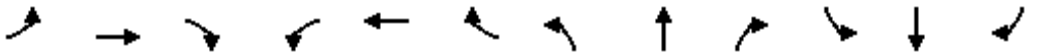
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	78	64	1	30	7	85	242	8	17	198	30
Future Volume (vph)	9	78	64	1	30	7	85	242	8	17	198	30
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.6			6.6		5.3	5.3		5.7	5.3	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.99	1.00	
Frt		0.94			0.97		1.00	1.00		1.00	0.98	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1416			1485		1439	2834		1445	2781	
Flt Permitted		0.98			0.99		0.46	1.00		0.58	1.00	
Satd. Flow (perm)		1389			1472		702	2834		889	2781	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	85	70	1	33	8	92	263	9	18	215	33
RTOR Reduction (vph)	0	23	0	0	6	0	0	2	0	0	9	0
Lane Group Flow (vph)	0	142	0	0	36	0	92	270	0	18	239	0
Confl. Peds. (#/hr)	1		5	5		1	1		15	15		1
Confl. Bikes (#/hr)			1						2			2
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	1%	2%	0%	0%	2%	3%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4			6			2		
Actuated Green, G (s)		10.4			10.4		26.6	20.5		17.0	15.9	
Effective Green, g (s)		10.4			10.4		26.6	20.5		17.0	15.9	
Actuated g/C Ratio		0.21			0.21		0.54	0.41		0.34	0.32	
Clearance Time (s)		6.6			6.6		5.3	5.3		5.7	5.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		291			308		467	1171		317	891	
v/s Ratio Prot							c0.02	0.10		0.00	c0.09	
v/s Ratio Perm		c0.10			0.02		0.08			0.02		
v/c Ratio		0.49			0.12		0.20	0.23		0.06	0.27	
Uniform Delay, d1		17.3			15.9		5.9	9.4		10.8	12.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.3			0.2		0.2	0.1		0.1	0.2	
Delay (s)		18.5			16.0		6.1	9.5		10.9	12.7	
Level of Service		B			B		A	A		B	B	
Approach Delay (s)		18.5			16.0			8.7			12.6	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	49.6	Sum of lost time (s)	17.6
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	201	146	202	256	11	231	299	87
v/c Ratio	0.81	0.54	0.34	0.32	0.02	0.77	0.72	0.13
Control Delay	61.6	29.5	21.5	2.2	11.8	48.2	26.9	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.6	29.5	21.5	2.2	11.8	48.2	26.9	14.9
Queue Length 50th (ft)	104	55	76	0	3	116	103	23
Queue Length 95th (ft)	#233	107	139	28	11	194	165	63
Internal Link Dist (ft)	206		720			306		303
Turn Bay Length (ft)		175		150	100			
Base Capacity (vph)	252	279	602	815	550	473	431	666
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.52	0.34	0.31	0.02	0.49	0.69	0.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	162	15	130	180	228	10	86	119	266	68	10
Future Volume (veh/h)	2	162	15	130	180	228	10	86	119	266	68	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.97	1.00		0.98
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	1530	1518	1446	1506	1518	1482	1530	1506	1518	1506	1518	1530
Adj Flow Rate, veh/h	2	182	14	146	202	122	11	97	134	299	76	5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	1	7	2	1	4	0	2	1	2	1	0
Cap, veh/h	46	215	16	336	548	676	525	114	157	392	457	30
Arrive On Green	0.16	0.16	0.16	0.10	0.36	0.36	0.06	0.20	0.20	0.19	0.32	0.32
Sat Flow, veh/h	4	1385	106	1434	1518	1228	1457	563	778	1434	1406	93
Grp Volume(v), veh/h	198	0	0	146	202	122	11	0	231	299	0	81
Grp Sat Flow(s),veh/h/ln	1495	0	0	1434	1518	1228	1457	0	1340	1434	0	1499
Q Serve(g_s), s	1.3	0.0	0.0	6.7	7.9	4.0	0.4	0.0	13.4	13.0	0.0	3.1
Cycle Q Clear(g_c), s	10.4	0.0	0.0	6.7	7.9	4.0	0.4	0.0	13.4	13.0	0.0	3.1
Prop In Lane	0.01		0.07	1.00		1.00	1.00		0.58	1.00		0.06
Lane Grp Cap(c), veh/h	278	0	0	336	548	676	525	0	271	392	0	487
V/C Ratio(X)	0.71	0.00	0.00	0.43	0.37	0.18	0.02	0.00	0.85	0.76	0.00	0.17
Avail Cap(c_a), veh/h	303	0	0	345	621	735	650	0	398	392	0	594
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.1	0.0	0.0	24.5	19.0	9.2	15.3	0.0	31.0	20.6	0.0	19.4
Incr Delay (d2), s/veh	7.0	0.0	0.0	0.9	0.4	0.1	0.0	0.0	11.3	8.6	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	0.0	2.3	2.7	1.0	0.1	0.0	5.1	5.1	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.0	0.0	0.0	25.4	19.4	9.3	15.3	0.0	42.3	29.2	0.0	19.6
LnGrp LOS	D	A	A	C	B	A	B	A	D	C	A	B
Approach Vol, veh/h		198			470			242			380	
Approach Delay, s/veh		40.0			18.6			41.1			27.1	
Approach LOS		D			B			D			C	

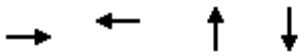
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	16.5	20.6	21.0	22.3		37.1	11.1	32.2				
Change Period (Y+Rc), s	* 8.1	* 8.1	* 6.1	* 6.1		* 8.1	* 6.1	* 6.1				
Max Green Setting (Gmax), s	* 8.9	* 14	* 15	* 24		* 33	* 12	* 32				
Max Q Clear Time (g_c+I1), s	8.7	12.4	15.0	15.4		9.9	2.4	5.1				
Green Ext Time (p_c), s	0.0	0.2	0.0	0.9		1.5	0.0	0.4				

Intersection Summary	
HCM 6th Ctrl Delay	28.6
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	114	66	427	351
v/c Ratio	0.36	0.28	0.23	0.18
Control Delay	10.4	18.7	5.4	5.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.4	18.7	5.4	5.1
Queue Length 50th (ft)	7	15	24	18
Queue Length 95th (ft)	31	35	43	35
Internal Link Dist (ft)	209	298	303	282
Turn Bay Length (ft)				
Base Capacity (vph)	389	320	1891	1962
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.29	0.21	0.23	0.18

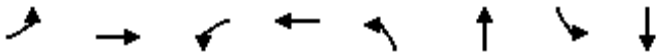
Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	8	17	68	14	28	12	4	22	319	5	5	279
Future Volume (vph)	8	17	68	14	28	12	4	22	319	5	5	279
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0				6.0			6.0
Lane Util. Factor		1.00			1.00				0.95			0.95
Frpb, ped/bikes		0.99			1.00				1.00			1.00
Flpb, ped/bikes		1.00			1.00				1.00			1.00
Frt		0.90			0.97				1.00			1.00
Flt Protected		1.00			0.99				1.00			1.00
Satd. Flow (prot)		1518			1629				3199			3207
Flt Permitted		0.96			0.88				0.91			0.95
Satd. Flow (perm)		1463			1445				2932			3043
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	10	21	83	17	34	15	5	27	389	6	6	340
RTOR Reduction (vph)	0	71	0	0	0	0	0	0	2	0	0	2
Lane Group Flow (vph)	0	43	0	0	66	0	0	0	425	0	0	349
Confl. Peds. (#/hr)	11		3	3		11		4		10	10	
Confl. Bikes (#/hr)			1							1		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		4			4				2			6
Permitted Phases	4			4			2	2			6	
Actuated Green, G (s)		6.4			6.4				26.6			26.6
Effective Green, g (s)		6.4			6.4				26.6			26.6
Actuated g/C Ratio		0.14			0.14				0.59			0.59
Clearance Time (s)		6.0			6.0				6.0			6.0
Vehicle Extension (s)		3.0			3.0				3.0			3.0
Lane Grp Cap (vph)		208			205				1733			1798
v/s Ratio Prot												
v/s Ratio Perm		0.03			c0.05				c0.15			0.11
v/c Ratio		0.21			0.32				0.25			0.19
Uniform Delay, d1		17.1			17.3				4.4			4.2
Progression Factor		1.00			1.00				1.00			1.00
Incremental Delay, d2		0.5			0.9				0.3			0.2
Delay (s)		17.5			18.3				4.7			4.5
Level of Service		B			B				A			A
Approach Delay (s)		17.5			18.3				4.7			4.5
Approach LOS		B			B				A			A

Intersection Summary			
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

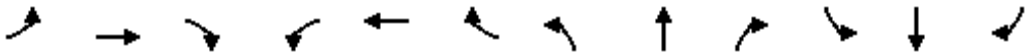
Movement	SBR
Lane Configurations	
Traffic Volume (vph)	4
Future Volume (vph)	4
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.82
Adj. Flow (vph)	5
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	4
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	16	236	21	104	118	169	54	178
v/c Ratio	0.04	0.58	0.07	0.23	0.26	0.18	0.14	0.34
Control Delay	13.6	26.4	13.9	18.4	15.4	21.8	15.1	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.6	26.4	13.9	18.4	15.4	21.8	15.1	27.7
Queue Length 50th (ft)	4	56	5	24	20	22	9	26
Queue Length 95th (ft)	15	161	18	78	74	63	39	72
Internal Link Dist (ft)		334		369		298		438
Turn Bay Length (ft)					90		75	
Base Capacity (vph)	766	1239	644	1271	761	2488	760	2564
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.19	0.03	0.08	0.16	0.07	0.07	0.07

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	109	97	18	72	18	103	127	20	47	149	6
Future Volume (veh/h)	14	109	97	18	72	18	103	127	20	47	149	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.98	0.97		0.96	0.97		0.94
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	1710	1657	1710	1483	1670	1563	1697	1683	1510	1683	1670	1710
Adj Flow Rate, veh/h	16	125	89	21	83	15	118	146	15	54	171	5
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	4	0	17	3	11	1	2	15	2	3	0
Cap, veh/h	419	215	153	282	339	61	411	606	61	403	548	16
Arrive On Green	0.02	0.24	0.24	0.02	0.25	0.25	0.08	0.21	0.21	0.05	0.17	0.17
Sat Flow, veh/h	1629	890	634	1413	1371	248	1616	2921	296	1603	3141	91
Grp Volume(v), veh/h	16	0	214	21	0	98	118	79	82	54	86	90
Grp Sat Flow(s),veh/h/ln	1629	0	1524	1413	0	1618	1616	1599	1617	1603	1586	1646
Q Serve(g_s), s	0.4	0.0	7.1	0.6	0.0	2.8	3.3	2.4	2.4	1.5	2.7	2.7
Cycle Q Clear(g_c), s	0.4	0.0	7.1	0.6	0.0	2.8	3.3	2.4	2.4	1.5	2.7	2.7
Prop In Lane	1.00		0.42	1.00		0.15	1.00		0.18	1.00		0.06
Lane Grp Cap(c), veh/h	419	0	369	282	0	400	411	332	335	403	277	287
V/C Ratio(X)	0.04	0.00	0.58	0.07	0.00	0.24	0.29	0.24	0.24	0.13	0.31	0.31
Avail Cap(c_a), veh/h	1081	0	1236	850	0	1312	1011	1342	1357	1051	1331	1381
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	1.00
Uniform Delay (d), s/veh	15.8	0.0	19.1	16.1	0.0	17.3	17.1	18.9	18.9	17.8	20.6	20.6
Incr Delay (d2), s/veh	0.0	0.0	1.4	0.1	0.0	0.3	0.4	0.4	0.4	0.1	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	2.5	0.2	0.0	1.0	1.2	0.9	0.9	0.6	1.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.8	0.0	20.6	16.2	0.0	17.6	17.5	19.3	19.3	17.9	21.2	21.2
LnGrp LOS	B	A	C	B	A	B	B	B	B	B	C	C
Approach Vol, veh/h		230			119			279			230	
Approach Delay, s/veh		20.2			17.3			18.5			20.5	
Approach LOS		C			B			B			C	

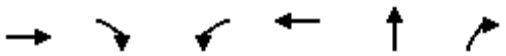
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.8	16.0	9.0	21.4	8.9	17.9	8.7	21.7
Change Period (Y+Rc), s	6.0	6.0	* 7.6	* 7.6	6.0	6.0	* 7.6	* 7.6
Max Green Setting (Gmax), s	26.0	48.0	* 24	* 46	26.0	48.0	* 24	* 46
Max Q Clear Time (g_c+I1), s	5.3	4.7	2.6	9.1	3.5	4.4	2.4	4.8
Green Ext Time (p_c), s	0.3	1.1	0.0	1.5	0.1	1.0	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	19.3
HCM 6th LOS	B

Notes

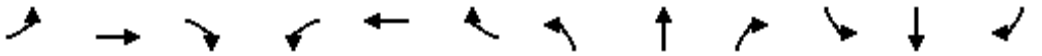
User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBT	EBR	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	335	16	166	287	12	191
v/c Ratio	0.26	0.01	0.19	0.18	0.11	0.14
Control Delay	4.5	0.0	1.6	1.0	41.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.5	0.0	1.6	1.0	41.5	0.2
Queue Length 50th (ft)	35	0	0	0	7	0
Queue Length 95th (ft)	120	0	26	45	24	0
Internal Link Dist (ft)	561			475	271	
Turn Bay Length (ft)		100	100			
Base Capacity (vph)	1288	1434	917	1594	119	1395
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.01	0.18	0.18	0.10	0.14

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	298	14	148	255	0	8	3	170	0	0	0
Future Volume (veh/h)	0	298	14	148	255	0	8	3	170	0	0	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	1710	1683	1710	1710	1670	1710	1710	1710	1683	1710	1710	1710
Adj Flow Rate, veh/h	0	335	0	166	287	0	9	3	0	0	0	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	2	0	0	3	0	0	0	2	0	0	0
Cap, veh/h	0	1236		883	1427	0	86	5		0	25	0
Arrive On Green	0.00	0.73	0.00	0.05	0.85	0.00	0.01	0.01	0.00	0.00	0.00	0.00
Sat Flow, veh/h	0	1683	1449	1629	1670	0	1130	377	1427	0	1710	0
Grp Volume(v), veh/h	0	335	0	166	287	0	12	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	0	1683	1449	1629	1670	0	1506	0	1427	0	1710	0
Q Serve(g_s), s	0.0	5.9	0.0	2.2	2.7	0.0	0.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	5.9	0.0	2.2	2.7	0.0	0.7	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00	0.75		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	0	1236		883	1427	0	92	0		0	25	0
V/C Ratio(X)	0.00	0.27		0.19	0.20	0.00	0.13	0.00		0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	1236		976	1427	0	175	0		0	116	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)	0.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	4.0	0.0	2.5	1.2	0.0	44.1	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.1	0.3	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.9	0.0	0.5	0.5	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	4.5	0.0	2.6	1.5	0.0	44.7	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	A	A		A	A	A	D	A		A	A	A
Approach Vol, veh/h		335			453			12			0	
Approach Delay, s/veh		4.5			1.9			44.7			0.0	
Approach LOS		A			A			D				

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.8	72.0		7.2		82.8		7.2				
Change Period (Y+Rc), s	5.9	5.9		5.9		5.9		* 5.9				
Max Green Setting (Gmax), s	10.1	56.1		6.1		72.1		* 6.3				
Max Q Clear Time (g_c+I1), s	4.2	7.9		0.0		4.7		2.7				
Green Ext Time (p_c), s	0.2	2.4		0.0		2.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		3.6
HCM 6th LOS		A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Future Baseline Conditions

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	10	29	5	14	11	16	109	1	6	158	5
Future Vol, veh/h	8	10	29	5	14	11	16	109	1	6	158	5
Conflicting Peds, #/hr	7	0	2	2	0	7	5	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	90	-	-	90	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	13	0	0	9	11	0	3	0	0	7	0
Mvmt Flow	9	11	32	5	15	12	17	118	1	7	172	5

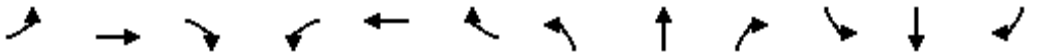
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	302	347	96	261	349	67	182	0	0	119	0	0
Stage 1	194	194	-	153	153	-	-	-	-	-	-	-
Stage 2	108	153	-	108	196	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.76	6.9	7.5	6.68	7.12	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.76	-	6.5	5.68	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.76	-	6.5	5.68	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.13	3.3	3.5	4.09	3.41	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	633	551	948	676	558	954	1405	-	-	1482	-	-
Stage 1	795	713	-	840	753	-	-	-	-	-	-	-
Stage 2	892	744	-	892	721	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	597	539	942	634	546	948	1398	-	-	1482	-	-
Mov Cap-2 Maneuver	597	539	-	634	546	-	-	-	-	-	-	-
Stage 1	781	706	-	830	744	-	-	-	-	-	-	-
Stage 2	847	735	-	843	714	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	10.7	1	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1398	-	-	749	665	1482	-	-
HCM Lane V/C Ratio	0.012	-	-	0.068	0.049	0.004	-	-
HCM Control Delay (s)	7.6	-	-	10.2	10.7	7.4	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	107	62	71	153	15	219
v/c Ratio	0.33	0.21	0.13	0.11	0.03	0.19
Control Delay	12.2	14.9	6.2	8.7	6.0	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	14.9	6.2	8.7	6.0	13.0
Queue Length 50th (ft)	11	10	7	7	1	21
Queue Length 95th (ft)	43	36	22	34	8	47
Internal Link Dist (ft)	210	279		282		301
Turn Bay Length (ft)			100		100	
Base Capacity (vph)	1367	1400	892	2703	727	2754
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.04	0.08	0.06	0.02	0.08

Intersection Summary



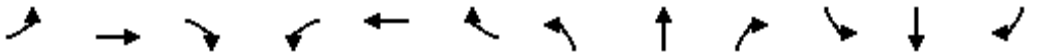
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	39	55	5	43	9	65	134	6	14	188	14
Future Volume (vph)	5	39	55	5	43	9	65	134	6	14	188	14
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.6			6.6		5.3	5.3		5.7	5.3	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.92			0.98		1.00	0.99		1.00	0.99	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1399			1456		1425	2703		1451	2753	
Flt Permitted		0.98			0.96		0.54	1.00		0.65	1.00	
Satd. Flow (perm)		1372			1401		806	2703		1000	2753	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	42	60	5	47	10	71	146	7	15	204	15
RTOR Reduction (vph)	0	45	0	0	7	0	0	2	0	0	4	0
Lane Group Flow (vph)	0	62	0	0	55	0	71	151	0	15	215	0
Confl. Peds. (#/hr)	2		7	7		2			4	4		
Confl. Bikes (#/hr)						4			2			2
Heavy Vehicles (%)	0%	0%	0%	25%	0%	0%	2%	7%	0%	0%	4%	9%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4			6			2		
Actuated Green, G (s)		6.1			6.1		21.9	18.2		16.9	15.9	
Effective Green, g (s)		6.1			6.1		21.9	18.2		16.9	15.9	
Actuated g/C Ratio		0.14			0.14		0.51	0.42		0.39	0.37	
Clearance Time (s)		6.6			6.6		5.3	5.3		5.7	5.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		195			199		464	1146		404	1020	
v/s Ratio Prot							c0.01	0.06		0.00	c0.08	
v/s Ratio Perm		c0.05			0.04		0.06			0.01		
v/c Ratio		0.32			0.28		0.15	0.13		0.04	0.21	
Uniform Delay, d1		16.5			16.4		5.5	7.5		8.0	9.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.0			0.8		0.2	0.1		0.0	0.1	
Delay (s)		17.5			17.2		5.6	7.6		8.0	9.3	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		17.5			17.2			7.0			9.2	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	42.9	Sum of lost time (s)	17.6
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	145	226	201	227	5	125	237	104
v/c Ratio	0.55	0.54	0.28	0.26	0.01	0.62	0.64	0.21
Control Delay	40.4	22.8	16.2	1.4	16.4	49.6	28.3	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.4	22.8	16.2	1.4	16.4	49.6	28.3	20.5
Queue Length 50th (ft)	72	82	67	0	2	63	87	32
Queue Length 95th (ft)	134	143	120	19	9	#141	168	90
Internal Link Dist (ft)	206		720			306		303
Turn Bay Length (ft)		175		150	100			
Base Capacity (vph)	417	459	920	912	458	258	428	569
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.49	0.22	0.25	0.01	0.48	0.55	0.18

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	121	8	208	185	209	5	56	59	218	85	11
Future Volume (veh/h)	4	121	8	208	185	209	5	56	59	218	85	11
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		0.98	1.00		0.97	1.00		0.98
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	1136	1530	1530	1518	1530	1458	1530	1423	1458	1446	1518	1530
Adj Flow Rate, veh/h	4	132	7	226	201	129	5	61	64	237	92	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	33	0	0	1	0	6	0	9	6	7	1	0
Cap, veh/h	54	199	10	466	631	718	414	78	82	379	323	25
Arrive On Green	0.14	0.14	0.14	0.16	0.41	0.41	0.07	0.13	0.13	0.18	0.23	0.23
Sat Flow, veh/h	15	1419	74	1446	1530	1210	1457	626	657	1378	1390	106
Grp Volume(v), veh/h	143	0	0	226	201	129	5	0	125	237	0	99
Grp Sat Flow(s),veh/h/ln	1508	0	0	1446	1530	1210	1457	0	1284	1378	0	1496
Q Serve(g_s), s	0.0	0.0	0.0	9.2	6.3	3.5	0.2	0.0	6.7	10.3	0.0	3.9
Cycle Q Clear(g_c), s	6.4	0.0	0.0	9.2	6.3	3.5	0.2	0.0	6.7	10.3	0.0	3.9
Prop In Lane	0.03		0.05	1.00		1.00	1.00		0.51	1.00		0.07
Lane Grp Cap(c), veh/h	264	0	0	466	631	718	414	0	161	379	0	347
V/C Ratio(X)	0.54	0.00	0.00	0.49	0.32	0.18	0.01	0.00	0.78	0.63	0.00	0.29
Avail Cap(c_a), veh/h	492	0	0	519	965	982	555	0	269	462	0	418
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.0	0.0	0.0	20.7	14.1	6.7	17.5	0.0	30.2	21.3	0.0	22.5
Incr Delay (d2), s/veh	1.7	0.0	0.0	0.8	0.3	0.1	0.0	0.0	7.8	1.9	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	0.0	3.0	2.0	0.8	0.1	0.0	2.4	3.4	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.8	0.0	0.0	21.5	14.4	6.8	17.5	0.0	38.0	23.2	0.0	22.9
LnGrp LOS	C	A	A	C	B	A	B	A	D	C	A	C
Approach Vol, veh/h		143			556			130			336	
Approach Delay, s/veh		30.8			15.5			37.2			23.1	
Approach LOS		C			B			D			C	

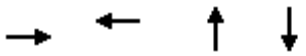
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	19.4	18.1	18.7	15.0		37.5	11.1	22.6				
Change Period (Y+Rc), s	* 8.1	* 8.1	* 6.1	* 6.1		* 8.1	* 6.1	* 6.1				
Max Green Setting (Gmax), s	* 14	* 21	* 17	* 15		* 45	* 12	* 20				
Max Q Clear Time (g_c+I1), s	11.2	8.4	12.3	8.7		8.3	2.2	5.9				
Green Ext Time (p_c), s	0.2	0.6	0.3	0.3		1.6	0.0	0.4				

Intersection Summary	
HCM 6th Ctrl Delay	22.0
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	75	22	297	290
v/c Ratio	0.28	0.09	0.15	0.14
Control Delay	12.4	16.4	4.2	4.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.4	16.4	4.2	4.1
Queue Length 50th (ft)	8	5	14	14
Queue Length 95th (ft)	32	18	33	32
Internal Link Dist (ft)	209	298	303	282
Turn Bay Length (ft)				
Base Capacity (vph)	531	515	1956	2114
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.04	0.15	0.14

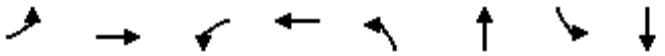
Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	6	25	38	3	13	5	1	48	215	9	10	248
Future Volume (vph)	6	25	38	3	13	5	1	48	215	9	10	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0				6.0			6.0
Lane Util. Factor		1.00			1.00				0.95			0.95
Frpb, ped/bikes		0.99			1.00				1.00			1.00
Flpb, ped/bikes		1.00			1.00				1.00			1.00
Frt		0.93			0.97				0.99			1.00
Flt Protected		1.00			0.99				0.99			1.00
Satd. Flow (prot)		1561			1639				3038			3039
Flt Permitted		0.96			0.94				0.86			0.94
Satd. Flow (perm)		1510			1547				2650			2867
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	27	41	3	14	5	1	52	234	10	11	270
RTOR Reduction (vph)	0	37	0	0	0	0	0	0	3	0	0	3
Lane Group Flow (vph)	0	38	0	0	22	0	0	0	294	0	0	287
Confl. Peds. (#/hr)	6		3	3		6		10		4	4	
Confl. Bikes (#/hr)			2			2						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	6%	0%	0%	6%
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		4			4				2			6
Permitted Phases	4			4			2	2			6	
Actuated Green, G (s)		4.6			4.6				28.4			28.4
Effective Green, g (s)		4.6			4.6				28.4			28.4
Actuated g/C Ratio		0.10			0.10				0.63			0.63
Clearance Time (s)		6.0			6.0				6.0			6.0
Vehicle Extension (s)		3.0			3.0				3.0			3.0
Lane Grp Cap (vph)		154			158				1672			1809
v/s Ratio Prot												
v/s Ratio Perm		c0.03			0.01				c0.11			0.10
v/c Ratio		0.25			0.14				0.18			0.16
Uniform Delay, d1		18.6			18.4				3.4			3.4
Progression Factor		1.00			1.00				1.00			1.00
Incremental Delay, d2		0.8			0.4				0.2			0.2
Delay (s)		19.5			18.8				3.7			3.6
Level of Service		B			B				A			A
Approach Delay (s)		19.5			18.8				3.7			3.6
Approach LOS		B			B				A			A

Intersection Summary			
HCM 2000 Control Delay	5.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

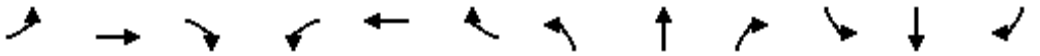
Movement	SBR
Lane Configurations	
Traffic Volume (vph)	8
Future Volume (vph)	8
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	9
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	10
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	17%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	10	189	5	87	99	123	21	126
v/c Ratio	0.03	0.48	0.02	0.23	0.22	0.12	0.06	0.22
Control Delay	13.3	19.4	13.2	18.4	11.7	13.1	11.7	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.3	19.4	13.2	18.4	11.7	13.1	11.7	22.0
Queue Length 50th (ft)	2	33	1	17	13	7	3	15
Queue Length 95th (ft)	11	114	7	65	60	44	19	50
Internal Link Dist (ft)		334		369		298		438
Turn Bay Length (ft)					90		75	
Base Capacity (vph)	492	1470	513	1517	899	2658	522	2544
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.13	0.01	0.06	0.11	0.05	0.04	0.05

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	79	95	5	65	15	91	95	18	19	111	5
Future Volume (veh/h)	9	79	95	5	65	15	91	95	18	19	111	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	1.00		0.99	0.98		0.98	0.98		0.98
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	1523	1577	1710	1603	1657	1377	1643	1617	1230	1617	1683	1710
Adj Flow Rate, veh/h	10	86	74	5	71	11	99	103	10	21	121	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	14	10	0	8	4	25	5	7	36	7	2	0
Cap, veh/h	344	149	128	272	261	40	405	543	52	364	446	11
Arrive On Green	0.01	0.19	0.19	0.01	0.19	0.19	0.08	0.19	0.19	0.03	0.14	0.14
Sat Flow, veh/h	1451	774	666	1527	1399	217	1565	2828	271	1540	3188	79
Grp Volume(v), veh/h	10	0	160	5	0	82	99	55	58	21	60	64
Grp Sat Flow(s),veh/h/ln	1451	0	1439	1527	0	1616	1565	1536	1563	1540	1599	1667
Q Serve(g_s), s	0.3	0.0	4.7	0.1	0.0	2.0	2.5	1.4	1.4	0.5	1.6	1.6
Cycle Q Clear(g_c), s	0.3	0.0	4.7	0.1	0.0	2.0	2.5	1.4	1.4	0.5	1.6	1.6
Prop In Lane	1.00		0.46	1.00		0.13	1.00		0.17	1.00		0.05
Lane Grp Cap(c), veh/h	344	0	277	272	0	301	405	295	300	364	224	233
V/C Ratio(X)	0.03	0.00	0.58	0.02	0.00	0.27	0.24	0.19	0.19	0.06	0.27	0.27
Avail Cap(c_a), veh/h	741	0	2111	700	0	2370	1123	1713	1743	687	1303	1358
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	1.00
Uniform Delay (d), s/veh	15.1	0.0	17.1	15.4	0.0	16.3	15.3	15.8	15.8	16.5	17.9	17.9
Incr Delay (d2), s/veh	0.0	0.0	1.9	0.0	0.0	0.5	0.3	0.3	0.3	0.1	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	1.6	0.0	0.0	0.7	0.8	0.5	0.5	0.2	0.6	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.1	0.0	19.0	15.5	0.0	16.7	15.6	16.1	16.1	16.5	18.6	18.6
LnGrp LOS	B	A	B	B	A	B	B	B	B	B	B	B
Approach Vol, veh/h		170			87			212			145	
Approach Delay, s/veh		18.8			16.7			15.9			18.3	
Approach LOS		B			B			B			B	

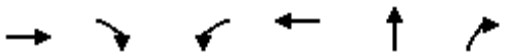
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	12.5	7.9	16.6	7.2	14.9	8.2	16.3
Change Period (Y+Rc), s	6.0	6.0	* 7.6	* 7.6	6.0	6.0	* 7.6	* 7.6
Max Green Setting (Gmax), s	25.0	38.0	* 13	* 68	11.0	52.0	* 13	* 68
Max Q Clear Time (g_c+I1), s	4.5	3.6	2.1	6.7	2.5	3.4	2.3	4.0
Green Ext Time (p_c), s	0.2	0.7	0.0	1.2	0.0	0.7	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	17.4
HCM 6th LOS	B

Notes

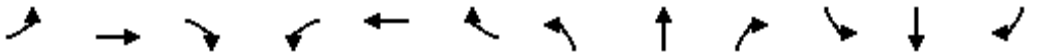
User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBT	EBR	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	233	4	132	277	3	114
v/c Ratio	0.21	0.00	0.14	0.17	0.03	0.09
Control Delay	4.2	0.0	1.4	1.0	39.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.2	0.0	1.4	1.0	39.7	0.1
Queue Length 50th (ft)	23	0	0	0	2	0
Queue Length 95th (ft)	85	0	22	45	10	0
Internal Link Dist (ft)	561			475	271	
Turn Bay Length (ft)		100	100			
Base Capacity (vph)	1135	1454	1007	1593	347	1328
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.00	0.13	0.17	0.01	0.09

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	213	4	121	255	0	3	0	105	0	0	0
Future Volume (veh/h)	1	213	4	121	255	0	3	0	105	0	0	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	0.75		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	1710	1497	1710	1710	1670	1710	1710	1710	1617	1710	1710	1710
Adj Flow Rate, veh/h	1	232	0	132	277	0	3	0	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	16	0	0	3	0	0	0	7	0	0	0
Cap, veh/h	41	1116		1056	1444	0	84	0		0	7	0
Arrive On Green	0.75	0.75	0.00	0.05	0.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1	1496	1449	1629	1670	0	1088	0	1370	0	1710	0
Grp Volume(v), veh/h	233	0	0	132	277	0	3	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1496	0	1449	1629	1670	0	1088	0	1370	0	1710	0
Q Serve(g_s), s	0.0	0.0	0.0	1.6	2.4	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.2	0.0	0.0	1.6	2.4	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	1156	0		1056	1444	0	84	0		0	7	0
V/C Ratio(X)	0.20	0.00		0.13	0.19	0.00	0.04	0.00		0.00	0.00	0.00
Avail Cap(c_a), veh/h	1156	0		1169	1444	0	301	0		0	344	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	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	3.4	0.0	0.0	2.0	1.0	0.0	44.8	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.1	0.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	0.3	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3.8	0.0	0.0	2.0	1.3	0.0	44.9	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	A	A		A	A	A	D	A		A	A	A
Approach Vol, veh/h		233			409			3			0	
Approach Delay, s/veh		3.8			1.5			44.9			0.0	
Approach LOS		A			A			D				

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.7	73.0		6.3		83.7		6.3				
Change Period (Y+Rc), s	5.9	5.9		5.9		5.9		* 5.9				
Max Green Setting (Gmax), s	11.1	43.1		18.1		60.1		* 18				
Max Q Clear Time (g_c+I1), s	3.6	6.2		0.0		4.4		2.2				
Green Ext Time (p_c), s	0.2	1.6		0.0		1.9		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	2.6	
HCM 6th LOS	A	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	18	41	6	11	13	18	256	9	13	210	10
Future Vol, veh/h	13	18	41	6	11	13	18	256	9	13	210	10
Conflicting Peds, #/hr	9	0	1	1	0	9	7	0	0	0	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	90	-	-	90	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	20	0	0	0	2	14	0	3	0
Mvmt Flow	14	20	45	7	12	14	20	278	10	14	228	11

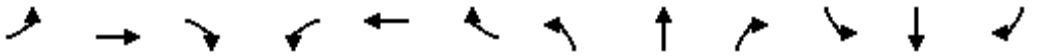
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	463	597	128	476	597	153	246	0	0	288	0	0
Stage 1	269	269	-	323	323	-	-	-	-	-	-	-
Stage 2	194	328	-	153	274	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.9	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.9	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.9	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.7	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	487	419	905	433	419	872	1332	-	-	1286	-	-
Stage 1	719	690	-	616	654	-	-	-	-	-	-	-
Stage 2	795	651	-	784	687	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	452	405	898	388	405	865	1323	-	-	1286	-	-
Mov Cap-2 Maneuver	452	405	-	388	405	-	-	-	-	-	-	-
Stage 1	703	678	-	607	644	-	-	-	-	-	-	-
Stage 2	749	641	-	715	675	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.8	12.4	0.5	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1323	-	-	606	520	1286	-	-
HCM Lane V/C Ratio	0.015	-	-	0.129	0.063	0.011	-	-
HCM Control Delay (s)	7.8	-	-	11.8	12.4	7.8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.2	0	-	-

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	206	52	115	340	23	311
v/c Ratio	0.53	0.13	0.26	0.27	0.06	0.42
Control Delay	20.0	14.0	9.1	11.2	8.5	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.0	14.0	9.1	11.2	8.5	18.6
Queue Length 50th (ft)	43	9	16	25	3	38
Queue Length 95th (ft)	111	34	46	86	14	84
Internal Link Dist (ft)	210	279		282		301
Turn Bay Length (ft)			100		100	
Base Capacity (vph)	1353	1434	746	2769	478	2461
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.04	0.15	0.12	0.05	0.13

Intersection Summary



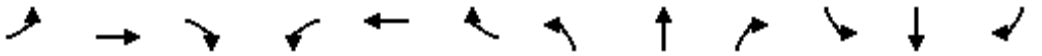
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	98	80	1	38	9	106	303	10	21	248	38
Future Volume (vph)	11	98	80	1	38	9	106	303	10	21	248	38
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.6			6.6		5.3	5.3		5.7	5.3	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.99	1.00	
Frt		0.94			0.97		1.00	1.00		1.00	0.98	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1417			1485		1439	2834		1446	2781	
Flt Permitted		0.98			0.99		0.43	1.00		0.55	1.00	
Satd. Flow (perm)		1393			1475		652	2834		833	2781	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	107	87	1	41	10	115	329	11	23	270	41
RTOR Reduction (vph)	0	23	0	0	8	0	0	2	0	0	9	0
Lane Group Flow (vph)	0	183	0	0	44	0	115	338	0	23	302	0
Confl. Peds. (#/hr)	1		5	5		1	1		15	15		1
Confl. Bikes (#/hr)			1						2			2
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	1%	2%	0%	0%	2%	3%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4			6			2		
Actuated Green, G (s)		12.9			12.9		27.8	21.3		17.4	16.3	
Effective Green, g (s)		12.9			12.9		27.8	21.3		17.4	16.3	
Actuated g/C Ratio		0.24			0.24		0.53	0.40		0.33	0.31	
Clearance Time (s)		6.6			6.6		5.3	5.3		5.7	5.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		339			359		439	1141		286	856	
v/s Ratio Prot							c0.03	0.12		0.00	c0.11	
v/s Ratio Perm		c0.13			0.03		0.11			0.02		
v/c Ratio		0.54			0.12		0.26	0.30		0.08	0.35	
Uniform Delay, d1		17.4			15.6		6.7	10.7		12.1	14.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.6			0.2		0.3	0.1		0.1	0.3	
Delay (s)		19.1			15.7		7.1	10.9		12.2	14.5	
Level of Service		B			B		A	B		B	B	
Approach Delay (s)		19.1			15.7			9.9			14.3	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	52.9	Sum of lost time (s)	17.6
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	245	177	245	310	14	279	362	106
v/c Ratio	0.82	0.74	0.42	0.37	0.03	0.90	0.88	0.16
Control Delay	56.6	44.4	23.3	2.2	13.7	68.4	44.0	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.6	44.4	23.3	2.2	13.7	68.4	44.0	16.7
Queue Length 50th (ft)	136	75	104	0	4	164	149	32
Queue Length 95th (ft)	#251	#154	170	28	15	#312	#278	82
Internal Link Dist (ft)	206		720			306		303
Turn Bay Length (ft)		175		150	100			
Base Capacity (vph)	342	239	628	841	555	325	411	674
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.74	0.39	0.37	0.03	0.86	0.88	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	203	19	163	225	285	13	108	149	333	85	13
Future Volume (veh/h)	3	203	19	163	225	285	13	108	149	333	85	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.97	1.00		0.98
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	1530	1518	1446	1506	1518	1482	1530	1506	1518	1506	1518	1530
Adj Flow Rate, veh/h	3	221	18	177	245	145	14	117	162	362	92	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	1	7	2	1	4	0	2	1	2	1	0
Cap, veh/h	42	256	21	283	538	673	536	129	178	378	492	48
Arrive On Green	0.19	0.19	0.19	0.08	0.35	0.35	0.06	0.23	0.23	0.19	0.36	0.36
Sat Flow, veh/h	5	1377	111	1434	1518	1228	1457	562	779	1434	1358	133
Grp Volume(v), veh/h	242	0	0	177	245	145	14	0	279	362	0	101
Grp Sat Flow(s),veh/h/ln	1493	0	0	1434	1518	1228	1457	0	1341	1434	0	1491
Q Serve(g_s), s	2.0	0.0	0.0	6.9	11.1	5.4	0.5	0.0	18.1	16.9	0.0	4.1
Cycle Q Clear(g_c), s	14.0	0.0	0.0	6.9	11.1	5.4	0.5	0.0	18.1	16.9	0.0	4.1
Prop In Lane	0.01		0.07	1.00		1.00	1.00		0.58	1.00		0.09
Lane Grp Cap(c), veh/h	319	0	0	283	538	673	536	0	307	378	0	540
V/C Ratio(X)	0.76	0.00	0.00	0.62	0.46	0.22	0.03	0.00	0.91	0.96	0.00	0.19
Avail Cap(c_a), veh/h	390	0	0	283	645	760	649	0	329	378	0	540
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.2	0.0	0.0	28.6	22.2	10.5	15.3	0.0	33.5	22.9	0.0	19.5
Incr Delay (d2), s/veh	6.8	0.0	0.0	4.3	0.6	0.2	0.0	0.0	27.1	35.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	0.0	3.6	3.9	1.4	0.2	0.0	8.1	9.4	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.0	0.0	0.0	32.9	22.8	10.7	15.4	0.0	60.6	58.0	0.0	19.6
LnGrp LOS	D	A	A	C	C	B	B	A	E	E	A	B
Approach Vol, veh/h		242			567			293			463	
Approach Delay, s/veh		42.0			22.8			58.4			49.6	
Approach LOS		D			C			E			D	

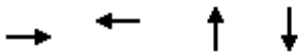
Timer - Assigned Phs	1	2	3	4		6	7	8
Phs Duration (G+Y+Rc), s	15.0	24.7	23.0	26.5		39.7	11.1	38.4
Change Period (Y+Rc), s	* 8.1	* 8.1	* 6.1	* 6.1		* 8.1	* 6.1	* 6.1
Max Green Setting (Gmax), s	* 6.9	* 21	* 17	* 22		* 38	* 12	* 27
Max Q Clear Time (g_c+I1), s	8.9	16.0	18.9	20.1		13.1	2.5	6.1
Green Ext Time (p_c), s	0.0	0.6	0.0	0.3		1.9	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	40.4
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	126	74	476	391
v/c Ratio	0.39	0.30	0.25	0.20
Control Delay	10.3	18.9	5.7	5.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.3	18.9	5.7	5.4
Queue Length 50th (ft)	8	17	27	22
Queue Length 95th (ft)	38	41	56	45
Internal Link Dist (ft)	209	298	303	282
Turn Bay Length (ft)				
Base Capacity (vph)	548	477	1869	1946
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.23	0.16	0.25	0.20

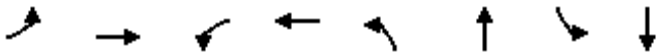
Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	10	21	85	18	35	15	5	28	399	6	6	349
Future Volume (vph)	10	21	85	18	35	15	5	28	399	6	6	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0				6.0			6.0
Lane Util. Factor		1.00			1.00				0.95			0.95
Frpb, ped/bikes		0.99			1.00				1.00			1.00
Flpb, ped/bikes		1.00			1.00				1.00			1.00
Frt		0.90			0.97				1.00			1.00
Flt Protected		1.00			0.99				1.00			1.00
Satd. Flow (prot)		1517			1631				3199			3207
Flt Permitted		0.96			0.87				0.91			0.95
Satd. Flow (perm)		1462			1432				2917			3039
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	23	92	20	38	16	5	30	434	7	7	379
RTOR Reduction (vph)	0	79	0	0	0	0	0	0	2	0	0	1
Lane Group Flow (vph)	0	47	0	0	74	0	0	0	474	0	0	390
Confl. Peds. (#/hr)	11		3	3		11		4		10	10	
Confl. Bikes (#/hr)			1							1		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		4			4				2			6
Permitted Phases	4			4			2	2			6	
Actuated Green, G (s)		6.6			6.6				26.4			26.4
Effective Green, g (s)		6.6			6.6				26.4			26.4
Actuated g/C Ratio		0.15			0.15				0.59			0.59
Clearance Time (s)		6.0			6.0				6.0			6.0
Vehicle Extension (s)		3.0			3.0				3.0			3.0
Lane Grp Cap (vph)		214			210				1711			1782
v/s Ratio Prot												
v/s Ratio Perm		0.03			c0.05				c0.16			0.13
v/c Ratio		0.22			0.35				0.28			0.22
Uniform Delay, d1		16.9			17.3				4.6			4.4
Progression Factor		1.00			1.00				1.00			1.00
Incremental Delay, d2		0.5			1.0				0.4			0.3
Delay (s)		17.5			18.3				5.0			4.7
Level of Service		B			B				A			A
Approach Delay (s)		17.5			18.3				5.0			4.7
Approach LOS		B			B				A			A

Intersection Summary			
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

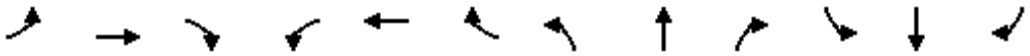
Movement	SBR
Lane Configurations	
Traffic Volume (vph)	5
Future Volume (vph)	5
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	5
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	4
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	20	280	25	123	140	200	64	211
v/c Ratio	0.05	0.62	0.08	0.28	0.32	0.25	0.17	0.40
Control Delay	14.0	27.1	14.5	21.7	17.4	25.0	16.7	30.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	27.1	14.5	21.7	17.4	25.0	16.7	30.2
Queue Length 50th (ft)	5	73	6	30	28	30	12	35
Queue Length 95th (ft)	19	207	22	96	98	83	51	95
Internal Link Dist (ft)		334		369		298		438
Turn Bay Length (ft)					90		75	
Base Capacity (vph)	443	1422	354	1468	700	2449	512	2015
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.20	0.07	0.08	0.20	0.08	0.13	0.10

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	136	121	23	90	23	129	159	25	59	186	8
Future Volume (veh/h)	18	136	121	23	90	23	129	159	25	59	186	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.98	0.97		0.97	0.97		0.94
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	1710	1657	1710	1483	1670	1563	1697	1683	1510	1683	1670	1710
Adj Flow Rate, veh/h	20	148	111	25	98	20	140	173	18	64	202	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	4	0	17	3	11	1	2	15	2	3	0
Cap, veh/h	426	230	172	267	361	74	410	644	66	399	553	19
Arrive On Green	0.02	0.26	0.26	0.03	0.27	0.27	0.10	0.22	0.22	0.05	0.18	0.18
Sat Flow, veh/h	1629	869	652	1413	1340	273	1616	2917	299	1603	3121	108
Grp Volume(v), veh/h	20	0	259	25	0	118	140	94	97	64	102	107
Grp Sat Flow(s),veh/h/ln	1629	0	1521	1413	0	1613	1616	1599	1617	1603	1586	1642
Q Serve(g_s), s	0.6	0.0	9.5	0.8	0.0	3.6	4.3	3.0	3.1	2.0	3.6	3.6
Cycle Q Clear(g_c), s	0.6	0.0	9.5	0.8	0.0	3.6	4.3	3.0	3.1	2.0	3.6	3.6
Prop In Lane	1.00		0.43	1.00		0.17	1.00		0.19	1.00		0.07
Lane Grp Cap(c), veh/h	426	0	402	267	0	434	410	353	357	399	281	291
V/C Ratio(X)	0.05	0.00	0.64	0.09	0.00	0.27	0.34	0.27	0.27	0.16	0.36	0.37
Avail Cap(c_a), veh/h	632	0	1706	461	0	1835	897	1299	1314	645	986	1020
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	1.00
Uniform Delay (d), s/veh	16.2	0.0	20.5	16.7	0.0	18.1	18.2	20.3	20.3	19.3	22.7	22.7
Incr Delay (d2), s/veh	0.0	0.0	1.7	0.2	0.0	0.3	0.5	0.4	0.4	0.2	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	3.4	0.3	0.0	1.3	1.6	1.1	1.2	0.7	1.3	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.3	0.0	22.2	16.9	0.0	18.4	18.7	20.7	20.7	19.5	23.5	23.5
LnGrp LOS	B	A	C	B	A	B	B	C	C	B	C	C
Approach Vol, veh/h		279			143			331			273	
Approach Delay, s/veh		21.8			18.2			19.8			22.6	
Approach LOS		C			B			B			C	

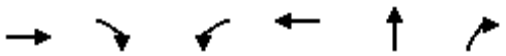
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	17.1	9.4	24.2	9.4	19.8	9.1	24.5
Change Period (Y+Rc), s	6.0	6.0	* 7.6	* 7.6	6.0	6.0	* 7.6	* 7.6
Max Green Setting (Gmax), s	25.0	39.0	* 10	* 70	13.0	51.0	* 9.4	* 71
Max Q Clear Time (g_c+I1), s	6.3	5.6	2.8	11.5	4.0	5.1	2.6	5.6
Green Ext Time (p_c), s	0.3	1.3	0.0	1.9	0.1	1.2	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	20.9
HCM 6th LOS	C

Notes

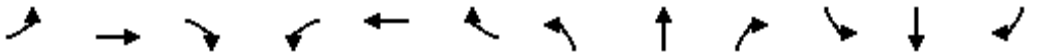
User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBT	EBR	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	405	20	201	347	15	232
v/c Ratio	0.32	0.01	0.25	0.22	0.12	0.17
Control Delay	5.4	0.0	2.0	1.2	40.6	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.4	0.0	2.0	1.2	40.6	0.3
Queue Length 50th (ft)	45	0	0	0	8	0
Queue Length 95th (ft)	171	0	37	66	27	0
Internal Link Dist (ft)	561			475	271	
Turn Bay Length (ft)		100	100			
Base Capacity (vph)	1274	1434	891	1587	347	1395
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.01	0.23	0.22	0.04	0.17

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	373	18	185	319	0	10	4	213	0	0	0
Future Volume (veh/h)	0	373	18	185	319	0	10	4	213	0	0	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	1710	1683	1710	1710	1670	1710	1710	1710	1683	1710	1710	1710
Adj Flow Rate, veh/h	0	405	0	201	347	0	11	4	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	0	0	3	0	0	0	2	0	0	0
Cap, veh/h	0	1229		817	1422	0	89	7		0	30	0
Arrive On Green	0.00	0.73	0.00	0.06	0.85	0.00	0.02	0.02	0.00	0.00	0.00	0.00
Sat Flow, veh/h	0	1683	1449	1629	1670	0	1107	403	1427	0	1710	0
Grp Volume(v), veh/h	0	405	0	201	347	0	15	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	0	1683	1449	1629	1670	0	1510	0	1427	0	1710	0
Q Serve(g_s), s	0.0	7.7	0.0	2.7	3.5	0.0	0.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	7.7	0.0	2.7	3.5	0.0	0.9	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00	0.73		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	0	1229		817	1422	0	96	0		0	30	0
V/C Ratio(X)	0.00	0.33		0.25	0.24	0.00	0.16	0.00		0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	1229		963	1422	0	376	0		0	344	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)	0.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	4.3	0.0	2.8	1.3	0.0	43.9	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.2	0.4	0.0	0.8	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.4	0.0	0.6	0.6	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	5.0	0.0	2.9	1.7	0.0	44.6	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	A	A		A	A	A	D	A		A	A	A
Approach Vol, veh/h		405			548			15			0	
Approach Delay, s/veh		5.0			2.1			44.6			0.0	
Approach LOS		A			A			D				

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.9	71.6		7.5		82.5		7.5				
Change Period (Y+Rc), s	5.9	5.9		5.9		5.9		* 5.9				
Max Green Setting (Gmax), s	13.1	41.1		18.1		60.1		* 18				
Max Q Clear Time (g_c+I1), s	4.7	9.7		0.0		5.5		2.9				
Green Ext Time (p_c), s	0.4	2.9		0.0		2.5		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		4.0
HCM 6th LOS		A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection Alternatives Analysis

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	75	22	297	290
v/c Ratio	0.28	0.09	0.28	0.25
Control Delay	12.4	16.4	5.5	5.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.4	16.4	5.5	5.2
Queue Length 50th (ft)	8	5	32	30
Queue Length 95th (ft)	32	18	78	74
Internal Link Dist (ft)	209	298	303	282
Turn Bay Length (ft)				
Base Capacity (vph)	531	514	1079	1166
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.04	0.28	0.25

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	6	25	38	3	13	5	1	48	215	9	10	248
Future Volume (vph)	6	25	38	3	13	5	1	48	215	9	10	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0				6.0			6.0
Lane Util. Factor		1.00			1.00				1.00			1.00
Frpb, ped/bikes		0.99			0.99				1.00			1.00
Flpb, ped/bikes		1.00			1.00				1.00			1.00
Frt		0.93			0.97				1.00			1.00
Flt Protected		1.00			0.99				0.99			1.00
Satd. Flow (prot)		1560			1634				1600			1600
Flt Permitted		0.96			0.94				0.91			0.99
Satd. Flow (perm)		1510			1542				1464			1581
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	27	41	3	14	5	1	52	234	10	11	270
RTOR Reduction (vph)	0	37	0	0	0	0	0	0	2	0	0	1
Lane Group Flow (vph)	0	38	0	0	22	0	0	0	295	0	0	289
Confl. Peds. (#/hr)	6		3	3		6		10		4	4	
Confl. Bikes (#/hr)			2			2						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	6%	0%	0%	6%
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		4			4				2			6
Permitted Phases	4			4			2	2			6	
Actuated Green, G (s)		4.6			4.6				28.4			28.4
Effective Green, g (s)		4.6			4.6				28.4			28.4
Actuated g/C Ratio		0.10			0.10				0.63			0.63
Clearance Time (s)		6.0			6.0				6.0			6.0
Vehicle Extension (s)		3.0			3.0				3.0			3.0
Lane Grp Cap (vph)		154			157				923			997
v/s Ratio Prot												
v/s Ratio Perm		c0.03			0.01				c0.20			0.18
v/c Ratio		0.25			0.14				0.32			0.29
Uniform Delay, d1		18.6			18.4				3.8			3.7
Progression Factor		1.00			1.00				1.00			1.00
Incremental Delay, d2		0.8			0.4				0.9			0.7
Delay (s)		19.5			18.8				4.7			4.5
Level of Service		B			B				A			A
Approach Delay (s)		19.5			18.8				4.7			4.5
Approach LOS		B			B				A			A

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	8
Future Volume (vph)	8
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	9
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	10
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	17%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	63	0	0	18	0	240	9	0	248	8
Future Vol, veh/h	0	0	63	0	0	18	0	240	9	0	248	8
Conflicting Peds, #/hr	6	0	3	3	0	6	10	0	4	4	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	3	6	0	0	6	17
Mvmt Flow	0	0	68	0	0	20	0	261	10	0	270	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	288	-	-	276	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.2	-	-	6.2	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	756	0	0	768	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	747	-	-	761	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	9.9	0	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	747	761	-	-
HCM Lane V/C Ratio	-	-	0.092	0.026	-	-
HCM Control Delay (s)	-	-	10.3	9.9	-	-
HCM Lane LOS	-	-	B	A	-	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-	-

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	126	74	476	391
v/c Ratio	0.38	0.30	0.47	0.37
Control Delay	9.9	18.1	8.5	7.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.9	18.1	8.5	7.4
Queue Length 50th (ft)	7	15	62	47
Queue Length 95th (ft)	38	41	147	110
Internal Link Dist (ft)	209	298	303	282
Turn Bay Length (ft)				
Base Capacity (vph)	561	490	1020	1058
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.22	0.15	0.47	0.37

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	10	21	85	18	35	15	5	28	399	6	6	349
Future Volume (vph)	10	21	85	18	35	15	5	28	399	6	6	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0				6.0			6.0
Lane Util. Factor		1.00			1.00				1.00			1.00
Frpb, ped/bikes		0.99			0.99				1.00			1.00
Flpb, ped/bikes		1.00			1.00				1.00			1.00
Frt		0.90			0.97				1.00			1.00
Flt Protected		1.00			0.99				1.00			1.00
Satd. Flow (prot)		1517			1627				1684			1688
Flt Permitted		0.96			0.87				0.95			0.99
Satd. Flow (perm)		1461			1428				1613			1675
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	23	92	20	38	16	5	30	434	7	7	379
RTOR Reduction (vph)	0	79	0	0	0	0	0	0	1	0	0	1
Lane Group Flow (vph)	0	47	0	0	74	0	0	0	475	0	0	390
Confl. Peds. (#/hr)	11		3	3		11		4		10	10	
Confl. Bikes (#/hr)			1							1		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		4			4				2			6
Permitted Phases	4			4			2	2			6	
Actuated Green, G (s)		6.5			6.5				26.5			26.5
Effective Green, g (s)		6.5			6.5				26.5			26.5
Actuated g/C Ratio		0.14			0.14				0.59			0.59
Clearance Time (s)		6.0			6.0				6.0			6.0
Vehicle Extension (s)		3.0			3.0				3.0			3.0
Lane Grp Cap (vph)		211			206				949			986
v/s Ratio Prot												
v/s Ratio Perm		0.03			c0.05				c0.29			0.23
v/c Ratio		0.22			0.36				0.50			0.40
Uniform Delay, d1		17.0			17.4				5.4			5.0
Progression Factor		1.00			1.00				1.00			1.00
Incremental Delay, d2		0.5			1.1				1.9			1.2
Delay (s)		17.6			18.4				7.3			6.1
Level of Service		B			B				A			A
Approach Delay (s)		17.6			18.4				7.3			6.1
Approach LOS		B			B				A			A

Intersection Summary			
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	5
Future Volume (vph)	5
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	5
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	4
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	106	0	0	50	0	415	6	0	349	5
Future Vol, veh/h	0	0	106	0	0	50	0	415	6	0	349	5
Conflicting Peds, #/hr	11	0	3	3	0	11	4	0	10	10	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	0	0	115	0	0	54	0	451	7	0	379	5

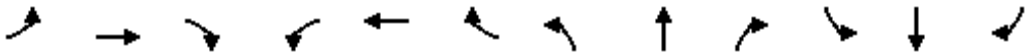
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	389	-	-	476	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.2	-	-	6.2	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	664	0	0	593	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	660	-	-	581	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.6	11.8	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	660	581	-	-
HCM Lane V/C Ratio	-	-	0.175	0.094	-	-
HCM Control Delay (s)	-	-	11.6	11.8	-	-
HCM Lane LOS	-	-	B	B	-	-
HCM 95th %tile Q(veh)	-	-	0.6	0.3	-	-

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	107	62	71	153	15	219
v/c Ratio	0.30	0.19	0.15	0.21	0.03	0.30
Control Delay	8.3	10.1	8.0	7.9	6.8	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	10.1	8.0	7.9	6.8	8.4
Queue Length 50th (ft)	6	6	7	15	1	22
Queue Length 95th (ft)	29	24	24	42	8	59
Internal Link Dist (ft)	210	279		282		301
Turn Bay Length (ft)			150		150	
Base Capacity (vph)	1355	1397	932	1423	1001	1450
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.04	0.08	0.11	0.01	0.15

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	39	55	5	43	9	65	134	6	14	188	14
Future Volume (vph)	5	39	55	5	43	9	65	134	6	14	188	14
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.6			6.6		5.3	5.3		5.3	5.3	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.92			0.98		1.00	0.99		1.00	0.99	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1392			1454		1425	1423		1450	1449	
Flt Permitted		0.98			0.96		0.62	1.00		0.66	1.00	
Satd. Flow (perm)		1365			1399		932	1423		1007	1449	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	42	60	5	47	10	71	146	7	15	204	15
RTOR Reduction (vph)	0	43	0	0	7	0	0	2	0	0	2	0
Lane Group Flow (vph)	0	64	0	0	55	0	71	151	0	15	217	0
Confl. Peds. (#/hr)	2		7	7		2			4	4		
Confl. Bikes (#/hr)						4			2			2
Heavy Vehicles (%)	0%	0%	0%	25%	0%	0%	2%	7%	0%	0%	4%	9%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			6			2	
Permitted Phases	4			4			6			2		
Actuated Green, G (s)		5.9			5.9		14.5	14.5		14.5	14.5	
Effective Green, g (s)		5.9			5.9		14.5	14.5		14.5	14.5	
Actuated g/C Ratio		0.18			0.18		0.45	0.45		0.45	0.45	
Clearance Time (s)		6.6			6.6		5.3	5.3		5.3	5.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		249			255		418	638		452	650	
v/s Ratio Prot								0.11			c0.15	
v/s Ratio Perm		c0.05			0.04		0.08			0.01		
v/c Ratio		0.26			0.22		0.17	0.24		0.03	0.33	
Uniform Delay, d1		11.3			11.2		5.3	5.5		5.0	5.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.5			0.4		0.2	0.2		0.0	0.3	
Delay (s)		11.9			11.7		5.5	5.7		5.0	6.1	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		11.9			11.7			5.6			6.0	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	32.3	Sum of lost time (s)	11.9
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	5	39	55	5	43	9	65	134	6	14	188	14
Future Vol, veh/h	5	39	55	5	43	9	65	134	6	14	188	14
Conflicting Peds, #/hr	2	0	7	7	0	2	0	0	4	4	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	25	0	0	2	7	0	0	4	9
Mvmt Flow	5	42	60	5	47	10	71	146	7	15	204	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	564	541	219	596	545	156	219	0	0	157	0	0
Stage 1	242	242	-	296	296	-	-	-	-	-	-	-
Stage 2	322	299	-	300	249	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.35	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.725	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	439	451	826	384	449	895	1350	-	-	1435	-	-
Stage 1	766	709	-	666	672	-	-	-	-	-	-	-
Stage 2	694	670	-	662	704	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	378	421	820	310	419	890	1350	-	-	1430	-	-
Mov Cap-2 Maneuver	378	421	-	310	419	-	-	-	-	-	-	-
Stage 1	725	702	-	629	634	-	-	-	-	-	-	-
Stage 2	601	632	-	567	697	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.7	14.5	2.5	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1350	-	-	572	442	1430	-	-
HCM Lane V/C Ratio	0.052	-	-	0.188	0.14	0.011	-	-
HCM Control Delay (s)	7.8	-	-	12.7	14.5	7.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.7	0.5	0	-	-

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	206	52	115	340	23	311
v/c Ratio	0.50	0.12	0.31	0.54	0.07	0.50
Control Delay	15.9	11.2	11.6	13.2	8.6	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	11.2	11.6	13.2	8.6	12.4
Queue Length 50th (ft)	31	7	16	53	3	46
Queue Length 95th (ft)	96	29	53	135	14	120
Internal Link Dist (ft)	210	279		282		301
Turn Bay Length (ft)			150		150	
Base Capacity (vph)	1369	1458	864	1492	821	1463
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.04	0.13	0.23	0.03	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	98	80	1	38	9	106	303	10	21	248	38
Future Volume (vph)	11	98	80	1	38	9	106	303	10	21	248	38
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.6			6.6		5.3	5.3		5.3	5.3	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.99	1.00	
Frt		0.94			0.97		1.00	1.00		1.00	0.98	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1412			1483		1438	1492		1442	1464	
Flt Permitted		0.98			0.99		0.57	1.00		0.55	1.00	
Satd. Flow (perm)		1388			1472		865	1492		832	1464	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	107	87	1	41	10	115	329	11	23	270	41
RTOR Reduction (vph)	0	21	0	0	7	0	0	1	0	0	5	0
Lane Group Flow (vph)	0	185	0	0	45	0	115	339	0	23	306	0
Confl. Peds. (#/hr)	1		5	5		1	1		15	15		1
Confl. Bikes (#/hr)			1						2			2
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	1%	2%	0%	0%	2%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			6			2	
Permitted Phases	4			4			6			2		
Actuated Green, G (s)		12.0			12.0		17.9	17.9		17.9	17.9	
Effective Green, g (s)		12.0			12.0		17.9	17.9		17.9	17.9	
Actuated g/C Ratio		0.29			0.29		0.43	0.43		0.43	0.43	
Clearance Time (s)		6.6			6.6		5.3	5.3		5.3	5.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		398			422		370	638		356	626	
v/s Ratio Prot								c0.23			0.21	
v/s Ratio Perm		c0.13			0.03		0.13			0.03		
v/c Ratio		0.46			0.11		0.31	0.53		0.06	0.49	
Uniform Delay, d1		12.3			11.0		7.9	8.8		7.0	8.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.9			0.1		0.5	0.9		0.1	0.6	
Delay (s)		13.1			11.1		8.4	9.7		7.1	9.2	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		13.1			11.1			9.4			9.1	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	41.8	Sum of lost time (s)	11.9
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	98	80	1	38	9	106	303	10	21	248	38
Future Vol, veh/h	11	98	80	1	38	9	106	303	10	21	248	38
Conflicting Peds, #/hr	1	0	5	5	0	1	1	0	15	15	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	0	1	2	0	0	2	3
Mvmt Flow	12	107	87	1	41	10	115	329	11	23	270	41

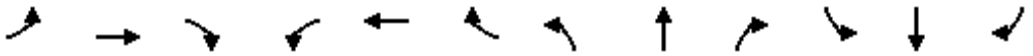
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	929	923	297	1019	938	351	312	0	0	355	0	0
Stage 1	338	338	-	580	580	-	-	-	-	-	-	-
Stage 2	591	585	-	439	358	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.22	7.1	6.5	6.2	4.11	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.318	3.5	4	3.3	2.209	-	-	2.2	-	-
Pot Cap-1 Maneuver	250	272	742	217	266	697	1254	-	-	1215	-	-
Stage 1	681	644	-	504	503	-	-	-	-	-	-	-
Stage 2	497	501	-	601	631	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	195	239	738	113	233	686	1253	-	-	1198	-	-
Mov Cap-2 Maneuver	195	239	-	113	233	-	-	-	-	-	-	-
Stage 1	618	631	-	451	450	-	-	-	-	-	-	-
Stage 2	404	448	-	430	618	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	32.5	22.4	2.1	0.6
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1253	-	-	329	259	1198	-	-
HCM Lane V/C Ratio	0.092	-	-	0.624	0.201	0.019	-	-
HCM Control Delay (s)	8.2	-	-	32.5	22.4	8.1	-	-
HCM Lane LOS	A	-	-	D	C	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	4	0.7	0.1	-	-

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	114	62	112	153	26	219
v/c Ratio	0.32	0.18	0.24	0.21	0.05	0.30
Control Delay	9.3	9.9	9.2	8.1	7.2	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.3	9.9	9.2	8.1	7.2	8.7
Queue Length 50th (ft)	8	6	12	15	2	23
Queue Length 95th (ft)	33	25	37	43	12	61
Internal Link Dist (ft)	210	279		282		301
Turn Bay Length (ft)			150		150	
Base Capacity (vph)	1328	1396	932	1423	1001	1450
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.04	0.12	0.11	0.03	0.15

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	39	55	5	43	9	103	134	6	24	188	14
Future Volume (vph)	11	39	55	5	43	9	103	134	6	24	188	14
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.6			6.6		5.3	5.3		5.3	5.3	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.98		1.00	0.99		1.00	0.99	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1396			1454		1425	1423		1450	1449	
Flt Permitted		0.95			0.96		0.62	1.00		0.66	1.00	
Satd. Flow (perm)		1337			1398		932	1423		1007	1449	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	42	60	5	47	10	112	146	7	26	204	15
RTOR Reduction (vph)	0	37	0	0	6	0	0	2	0	0	2	0
Lane Group Flow (vph)	0	77	0	0	56	0	112	151	0	26	217	0
Confl. Peds. (#/hr)	2		7	7		2			4	4		
Confl. Bikes (#/hr)						4			2			2
Heavy Vehicles (%)	0%	0%	0%	25%	0%	0%	2%	7%	0%	0%	4%	9%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			6			2	
Permitted Phases	4			4			6			2		
Actuated Green, G (s)		6.2			6.2		14.4	14.4		14.4	14.4	
Effective Green, g (s)		6.2			6.2		14.4	14.4		14.4	14.4	
Actuated g/C Ratio		0.19			0.19		0.44	0.44		0.44	0.44	
Clearance Time (s)		6.6			6.6		5.3	5.3		5.3	5.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		255			266		412	630		446	642	
v/s Ratio Prot								0.11			c0.15	
v/s Ratio Perm		c0.06			0.04		0.12			0.03		
v/c Ratio		0.30			0.21		0.27	0.24		0.06	0.34	
Uniform Delay, d1		11.3			11.1		5.7	5.6		5.2	5.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.7			0.4		0.4	0.2		0.1	0.3	
Delay (s)		12.0			11.5		6.1	5.8		5.2	6.2	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		12.0			11.5			5.9			6.1	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	32.5	Sum of lost time (s)	11.9
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	217	52	172	340	29	311
v/c Ratio	0.53	0.12	0.46	0.53	0.08	0.49
Control Delay	17.8	12.0	14.5	13.2	8.8	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.8	12.0	14.5	13.2	8.8	12.3
Queue Length 50th (ft)	35	7	27	55	4	47
Queue Length 95th (ft)	114	33	84	141	17	126
Internal Link Dist (ft)	210	279		282		301
Turn Bay Length (ft)			150		150	
Base Capacity (vph)	1311	1415	864	1492	813	1463
Starvation Cap Reductn	0	0	0	20	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.04	0.20	0.23	0.04	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	98	80	1	38	9	158	303	10	27	248	38
Future Volume (vph)	21	98	80	1	38	9	158	303	10	27	248	38
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.6			6.6		5.3	5.3		5.3	5.3	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.99	1.00	
Frt		0.95			0.97		1.00	1.00		1.00	0.98	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1414			1483		1438	1492		1442	1464	
Flt Permitted		0.96			0.99		0.57	1.00		0.54	1.00	
Satd. Flow (perm)		1367			1473		865	1492		824	1464	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	107	87	1	41	10	172	329	11	29	270	41
RTOR Reduction (vph)	0	19	0	0	7	0	0	1	0	0	5	0
Lane Group Flow (vph)	0	198	0	0	45	0	172	339	0	29	306	0
Confl. Peds. (#/hr)	1		5	5		1	1		15	15		1
Confl. Bikes (#/hr)			1						2			2
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	1%	2%	0%	0%	2%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			6			2	
Permitted Phases	4			4			6			2		
Actuated Green, G (s)		12.8			12.8		19.1	19.1		19.1	19.1	
Effective Green, g (s)		12.8			12.8		19.1	19.1		19.1	19.1	
Actuated g/C Ratio		0.29			0.29		0.44	0.44		0.44	0.44	
Clearance Time (s)		6.6			6.6		5.3	5.3		5.3	5.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		399			430		377	650		359	638	
v/s Ratio Prot								c0.23			0.21	
v/s Ratio Perm		c0.14			0.03		0.20			0.04		
v/c Ratio		0.50			0.10		0.46	0.52		0.08	0.48	
Uniform Delay, d1		12.8			11.3		8.7	9.0		7.2	8.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.0			0.1		0.9	0.8		0.1	0.6	
Delay (s)		13.8			11.4		9.6	9.8		7.3	9.4	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		13.8			11.4			9.7			9.2	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	43.8	Sum of lost time (s)	11.9
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	8	10	29	5	14	11	16	109	1	6	158	5
Future Vol, veh/h	8	10	29	5	14	11	16	109	1	6	158	5
Conflicting Peds, #/hr	7	0	2	2	0	7	5	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	13	0	0	9	11	0	3	0	0	7	0
Mvmt Flow	9	11	32	5	15	12	17	118	1	7	172	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	367	347	182	365	349	126	182	0	0	119	0	0
Stage 1	194	194	-	153	153	-	-	-	-	-	-	-
Stage 2	173	153	-	212	196	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.63	6.2	7.1	6.59	6.31	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.63	-	6.1	5.59	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.63	-	6.1	5.59	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.117	3.3	3.5	4.081	3.399	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	593	559	866	595	564	901	1405	-	-	1482	-	-
Stage 1	812	720	-	854	758	-	-	-	-	-	-	-
Stage 2	834	750	-	795	726	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	559	546	860	556	551	895	1398	-	-	1482	-	-
Mov Cap-2 Maneuver	559	546	-	556	551	-	-	-	-	-	-	-
Stage 1	797	713	-	843	748	-	-	-	-	-	-	-
Stage 2	790	740	-	749	719	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	10.9	1	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1398	-	-	708	643	1482	-	-
HCM Lane V/C Ratio	0.012	-	-	0.072	0.051	0.004	-	-
HCM Control Delay (s)	7.6	0	-	10.5	10.9	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	10	29	5	14	11	16	109	1	6	158	5
Future Vol, veh/h	8	10	29	5	14	11	16	109	1	6	158	5
Conflicting Peds, #/hr	7	0	2	2	0	7	5	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	13	0	0	9	11	0	3	0	0	7	0
Mvmt Flow	9	11	32	5	15	12	17	118	1	7	172	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	367	347	182	365	349	126	182	0	0	119	0	0
Stage 1	194	194	-	153	153	-	-	-	-	-	-	-
Stage 2	173	153	-	212	196	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.63	6.2	7.1	6.59	6.31	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.63	-	6.1	5.59	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.63	-	6.1	5.59	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.117	3.3	3.5	4.081	3.399	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	593	559	866	595	564	901	1405	-	-	1482	-	-
Stage 1	812	720	-	854	758	-	-	-	-	-	-	-
Stage 2	834	750	-	795	726	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	559	547	860	556	552	895	1398	-	-	1482	-	-
Mov Cap-2 Maneuver	559	547	-	556	552	-	-	-	-	-	-	-
Stage 1	798	713	-	844	749	-	-	-	-	-	-	-
Stage 2	791	741	-	749	719	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	10.9	1	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1398	-	-	709	643	1482	-	-
HCM Lane V/C Ratio	0.012	-	-	0.072	0.051	0.004	-	-
HCM Control Delay (s)	7.6	-	-	10.5	10.9	7.4	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	13	18	41	6	11	13	18	256	9	13	210	10
Future Vol, veh/h	13	18	41	6	11	13	18	256	9	13	210	10
Conflicting Peds, #/hr	9	0	1	1	0	9	7	0	0	0	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	20	0	0	0	2	14	0	3	0
Mvmt Flow	14	20	45	7	12	14	20	278	10	14	228	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	614	597	242	618	597	292	246	0	0	288	0	0
Stage 1	269	269	-	323	323	-	-	-	-	-	-	-
Stage 2	345	328	-	295	274	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.3	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.68	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	407	419	802	377	419	752	1332	-	-	1286	-	-
Stage 1	741	690	-	653	654	-	-	-	-	-	-	-
Stage 2	675	651	-	676	687	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	375	403	796	334	403	746	1323	-	-	1286	-	-
Mov Cap-2 Maneuver	375	403	-	334	403	-	-	-	-	-	-	-
Stage 1	722	676	-	641	642	-	-	-	-	-	-	-
Stage 2	633	639	-	611	673	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.6	13.1	0.5	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1323	-	-	550	479	1286	-	-
HCM Lane V/C Ratio	0.015	-	-	0.142	0.068	0.011	-	-
HCM Control Delay (s)	7.8	0	-	12.6	13.1	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.2	0	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	18	41	6	11	13	18	256	9	13	210	10
Future Vol, veh/h	13	18	41	6	11	13	18	256	9	13	210	10
Conflicting Peds, #/hr	9	0	1	1	0	9	7	0	0	0	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	20	0	0	0	2	14	0	3	0
Mvmt Flow	14	20	45	7	12	14	20	278	10	14	228	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	614	597	242	618	597	292	246	0	0	288	0	0
Stage 1	269	269	-	323	323	-	-	-	-	-	-	-
Stage 2	345	328	-	295	274	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.3	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.68	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	407	419	802	377	419	752	1332	-	-	1286	-	-
Stage 1	741	690	-	653	654	-	-	-	-	-	-	-
Stage 2	675	651	-	676	687	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	377	405	796	336	405	746	1323	-	-	1286	-	-
Mov Cap-2 Maneuver	377	405	-	336	405	-	-	-	-	-	-	-
Stage 1	725	678	-	643	644	-	-	-	-	-	-	-
Stage 2	635	641	-	612	675	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.6	13	0.5	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1323	-	-	552	480	1286	-	-
HCM Lane V/C Ratio	0.015	-	-	0.142	0.068	0.011	-	-
HCM Control Delay (s)	7.8	-	-	12.6	13	7.8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.2	0	-	-

MOVEMENT SUMMARY

Site: 102 [E Gay St / N Mason St AM]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: N Mason St												
3	L2	99	5.0	0.211	6.3	LOS A	1.3	34.1	0.37	0.38	0.37	18.0
8	T1	103	7.0	0.211	1.1	LOS A	1.3	34.1	0.37	0.38	0.37	24.2
18	R2	20	36.0	0.211	2.6	LOS A	1.3	34.1	0.37	0.38	0.37	21.8
Approach		222	8.7	0.211	3.5	LOS A	1.3	34.1	0.37	0.38	0.37	20.8
East: E Gay St												
1	L2	16	8.0	0.107	6.9	LOS A	0.6	15.7	0.45	0.34	0.45	21.5
6	T1	71	4.0	0.107	1.5	LOS A	0.6	15.7	0.45	0.34	0.45	25.2
16	R2	16	25.0	0.107	3.1	LOS A	0.6	15.7	0.45	0.34	0.45	22.5
Approach		103	7.9	0.107	2.6	LOS A	0.6	15.7	0.45	0.34	0.45	24.1
North: N Mason St												
7	L2	21	7.0	0.139	6.7	LOS A	0.8	19.6	0.41	0.28	0.41	18.5
4	T1	121	2.0	0.139	1.3	LOS A	0.8	19.6	0.41	0.28	0.41	25.6
14	R2	5	0.0	0.139	2.2	LOS A	0.8	19.6	0.41	0.28	0.41	22.9
Approach		147	2.6	0.139	2.1	LOS A	0.8	19.6	0.41	0.28	0.41	24.2
West: E Gay St												
5	L2	10	14.0	0.188	6.7	LOS A	1.1	29.2	0.41	0.30	0.41	18.3
2	T1	86	10.0	0.188	1.4	LOS A	1.1	29.2	0.41	0.30	0.41	26.0
12	R2	103	0.0	0.188	2.1	LOS A	1.1	29.2	0.41	0.30	0.41	23.1
Approach		199	5.0	0.188	2.0	LOS A	1.1	29.2	0.41	0.30	0.41	23.9
All Vehicles		671	6.1	0.211	2.6	LOS A	1.3	34.1	0.40	0.33	0.40	22.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [E Gay St / N Mason St PM]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: N Mason St												
3	L2	140	1.0	0.340	7.2	LOS A	2.3	59.0	0.55	0.48	0.55	17.5
8	T1	173	2.0	0.340	2.0	LOS A	2.3	59.0	0.55	0.48	0.55	23.4
18	R2	27	15.0	0.340	3.4	LOS A	2.3	59.0	0.55	0.48	0.55	21.2
Approach		340	2.6	0.340	4.2	LOS A	2.3	59.0	0.55	0.48	0.55	20.4
East: E Gay St												
1	L2	25	17.0	0.172	8.2	LOS A	1.0	26.7	0.57	0.47	0.57	20.8
6	T1	98	3.0	0.172	2.4	LOS A	1.0	26.7	0.57	0.47	0.57	24.3
16	R2	25	11.0	0.172	3.6	LOS A	1.0	26.7	0.57	0.47	0.57	21.8
Approach		148	6.7	0.172	3.6	LOS A	1.0	26.7	0.57	0.47	0.57	23.2
North: N Mason St												
7	L2	64	2.0	0.281	7.3	LOS A	1.8	44.9	0.54	0.42	0.54	17.8
4	T1	202	3.0	0.281	2.1	LOS A	1.8	44.9	0.54	0.42	0.54	24.2
14	R2	9	0.0	0.281	2.9	LOS A	1.8	44.9	0.54	0.42	0.54	21.8
Approach		275	2.7	0.281	3.4	LOS A	1.8	44.9	0.54	0.42	0.54	22.2
West: E Gay St												
5	L2	20	0.0	0.316	7.5	LOS A	2.1	53.3	0.59	0.46	0.59	17.7
2	T1	148	4.0	0.316	2.5	LOS A	2.1	53.3	0.59	0.46	0.59	24.6
12	R2	132	0.0	0.316	3.2	LOS A	2.1	53.3	0.59	0.46	0.59	21.9
Approach		299	2.0	0.316	3.1	LOS A	2.1	53.3	0.59	0.46	0.59	22.8
All Vehicles		1062	3.0	0.340	3.6	LOS A	2.3	59.0	0.56	0.46	0.56	21.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [E Gay St / N Mason St AM - +50%]

New Site
Site Category: (None)
Roundabout
Design Life Analysis: Constant Number of Years = 100

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: N Mason St												
3	L2	198	5.0	0.490	7.8	LOS A	3.8	102.2	0.67	0.57	0.67	17.0
8	T1	207	7.0	0.490	2.7	LOS A	3.8	102.2	0.67	0.57	0.67	22.5
18	R2	39	36.0	0.490	5.1	LOS A	3.8	102.2	0.67	0.57	0.67	20.4
Approach		443	8.7	0.490	5.2	LOS A	3.8	102.2	0.67	0.57	0.67	19.5
East: E Gay St												
1	L2	33	8.0	0.277	9.0	LOS A	1.8	47.2	0.70	0.63	0.70	20.1
6	T1	141	4.0	0.277	3.5	LOS A	1.8	47.2	0.70	0.63	0.70	23.2
16	R2	33	25.0	0.277	5.8	LOS A	1.8	47.2	0.70	0.63	0.70	20.9
Approach		207	7.9	0.277	4.7	LOS A	1.8	47.2	0.70	0.63	0.70	22.3
North: N Mason St												
7	L2	41	7.0	0.336	8.6	LOS A	2.2	55.7	0.65	0.54	0.65	17.5
4	T1	241	2.0	0.336	3.1	LOS A	2.2	55.7	0.65	0.54	0.65	23.7
14	R2	11	0.0	0.336	3.9	LOS A	2.2	55.7	0.65	0.54	0.65	21.4
Approach		293	2.6	0.336	3.9	LOS A	2.2	55.7	0.65	0.54	0.65	22.5
West: E Gay St												
5	L2	20	14.0	0.451	8.8	LOS A	3.3	86.7	0.69	0.56	0.69	17.3
2	T1	172	10.0	0.451	3.3	LOS A	3.3	86.7	0.69	0.56	0.69	24.0
12	R2	207	0.0	0.451	3.7	LOS A	3.3	86.7	0.69	0.56	0.69	21.5
Approach		398	5.0	0.451	3.8	LOS A	3.3	86.7	0.69	0.56	0.69	22.2
All Vehicles		1341	6.1	0.490	4.4	LOS A	3.8	102.2	0.68	0.57	0.68	21.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

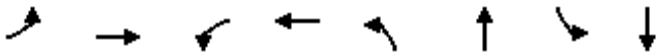
MOVEMENT SUMMARY

Site: 102 [E Gay St / N Mason St PM - +50%]

New Site
Site Category: (None)
Roundabout
Design Life Analysis: Constant Number of Years = 100

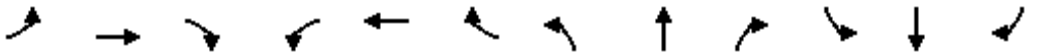
Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: N Mason St												
3	L2	280	1.0	0.886	24.0	LOS C	17.7	450.9	1.00	1.46	1.83	11.4
8	T1	346	2.0	0.886	18.9	LOS B	17.7	450.9	1.00	1.46	1.83	13.6
18	R2	54	15.0	0.886	21.2	LOS C	17.7	450.9	1.00	1.46	1.83	12.8
Approach		680	2.6	0.886	21.2	LOS C	17.7	450.9	1.00	1.46	1.83	12.5
East: E Gay St												
1	L2	50	17.0	0.539	15.4	LOS B	4.8	125.8	0.95	1.05	1.13	16.8
6	T1	196	3.0	0.539	8.7	LOS A	4.8	125.8	0.95	1.05	1.13	19.0
16	R2	50	11.0	0.539	10.4	LOS B	4.8	125.8	0.95	1.05	1.13	17.4
Approach		296	6.7	0.539	10.2	LOS B	4.8	125.8	0.95	1.05	1.13	18.3
North: N Mason St												
7	L2	128	2.0	0.744	17.0	LOS B	9.7	247.8	0.98	1.21	1.43	13.7
4	T1	404	3.0	0.744	11.9	LOS B	9.7	247.8	0.98	1.21	1.43	17.1
14	R2	17	0.0	0.744	12.5	LOS B	9.7	247.8	0.98	1.21	1.43	15.9
Approach		550	2.7	0.744	13.1	LOS B	9.7	247.8	0.98	1.21	1.43	16.1
West: E Gay St												
5	L2	39	0.0	0.917	31.9	LOS C	18.9	480.3	1.00	1.66	2.14	9.5
2	T1	296	4.0	0.917	27.2	LOS C	18.9	480.3	1.00	1.66	2.14	11.1
12	R2	263	0.0	0.917	27.6	LOS C	18.9	480.3	1.00	1.66	2.14	10.5
Approach		598	2.0	0.917	27.7	LOS C	18.9	480.3	1.00	1.66	2.14	10.7
All Vehicles		2124	3.0	0.917	19.4	LOS B	18.9	480.3	0.99	1.39	1.72	13.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	10	189	5	87	99	123	21	126
v/c Ratio	0.03	0.42	0.02	0.20	0.31	0.28	0.07	0.26
Control Delay	8.9	10.3	8.6	9.4	12.6	11.0	9.6	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	10.3	8.6	9.4	12.6	11.0	9.6	10.8
Queue Length 50th (ft)	1	17	1	9	13	14	2	15
Queue Length 95th (ft)	8	54	5	31	41	44	13	45
Internal Link Dist (ft)		334		369		298		438
Turn Bay Length (ft)					150		150	
Base Capacity (vph)	1042	1479	1008	1533	1095	1484	1065	1666
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.13	0.00	0.06	0.09	0.08	0.02	0.08

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	79	95	5	65	15	91	95	18	19	111	5
Future Volume (veh/h)	9	79	95	5	65	15	91	95	18	19	111	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.99	0.99		0.99	0.99		0.99
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	1523	1577	1710	1603	1657	1377	1643	1617	1230	1617	1683	1710
Adj Flow Rate, veh/h	10	86	74	5	71	11	99	103	10	21	121	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	14	10	0	8	4	25	5	7	36	7	2	0
Cap, veh/h	480	169	145	410	307	48	534	396	38	535	446	11
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1189	769	661	1168	1399	217	1234	1449	141	1226	1635	41
Grp Volume(v), veh/h	10	0	160	5	0	82	99	0	113	21	0	124
Grp Sat Flow(s),veh/h/ln	1189	0	1430	1168	0	1615	1234	0	1589	1226	0	1675
Q Serve(g_s), s	0.2	0.0	2.6	0.1	0.0	1.1	1.8	0.0	1.5	0.4	0.0	1.6
Cycle Q Clear(g_c), s	1.3	0.0	2.6	2.7	0.0	1.1	3.4	0.0	1.5	1.9	0.0	1.6
Prop In Lane	1.00		0.46	1.00		0.13	1.00		0.09	1.00		0.02
Lane Grp Cap(c), veh/h	480	0	314	410	0	355	534	0	434	535	0	457
V/C Ratio(X)	0.02	0.00	0.51	0.01	0.00	0.23	0.19	0.00	0.26	0.04	0.00	0.27
Avail Cap(c_a), veh/h	4008	0	4557	3876	0	5146	3557	0	4329	3539	0	4563
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.1	0.0	9.2	10.4	0.0	8.6	9.0	0.0	7.6	8.4	0.0	7.6
Incr Delay (d2), s/veh	0.0	0.0	1.3	0.0	0.0	0.3	0.2	0.0	0.3	0.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.7	0.0	0.0	0.3	0.4	0.0	0.4	0.1	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.2	0.0	10.5	10.4	0.0	8.9	9.1	0.0	7.9	8.4	0.0	8.0
LnGrp LOS	A	A	B	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		170			87			212			145	
Approach Delay, s/veh		10.4			9.0			8.5			8.0	
Approach LOS		B			A			A			A	

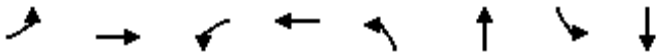
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		13.3		13.5		13.3		13.5				
Change Period (Y+Rc), s		6.0		* 7.6		6.0		* 7.6				
Max Green Setting (Gmax), s		73.0		* 85		73.0		* 85				
Max Q Clear Time (g_c+I1), s		3.9		4.6		5.4		4.7				
Green Ext Time (p_c), s		0.9		1.2		1.1		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			9.0									
HCM 6th LOS			A									

Notes

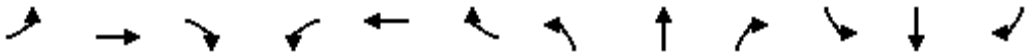
User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	20	280	25	123	140	200	64	211
v/c Ratio	0.05	0.53	0.09	0.23	0.42	0.39	0.20	0.40
Control Delay	10.6	14.2	11.2	11.0	16.2	13.5	12.5	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	14.2	11.2	11.0	16.2	13.5	12.5	13.9
Queue Length 50th (ft)	3	40	4	17	23	32	10	34
Queue Length 95th (ft)	15	114	18	53	70	85	35	91
Internal Link Dist (ft)		334		369		298		438
Turn Bay Length (ft)					150		150	
Base Capacity (vph)	1157	1525	848	1578	1043	1600	1023	1649
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.18	0.03	0.08	0.13	0.13	0.06	0.13

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	136	121	23	90	23	129	159	25	59	186	8
Future Volume (veh/h)	18	136	121	23	90	23	129	159	25	59	186	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.96	0.99		0.98	0.99		0.96
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	1710	1657	1710	1483	1670	1563	1697	1683	1510	1683	1670	1710
Adj Flow Rate, veh/h	20	148	111	25	98	20	140	173	18	64	202	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	4	0	17	3	11	1	2	15	2	3	0
Cap, veh/h	506	264	198	344	408	83	480	519	54	493	556	19
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	1287	864	648	985	1336	273	1172	1496	156	1182	1602	56
Grp Volume(v), veh/h	20	0	259	25	0	118	140	0	191	64	0	209
Grp Sat Flow(s),veh/h/ln	1287	0	1512	985	0	1609	1172	0	1651	1182	0	1657
Q Serve(g_s), s	0.5	0.0	5.6	0.9	0.0	2.2	4.0	0.0	3.3	1.7	0.0	3.7
Cycle Q Clear(g_c), s	2.6	0.0	5.6	6.5	0.0	2.2	7.7	0.0	3.3	5.0	0.0	3.7
Prop In Lane	1.00		0.43	1.00		0.17	1.00		0.09	1.00		0.03
Lane Grp Cap(c), veh/h	506	0	462	344	0	492	480	0	573	493	0	575
V/C Ratio(X)	0.04	0.00	0.56	0.07	0.00	0.24	0.29	0.00	0.33	0.13	0.00	0.36
Avail Cap(c_a), veh/h	2790	0	3144	2092	0	3346	2380	0	3248	2408	0	3260
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.2	0.0	11.4	14.1	0.0	10.2	12.4	0.0	9.4	11.3	0.0	9.5
Incr Delay (d2), s/veh	0.0	0.0	1.1	0.1	0.0	0.2	0.3	0.0	0.3	0.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	1.7	0.2	0.0	0.7	0.9	0.0	1.0	0.4	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.2	0.0	12.5	14.2	0.0	10.4	12.7	0.0	9.8	11.4	0.0	9.9
LnGrp LOS	B	A	B	B	A	B	B	A	A	B	A	A
Approach Vol, veh/h		279			143			331			273	
Approach Delay, s/veh		12.4			11.1			11.0			10.3	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		19.6		19.6		19.6		19.6				
Change Period (Y+Rc), s		6.0		* 7.6		6.0		* 7.6				
Max Green Setting (Gmax), s		77.0		* 81		77.0		* 81				
Max Q Clear Time (g_c+I1), s		7.0		7.6		9.7		8.5				
Green Ext Time (p_c), s		1.7		2.0		1.9		0.9				

Intersection Summary	
HCM 6th Ctrl Delay	11.2
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	237	132	277	3	114
v/c Ratio	0.17	0.13	0.17	0.03	0.09
Control Delay	1.0	1.1	1.0	39.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.0	1.1	1.0	39.7	0.1
Queue Length 50th (ft)	0	0	0	2	0
Queue Length 95th (ft)	40	25	45	10	0
Internal Link Dist (ft)	561		475	271	
Turn Bay Length (ft)		150			150
Base Capacity (vph)	1414	1003	1593	442	1328
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.13	0.17	0.01	0.09

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	213	4	121	255	0	3	0	105	0	0	0
Future Volume (veh/h)	1	213	4	121	255	0	3	0	105	0	0	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	0.94		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	1710	1497	1710	1710	1670	1710	1710	1710	1617	1710	1710	1710
Adj Flow Rate, veh/h	1	232	4	132	277	0	3	0	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	16	0	0	3	0	0	0	7	0	0	0
Cap, veh/h	41	1250	21	1090	1424	0	102	0		0	27	0
Arrive On Green	0.85	0.85	0.85	0.85	0.85	0.00	0.02	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1	1466	25	1169	1670	0	1358	0	1370	0	1710	0
Grp Volume(v), veh/h	237	0	0	132	277	0	3	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1492	0	0	1169	1670	0	1358	0	1370	0	1710	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	2.6	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.5	0.0	0.0	1.2	2.6	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.00		0.02	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	1312	0	0	1090	1424	0	102	0		0	27	0
V/C Ratio(X)	0.18	0.00	0.00	0.12	0.19	0.00	0.03	0.00		0.00	0.00	0.00
Avail Cap(c_a), veh/h	1312	0	0	1090	1424	0	432	0		0	439	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	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	1.2	0.0	0.0	1.1	1.2	0.0	43.7	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	0.2	0.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.5	0.0	0.0	1.3	1.5	0.0	43.8	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A		A	A	A
Approach Vol, veh/h		237			409			3			0	
Approach Delay, s/veh		1.5			1.4			43.8			0.0	
Approach LOS		A			A			D				

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		82.7		7.3		82.7		7.3				
Change Period (Y+Rc), s		5.9		5.9		5.9		* 5.9				
Max Green Setting (Gmax), s		55.1		23.1		55.1		* 23				
Max Q Clear Time (g_c+I1), s		4.5		0.0		4.6		2.2				
Green Ext Time (p_c), s		1.7		0.0		2.5		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	1.6	
HCM 6th LOS	A	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	213	4	121	255	0	3	0	105	0	0	0
Future Vol, veh/h	1	213	4	121	255	0	3	0	105	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	-	100	-	-	-	-	150	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	16	0	0	3	0	0	0	7	0	0	0
Mvmt Flow	1	232	4	132	277	0	3	0	114	0	0	0

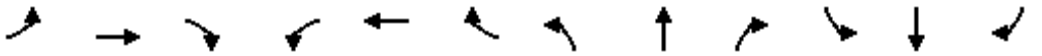
Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	277	0	0	236	0	0	777	777	236
Stage 1	-	-	-	-	-	-	236	236	-
Stage 2	-	-	-	-	-	-	541	541	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.363
Pot Cap-1 Maneuver	1298	-	-	1343	-	-	368	330	791
Stage 1	-	-	-	-	-	-	808	713	-
Stage 2	-	-	-	-	-	-	588	524	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1298	-	-	1343	-	-	332	0	789
Mov Cap-2 Maneuver	-	-	-	-	-	-	332	0	-
Stage 1	-	-	-	-	-	-	807	0	-
Stage 2	-	-	-	-	-	-	530	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	332	789	1298	-	-	1343	-	-
HCM Lane V/C Ratio	0.01	0.145	0.001	-	-	0.098	-	-
HCM Control Delay (s)	16	10.3	7.8	0	-	8	-	-
HCM Lane LOS	C	B	A	A	-	A	-	-
HCM 95th %tile Q(veh)	0	0.5	0	-	-	0.3	-	-

Lane Group	EBT	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	425	201	347	15	232
v/c Ratio	0.27	0.24	0.22	0.12	0.17
Control Delay	1.3	1.7	1.2	40.6	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.3	1.7	1.2	40.6	0.3
Queue Length 50th (ft)	0	0	0	8	0
Queue Length 95th (ft)	83	47	65	27	0
Internal Link Dist (ft)	561		475	271	
Turn Bay Length (ft)		150			150
Base Capacity (vph)	1593	842	1587	423	1395
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.27	0.24	0.22	0.04	0.17

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	373	18	185	319	0	10	4	213	0	0	0
Future Volume (veh/h)	0	373	18	185	319	0	10	4	213	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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	1710	1683	1710	1710	1670	1710	1710	1710	1683	1710	1710	1710
Adj Flow Rate, veh/h	0	405	19	201	347	0	11	4	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	0	0	3	0	0	0	2	0	0	0
Cap, veh/h	0	1357	64	868	1422	0	89	7		0	30	0
Arrive On Green	0.00	0.85	0.85	0.85	0.85	0.00	0.02	0.02	0.00	0.00	0.00	0.00
Sat Flow, veh/h	0	1593	75	984	1670	0	1107	403	1427	0	1710	0
Grp Volume(v), veh/h	0	0	424	201	347	0	15	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1668	984	1670	0	1510	0	1427	0	1710	0
Q Serve(g_s), s	0.0	0.0	4.6	4.6	3.5	0.0	0.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	4.6	9.2	3.5	0.0	0.9	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.00		0.04	1.00		0.00	0.73		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	0	0	1420	868	1422	0	96	0		0	30	0
V/C Ratio(X)	0.00	0.00	0.30	0.23	0.24	0.00	0.16	0.00		0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	0	1420	868	1422	0	443	0		0	420	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)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	1.3	2.2	1.3	0.0	43.9	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.5	0.6	0.4	0.0	0.8	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.8	0.7	0.6	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	1.9	2.9	1.7	0.0	44.6	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A		A	A	A
Approach Vol, veh/h		424			548			15			0	
Approach Delay, s/veh		1.9			2.1			44.6			0.0	
Approach LOS		A			A			D				

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		82.5		7.5		82.5		7.5				
Change Period (Y+Rc), s		5.9		5.9		5.9		* 5.9				
Max Green Setting (Gmax), s		56.1		22.1		56.1		* 22				
Max Q Clear Time (g_c+I1), s		6.6		0.0		11.2		2.9				
Green Ext Time (p_c), s		3.2		0.0		3.7		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	2.6
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	373	18	185	319	0	10	4	213	0	0	0
Future Vol, veh/h	0	373	18	185	319	0	10	4	213	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	-	100	-	-	-	-	150	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	3	0	0	0	2	0	0	0
Mvmt Flow	0	405	20	201	347	0	11	4	232	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	347	0	0	425	0	0	1164	1164	415
Stage 1	-	-	-	-	-	-	415	415	-
Stage 2	-	-	-	-	-	-	749	749	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.318
Pot Cap-1 Maneuver	1223	-	-	1145	-	-	217	196	637
Stage 1	-	-	-	-	-	-	671	596	-
Stage 2	-	-	-	-	-	-	471	422	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1223	-	-	1145	-	-	179	0	637
Mov Cap-2 Maneuver	-	-	-	-	-	-	179	0	-
Stage 1	-	-	-	-	-	-	671	0	-
Stage 2	-	-	-	-	-	-	388	0	-

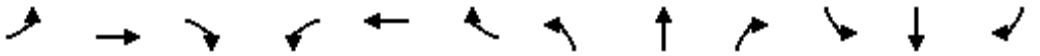
Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	179	637	1223	-	-	1145	-	-
HCM Lane V/C Ratio	0.085	0.363	-	-	-	0.176	-	-
HCM Control Delay (s)	27	13.8	0	-	-	8.8	-	-
HCM Lane LOS	D	B	A	-	-	A	-	-
HCM 95th %tile Q(veh)	0.3	1.7	0	-	-	0.6	-	-

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	145	229	201	227	33	125	264	104
v/c Ratio	0.58	0.58	0.30	0.27	0.08	0.65	0.68	0.22
Control Delay	41.9	24.5	16.7	1.5	16.8	51.9	29.7	25.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.9	24.5	16.7	1.5	16.8	51.9	29.7	25.3
Queue Length 50th (ft)	73	85	69	0	10	64	99	41
Queue Length 95th (ft)	134	145	120	19	30	#141	188	93
Internal Link Dist (ft)	206		720			306		303
Turn Bay Length (ft)		175		150	100			
Base Capacity (vph)	387	426	853	870	472	240	425	469
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.54	0.24	0.26	0.07	0.52	0.62	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	121	8	211	185	209	30	56	59	243	85	11
Future Volume (veh/h)	4	121	8	211	185	209	30	56	59	243	85	11
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		0.98	1.00		0.97	1.00		0.98
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	1136	1530	1530	1518	1530	1458	1530	1423	1458	1446	1518	1530
Adj Flow Rate, veh/h	4	132	7	229	201	129	33	61	64	264	92	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	33	0	0	1	0	6	0	9	6	7	1	0
Cap, veh/h	52	193	10	457	622	730	429	78	82	396	346	26
Arrive On Green	0.14	0.14	0.14	0.16	0.41	0.41	0.07	0.12	0.12	0.19	0.25	0.25
Sat Flow, veh/h	15	1419	74	1446	1530	1210	1457	626	657	1378	1390	106
Grp Volume(v), veh/h	143	0	0	229	201	129	33	0	125	264	0	99
Grp Sat Flow(s),veh/h/ln	1508	0	0	1446	1530	1210	1457	0	1284	1378	0	1496
Q Serve(g_s), s	0.2	0.0	0.0	9.7	6.6	3.5	1.2	0.0	6.9	11.9	0.0	3.9
Cycle Q Clear(g_c), s	6.6	0.0	0.0	9.7	6.6	3.5	1.2	0.0	6.9	11.9	0.0	3.9
Prop In Lane	0.03		0.05	1.00		1.00	1.00		0.51	1.00		0.07
Lane Grp Cap(c), veh/h	256	0	0	457	622	730	429	0	160	396	0	373
V/C Ratio(X)	0.56	0.00	0.00	0.50	0.32	0.18	0.08	0.00	0.78	0.67	0.00	0.27
Avail Cap(c_a), veh/h	477	0	0	499	935	977	566	0	260	448	0	405
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	0.0	21.6	14.9	6.6	17.6	0.0	31.2	21.6	0.0	22.2
Incr Delay (d2), s/veh	1.9	0.0	0.0	0.9	0.3	0.1	0.1	0.0	8.0	3.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.0	3.2	2.1	0.8	0.4	0.0	2.5	4.0	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.2	0.0	0.0	22.5	15.2	6.7	17.7	0.0	39.1	24.8	0.0	22.6
LnGrp LOS	C	A	A	C	B	A	B	A	D	C	A	C
Approach Vol, veh/h		143			559			158			363	
Approach Delay, s/veh		32.2			16.2			34.6			24.2	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	19.9	18.1	20.2	15.3		38.0	11.1	24.4				
Change Period (Y+Rc), s	* 8.1	* 8.1	* 6.1	* 6.1		* 8.1	* 6.1	* 6.1				
Max Green Setting (Gmax), s	* 14	* 21	* 17	* 15		* 45	* 12	* 20				
Max Q Clear Time (g_c+I1), s	11.7	8.6	13.9	8.9		8.6	3.2	5.9				
Green Ext Time (p_c), s	0.1	0.5	0.2	0.3		1.6	0.0	0.4				

Intersection Summary												
HCM 6th Ctrl Delay			22.8									
HCM 6th LOS			C									

Notes

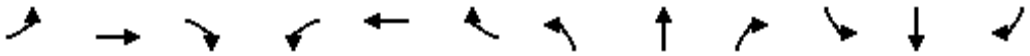
User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	245	197	245	310	32	279	385	106
v/c Ratio	0.86	0.86	0.43	0.37	0.06	0.91	0.90	0.17
Control Delay	64.4	60.5	24.8	2.2	13.1	70.6	45.1	19.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.4	60.5	24.8	2.2	13.1	70.6	45.1	19.7
Queue Length 50th (ft)	140	88	108	0	10	164	154	40
Queue Length 95th (ft)	#272	#203	177	28	25	#312	#301	81
Internal Link Dist (ft)	206		720			306		303
Turn Bay Length (ft)		175		150	100			
Base Capacity (vph)	304	230	586	844	579	320	429	611
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.86	0.42	0.37	0.06	0.87	0.90	0.17

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	203	19	181	225	285	29	108	149	354	85	13
Future Volume (veh/h)	3	203	19	181	225	285	29	108	149	354	85	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
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	1530	1518	1446	1506	1518	1482	1530	1506	1518	1506	1518	1530
Adj Flow Rate, veh/h	3	221	18	197	245	145	32	117	162	385	92	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	1	7	2	1	4	0	2	1	2	1	0
Cap, veh/h	41	252	20	272	526	684	552	128	177	397	514	50
Arrive On Green	0.18	0.18	0.18	0.08	0.35	0.35	0.05	0.23	0.23	0.21	0.38	0.38
Sat Flow, veh/h	5	1376	111	1434	1518	1228	1457	562	779	1434	1358	133
Grp Volume(v), veh/h	242	0	0	197	245	145	32	0	279	385	0	101
Grp Sat Flow(s),veh/h/ln	1492	0	0	1434	1518	1228	1457	0	1341	1434	0	1491
Q Serve(g_s), s	2.3	0.0	0.0	6.9	11.6	5.5	1.2	0.0	18.7	18.9	0.0	4.2
Cycle Q Clear(g_c), s	14.5	0.0	0.0	6.9	11.6	5.5	1.2	0.0	18.7	18.9	0.0	4.2
Prop In Lane	0.01		0.07	1.00		1.00	1.00		0.58	1.00		0.09
Lane Grp Cap(c), veh/h	313	0	0	272	526	684	552	0	305	397	0	564
V/C Ratio(X)	0.77	0.00	0.00	0.72	0.47	0.21	0.06	0.00	0.92	0.97	0.00	0.18
Avail Cap(c_a), veh/h	346	0	0	272	593	738	693	0	320	397	0	564
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.6	0.0	0.0	31.8	23.4	10.5	15.2	0.0	34.7	22.6	0.0	19.0
Incr Delay (d2), s/veh	9.5	0.0	0.0	9.2	0.6	0.2	0.0	0.0	29.1	37.0	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	0.0	0.0	2.2	4.1	1.5	0.4	0.0	8.5	10.3	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.1	0.0	0.0	41.0	24.1	10.6	15.3	0.0	63.8	59.7	0.0	19.2
LnGrp LOS	D	A	A	D	C	B	B	A	E	E	A	B
Approach Vol, veh/h		242			587			311			486	
Approach Delay, s/veh		46.1			26.4			58.8			51.3	
Approach LOS		D			C			E			D	

Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	15.0	24.9	25.0	27.0		39.9	11.1	40.9				
Change Period (Y+Rc), s	* 8.1	* 8.1	* 6.1	* 6.1		* 8.1	* 6.1	* 6.1				
Max Green Setting (Gmax), s	* 6.9	* 19	* 19	* 22		* 36	* 14	* 27				
Max Q Clear Time (g_c+I1), s	8.9	16.5	20.9	20.7		13.6	3.2	6.2				
Green Ext Time (p_c), s	0.0	0.3	0.0	0.2		1.8	0.0	0.5				

Intersection Summary	
HCM 6th Ctrl Delay	43.0
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

E Open House Public Comments Analysis

Meeting Notes

Date:	February 24, 2026	**Notes Taken By:**	VHB
Place:	Lucy F. Simms Continuing Education Center, Harrisonburg Virginia	**Re:**	North Mason Street Open House
Project No.:	34826.002		

Introduction

The open house was hosted on Tuesday, February 24, 2026, at the Lucy F. Simms Continuing Education Center from 4pm to 6pm to collect public feedback on proposed alternatives for North Mason Street. Open house participants provided 244 comments.

There was a strong preference for the Open Space Option compared to the Wide Median Option which is shown in the quantity and content of the comments. Table 1 displays the engagement by alternative.

Table 1 Engagement by Alternative

	Option A	**Option B**
Typical Section	Wide Median – 13 comments	Open Space – 47 comments
Main St Intersection	Signal Control – 2 comments	No Signal – 27 comments
Gay St Intersection	Signal Control – 8 comments	Roundabout – 30 comments
East Rock Street Intersection	Left Turn Lanes – 20 comments	No Left Turn Lane – 9 comments
East Wolfe Street Intersection	Signal Control – 24 comments	No Signal – 19 comments
East Elizabeth Street Intersection	Signal with Full Access – 14 comments	No Signal with Right Turns Only – 27 comments

Corridor Treatment Options

The project team proposed two corridor-wide treatments: open space and wide median. The open space option proposes open space on the east side of North Mason Street while the wide median option proposes a wide landscaped median in the center of the roadway. The two options both reduce the width of the current roadway.

Many comments highlight support for the Open Space Option. Comments stated,

- "I LOVE this option"
- "I support this option"
- "I like the OPEN space option"

Comments pointed to preference for this option because of increased safety for all road users. Comments included,

- "I prefer this separate path option – safer from cars!"
- "Looks great. Safer for bikers and children. Also safer for drivers who are likely to have accidents at intersections"
- "This design makes the most sense for all transportation options, pedestrians, cyclists, automobiles and prioritizes most safety"
- "This is far preferable as it provides walking space and a shorter/safer crossing of the street for those on foot"

Comments suggested design alterations including an extension of the Shared-Use Path (SUP). Comments on design alterations shared:

- "Put open space @ shared use on West side. Then shared use path could extend all the way to 33 and S. Mason, thus better connecting to downtown and JMU campus"
- "PLEASE make it one lane each way with roundabouts"
- "What happens to SUP south of Wolfe St?"
- "Need to connect shared use path all the way to 33 and South Mason!"
- "Would love to have a roundabout at 33/Mason intersection"

By contrast, comments for the Wide Median Option indicated dislike for the option because of perceived decreased safety benefits. Comments shared,

- "This is just a wide road. People will still feel like they can drive fast. It's just so big."
- "Doesn't provide real change for money spent (only possibly nicer looking)"
- "Still a long way to cross for pedestrians, strollers, etc."

One comment shared that the Wide Median Option provides benefits to bicyclists. The comment stated, "Wide option feels friendlier to bikes because you don't have to cross the street to get to a path and navigate pedestrian traffic, but it does feel more protected from cars"

Two comments opposed any change to North Mason Street. They comments shared,

- "I am opposed to the change. I don't see the need when there are already sidewalks on both sides of the road."
- "City is growing, JMU's population is also increasing. I feel like the need of traffic lanes to accommodate traffic is necessary"

Meeting Notes

North Mason Street – Open Space Option

Open house participants left 24 comments on the Open Space option. Figure 1 and Table 2 display participant comments.

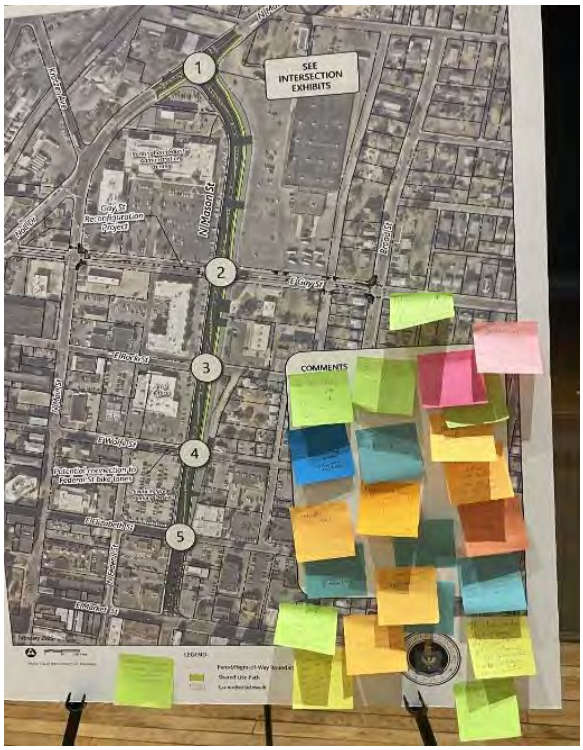


Figure 1: Open Space Option Board with Comments

Table 2: Open Space Option Comments Transcribed

Open Space Option (24 Comments)
Put open space @ shared use on West side. Then shared use path could extend all the way to 33 and S. Mason, thus better connecting to downtown and JMU campus
Better option that provides actual lane
This is far preferable as it provides walking space and a shorter/safer crossing of the street for those on foot
I support this option
I like the OPEN space option
I prefer this separate path option – safer from cars!

Meeting Notes

I prefer this green space option. Prefer roundabouts to turn lanes.
I think crossing is easier when traffic lanes are not next to each other.
Like: Greenspace, safer walking/biking, driving lanes together
I LOVE this option
Love this and really love having sidewalks between Elizabeth & Market
Prefer open space option but concerned about viability with likely higher cost. Shorter crossings, more usable green space, SUP more valuable to users than bike lanes
Still like this best
Open space looks to offer better pedestrian options and intersections
PLEASE make it one lane each way with roundabouts (how it was last summer) – I second this!
Open space on east side makes more sense given existing fronting uses and residential neighborhood further east
Marked left turn lane is likely safer than TWLTL. May create some issues with entrances on east side
I like this option
This design makes the most sense for all transportation options, pedestrians, cyclists, automobiles and prioritizes most safety
What happens to SUP south of Wolfe St?
Need to connect shared use path all the way to 33 and South Mason!
Looks great. Safer for bikers and children. Also safer for drivers who are likely to have accidents at intersections
Would love to have a roundabout at 33/Mason intersection
Configuring the open space to allow for temporary shops like the summer demonstration

North Mason Street - Wide Median Option

Open house participants left 10 comments on the Wide Median option. Figure 2 and Table 3 display participant comments.

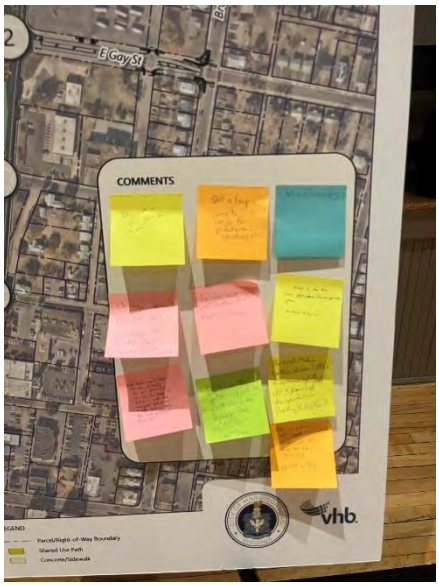


Figure 2: Wide Median Option Board with Comments

Table 3: Wide Median Option Comments Transcribed

Wide Median Option (10 Comments)
This is just a wide road. People will still feel like they can drive fast. It's just so big.
The wide median option does little to enhance safety for all forms of transportation
Don't like this option – shared use path should be separate from traffic as in open space option
Wide option feels friendlier to bikes because you don't have to cross the street to get to a path and navigate pedestrian traffic, but it does feel more protected from cars
Doesn't provide real change for money spent (only possibly nicer looking)
I'm not sure what problem this design is solving
No thanks to this – needs to slow down cars AND provide transportation space
No thanks

Meeting Notes

Big waste of space, good for no one
Still a long way to cross for pedestrians, strollers, etc.

Typical Sections – Existing Conditions Compared to Open Space and Wide Median Options

Open house participants left 30 comments on the Typical Sections. Figure 3 and Table 4 display participant comments.

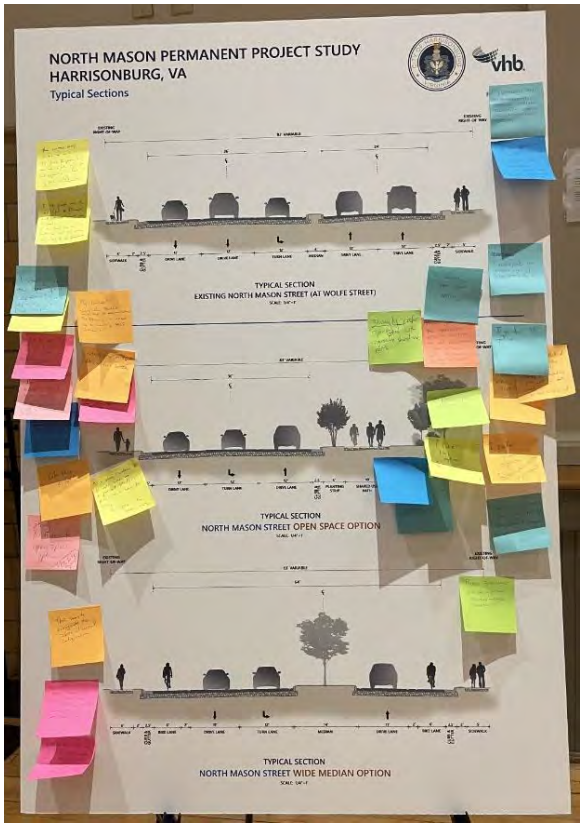


Figure 3: Existing Conditions Compared to Open Space and Wide Median Options Board with Comments

Table 4: Existing Conditions Compared to Open Space and Wide Median Options Comments Transcribed

Existing (4 Comments)	**Open Space** (23 Comments)	**Wide Median** (3 Comments)
I am opposed to the change. I don't see the need when there are already sidewalks on both sides of the road.	I prefer this option	Prefer open space, but wide median probably an easier conversation
I would prefer the current plan with share used bike lane	I prefer the sheltered option for bikes and walkers. Ideally the shared use path would be both ways but this is still best.	Bike lanes with only paint to separate car traffic aren't preferred

City is growing, JMU's population is also increasing. I feel like the need of traffic lanes to accommodate traffic is necessary	Like the open space option	Wide median opt still feels like a barrier between communities, will deter connectivity
I see people run the red light at Elizabeth and Mason about once a week. I am afraid for my life and my son's life when we cross to go downtown. The current set up sucks so much. It feels dangerous to me on a bike or in a car but especially on foot. (This sucks with an arrow pointing to Existing)	I like the open space option!	
	Thank you for the open space option to improve the ped experience. Love making Mason 2 lanes instead of 4.	
	Open space preferred	
	Strongly prefer "open space" with separated shared-use path	
	Open space option looks great	
	I like this option!	
	I like this option. Green space seems more usable.	
	I prefer the open space option.	
	Open space option offers more opportunity for variety of programming for open area	
	I really like the open space option! Feels safer for bike/ped traffic	
	Open space option!	

	My favorite! Love the buffer, more room for beautification, the wide median option is what we currently have (similar)	
	Clear preference for this option. Like the potential for open space provides multiple turn options for pedestrians, traffic, etc	
	I like this option as it provides a usable space for kids, walkers, and bikes. The median does not.	
	I love this option. Would be like a linear park! Do the car lanes need to be that wide?	
	This option has more green space and seems more safe	
	As a biker and walker, I would rather see a protected bike/walk path. Much safer for biking. This option is best.	
	I like this a lot!	
	Strong preference for open space option. I like bike separation.	
	This seems to exaggerate the issues with current configuration	

Intersections

There are five intersections within the study area. The project team developed alternative intersection designs for each corridor treatment option.

Intersection 1: North Main Street and North Mason Street

The project team developed a total of four alternatives for the North Main Street and North Mason Street intersection, two alternatives are for the Open Space option, and two alternatives are for the Wide Median option.

Open Space Option

Open house participants left 20 comments on both alternatives for the Open Space option at the North Main Street and North Mason Street intersection. Figure 4 and Table 5 display participant comments. Comments indicated support for Alternative 2 over Alternative 1 highlighting the preference for removing the signal. Comments stated,

- "I like no light so vehicle traffic needs to pay more attention."
- "If data shows we don't need a light here to facilitate flow, I prefer this option"

One comment questioned if the removal of the light would cause speeding on Main Street. The comment said, "Without signal, will there be a risk of excessive speed on Main St?".

Some comments provided suggestions to the design of Alternative 2. They shared,

- "Remove signal. Use RRFB @ crosswalk. Consider shifting walk to south side with median refuge to reduce conflict points"
- "How will speed of vehicles going N/S on Main st be reduced? I do like no traffic signal. Have you considered a roundabout?"
- "This would be better if it were a roundabout"

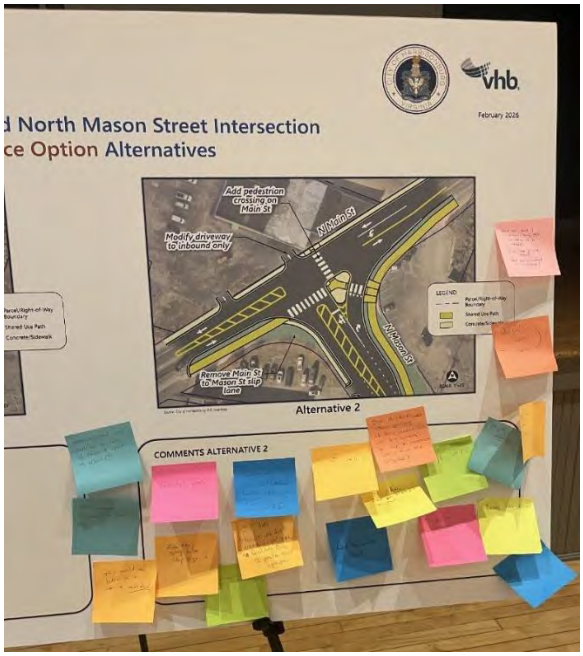


Figure 4: Open Space Board with Comments

Table 5: Open Space Option Board Comments Transcribed

Alternative 1 (0 Comments)	**Alternative 2** (20 Comments)
No comments	I like no light so vehicle traffic needs to pay more attention.
	Prefer this option
	By far the best option
	I vote for this alt #2
	Like alternative 2 best
	This is better. More space for bike/ped throughout

	Pedestrian crossing allowed?
	If data shows we don't need a light here to facilitate flow, I prefer this option
	Are there going to be stop signs?
	This would be better if it were a roundabout
	Need marked crosswalk on west side
	Without signal, will there be a risk of excessive speed on Main St?
	Definitely prefer
	Remove signal. Use RRFB @ crosswalk. Consider shifting walk to south side with median refuge to reduce conflict points
	I like it
	The differences between options at this intersection are too subtle for me to comment on. I trust the engineers.
	Prefer
	Prefer this subtle change
	How will speed of vehicles going N/S on Main st be reduced? I do like no traffic signal. Have you considered a roundabout?
	(Rose's is over here)

Wide Median Option

Open house participants left 9 comments on both alternatives for the Wide Median option at the North Main Street and North Mason Street intersection. Figure 5 and Table 6 display participant comments.

Comments did not show as strong support for either alternative unlike the Open Space Option. Six of the Seven comments for Alternative 2 proposed design suggestions.

Figure 5: Wide Median Option Board with Comments

Table 6: Wide Median Option Comments Transcribed

Alternative 1 (2 Comments)	**Alternative 2** (7 Comments)
Eastbound lefts allowed?	How is speed of cars on Main St going N/S controlled?
It is wide (don't prefer) then I think there needs to be a light. Prefer roundabout	Need marked crosswalk on west side
	Seems like volume are too high not to signalize – analysis needed
	Pedestrian crossing light?

	What about switching the in and out to business to north?
	I like it
	Could there be a roundabout here to enable more flow?

Intersection 2: North Mason Street and East Gay Street

The project team developed a total of three alternatives for the North Mason Street and East Gay Street intersection, two alternatives are for the Open Space option, and one alternative are for the Wide Median option.

Open Space and Wide Median Options, Signalized Intersection

Open house participants left 9 comments on both signalized intersection alternatives (Open Space and Wide Median) at the North Mason Street and East Gay Street Intersection. Figure 6 and Table 7 display participant comments.

One comment explicitly stated opposition against roundabout design. The comment stated, "Do not want a roundabout! Prefer green space on one side, not in the middle". Other comments highlighted concerns about pedestrian safety, comments included:

- "Shorter crosswalks are preferred"
- "Looks like long dangerous crosswalks"
- "I feel more vulnerable as a pedestrian crossing Mason in this scenario"

One comment liked the crosswalk length in the Open Space Alternative. The comment explained, "shortens this super long crosswalk which is good".

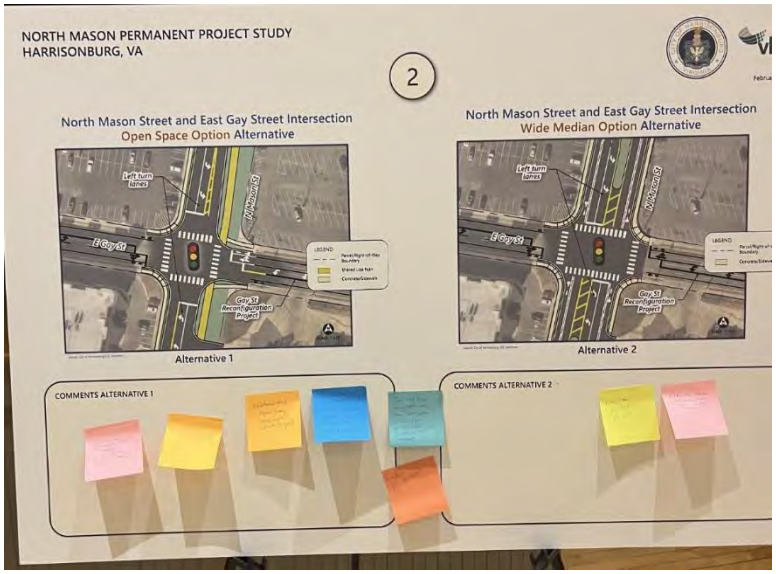


Figure 6: Open Space and Wide Median Option Board with Comments

Table 7: Open Space and Wide Median Alternative 1 Option Comments Transcribed

Alternative 1 (4 Comments)
I like the more greenspace + tree potential in this alternative. We need more shade here.

Shorter crosswalks are preferred
Shortens this super long crosswalk which is good
Do not want a roundabout! Prefer green space on one side, not in the middle

Table 8: Open Space and Wide Median Alternative 2 Option Comments Transcribed

Alternative 2 (4 Comments)
Prefer roundabout
Looks like long dangerous crosswalks
Test full size roundabout with open space option to see impact on open space in NE and SE quadrants
I feel more vulnerable as a pedestrian crossing Mason in this scenario

Open Space Option, Roundabout Alternative

Open house participants left 30 comments on the roundabout alternative (Open Space and Wide Median) at the North Mason Street and East Gay Street Intersection. Figure 7 and Table 9 display participant comments.

Comments indicated overwhelming support for the roundabout alternative compared to the signal control alternatives. Comments shared,

- "Love roundabouts!"
- "Yes, yes, yes! My family was involved in a terrible car accident here due to high speed – someone running a red light and poor sight lines. This intersection needs this to slow traffic down"
- "This looks good!"

One comment highlighted concern with pedestrian crossing for the roundabout alternative. The comment stated, " Concerned about how pedestrian crossings work with this option"

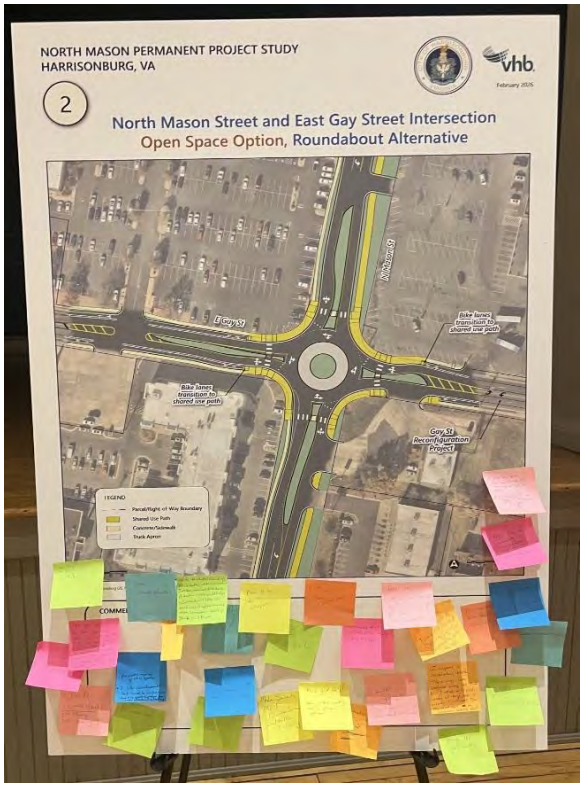


Figure 7: Open Space Option, Roundabout Option Board with Comments

Table 9: Open Space Option, Roundabout Option Comments Transcribed

Roundabout Alternative (30 Comments)
Yes! I support this!

Provides more green space. I like the roundabouts but need to make sure there is good signage for safe pedestrian crossing
Prefer
Yes! Existing signal and interaction are over-built for traffic volumes.
Make sense to me! Commonsense and traffic calming
The roundabouts were the highlight of the previous project
Yes please (heart drawing)
Yes
Yes to the circle
Please god, this! Slow cars down – walking here is not ideal right now
Love this! No light & shortened crosswalks
I support a roundabout here. There was some confusion during the trial, but I think with curbs instead of temp posts I believe it will work fine. The roundabout on the Reservoir works well.
Seems like a good design.
Concerned about how pedestrian crossings work with this option
Public art at roundabout?
Please do this. Safer for everyone.
With the higher volume of vehicle traffic at this intersection I've seen more accidents here. A traffic circle would help slow traffic as it approaches the next intersection traveling South and East
Love roundabouts!
Best option since intersection is large enough for real roundabout
I'm a fan of roundabouts. Push button activated flashing lights for cross walks would be good

Traffic circle preferred. I like the crosswalk placement.
Roundabout, yes!!
A roundabout here feels very appropriate
I prefer this option. Feels more friendly to more different type of users. I like less lanes of car traffic to cross while on foot + bike
HUGE fan of roundabout in this location. Worked so well in trial run.
Crossing this intersection on foot while the temporary traffic circle was present was so much faster and pleasant. I love this option when driving as well
I prefer the roundabout
Yes, yes, yes! My family was involved in a terrible car accident here due to high speed – someone running a red light and poor sight lines. This intersection needs this to slow traffic down
This looks good!
Yes to roundabouts! Good gateway traffic calming

Intersection 3: North Mason Street and East Rock Street

The project team developed a total of four alternatives for the North Mason Street and East Rock Street intersection, two alternatives are for the Open Space option, and two alternatives are for the Wide Median option.

Open Space Option

Open house participants left 22 comments on both alternatives for the Open Space option at the East Rock Street and North Mason Street intersection. Figure 8 and Table 10 display participant comments.

Across the Open Space and Wide Median option, most comments supported the left turn lane option (Alternative 1). In the Open Space option, comments pointed to increased safety and operations at the intersection. Comments included,

- "This is a much more reasonable of a crossing distance when on foot compared to the widened option"
- "Yes to this. Less road surface, more full separation from cars and allowing left turn is good."
- "Two way stop makes sense. Still allows for some control, or slowing of movement, to provide space & time to turn"

One comment highlighted concerns with pedestrian safety. The comment shared, " It's going to be harder to walk across this alternative with turn lanes. Could there be some sort of signal for pedestrians & bikes to cross?"

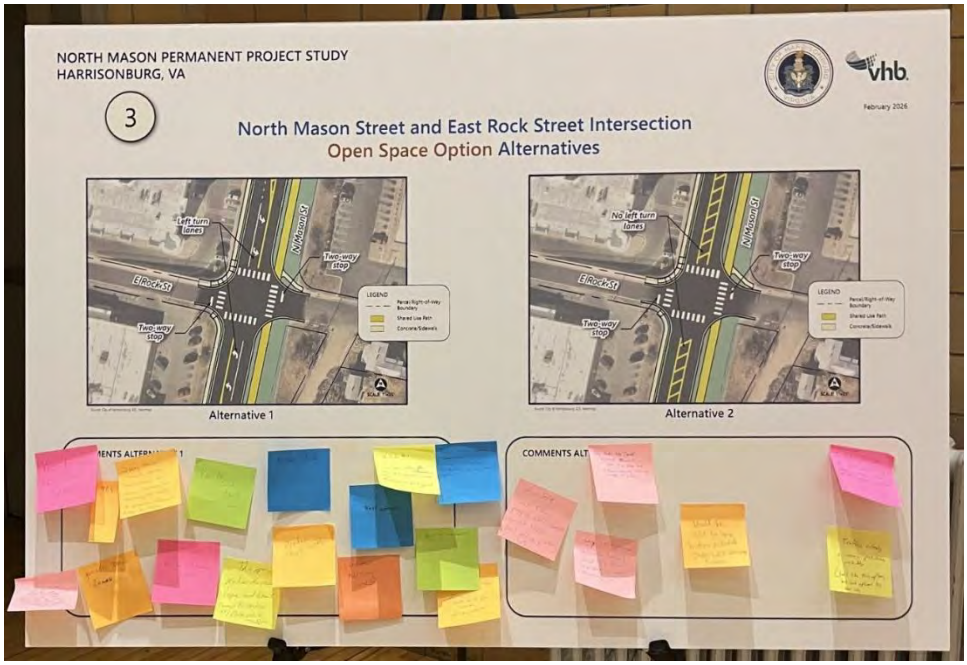


Figure 8: Open Space Option Board with Comments

Table 10: Open Space Option Comments Transcribed

Alternative 1 (16 Comments)	**Alternative 2** (6 Comments)
Prefer turn lanes	If not left turn then people will choose to go through post office parking lot

It's going to be harder to walk across this alternative with turn lanes. Could there be some sort of signal for pedestrians & bikes to cross?	This feels safer / easier to cross Mason on foot and on bike due to fewer lanes of vehicle traffic to cross
Yes to left turn lane	Why not have a turn lane? What is the benefit to not having one?
Yes	Would be nice to have bottom activated cross walk warning lights
Two way stop makes sense. Still allows for some control, or slowing of movement, to provide space & time to turn	I like this option as there could be a pedestrian (unknown word) in the center – please consider
Yes to left turn lanes	Traffic calming & increase pedestrian visibility (Don't like this option, but want options to slow cars)
This option makes the most logic and doesn't cause frustration with automobile traffic	
Yes to left turn lanes	
Prefer this	
Prefer turn lanes	
I prefer turning lanes	
Best option	
This is a much more reasonable of a crossing distance when on foot compared to the widened option	
Yes to this. Less road surface, more full separation from cars and allowing left turn is good.	
Yes to turn lanes	
This should be a roundabout – otherwise might as well allow left turn? Not a smart option	

Wide Median Option

Open house participants left 7 comments on both alternatives for the Wide Median option at the East Rock Street and North Mason Street intersection. Figure 9 and Table 11 display participant comments.

One comment highlighted concerns with Alternative 1. The comment shared, "Feels like a lot to watch 3 vehicle lanes & 2 bike lanes of traffic when crossing". The other three comments for Alternative 1 stated explicit support for the turn lanes.

Figure 9: Wide Median Option Board with Comments

Table 11: Wide Median Option Comments Transcribed

Alternative 1 (4 Comments)	**Alternative 2** (3 Comments)
Turn lanes - yes	Better of these 2 in my opinion
Prefer turn lanes	Bigger median is better, roundabout is best
Yes turn lanes	Feels like better option for bikers & pedestrians of these two alternatives
Feels like a lot to watch 3 vehicle lanes & 2 bike lanes of traffic when crossing	

Intersection 4: North Mason Street and East Wolfe Street

The project team developed a total of four alternatives for the North Mason Street and East Wolfe Street intersection, two alternatives are for the Open Space option, and two alternatives are for the Wide Median option.

Across both options, there is divided support among the signalized intersection alternative or the non-signalized intersection alternative. A common concern for the unsignalized design is pedestrian safety, comments shared,

- "I strongly doubt I would volunteer to stop for pedestrians at crosswalks"
- "I like no light, but I'm concerned about pedestrian safety when crossing Mason"
- "Prefer light because of pedestrian safety"
- "Pedestrian & motorists are accustomed and use to traffic signals combined with crosswalk signals. With this being a high volume auto intersection, a traffic light and crosswalk signal would be the safest option"

Open Space Option

Open house participants left 33 comments on both alternatives for the Open Space option at the North Mason Street and East Wolfe Street intersection. Figure 10 and Table 12 display participant comments.

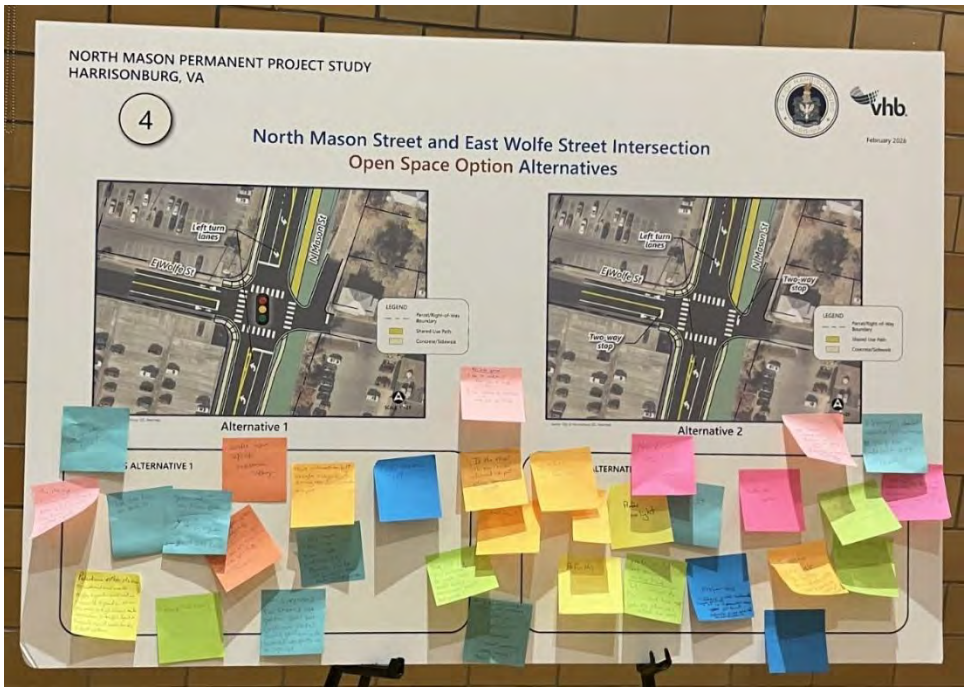


Figure 10: Open Space Option Board with Comments

Table 12: Open Space Option Comments Transcribed

Alternative 1 (17 Comments)	**Alternative 2** (16 Comments)

(During the demonstration everyone was confused) I like no light, but I'm concerned about pedestrian safety when crossing Mason	What controls speed of vehicles on Mason St going N/S? It was hard to cross Mason here during demo project with no light
Roundabout?	Prefer this option
If the street is narrower with shared use path either seems good	Prefer this. Where is the sidewalk in lower portion? Or is it smaller than upper portion? Sidewalk size should be consistent.
For both options I like the addition of the bike lanes on Wolfe St. I like addition of crosswalk on Northside of Wolfe	Prefer no light
How well did mini roundabout do with truck traffic during demonstration project? Still possible?	Prefer no light not necessarily waiting time – but…can we do this without turn lanes? Safer for pedestrians without turn lanes.
Keep the light	Prefer this
I'm surprised the shared use path does not continue south! Strong preference for shared use path as a cyclist	Prefer no light
Clarify travel direction on "Old Mason" Better roundabout only? Emerging vehicles will be farther from Mason St. intersection	Prefer no light
This is best	I like no stop sign
The strange connector street does add some confusion and a stop light is clear	No light needed
Open space on the side. Yes, to light @ Wolfe. Yes, to bike lane.	I strongly doubt I would volunteer to stop for pedestrians at crosswalks
I like bike lanes on Wolfe St	I like this option. Please consider site lines for visibility turning left onto North Mason. Is there a way to slow traffic here other than a light?
Prefer light because of pedestrian safety	I like the open space on the side of the street

Pedestrian & motorists are accustomed and use to traffic signals combined with crosswalk signals. With this being a high volume auto intersection, a traffic light and crosswalk signal would be the safest option	I prefer no light. A button activated cross walk warning would be great.
I prefer open space and a light @ Wolfe. Without a light, I can see N&S bound drivers speeding down Mason	I think no light here is reasonable
This intersection felt unsafe (unreadable word) during the demonstration project	I prefer no light. How might that affect pedestrians?
Prefer the traffic light	

Wide Median Option

Open house participants left 10 comments on both alternatives for the Wide Median option at the North Mason Street and East Wolfe Street intersection. Figure 11 and Table 13 display participant comments.

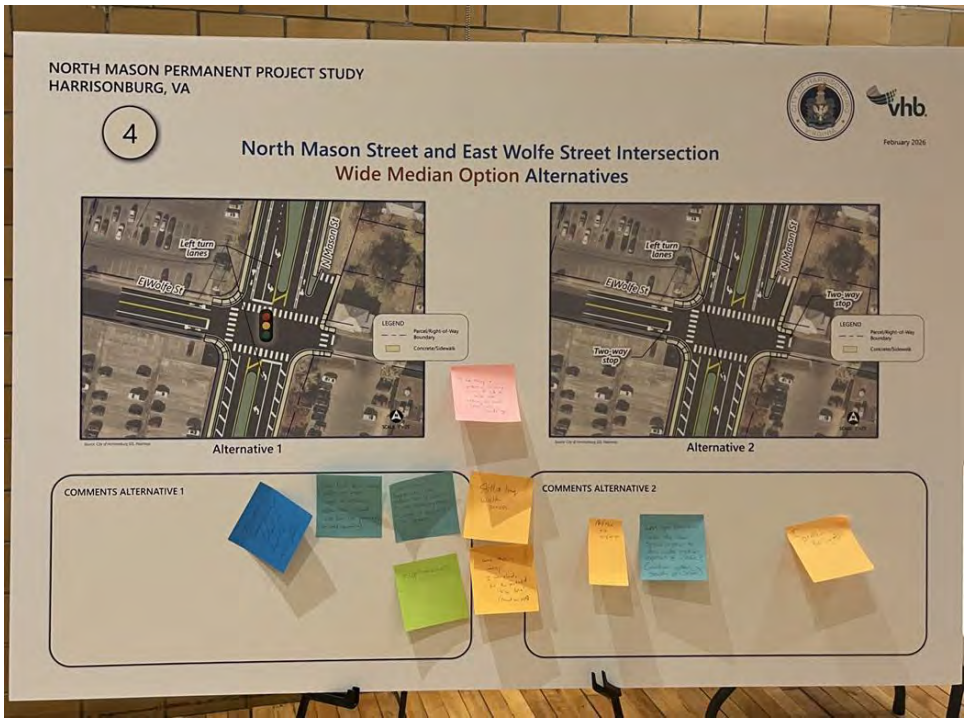


Figure 11: Wide Median Option Board with Comments

Table 13: Wide Median Option Comments Transcribed

Alternative 1 (7 Comments)	**Alternative 2** (3 Comments)
Wow this is messy. I was already for the protected bike lane! (Shared path)	Prefer no light
Still a long walk across	I prefer no light
I like having a pedestrian crossing on N. Side of Wolfe but crossing all those lanes looks intimidating	Can you transition from the open space option to the wide median option @ Wolfe? (Median option South of Wolfe)
Keep the light	

Prefer stop light. Right turn onto Mason has to come to see oncoming traffic	
Why leave extra unused pavement width south of intersection rather than marked bike lane (or parking) (or road narrowing)?	
(Unreadable word) emergency vehicles hard to navigate	

Intersection 5: North Mason Street and East Elizabeth Street Intersection

The project team developed a total of four alternatives for the North Mason Street and East Elizabeth Street intersection, two alternatives are for the Open Space option, and two alternatives are for the Wide Median option.

Across the Open Space and Wide Median option, there is divided support among maintaining and removing signal control for the intersection. Two comments highlighted sight distance concerns at the intersection. Comments included,

- "We were hit at this intersection – blind corner – light is essential!!"
- "Can't see oncoming traffic"

Some comments indicated conditional support for removing signalization if it meant that the N Mason Street / E Wolfe Street intersection would be signalized.

- "I think no light is OK here WITH light at Wolfe"
- "I think a light at either Wolfe or Elizabeth will reduce speeding N&S bound. I can see only having 2-way stop signs on the E&W bound traffic lanes will encourage N&S speeding"
- "If we only have 2-way stop signs all along Mason. As an Elizabeth St resident, I'm worried residents will have a hard time exiting our neighborhood. We need a signal at either Wolfe or Elizabeth"

Open Space Option

Open house participants left 27 comments on both alternatives for the Open Space option at the North Mason Street and East Elizabeth Street intersection. Table 14 displays participant comments.

Table 14: Open Space Option Comments Transcribed

Alternative 1 (8 Comments)	**Alternative 2** (19 Comments)
A light here or at Wolfe would be good for pedestrians crossing Mason	Could we do a roundabout to get rid of the light but keep speeds low? I realize the one in the demo project wasn't great but we could do it better
Yes. Keep Elizabeth St open to the west	What happens to bikes going N from Mason to 33? Make sure they don't get squeezed into motorist lanes
We were hit at this intersection – blind corner – light is essential!!	No! Blocks left turn to turn right on Federal to access upper deck ramp
Light makes more sense than restricting turning	I like no light
If we only have 2-way stop signs all along Mason. As an Elizabeth St resident, I'm worried residents will have a hard time exiting our neighborhood. We need a signal at either Wolfe or Elizabeth	Less lights best

I think a light at either Wolfe or Elizabeth will reduce speeding N&S bound. I can see only having 2-way stop signs on the E&W bound traffic lanes will encourage N&S speeding	Prefer
Can't see oncoming traffic	Alternative 2 makes the most sense. No light needed and remove the ability to turn L (going N) and W through Elizabeth. This is a much lower volume intersection and this design simplifies it and makes it safer for all
Prefer traffic light. Want to be able to go through Elizabeth	No! Cuts off my commute home on Elizabeth from 42.
	Prefer this
	Noooooooooo! There are businesses here on other side of Elizabeth between Mason and Broad. Clients and customers will have some challenges navigating to and from appointments. I really don't like this – it's a barrier to business
	Prefer this option. But I would prefer shared use path on left side, least north of intersection. Two full lanes the entire length will encourage more speed. Expand median on south side and taper off as approach intersection
	I prefer no light
	I think no light is OK here WITH light at Wolfe
	Why keep bikes and vehicles from crossing Elizabeth? The real issue is speed of traffic on Mason and folks running the red light. Elizabeth is a great traffic cross street for bikes and people and convenient crossing for residents who live on Elizabeth
	Not in favor of extended median, eliminates left turn going W on Elizabeth
	Can there not be a roundabout at Mason and 33?

	Prefer no light
	I like this option. Can bikes cut through on Elizabeth and H(unreadable St)? Why no bike lane on Mason for the last block?
	I like this. I live on Elizabeth. This would cut down on traffic on my street and make us safer. People would use with less of a cut through to avoid 33. But if you do this, please put a light at Wolfe to cross there as a pedestrian.

Wide Median Option

Open house participants left 14 comments on both alternatives for the Wide Median option at the at the North Mason Street and East Elizabeth Street intersection. Table 15 displays participant comments.

Table 15: Wide Median Option Comments Transcribed

Alternative 1 (6 Comments)	**Alternative 2** (8 Comments)
Do not like the green space in the middle. Unsafe.	NO! Cuts Elizabeth in half to commuting
YES.	No! Do not remove vehicle crossing here. Just makes it safer by reducing speed of Mason St traffic and number of lanes
The green space in the middle is a waste. Put it on the side where walkers/bikers can use it.	Rather than unused pavement, northbound north of Elizabeth, more curb west and fix sidewalk constraints
Agree	I'm not too keen of breaking the east-west grind
What happened to roundabout option instead of light? We could implement it better than in demo project	Prefer no light
Same long crosswalks as now!	Prefer no light
	Don't like median, seems to cut people off from downtown
	Out of scope comment: examine mini roundabout on S. Mason St

F Project Estimate and Engineer's Estimate

PROJECT ESTIMATE SUMMARY (PES)

UPC & APP unspecified

North Mason Street Roadway Reconfiguration

PRELIMINARY ENGINEERING PHASE

	Category	Comments	Defined Cost	Allowance	Contingency		Total
○	Overall PE Phase				$0	0%	$0
	Roadway	20% of Roadway CN	$614,383		$215,034	35%	**$829,417**
	Structures & Bridge				$0	0%	**$0**
	Right-of-Way and Utilities	20% of Right-of-Way and Utilities	$222,559		$77,896	35%	**$300,454**
	Survey and SUE	Lump Sum	$100,000		$35,000	35%	**$135,000**
	Hydraulics (SWM, E&S, Nutrient Purchase)	20% of Hydraulics CN	$42,170		$14,759	35%	**$56,929**
◉	**Traffic** (MOT & permanent)	20% of Traffic CN	$300,996		$105,349	35%	**$406,345**
	Materials and Geotech				$0	0%	**$0**
	Environmental (NEPA, permits, etc.)	2% of CN	$146,662		$51,332	35%	**$197,994**
	Project Management & VDOT/LAP Coordination	5% of CN	$366,656		$128,330	35%	**$494,986**
	Other				$0	0%	**$0**
	PE PHASE SUBTOTAL:		**$1,793,425**	**$0**	**$627,699**	**35%**	**$2,421,124**

RIGHT OF WAY AND UTILITIES PHASE

	Category	Comments	Defined Cost	Allowance	Contingency		Total
○	Overall RW Phase				$0	0%	$0
	Right-of-Way Acquisition	Based on Right-of-Way Parcel Cost Estimate Worksheet	$840,170		$294,060	35%	**$1,134,230**
◉	**Utilities (relocations)**				$0	0%	**$0**
	VDOT RW/UT Oversight & VDOT/LAP Coordination				$0	0%	**$0**
	RW PHASE SUBTOTAL:		**$840,170**	**$0**	**$294,060**	**35%**	**$1,134,230**

CONSTRUCTION PHASE - BID ITEMS

	Category	Comments	Defined Cost	Allowance	Contingency		Total
○	Overall CN Bid Items				$0	0%	$0
	Roadway (road, earthwork)		$3,071,913		$1,075,170	35%	**$4,147,083**
	Bridge (bridges, major retaining walls & culverts, etc.)				$0	0%	**$0**
	Utilities (in-plan utilities, including water & sewer)		$272,623		$95,418	35%	**$368,041**
	Hydraulics (drainage, SWM, E&S, env, etc.)		$210,849		$73,797	35%	**$284,646**
◉	**Traffic** (signals, signs, pavement markings, etc.)		$872,434		$305,352	35%	**$1,177,786**
	MOT		$632,546		$221,391	35%	**$853,937**
	Mobilization & CN Survey		$371,575		$130,051	35%	**$501,626**
	Other				$0	0%	**$0**
	BID ITEMS SUBTOTAL:		**$5,431,940**	**$0**	**$1,901,179**	**35%**	**$7,333,119**

Category	Comments	Defined Cost	Allowance	Contingency		Total
Non-Bid Items (State Police, State Forces, etc.)				$0	0%	**$0**
Railroad				$0	0%	**$0**
Project CEI User can modify % or $-value		$1,466,624	20%	Default = 20%		**$1,466,624**
Project Management & VDOT/LAP Coordination				$0	0%	**$0**
Management Reserve User can modify % or $-value		$366,656	5.0%	Complexity max=5%		**$366,656**
Contract Requirements (Incentives & Disincentives)		$146,662	2.0%	Not to exceed 5%		**$146,662**
NON-BID ITEMS SUBTOTAL:		**$1,979,942**	**$0**	$0	0%	**$1,979,942**
CN PHASE (Bid and Non-Bid) SUBTOTAL		**$7,411,882**	**$0**	$1,901,179	26%	**$9,313,061**
TOTAL PROJECT ESTIMATE WITHOUT INFLATION IN CURRENT DAY DOLLARS (PE, RW & CN):						**$12,868,415**

TOTAL PROJECT ESTIMATE SUMMARY

Project Phase	Comments	Phase Start Date	Total Estimate	Inflation		Total with inflation
Preliminary Engineering (PE)		12/1/2029	$2,421,124	$303,872	12.6%	**$2,724,997**
Right of Way and Utilities (RW)		12/1/2031	$1,134,230	$220,100	19.4%	**$1,354,329**
Construction (CN)		12/1/2033	$9,313,061	$2,484,446	26.7%	**$11,797,507**
TOTAL ESTIMATE (PE, RW & CN) WITH INFLATION:				**$3,008,418**		**$15,876,833**

Field Key

- User-Entered Data (editable)
- Dropdown Choices (editable)
- Calculated Fields (protected)
- Imported from POOL (protected)

PROJECT INFORMATION

Date Prepared: 6/23/2026

Edit Project Information

Administered By:

Lead Designer: ○ In-House ◉ Consultant — VHB

PWA Schedule Template Type:

PCES Estimate Type (Milestone): Pre-Scoping

UPC and APP ID

- ○ UPC
- ◉ APP

Project Manager:

Project Description: North Mason Street Roadway Reconfiguration

District: Staunton

Jurisdiction (City/Town/County): Harrisonburg

Project Complexity: Non complex

BETTERMENT BREAKOUT

PE		
RW		
CN Defined Cost		
CN Allowance		
Contingency	$0	0%
Subtotal	**$0**	
CEI	$0	0%
Management Reserve		
Contract Requirements		
Inflation (Same as CN)	$0	**26.7%**
BETTERMENT TOTAL	**$0**	

Comments:

Note: The Betterment Breakdown is for information purposes only. Betterment costs must be included in the respective phase costs.

PROJECT ESTIMATE SUMMARY V 3.0

Form revised 06/26/25
VBA code revised 6/26/25

Need support? Email PMO@VDOT.Virginia.gov

CITY OF HARRISONBURG , VA

PROJECT: N Mason St Engineer's Estimate (file)

OPINION OF PROBABLE CONSTRUCTION COST - PH LEVEL

6/23/2026

LINE ITEM NO.	VDOT SPEC. SECTION	DESCRIPTION OF ITEM	QUALITY			TOTAL COST
			AMOUNT	UNIT	UNIT COST	
1	513	MOBILIZATION	1	LS	$287,235	$287,235
2	517	CONSTRUCTION SURVEYING	1	LS	2%	$84,339
3	512	MAINTENANCE OF TRAFFIC	1	LS	15%	$632,546
4	303	EROSION AND SEDIMENT CONTROL	1	LS	5%	$210,849
5		SIGNAL MODIFICATIONS	1	LS	$700,000	$700,000
6	303	REGULAR EXCAVATION	772	CY	$55	$42,460
7	303	BORROW EXCAVATION	618	CY	$110	$67,980
8	309	AGGREGATE BASE MATERIAL TYPE 1, NO. 21B (8" assumed)	3,246	TON	$55	$178,543
9	315	ASPHALT SURFACE COURSE SM-9.5A	1,854	TON	$205	$380,017
10	315	ASPHALT BASE COURSE BM 25.0A	2,498	TON	$245	$611,361
11	504	HYDR. CEMENT CONC. SIDEWALK 4"	996	SY	$89	$88,772
12	504	HYDR. CEMENT CONC. SIDEWALK 7" (RAMPS)	792	SY	$217	$171,864
13	502	COMBINATION CURB AND GUTTER CG-6	3,992	LF	$60	$239,520
14	502	RADIAL CURB AND GUTTER CG-6	1,707	LF	$65	$110,923
15	502	ENTRANCE GUTTER CG-9D	301	SY	$240	$72,240
16	502	MEDIAN STRIP, MS-1	42	SY	$200	$8,400
	502	MEDIAN STRIP, MS-2	557	LF	$90	$50,130
17	504	CG-12 DETECTABLE WARNING SURFACE	20	SY	$600	$12,000
18	504	CURB, STD. CG-3	350	LF	$60	$21,000
19	501	UNDERDRAIN, UD-4	2,899	LF	$25	$71,431
20	412	SAW CUT CURB, GUTTER AND ENTRANCES	2,899	LF	$19	$55,081
21	515	FLEXIBLE PAVEMENT PLANING, 0"-2"	8,954	SY	$20	$179,080
22	508	DEMOLITION OF PAVEMENT	9,700	SY	$17	$162,184
23	510	RELOCATE/REMOVE DRAINAGE STRUCTURE	10	EA	$18,000	$180,000
24	302	WATERLINE (SERVICE) RELOCATION	10	EA	$3,277	$32,773
		6" DI WATER MAIN	105	LF	$570	$59,850
25	604	SOD - FESCUE	5,106	SY	$27	$138,066
26	701	SIGN PANEL	29	SF	$52	$1,520
27	700	SIGN POST STP-1, 2", 14 GAUGE	40	LF	$43	$1,700
28	700	CONCRETE SIGN FOUNDATION STP-1, TYPE A	4	EA	$975	$3,900
29	700	#8 BONDED GROUND CABLE	55	LF	$18.00	$990
30	700	14/4 CONDUCTOR CABLE	215	LF	$6.00	$1,290
33	703	REMOVE EXISTING PEDESTAL POLE	6	EA	$2,160	$12,960
34	703	REMOVE EXISTING PEDESTAL POLE FOUNDATION	6	EA	$2,100	$12,600
35	700	PEDESTAL POLE PF-2 12'	4	EA	$2,250	$9,000
36	700	PEDESTRIAN ACTUATION PA-2	4	EA	$2,025	$8,100
37	700	PEDESTRIAN SIGNAL HEAD SP-8	7	EA	$1,100	$7,700
38	700	CONCRETE FOUNDATION PF-2	4	EA	$2,400	$9,600
39	703	HANGAR ASSEMBLY SMB-3, ONE WAY	4	EA	$500.0	$2,000
41	700	JUNCTION BOX JB-S2	2	EA	$2,850.0	$5,700
42	704	TYPE A. CLASS PAVEMENT LINE 4"	7,425	LF	$4.0	$29,700
43	704	TYPE B, CLASS II PAVEMENT LINE MARKING 24"	1,336	LF	$30	$39,719

CITY OF HARRISONBURG , VA

PROJECT: N Mason St Engineer's Estimate (file)

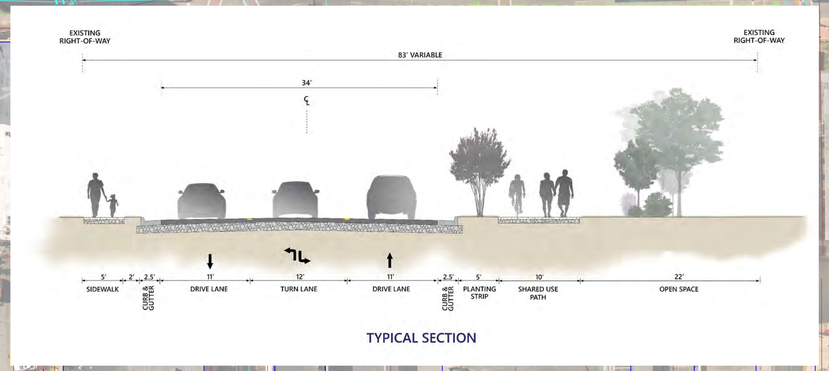
OPINION OF PROBABLE CONSTRUCTION COST - PH LEVEL

6/23/2026

LINE ITEM NO.	VDOT SPEC. SECTION	DESCRIPTION OF ITEM	QUALITY			TOTAL COST
			AMOUNT	UNIT	UNIT COST	
44	704	PVMT SYMB MRKG SGL TURN ARROW TY B, CL II	20	EA	$436	$8,730
45	704	PVMT SYMB MRKG DBL TURN ARROW THRU/LT OR RT TY B, CL II	5	EA	$650	$3,250
46	512	PVMT MSG. MARK. "ONLY" TY B, CL II, 8"	5	EA	$1,000.00	$5,000
50	203	SYMB MRKG HELMETED BICYCLIST TY B CL II	7	EA	$500.00	$3,500
51	305	SYMB MRKG BICYCLE THRU ARROW TY B CL II	7	EA	$375.00	$2,625
52	700	TRAF. SIG. HEAD SECT. 12" HVS BACKPLATE	4	EA	$447	$1,789
53	700	REMOVE EXISTING SIGNAL HEAD	2	LF	$145.00	$290
54	700	CONDUIT PVC 3"	55	LF	$14.00	$770
55		INSTALL BUS SHELTER	1	LS	$27,500.00	$27,500
56		Undefined Items	-	LS	10%	$383,361
					SUBTOTAL =	$5,431,939

Note: Estimate excludes right-of-way and easements.

G Project Sketch and Right-Of-Way Summary



TYPICAL SECTION

Legend

EXISTING

- RIGHT OF WAY/PARCEL LINES (GIS)
- EASEMENTS
- ELECTRIC LINES/OVERHEAD/STRUCTURES
- FIBER OPTIC LINES/STRUCTURES
- UNDERGROUND UTILITIES
- SANITARY SEWER LINES/STRUCTURES
- SANITARY SEWER LINES/STRUCTURES ABANDONED
- WATER LINES/STRUCTURES
- WATER LINES/STRUCTURES ABANDONED
- STORM LINES/STRUCTURES

PROPOSED

- RIGHT OF WAY
- TEMPORARY CONSTRUCTION EASEMENT
- MILL AND OVERLAY
- FULL DEPTH PAVEMENT
- RAISED GRASS MEDIAN / GRASS AREAS
- RAISED CONCRETE MEDIAN / CURB AND GUTTER / CONCRETE ENTRANCE
- MOUNTABLE CURB
- SHARED USE PATH
- SIDEWALK
- DETECTABLE WARNING SURFACE
- PAVEMENT MARKING
- STORM LINES/STRUCTURES

N Federal St
N Mason St
Community St
E Market St
E Elizabeth St
E Wolfe St
E Rock St

TEMPORARY CONSTRUCTION EASEMENT
MODIFY TRAFFIC SIGNAL HEADS
005
PROPOSED RIGHT-OF-WAY
009
75' Storage
75' Taper
TEMPORARY CONSTRUCTION EASEMENT
011
PROPOSED RIGHT-OF-WAY
75' Storage
75' Taper
PROPOSED RIGHT-OF-WAY
014
SEE MATCHLINE SHEET CP1.02
001
002
75' Taper
75' Storage
PROPOSED RIGHT-OF-WAY
TEMPORARY CONSTRUCTION EASEMENT
003
004
PROPOSED RIGHT-OF-WAY
006
BUS SHELTER
007
TEMPORARY CONSTRUCTION EASEMENT
008
75' Taper
75' Storage
NEW TRAFFIC SIGNAL POLE
NEW PEDESTRIAN SIGNAL POLE
010
75' Taper
75' Storage
PROPOSED RIGHT-OF-WAY
012
TEMPORARY CONSTRUCTION EASEMENT

SOURCE: CITY OF HARRISONBURG GIS, NEARMAP.

THIS PLAN IS COMPILED FROM AVAILABLE EXISTING INFORMATION AND IS FOR CONCEPTUAL PLANNING ONLY, FURTHER RESEARCH WILL BE REQUIRED TO VERIFY DIMENSIONS, ZONING REQUIREMENTS, WETLAND LIMITS, FIRE CODES, STATE AND LOCAL PERMITTING, PHYSICAL CONSTRAINTS ON SITE, AND TRAFFIC CIRCULATION.

vhb.com

Two James Center
1021 E. Cary Street
Suite 200
Richmond, VA 23219
804.343.7100

0 25 50 100 Feet

North Mason Permanent Project Study

Harrisonburg, VA

No.	Revision	Date	Appvd.

Designed by | Checked by

Issued for | Date

June 22, 2026

Drawing Title

Round 7 Smart Scale Application Sketch

Drawing Number

CP1.01

Sheet 1 of 2

Project Number

34826.002

Legend

EXISTING

- RIGHT OF WAY/PARCEL LINES (GIS)
- EASEMENTS
- ELECTRIC LINES/OVERHEAD/STRUCTURES
- FIBER OPTIC LINES/STRUCTURES
- UNDERGROUND UTILITIES
- SANITARY SEWER LINES/STRUCTURES
- SANITARY SEWER LINES/STRUCTURES ABANDONED
- WATER LINES/STRUCTURES
- WATER LINES/STRUCTURES ABANDONED
- STORM LINES/STRUCTURES

PROPOSED

- RIGHT-OF-WAY
- TEMPORARY CONSTRUCTION EASEMENT
- MILL AND OVERLAY
- FULL DEPTH PAVEMENT
- RAISED GRASS MEDIAN / GRASS AREAS
- RAISED CONCRETE MEDIAN / CURB AND GUTTER / CONCRETE ENTRANCE
- MOUNTABLE CURB
- SHARED USE PATH
- SIDEWALK
- DETECTABLE WARNING SURFACE
- PAVEMENT MARKING
- STORM LINES/STRUCTURES

GAY ST RECONFIGURATION PROJECT

E Gay St

N Main St

N Mason St

Community St

E Johnson St

BIKE LANES TRANSITION TO SHARED USE PATH

TEMPORARY CONSTRUCTION EASEMENT

PROPOSED RIGHT-OF-WAY

REMOVE TRAFFIC SIGNAL

125' Storage

75' Storage

75' Taper

100' Storage

100' Taper

50' Taper

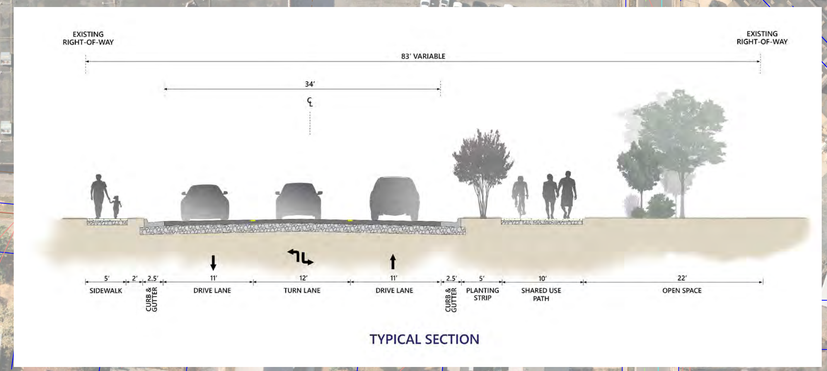
100' Storage

110'

11' 12' 11'

SEE MATCHLINE SHEET CP1.01

012 013 014 015 016 017 018



TYPICAL SECTION

SOURCE: CITY OF HARRISONBURG GIS, NEARMAP.

THIS PLAN IS COMPILED FROM AVAILABLE EXISTING INFORMATION AND IS FOR CONCEPTUAL PLANNING ONLY, FURTHER RESEARCH WILL BE REQUIRED TO VERIFY DIMENSIONS, ZONING REQUIREMENTS, WETLAND LIMITS, FIRE CODES, STATE AND LOCAL PERMITTING, PHYSICAL CONSTRAINTS ON SITE, AND TRAFFIC CIRCULATION.

vhb.com

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1021 E. Cary Street
Suite 200
Richmond, VA 23219
804.343.7100

0 25 50 100 Feet

North Mason Permanent Project Study

Harrisonburg, VA

No.	Revision	Date	Appvd.

Designed by | Checked by

Issued for | Date

June 22, 2026

Drawing Title

Round 7 Smart Scale Application Sketch

Drawing Number

CP1.02

Sheet 2 of 2

Project Number

34826.002

NAME: N Mason Street	
UPC:	
Date: April 29th, 2026	
Locality: City of Harrisonburg	

ROW PARCEL COST ESTIMATE WORKSHEET | **Ver. 1.2; Revised: 9/10/25**

Note: The VDOT Right of Way Cost Estimate Guide includes guidance and recommendations in preparation of RW Cost Estimates.

PARCEL #	001	**TAX MAP #**	034 U 1	**Zoning**	B1	**LAND**	$ 10,700		
ASSESSMENT	**LAND**	$ 130,000	$ 15.90			**BUILDING**	$ -		
	IMPROV.	$ 50,800				**IMPROVEMENTS**	$ -		
		SUBJ. SIZE (AC)	0.187738			**DAMAGES**	$ -		
EST. FMV. PER	SF	$ 15.90	--> if just impacting land, can calc Land Value per SF from above data and use						
ACQUISITION				%		**TOTAL**		$ 10,700	
	FEE	562.3778	SF		$ 9,000				
	Pres		SF		$ -				
	PERM ESMT		SF		$ -				
	UTILITY		SF		$ -				
	TCE	513.9803	SF	20%	$ 1,700				

Parcel Comments:

PARCEL #	002	**TAX MAP #**	034 U 19	**Zoning**	B1	**LAND**	$ 1,300		
ASSESSMENT	**LAND**	$ 87,100	$ 20.45			**BUILDING**	$ -		
	IMPROV.	$ 5,000				**IMPROVEMENTS**	$ -		
		SUBJ. SIZE (AC)	0.097799			**DAMAGES**	$ -		
EST. FMV. PER	SF	$ 20.45							
ACQUISITION				%		**TOTAL**		$ 1,300	
	FEE	0	SF		$ -				
	Pres		SF		$ -				
	PERM ESMT		SF		$ -				
	UTILITY		SF		$ -				
	TCE	297.3871	SF	20%	$ 1,300				

Parcel Comments:

PARCEL #	003	**TAX MAP #**	034 U 17 18	**Zoning**	B1	**LAND**	$ 2,200		
ASSESSMENT	**LAND**	$ 88,000	$ 19.47			**BUILDING**	$ -		
	IMPROV.	$ 620,000				**IMPROVEMENTS**	$ -		
		SUBJ. SIZE (AC)	0.103772			**DAMAGES**	$ -		
EST. FMV. PER	SF	$ 19.47							
ACQUISITION				%		**TOTAL**		$ 2,200	
	FEE	46.1719	SF		$ 900				
	Pres		SF		$ -				
	PERM ESMT		SF		$ -				
	UTILITY		SF		$ -				
	TCE	328.1599	SF	20%	$ 1,300				

Parcel Comments:

PARCEL #	004	**TAX MAP #**	034 U 16	**Zoning**	B1	**LAND**	$ 3,400		
ASSESSMENT	**LAND**	$ 126,000	$ 9.84			**BUILDING**	$ -		
	IMPROV.	$ 3,700				**IMPROVEMENTS**	$ -		
		SUBJ. SIZE (AC)	0.294054			**DAMAGES**	$ -		
EST. FMV. PER	SF	$ 9.84							
ACQUISITION				%		**TOTAL**		$ 3,400	
	FEE	200.9335	SF		$ 2,000				
	Pres		SF		$ -				
	PERM ESMT		SF		$ -				
	UTILITY		SF		$ -				
	TCE	680.8160	SF	20%	$ 1,400				

Parcel Comments:

PARCEL #	005	**TAX MAP #**	034 T 14	**Zoning**	B1	**LAND**	$ 300		
ASSESSMENT	**LAND**	$ 397,000	$ 13.44			**BUILDING**	$ -		

	IMPROV.	$ 2,589,000				IMPROVEMENTS	$ -	
		SUBJ. SIZE (AC)	0.678200			DAMAGES	$ -	
EST. FMV. PER	SF	$ 13.44						
ACQUISITION				%		TOTAL		$ 300
	FEE	0	SF		$ -			
	Pres		SF		$ -			
	PERM ESMT		SF		$ -			
	UTILITY		SF		$ -			
	TCE	79.9433	SF	20%	$ 300			

Parcel Comments:

PARCEL #	006	TAX MAP #	034 R 0 1 2	Zoning	B1	LAND	$ 1,700	
ASSESSMENT	LAND	$ 371,100	$ 10.01			BUILDING	$ -	
	IMPROV.	$ 3,070,100				IMPROVEMENTS	$ -	
		SUBJ. SIZE (AC)	0.851447			DAMAGES	$ -	
EST. FMV. PER	SF	$ 10.01						
ACQUISITION				%		TOTAL		$ 1,700
	FEE	46.1692	SF		$ 500			
	Pres		SF		$ -			
	PERM ESMT		SF		$ -			
	UTILITY		SF		$ -			
	TCE	576.4415	SF	20%	$ 1,200			

Parcel Comments:

PARCEL #	007	TAX MAP #	034 R 3	Zoning	B1	LAND	$ 600	
ASSESSMENT	LAND	$ 78,700	$ 10.00			BUILDING	$ -	
	IMPROV.	$ 15,700				IMPROVEMENTS	$ -	
		SUBJ. SIZE (AC)	0.180749			DAMAGES	$ -	
EST. FMV. PER	SF	$ 10.00						
ACQUISITION				%		TOTAL		$ 600
	FEE	0	SF		$ -			
	Pres		SF		$ -			
	PERM ESMT		SF		$ -			
	UTILITY		SF		$ -			
	TCE	253.0884	SF	20%	$ 600			

Parcel Comments:

PARCEL #	008	TAX MAP #	034 R 4	Zoning	B1	LAND	$ 200	
ASSESSMENT	LAND	$ 408,800	$ 10.00			BUILDING	$ -	
	IMPROV.	$ 1,474,100				IMPROVEMENTS	$ -	
		SUBJ. SIZE (AC)	0.938543			DAMAGES	$ -	
EST. FMV. PER	SF	$ 10.00						
ACQUISITION				%		TOTAL		$ 200
	FEE	0	SF		$ -			
	Pres		SF		$ -			
	PERM ESMT		SF		$ -			
	UTILITY		SF		$ -			
	TCE	76.2333	SF	20%	$ 200			

Parcel Comments:

PARCEL #	009	TAX MAP #	034 Q 5	Zoning	B1	LAND	$ 500	
ASSESSMENT	LAND	$ 744,000	$ 11.87			BUILDING	$ -	
	IMPROV.	$ 5,259,200				IMPROVEMENTS	$ -	
		SUBJ. SIZE (AC)	1.438991			DAMAGES	$ -	
EST. FMV. PER	SF	$ 11.87						
ACQUISITION				%		TOTAL		$ 500
	FEE	5.4059	SF		$ 100			
	Pres		SF		$ -			
	PERM ESMT		SF		$ -			
	UTILITY		SF		$ -			
	TCE	159.0757	SF	20%	$ 400			

Parcel Comments:

PARCEL #	010	**TAX MAP #**	034 O 20	**Zoning**	B1	**LAND**	$ 2,100	
ASSESSMENT	**LAND**	$ 27,000	$ 5.51			**BUILDING**	$ -	
	IMPROV.	$ -				**IMPROVEMENTS**	$ -	
		SUBJ. SIZE (AC)	0.112563			**DAMAGES**	$ -	
EST. FMV. PER	SF	$ 5.51						
ACQUISITION				%		**TOTAL**		$ 2,100
	FEE	19.3918	SF		$ 200			
	Pres		SF		$ -			
	PERM ESMT		SF		$ -			
	UTILITY		SF		$ -			
	TCE	1,714.1547	SF	20%	$ 1,900			

Parcel Comments:

PARCEL #	011	**TAX MAP #**	034 N 6	**Zoning**	B1	**LAND**	$ 1,600	
ASSESSMENT	**LAND**	$ 734,800	$ 12.45			**BUILDING**	$ -	
	IMPROV.	$ 1,207,200				**IMPROVEMENTS**	$ -	
		SUBJ. SIZE (AC)	1.354475			**DAMAGES**	$ -	
EST. FMV. PER	SF	$ 12.45						
ACQUISITION				%		**TOTAL**		$ 1,600
	FEE	63.7624	SF		$ 800			
	Pres		SF		$ -			
	PERM ESMT		SF		$ -			
	UTILITY		SF		$ -			
	TCE	304.5646	SF	20%	$ 800			

Parcel Comments:

PARCEL #	012	**TAX MAP #**	034 J 1	**Zoning**	B1	**LAND**	$ 2,900	
ASSESSMENT	**LAND**	$ 390,200	$ 10.69			**BUILDING**	$ -	
	IMPROV.	$ 1,275,800				**IMPROVEMENTS**	$ -	
		SUBJ. SIZE (AC)	0.837769			**DAMAGES**	$ -	
EST. FMV. PER	SF	$ 10.69						
ACQUISITION				%		**TOTAL**		$ 2,900
	FEE	0	SF		$ -			
	Pres		SF		$ -			
	PERM ESMT		SF		$ -			
	UTILITY		SF		$ -			
	TCE	1,335.3348	SF	20%	$ 2,900			

Parcel Comments:

PARCEL #	013	**TAX MAP #**	034 J 3	**Zoning**	B1	**LAND**	$ 24,300	
ASSESSMENT	**LAND**	$ 519,000	$ 10.65			**BUILDING**	$ -	
	IMPROV.	$ 369,500				**IMPROVEMENTS**	$ -	
		SUBJ. SIZE (AC)	1.118417			**DAMAGES**	$ -	
EST. FMV. PER	SF	$ 10.65						
ACQUISITION				%		**TOTAL**		$ 24,300
	FEE	344.7339	SF		$ 3,700			
	Pres		SF		$ -			
	PERM ESMT		SF		$ -			
	UTILITY		SF		$ -			
	TCE	9,657.4864	SF	20%	$ 20,600			

Parcel Comments:

PARCEL #	014	**TAX MAP #**	034 I 4	**Zoning**	B1	**LAND**	$ 12,100	
ASSESSMENT	**LAND**	$ 1,199,000	$ 12.50			**BUILDING**	$ -	
	IMPROV.	$ 2,420,300				**IMPROVEMENTS**	$ -	
		SUBJ. SIZE (AC)	2.201701			**DAMAGES**	$ -	
EST. FMV. PER	SF	$ 12.50						
ACQUISITION				%		**TOTAL**		$ 12,100
	FEE	775.2065	SF		$ 9,700			

Pres		SF		$ -	
PERM ESMT		SF		$ -	
UTILITY		SF		$ -	
TCE	959.4712	SF	20%	$ 2,400	

Parcel Comments:

PARCEL #	015	TAX MAP #	034 E 3	Zoning	B1	LAND	$ 15,800	
ASSESSMENT	LAND	$ 2,081,400	$ 9.25			BUILDING	$ -	
	IMPROV.	$ 13,077,100				IMPROVEMENTS	$ -	
		SUBJ. SIZE (AC)	5.167192			DAMAGES	$ -	
EST. FMV. PER	SF	$ 9.25						
ACQUISITION				%		TOTAL		$ 15,800
	FEE	1,218.0873	SF		$ 11,300			
	Pres		SF		$ -			
	PERM ESMT		SF		$ -			
	UTILITY		SF		$ -			
	TCE	2,397.3721	SF	20%	$ 4,500			

Parcel Comments:

PARCEL #	016	TAX MAP #	034 F 1 3	Zoning	B1	LAND	$ 18,800	
ASSESSMENT	LAND	$ 2,409,000	$ 7.11			BUILDING	$ -	
	IMPROV.	$ 2,183,800	7.781649			IMPROVEMENTS	$ -	
		SUBJ. SIZE (AC)				DAMAGES	$ -	
EST. FMV. PER	SF	$ 7.11						
ACQUISITION				%		TOTAL		$ 18,800
	FEE	1,270.5667	SF		$ 9,100			
	Pres		SF		$ -			
	PERM ESMT		SF		$ -			
	UTILITY		SF		$ -			
	TCE	6,762.9168	SF	20%	$ 9,700			

Parcel Comments:

PARCEL #	017	TAX MAP #	034 E 1	Zoning	B1	LAND	$ 600	
ASSESSMENT	LAND	$ 116,000	$ 10.15			BUILDING	$ -	
	IMPROV.	$ -				IMPROVEMENTS	$ -	
		SUBJ. SIZE (AC)	0.262455			DAMAGES	$ -	
EST. FMV. PER	SF	$ 10.15						
ACQUISITION				%		TOTAL		$ 600
	FEE	0	SF		$ -			
	Pres		SF		$ -			
	PERM ESMT		SF		$ -			
	UTILITY		SF		$ -			
	TCE	270.6191	SF	20%	$ 600			

Parcel Comments:

PARCEL #	018	TAX MAP #	034 B 4	Zoning	B1	LAND	$ 1,000	
ASSESSMENT	LAND	$ 258,600.00	$ 6.00			BUILDING	$ -	
	IMPROV.	$ 727,700.00				IMPROVEMENTS	$ -	
		SUBJ. SIZE (AC)	0.989869			DAMAGES	$ -	
EST. FMV. PER	SF	$ 6.00						
ACQUISITION				%		TOTAL		$ 1,000
	FEE	0	SF		$ -			
	Pres		SF		$ -			
	PERM ESMT		SF		$ -			
	UTILITY		SF		$ -			
	TCE	776.5623	SF	20%	$ 1,000			

		VALUE	AREA (SF)	$/SF
Proposed Right of Way (Land in Fee)	$	47,300	4,552.8	10.38919529
Proposed Prescriptive Right of Way	$	-	0.0	#DIV/0!
Proposed Permanent Easement (Drainage, Slope, Signage, etc.)	$	-	0.0	#DIV/0!
Proposed Permanent Utility Easement	$	-	0.0	#DIV/0!
Proposed Temporary Construction Easement	$	52,800	27,143.6	1.945209383
Total Cost of Fee ROW and Easements:	**$**	**100,100**		
Buildings	$	-		
Improvements	$	-		
Damages	$	-		
Total Costs (Land + Above)	**$**	**100,100**		
Administrative Settlements (NA%)	$	25,030		
Condemnation increment (NA%)	$	35,040.00		
Court Costs:	$	140,000.00	Guidance is $130,000-$150,000 for commercial properties	
ROW Admin Cost:	$	540,000.00	*18 parcels, guidance is $30-40k per commercial parcel, low end due to minor impacts	
Total Admin	**$**	**740,070.00**		
***Estimated Total Acquisitions**		0		
***Estimated Parcel Count**		18		
Commercial Relocation Costs	$	-		
Residential Relocation Costs	$	-		
Hazmat Costs	$	-		
Demolition Costs	$	-		
Grand Total with Relo Costs (No Utility Costs)	**$**	**840,170.00**		
Contingency (25%)	$	210,050.00		
ROW Grand Total with Contingency:	**$**	**1,050,220.00**		

Total Acres
24.597384

Estimate Notes:

	CITY OF HARRISONBURG GIS DATA						EASEMENTS					
PARCEL NO.	PIN	LANDOWNER	ZONING CODE	TOTAL	FEE TAKING	FEE REMAINDER	PERMANENT	UTILITY ONLY	TEMPORARY ONLY	TEMPORARY & UTILITY	TOTAL UTILITY ESMT	TOTAL TEMPORARY ESMT
				ACRES	SF	ACRES	SF	SF	SF	SF	SF	SF
001	034 U 1	UNITED VIRGINIA BANK	B1	0.1877	562.3778	0.1748			513.9803		0	513.9803
002	034 U 19	BELL INVESTMENTS LLC	B1	0.0978	0	0.0978			297.3871		0	297.3871
003	034 U 17 18	BELL INVESTMENTS LLC	B1	0.1038	46.1719	0.1027			328.1599		0	328.1599
004	034 U 16	CITY OF HBURG ELECTRIC C	B1	0.2941	200.9335	0.2894			680.8160		0	680.816
005	034 T 14	THE CHURCH OF THE INCARNATION	B1	0.6782	0	0.6782			79.9433		0	79.9433
006	034 R 0 1 2	THE CITY OF HARRISONBURG VIRGINIA	B1	0.8514	46.1692	0.8504			576.4415		0	576.4415
007	034 R 3	HBURG REDEVELOPMENT & HOUSING AUTHORITY	B1	0.1807	0	0.1807			253.0884		0	253.0884
008	034 R 4	HBURG REDEVELOPMENT & HOUSING AUTHORITY	B1	0.9385	0	0.9385			76.2333		0	76.2333
009	034 Q 5	CITY OF HBURG PARKING LOT	B1	1.4390	5.4059	1.4389			159.0757		0	159.0757
010	034 O 20	CITY OF HBURG	B1	0.1126	19.3918	0.1121			1714.1547		0	1714.1547
011	034 N 6	DRIVER PROPERTIES LLC	B1	1.3545	63.7624	1.3530			304.5646		0	304.5646
012	034 J 1	AUTOZONE INC	B1	0.8378	0	0.8378			1335.3348		0	1335.3348
013	034 J 3	7-ELEVEN INC	B1	1.1184	344.7339	1.1105			9657.4864		0	9657.4864
014	034 I 4	COLONNADE REALTY PARTNERS LP	B1	2.2017	775.2065	2.1839			959.4712		0	959.4712
015	034 E 3	ROCKINGHAM COUNTY OF VA	B1	5.1672	1218.0873	5.1392			2397.3721		0	2397.3721
016	034 F 1 3	STEROBEN ASSOCIATES	B1	7.7816	1270.5667	7.7525			6762.9168		0	6762.9168
017	034 E 1	DELTA DUO LLC	B1	0.2625	0	0.2625			270.6191		0	270.6191
018	034 B 4	ATKINS ROBERT C JR WILLIAM O ATKINS	M1	0.9899	0	0.9899			776.5623		0	776.5623
		TOTAL		**24.5974**	**4,552.8069**				**27,143.6075**			**27,143.6075**