

DIGITAL ONLY



Memorandum

To: Manny Sousa  
Sousa Realty & Development Co., Inc.  
46 Lowell Road  
Hudson, NH

Date: June 30, 2023

Project #: 52945.00

From: Meredith L. Graham, PE, PTOE  
Jason R. Plourde, PE, PTP

Re: Traffic Impact Study  
Lowell Road and Central Street Commercial Development  
Hudson, New Hampshire

Vanasse Hangen Brustlin, Inc. (VHB) has prepared this Traffic Impact Study to summarize the anticipated transportation impacts associated with the proposed commercial development to be located on the southeast corner of the Lowell Road and Central Street signalized intersection in Hudson, New Hampshire. As proposed, a 10 vehicle fueling position gasoline station and a 4,560 square foot convenience store with a drive-through coffee shop will be constructed. Access is proposed to be provided via a right-turn in only driveway on the east side of Lowell Road and a full access driveway on the south side of Central Street. The site location in relation to the surrounding roadway network is shown on Figure 1.

In the vicinity of the site, Lowell Road and Central Street are under Town of Hudson jurisdiction. Therefore, review and approval are expected to be required with respect to traffic through the Town of Hudson permitting process. Based on coordination efforts with the Hudson Town Engineer and Town Planner, the impacts of the proposed development were evaluated at the Lowell Road and Central Street.

## Existing Conditions

Existing conditions were developed by conducting field reconnaissance and obtaining traffic counts at the Lowell Road and Central Street study area signalized intersection. At the signalized intersection, Lowell Road is the south leg and Central Street is the north and east legs. NH Route 3A represents the major travel route and is aligned in a general north-south direction along Lowell Road south of the intersection and Central Street north of the intersection. The Lowell Road south leg and the Central Street north leg are functionally classified as Principal Arterials and legislatively categorized as Class IV: Compact Roads. The Central Street east leg is functionally classified as a Minor Arterial and legislatively categorized as a Class IV: Compact Road. The speed limit along the three approaches is posted at 30 miles per hour (mph). There is a Hudson Firefighters Memorial at Hammond Park located on the southeast corner of the intersection.

The Lowell Road northbound approach consists of a through lane and an exclusive right-turn lane. The Central Street southbound approach includes an exclusive left-turn lane and a through lane. The Central Street westbound approach contains an exclusive left-turn lane and an exclusive right-turn lane. Directional flows along the three legs are separated by raised median islands. There are sidewalks provided along both sides of each leg of the intersection with crosswalks striped across the Central Street north leg and the Central Street east leg. The traffic signal operates on a four phase system with a Central Street southbound approach left-turn lead phase, a Lowell Road northbound through/right-turn and a Central Street southbound through permissive phase, a Central Street westbound phase with a Lowell Road northbound right-turn overlap, and an exclusive pedestrian phase.



Site Location Map

Figure 1



0 200 400 Feet



On the Lowell Road approach, there is a Right Lane for Right Turn sign and a lane designation sign. On the Central Street southbound approach, there is a No Turn on Red Arrow sign for the left-turn lane, a No Turn on Red sign posted for the through lane, and a lane designation sign. On the Central Street westbound approach, there is a No Turn on Red Arrow sign for the left-turn lane, a Right Turn on Red After Stop sign for the right-turn lane, and a lane designation sign. There are No Parking signs posted along Lowell Road and Central Street.

### Traffic Volumes

#### Traffic Counts

Base traffic conditions at the study area intersection were developed by obtaining turning movement counts (TMCs) and vehicle classification counts between Wednesday, September 7, 2022, and Saturday, September 10, 2022 at the study area intersection. The traffic counts were provided by the Hudson Town Engineer using the GRIDSMART system installed at the signalized intersection for 24 hour periods to capture weekday AM, weekday PM, and Saturday midday peak hour traffic volumes. The traffic count data are provided in the Appendix.

#### Seasonal Adjustment

Traffic on a given roadway typically fluctuates throughout the year depending on the area and the type of roadway. Based on New Hampshire Department of Transportation (NHDOT) guidelines for the preparation of a traffic study, existing traffic volumes must represent peak-month conditions. Upon review of seasonal adjustment and historical count data provided by NHDOT, traffic volumes in the month of September are approximately 5 percent lower than peak-month volumes.<sup>1</sup> Therefore, the September 2022 traffic counts were increased by 5 percent to represent 2022 peak-hour traffic volumes during peak-month conditions. The NHDOT seasonal adjustment data are provided in the Appendix.

#### Pandemic Adjustment

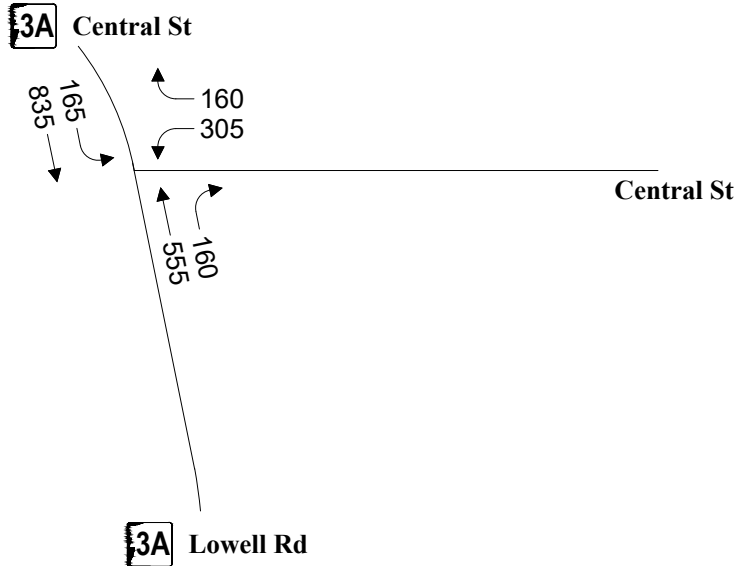
Due to the coronavirus disease 2019 (COVID-19) pandemic, traffic volumes may not represent normal travel conditions along New Hampshire roadways. To determine whether a pandemic adjustment should be made to the 2022 peak-month traffic volumes, NHDOT guidance is to review historical traffic counts from nearby permanent count stations during the month of full data that is nearest to the month of the counts and the same month prior to the pandemic.<sup>2</sup> Based on this NHDOT methodology, a comparison of the September 2019 and September 2022 data shows that traffic volumes have decreased during the weekday AM, weekday PM, and Saturday midday peak hours. Therefore, the 2022 peak-month traffic volumes were increased to account for the pandemic.<sup>3</sup> The pandemic adjustment calculations are provided in the Appendix. Figure 2 graphically depicts the 2022 Existing weekday AM, weekday PM, and Saturday midday peak hour traffic volumes.

<sup>1</sup> NHDOT Bureau of Traffic, 2019 Group 4 (Urban Highways) Monthly Average Data.

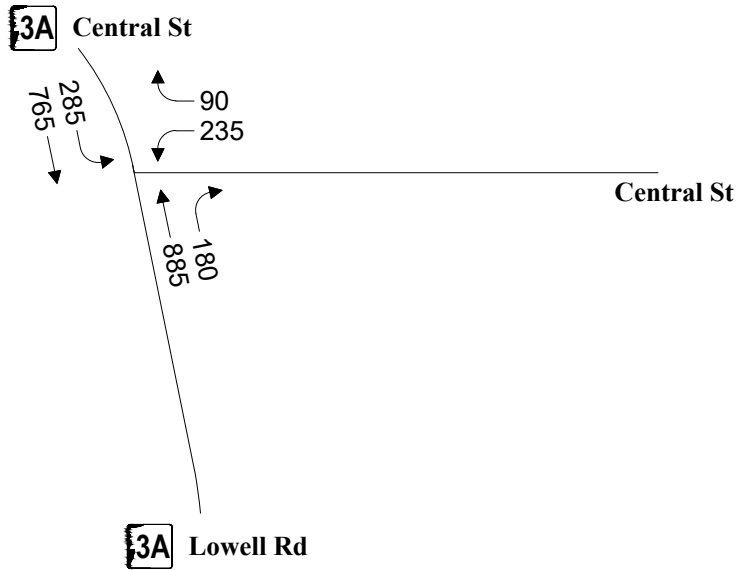
<sup>2</sup> NHDOT Transportation Data Management System, Location ID: 02297001 along US Route 3 (Daniel Webster Highway) north of Hilton Drive in Merrimack.

<sup>3</sup> Traffic volumes were increased by 1.198 during the weekday AM peak hour, 1.082 during the weekday PM peak hour, and 1.025 during the Saturday midday peak hour.

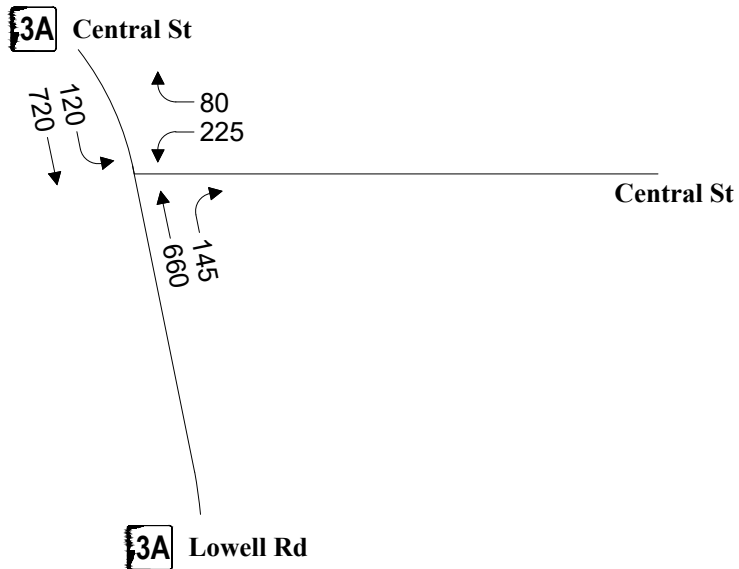
**Weekday Morning**



**Weekday Evening**



**Saturday Midday**



↑  
Not to Scale



2022 Existing  
Peak Hour Traffic Volumes

**Figure 2**



**Capacity and Queue Analyses**

**Capacity Analysis Methodology**

Capacity analyses were performed for the Lowell Road and Central Street intersection with the 2022 Existing traffic volumes during the weekday AM, weekday PM, and Saturday midday peak hours based on the concepts and procedures in the Highway Capacity Manual (HCM) using the *Trafficware Synchro Software* computer program. This software program is a NHDOT approved traffic analysis tools for determining intersection capacity operations. Based on NHDOT guidelines,<sup>4</sup> HCM 2000 methodologies<sup>5</sup> are preferred for signalized intersections. In addition, HCM 6<sup>th</sup> edition<sup>6</sup> is the NHDOT accepted methodology for unsignalized intersections. Therefore, the HCM 2000 methodologies and procedures have been used to evaluate operations at Lowell Road and Central Street signalized intersection and the HCM 6<sup>th</sup> edition was used for the unsignalized study area intersections.

The analysis results are categorized in terms of Level of Service (LOS), which describes the qualitative intersection operational conditions based on the calculated average delay per vehicle. The criteria for unsignalized intersections are different than for signalized intersections because drivers expect different performance levels from each type of intersection. The relationship between LOS and delay is summarized in Table 1.

**Table 1 Level of Service Criteria**

Level of Service	Unsignalized Intersection Criteria Average Total Delay (Seconds per Vehicle)	Signalized Intersection Criteria Average Total Delay (Seconds per Vehicle)
A	< 10.0	< 10.0
B	10.1 to 15.0	10.1 to 20.0
C	15.1 to 25.0	20.1 to 35.0
D	25.1 to 35.0	35.1 to 55.0
E	35.1 to 50.0	55.1 to 80.0
F	> 50.0	> 80.0

Source: Highway Capacity Manual 2000.

**Queue Length Methodology**

The study area intersections were also evaluated with respect to vehicle queuing. For signalized intersections, the quantitative measures of vehicle queue length are defined as the 50<sup>th</sup> and the 95<sup>th</sup> percentile queues. The 50<sup>th</sup> percentile queue represents the average queue length during the peak hour and the 95<sup>th</sup> percentile queue represents the calculated maximum back of queue that has a probability of 5 percent or less of being exceeded during the peak hour.

<sup>4</sup> New Hampshire Department of Transportation Bureau of Traffic. Synchro Inputs Checklist. 16 Aug. 2021.

<sup>5</sup> Transportation Research Board. Highway Capacity Manual. 2000.

<sup>6</sup> Transportation Research Board. Highway Capacity Manual. 6th edition.



For unsignalized intersections, the quantitative measure of vehicle queue length is defined as the 95<sup>th</sup> percentile queue. The 95<sup>th</sup> percentile queue represents the percent of time during the peak period being analyzed that the calculated maximum back of queue would be equal to or less than the percentile estimate (i.e., the maximum queue length that would be exceeded only 5 percent of the time).

### *Intersection Operational Results*

The capacity and queue length analysis results are summarized in Table 2 for the 2022 Existing traffic-volume conditions. The computer-generated analysis reports are provided in the Appendix. As shown, there are long delays (LOS E/F) on the Central Street westbound left-turn lane during the weekday commuter peak hours, as well as long delays (LOS E) on the Central Street southbound left-turn lane and the Lowell Road northbound through lane during the weekday PM peak hour. In addition, the signalized intersection currently operates with capacity constraints (volume-to-capacity [v/c] ratio > 1.00) within the Central Street westbound left-turn lane during the weekday AM peak hour and within the Lowell Road northbound through lane during the weekday PM peak hour.

**Table 2 Capacity Analysis Summary: 2022 Existing Conditions**

Intersection/ Peak Hour/Lane Group	v/c	Delay	LOS	50 <sup>th</sup> % Queue	95 <sup>th</sup> % Queue
<b>Lowell Road and Central Street</b>					
<b>Weekday AM</b>					
Central St WB Left	1.16	132.2	F	291	355
Central St WB Right	0.16	15.6	B	9	28
Lowell Rd NB Through	0.70	19.8	B	236	350
Lowell Rd NB Right	0.11	3.5	A	0	13
Central St SB Left	0.50	29.8	C	94	163
Central St SB Through	0.71	8.9	A	216	329
<i>Overall Intersection</i>	<i>0.83</i>	<i>33.4</i>	<i>C</i>	<i>--</i>	<i>--</i>
<b>Weekday PM</b>					
Central St WB Left	0.88	57.2	E	156	261
Central St WB Right	0.10	18.2	B	8	34
Lowell Rd NB Through	1.03	59.1	E	614	832
Lowell Rd NB Right	0.14	3.4	A	10	25
Central St SB Left	0.92	63.8	E	175	329
Central St SB Through	0.61	6.7	A	177	263
<i>Overall Intersection</i>	<i>0.97</i>	<i>37.7</i>	<i>D</i>	<i>--</i>	<i>--</i>
<b>Saturday Midday</b>					
Central St WB Left	0.77	41.2	D	143	239
Central St WB Right	0.06	15.8	B	0	24
Lowell Rd NB Through	0.76	21.0	C	294	432
Lowell Rd NB Right	0.10	3.4	A	0	13
Central St SB Left	0.37	28.9	C	68	120
Central St SB Through	0.60	6.5	A	170	241
<i>Overall Intersection</i>	<i>0.72</i>	<i>17.0</i>	<i>B</i>	<i>--</i>	<i>--</i>

v/c = volume-to-capacity ratio.

Delay in seconds.

Queue lengths in feet.



## Future Conditions

The impact of site-generated traffic within the study area has been evaluated under two design horizons: 2023 and 2033 traffic-volume conditions. Traffic volumes on the roadway network would include existing traffic, new traffic due to normal traffic growth, and traffic related to significant development by others that are expected to be completed within the design horizons. The one-year design horizon (2023) represents conditions that can determine the impacts of the proposed development, whereas the 11-year design horizon (2033) is typically used for planning purposes.

Consideration of these factors resulted in the development of 2023 and 2033 No-Build traffic volumes, which assume the proposed project is not built. The incremental impacts of the proposed development may then be determined by adding site-generated traffic volumes (Build conditions) and making comparisons to the baseline conditions.

## No-Build Conditions

Traffic growth is a function of the expected land development in a region. To predict a rate at which traffic can be expected to grow during the forecast periods, both historical growth and planned areas developments were examined.

## Historical Growth

An annual average traffic-growth percentage was determined based on NHDOT historical traffic-volume data. Based on a review of NHDOT count stations within Southeast Growth Region (in which the Town of Hudson resides) between 1999 and 2019, traffic volumes have experienced an annual increase of 0.67 percent. Consistent with NHDOT preference, a minimum of a 1.0 percent compounded annual growth rate was used to account for general population growth and traffic generated by smaller area developments. The NHDOT historical traffic volume data are provided in the Appendix.

## Background Developments

Traffic to be generated by planned developments anticipated to add substantial traffic volumes through the study area were considered in projecting future traffic volumes. Based on discussions with the Hudson Town Planner, the following developments were included within the future traffic-volumes as part of this traffic study.

### › Hudson Logistics Center

- This development is located at 43 Steele Road and is proposed to consist of a 1.4 million square foot single fulfillment center warehouse.
- The traffic volumes associated with the Hudson Logistics Center development were obtained from the traffic study prepared for that project<sup>7</sup> and based on Institute of Transportation Engineers (ITE) methodologies<sup>8</sup> to develop the Saturday midday peak hour trips. The trips for this background development are provided in the Appendix.

<sup>7</sup> Langan Engineering & Environmental Services, Inc. Traffic Impact Study: Hudson Logistics Center, 43 Lowell Road, Hudson, NH. September 2022.

<sup>8</sup> Institute of Transportation Engineers. Trip Generation Manual, 11th ed. Washington, DC, Sept. 2021.





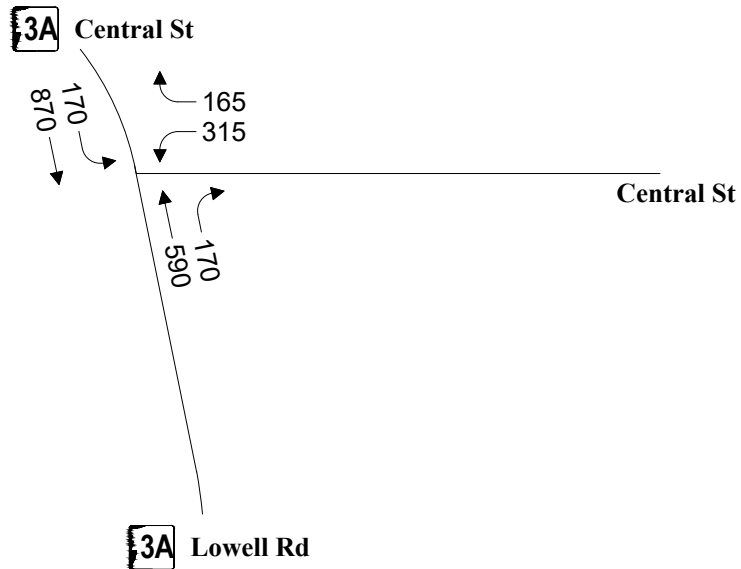
- › Frenette Gardens Subdivision
  - This development is located at 65 Central Street and consists of 9 single-family homes.
  - The traffic volumes associated with the Frenette Gardens subdivision were estimated based on ITE methodologies. The trips for this background development are provided in the Appendix.
- › Bluebird Self-Storage Facility
  - This development is located at 196-202 Central Street and consists of a 118,200 square foot self-storage facility.
  - The traffic volumes associated with the Bluebird self-storage facility were estimated based on ITE methodologies. The trips for this background development are provided in the Appendix.
- › Potential Cumberland Farms Renovation
  - The existing Cumberland Farms gasoline station and convenience store located at 189 Central Street may be renovated.
  - Since a specific program had not been submitted at the time of coordination efforts with local officials for this traffic study, additional trips associated with that project were not included within the future traffic volume projections for this Traffic Impact Study.

#### ***No-Build Traffic Volumes***

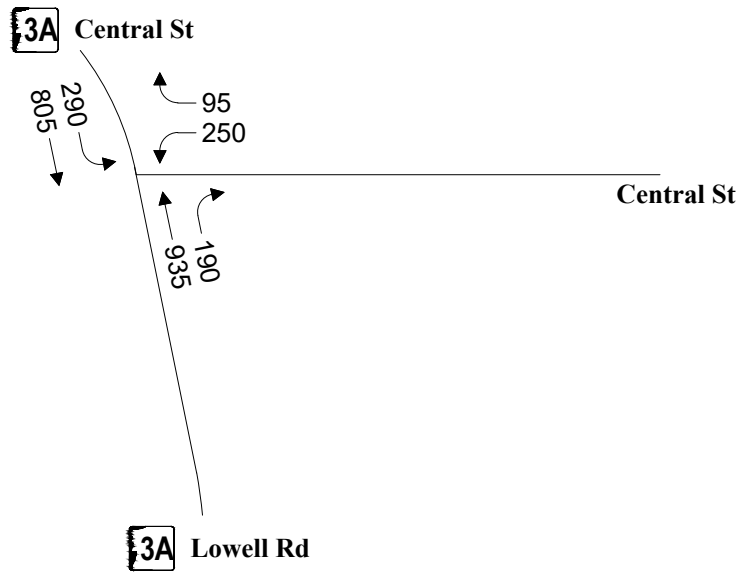
The 2023 No-Build peak hour traffic volumes were accordingly developed by applying a 1 percent compounded annual traffic growth rate to the 2023 Existing volumes and adding traffic associated with Hudson Logistics Center, Frenette Gardens subdivision, and Bluebird self-storage facility. The 2023 No-Build traffic volumes are shown graphically on Figure 3 for the weekday AM, weekday PM, and Saturday midday peak hours.

The 2033 No-Build peak-hour traffic volumes were accordingly developed by applying a 1 percent compounded annual traffic growth rate (or 11.6 percent over 11 years) to the 2022 Existing volumes and adding traffic associated with Hudson Logistics Center, Frenette Gardens subdivision, and Bluebird self-storage facility. The 2033 No-Build traffic volumes are shown graphically on Figure 4 for the weekday AM, weekday PM, and Saturday midday peak hours.

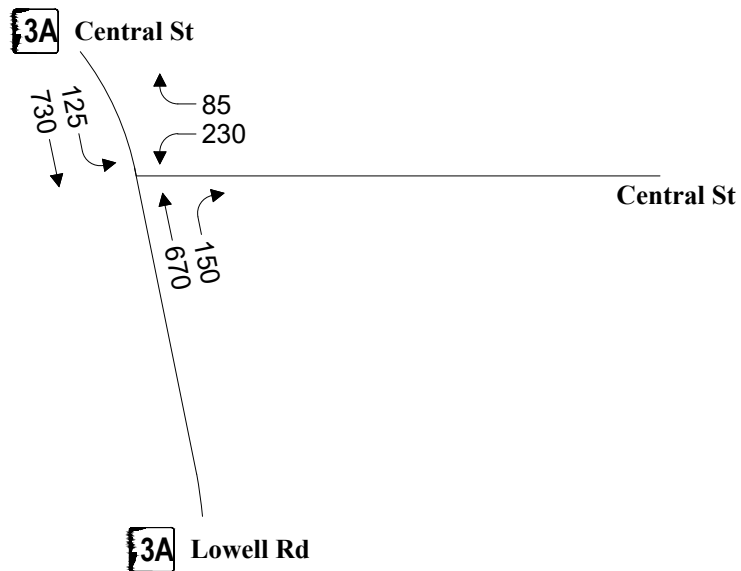
**Weekday Morning**



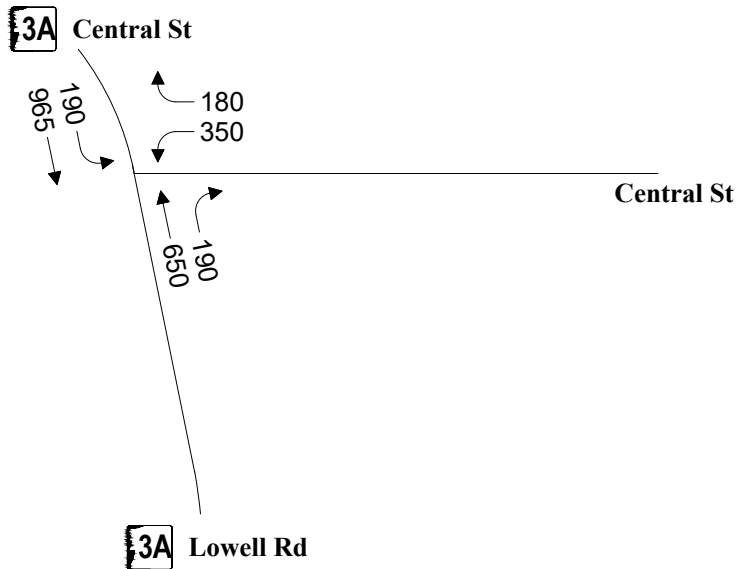
**Weekday Evening**



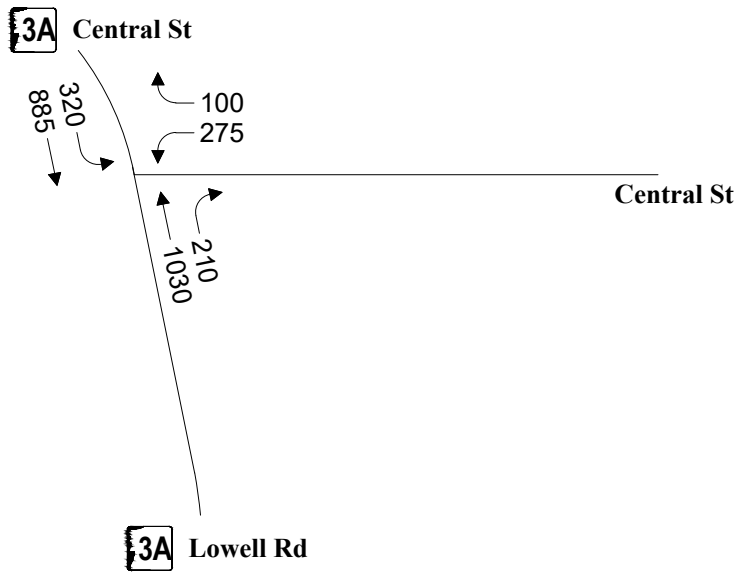
**Saturday Midday**



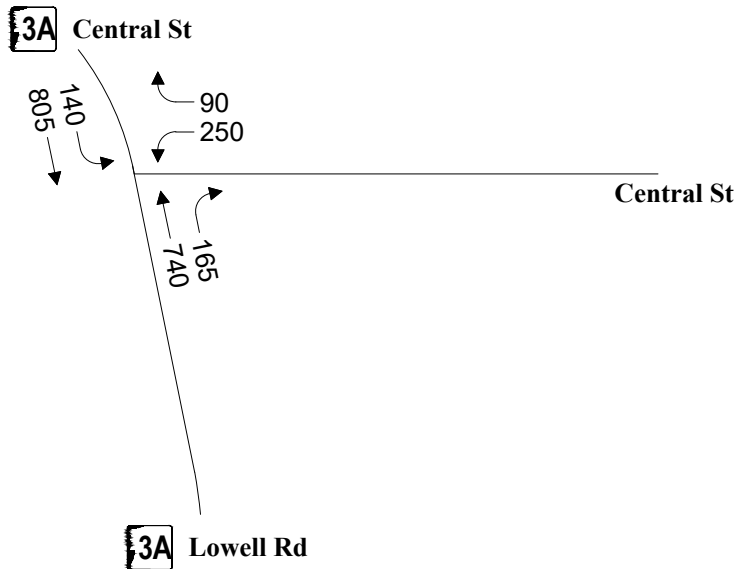
**Weekday Morning**



**Weekday Evening**



**Saturday Midday**



↑  
Not to Scale



2033 No Build  
Peak Hour Traffic Volumes

**Figure 4**



### Build Conditions

For purposes of this traffic study, the proposed development program evaluated consisted of constructing a 10 vehicle fueling position gasoline station and a 4,560 square foot building to include 3,760 square foot convenience store and an 800 square foot coffee shop with a drive-through window. Access is proposed to be provided via a right-turn in only driveway on the east side of Lowell Road and a full access driveway on the south side of Central Street.

### Sight Distance

Sight distances have been evaluated at the site driveway locations to determine if the available sightlines for vehicles exiting the site meet or exceed the minimum distances required for approaching vehicles to safely stop. In accordance Town of Hudson Land Use Regulations (Chapter 193: Driveways), stopping sight distances are required to be provided that meet or exceed the minimum sightline requirements as established by the American Association of State Highway and Transportation Officials (AASHTO).<sup>9</sup> Therefore, the available sightlines were compared with AASHTO is the national standard by which vehicle sight distance is calculated, measured, and reported.

Sight distance is the length of roadway ahead visible to the driver. The Stopping Sight Distance (SSD) is the minimum distance required for a vehicle traveling at a certain speed to safely stop before reaching a stationary object in its path. The Intersection Sight Distance (ISD) is provided on minor street approaches to allow the drivers of stopped vehicles a sufficient view of the major roadway to decide when to enter the major roadway. Based on the posted speed limit of 30 mph, the SSD and ISD requirements at the proposed site driveways were calculated using the AASHTO methodology. The required minimum sight distances are shown in Table 3.

**Table 3 Sight Distance Summary**

Location/Condition	Stopping Sight Distance (feet)		Intersection Sight Distance (feet)	
	To/From North/East	To/From South/West	To/From North/East	To/From South/West
<b>Lowell Road Site Driveway</b>				
Measured	400+	400+	400+	400+
Minimum Required <sup>a</sup>	200	200	200	200
Desirable <sup>b</sup>	205	205	335	335
<b>Central Street Site Driveway</b>				
Measured	400+	400+	400+	400+
Minimum Required <sup>a</sup>	200	200	200	200
Desirable <sup>b</sup>	335	335	335	335

a Minimum Required SSD lengths based on AASHTO Table 9-7 Design Intersection Sight Distance – Case B1, Left Turn from Stop for posted speed limits of 30 mph. Minimum Required ISD lengths based on Minimum Required SSD values.

b Desirable SSD lengths based on AASHTO Equation 3-2 with posted speed limits of 30 mph. Desirable ISD lengths based on AASHTO Equation 9-1 for the posted speed limits of 30 mph.

<sup>9</sup> *A Policy on Geometric Design of Highways and Streets*, 6th Edition. Washington, D.C.: American Association of State Highway and Transportation Officials (AASHTO), 2011.



As indicated in Table 3, available sight distances to the north and south of the proposed Lowell Road site driveway and to the east and west of the proposed Central Street site driveway exceed the AASHTO SSD and ISD requirements. To encourage safe and efficient flow of traffic to and from the site, proposed plantings, vegetation, landscaping, and signing along the site frontage and at the site driveway are recommended to be kept low to the ground or set back sufficiently from the edge of the roadways so as not to inhibit the available sight lines in the future.

### Trip Generation

To estimate the volume of traffic to be generated by the proposed development, trip rates published in the ITE Trip Generation Manual were researched for Land Use Code (LUC) 945 (Convenience Store/Gas Station) and LUC 937 (Coffee/Donut Shop with Drive-Through Window). The trip-generation summary is provided in Table 4 with the trip-generation calculations provided in the Appendix.

**Table 4 Trip-Generation Summary**

Time Period/Direction	Gas Station/ Convenience Store <sup>a</sup>	Coffee Shop <sup>b</sup>	Total Trips
<b>Weekday Daily</b>			
Enter	1,317	214	1,530
Exit	1,317	214	1,530
Total	2,634	428	3,060
<b>Weekday AM Peak Hour</b>			
Enter	107	35	142
Exit	107	34	141
Total	214	69	283
<b>Weekday PM Peak Hour</b>			
Enter	103	16	119
Exit	103	16	119
Total	206	32	238
<b>Saturday Midday Peak Hour</b>			
Enter	121	35	156
Exit	121	35	156
Total	242	70	312

a ITE Land Use Code 945 (Convenience Store/Gas Station for subcategory 9-15 vehicle fueling positions) for 3,760 sf.

b ITE Land Use Code 937 (Coffee/Donut Shop with Drive-Through Window) for 800 sf.

The vehicle trips calculated for the proposed development shown in Table 4 represent single-use trips that the site would generate as stand-alone uses. Based on the ITE Trip Generation Handbook,<sup>10</sup> studies have shown that some patrons of mixed-use or multi-use developments could visit more than one of the uses on the site (internal trips). In

<sup>10</sup> Institute of Transportation Engineers. Trip Generation Handbook, 3rd ed. Washington, DC, Sept. 2017.

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addition, not all of the vehicle trips expected to be generated by the proposed development represent new trips on the study area roadway system. Accordingly, ITE Trip Generation Handbook methodologies provide data to support a portion of the vehicles visiting a proposed gas station and coffee shop may already be present in the adjacent passing traffic stream (pass-by trips). Table 5 summarizes the trip-generation characteristics of the proposed development and the calculations are provided in the Appendix.

As shown in Table 5, the proposed development is estimated to generate 53 new trips (27 entering and 26 exiting) during the weekday AM peak hour, 50 new trips (46 entering and 46 exiting) during the weekday PM peak hour, and 64 new trips (32 entering and 32 exiting) during the Saturday midday peak hour.



**Table 5 Trip-Generation Characteristics Summary**

Peak Hour/Direction	Total Trips <sup>a</sup>	Internal Trips <sup>b</sup>	External Trips <sup>c</sup>	Pass-By Trips <sup>d</sup>	New Trips <sup>e</sup>
<b>Weekday AM</b>					
Enter	142	19	123	96	27
Exit	141	19	122	96	26
Total	283	38	245	192	53
<b>Weekday PM</b>					
Enter	119	12	107	82	25
Exit	119	12	107	82	25
Total	238	24	214	164	50
<b>Saturday Midday</b>					
Enter	156	21	135	103	32
Exit	156	21	135	103	32
Total	312	42	270	206	64

<sup>a</sup> From Table 4.  
<sup>b</sup> Based on ITE Trip Generation Handbook and NCHRP 685 Internal Trip Capture Estimation Tool.  
<sup>c</sup> Total Trips minus Internal Trips.  
<sup>d</sup> Based on ITE Trip Generation Handbook.  
<sup>e</sup> External Trips minus Pass-By Trips.



### *Build Traffic Volumes*

The directional distribution of new site trips is dependent on the combination of a number of factors, including existing travel patterns, competing opportunities, and site access routes. The directional distribution of pass-by traffic was determined based on the existing travel patterns observed along Lowell Road and Central Street adjacent to the site as part of the traffic counts collected in September 2022. Based on the traffic-generation and distribution estimates for the proposed commercial development, the site trips were assigned to the adjacent roadway network. The project-generated traffic volumes are shown on Figures 5 through 7 for the weekday AM, weekday PM, and Saturday midday peak hours.

As presented in Figures 5 through 7 based on the trip-generation and distribution methodologies used within this traffic study, the proposed development is projected to increase peak hour traffic volumes in the range of 22 to 26 vehicles per hour along Central Avenue north of Lowell Road, 16 to 26 vehicles per hour along Lowell Road south of the proposed site driveway, and 6 to 12 vehicles per hour along Central Street east of the proposed site driveway. These minimal increases represent 1 additional vehicle every 2.3 to 10 minutes during the peak hours.

In accordance with ITE methodologies<sup>11</sup> and NHDOT guidance,<sup>12</sup> a development may result in a change in vehicular operations (i.e., noticeably drop level of service or increase volume to capacity ratios [v/c] ratios) if the addition of site trips would increase peak hour traffic volumes at an intersection by 100 vehicles or more. In general, traffic increases less than this threshold could be attributed to the fluctuation of vehicles due to driver patterns that occur during the day, on different days of a week, or different months of a year. As shown on Figures 5 through 7, the proposed development is not anticipated to exceed these thresholds and standard traffic engineering practice suggests that the proposed development would be expected to result in negligible impacts to the adjacent roadway system.<sup>13</sup>

The project-generated traffic volumes were combined with the No-Build traffic volumes to develop the Build peak-hour traffic-volume networks. The 2023 Build weekday AM, weekday PM, and Saturday midday peak-hour traffic volumes are depicted on Figure 8. The 2033 Build weekday AM, weekday PM, and Saturday midday peak-hour traffic volumes are illustrated on Figure 9.

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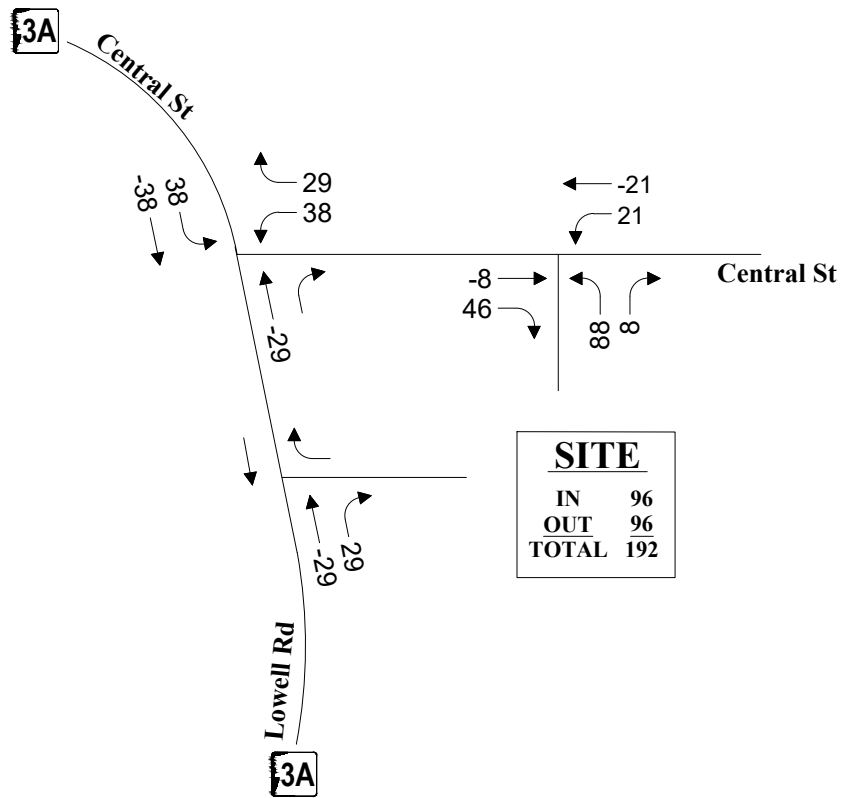
<sup>11</sup> Transportation Impact Analyses for Site Development: An ITE Proposed Recommended Practice. Washington, DC: Institute of Transportation Engineers, 2010.

<sup>12</sup> Bollinger, Robert E. Inter-Department Communication. New Hampshire Department of Transportation, Bureau of Traffic. 17 Feb. 2010.

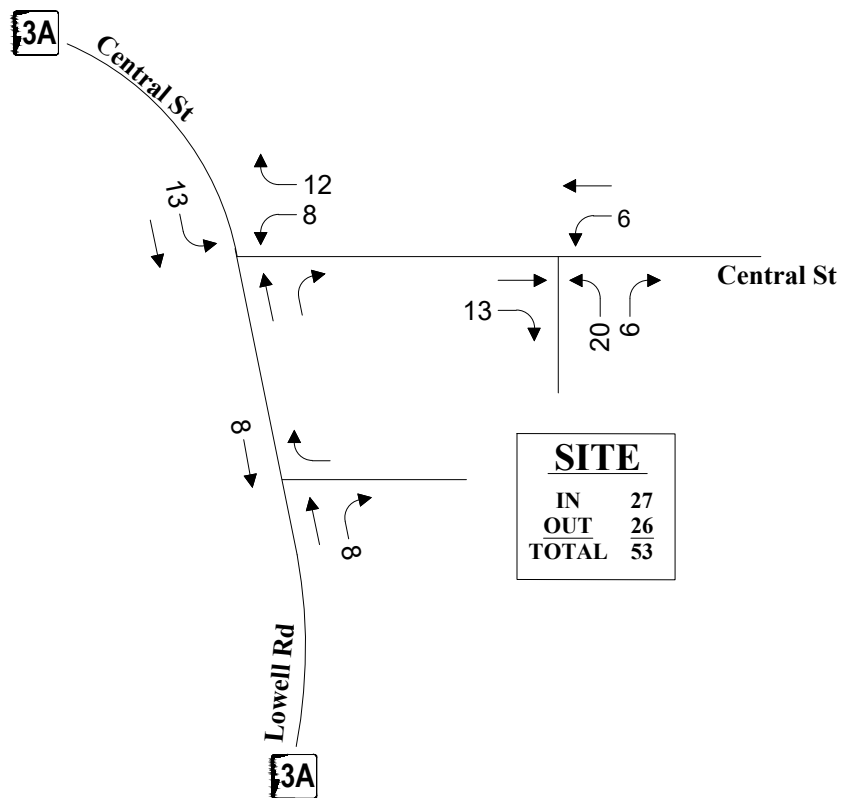
<sup>13</sup> Central Street north of Lowell Road = 22-26 vehicles per hour, Lowell Road south of proposed site driveway = 16-26 vehicles per hour, and Central Street east of proposed site driveway = 6-12 vehicles per hour.



### Pass-By Trips



### New Trips



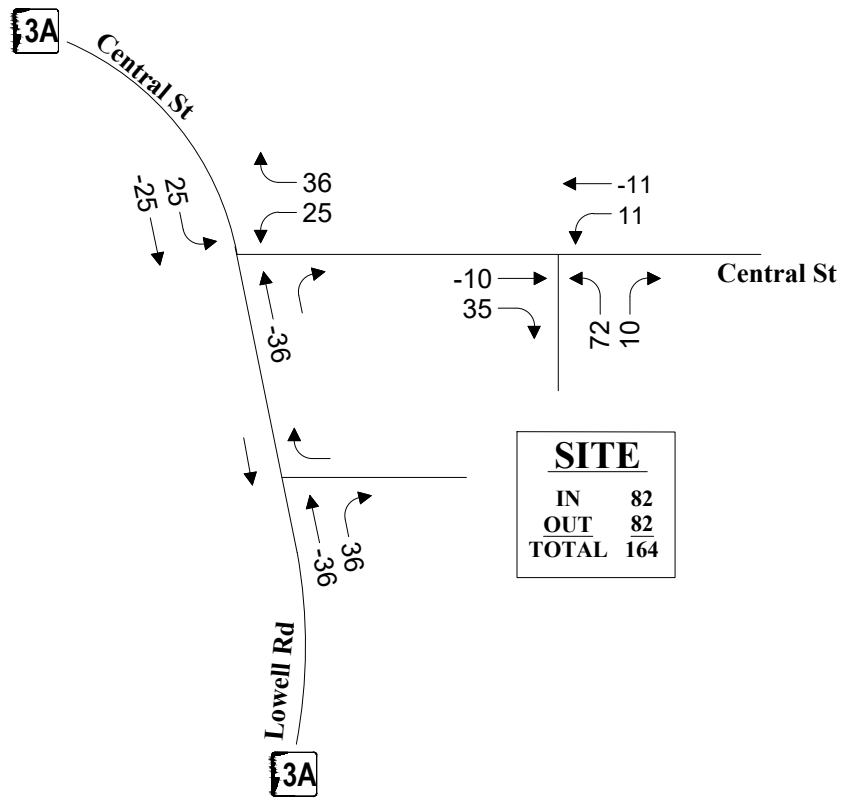
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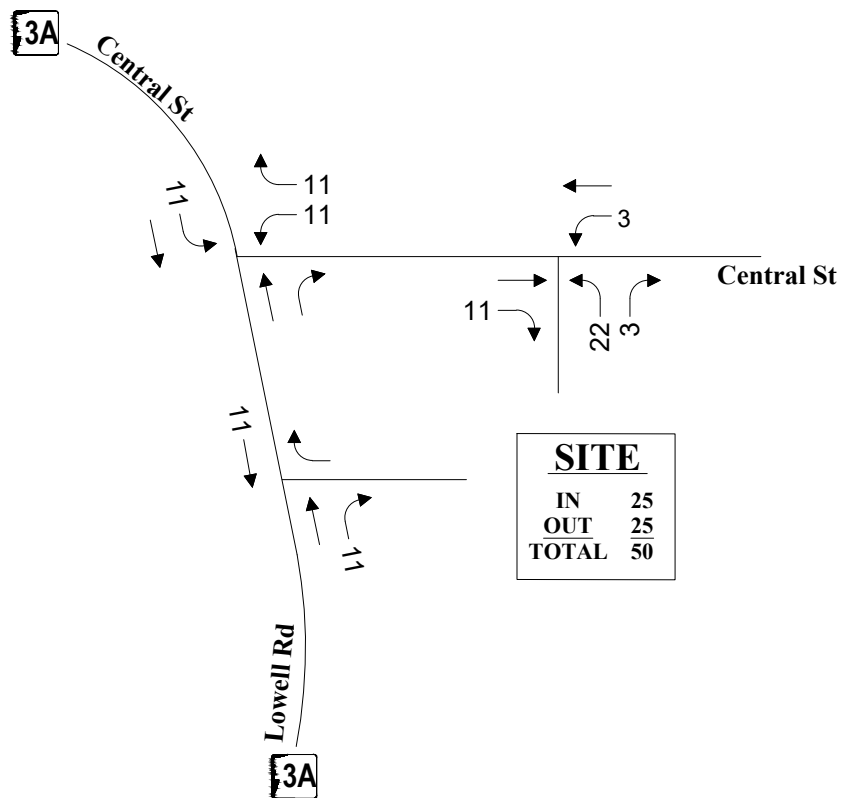
Weekday Morning  
Peak Hour Traffic Volumes

Figure 5

**Pass-By Trips**



**New Trips**



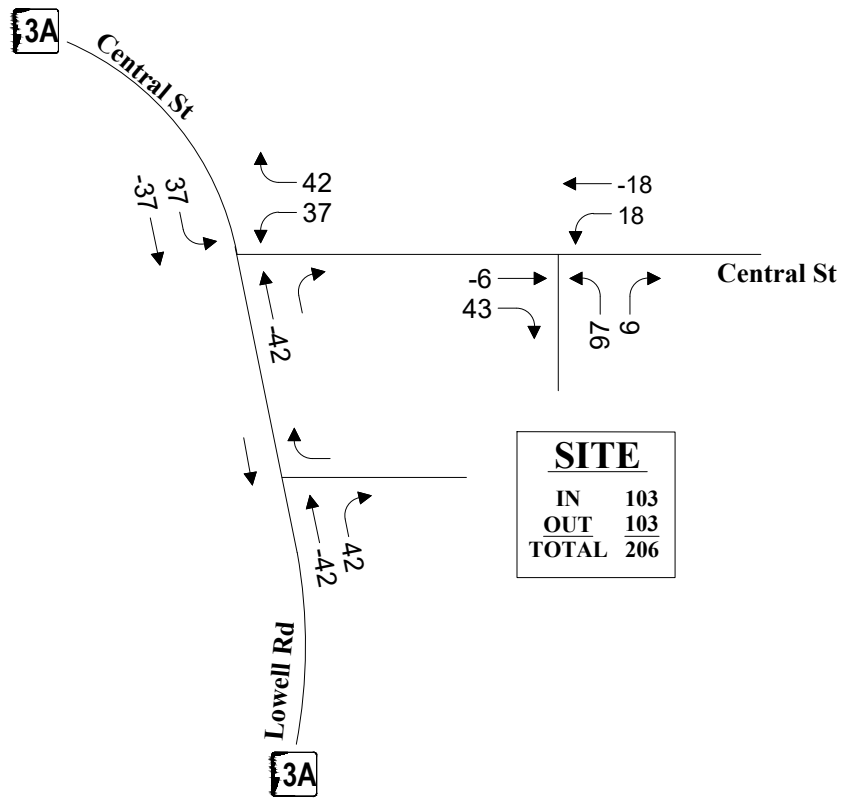
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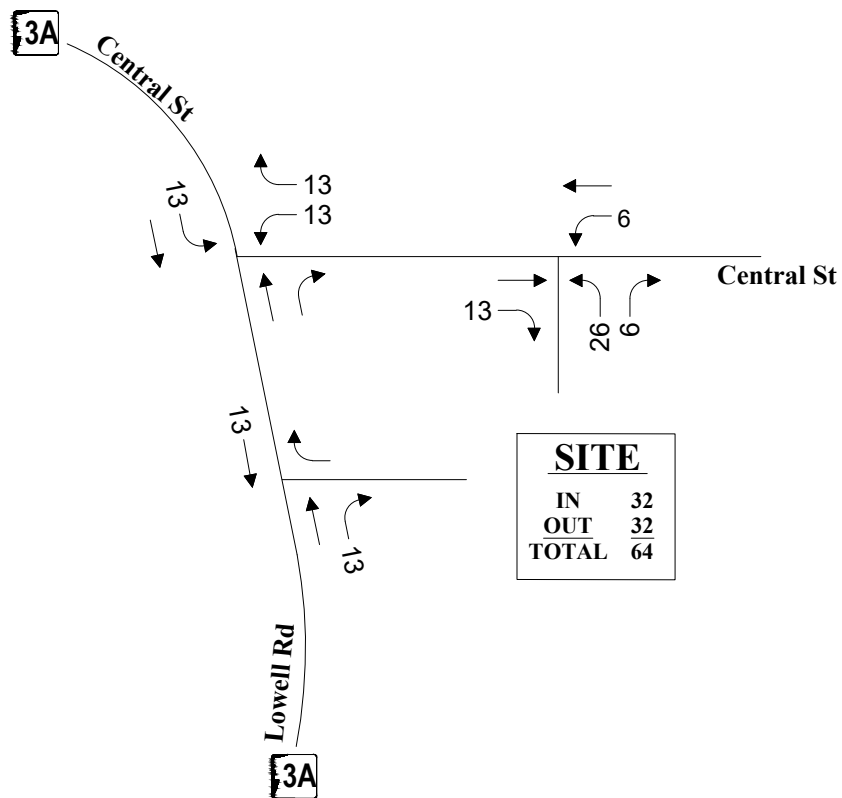
Weekday Evening  
Peak Hour Traffic Volumes

**Figure 6**

### Pass-By Trips



### New Trips



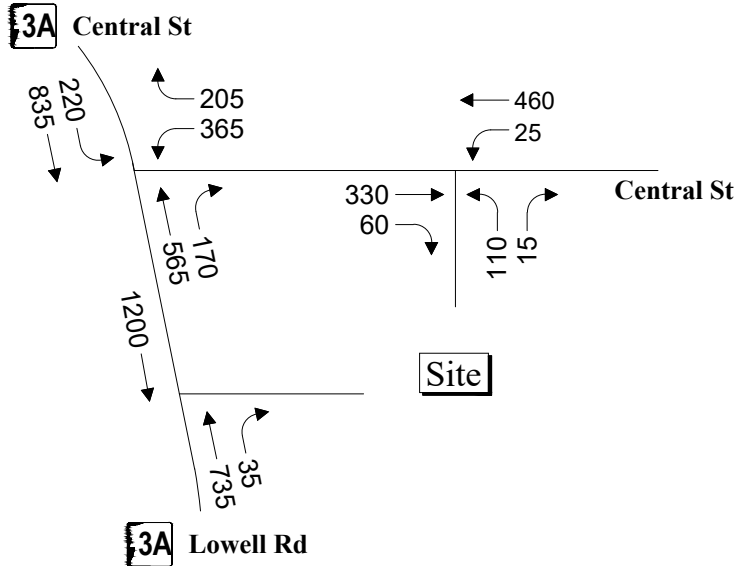
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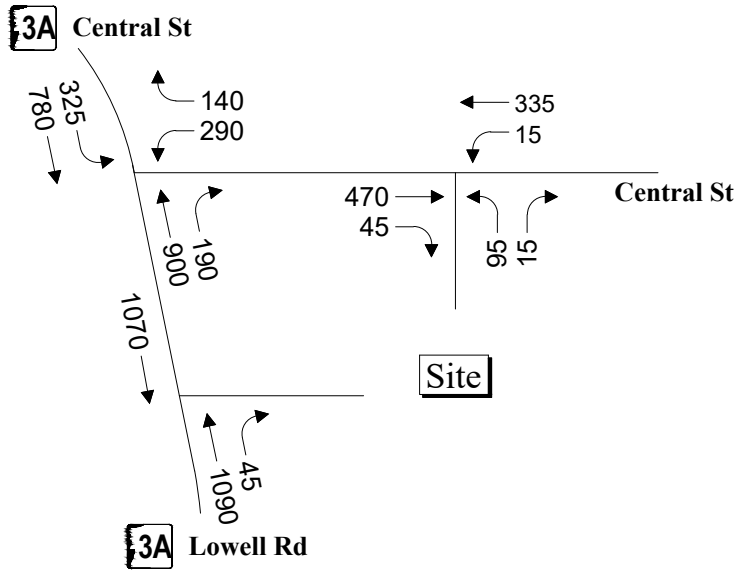
Saturday Midday  
Peak Hour Traffic Volumes

Figure 7

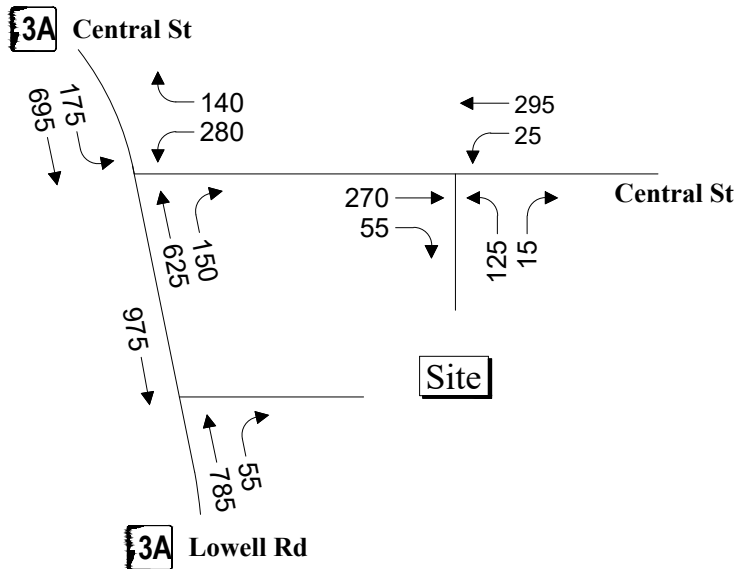
**Weekday Morning**



**Weekday Evening**



**Saturday Midday**



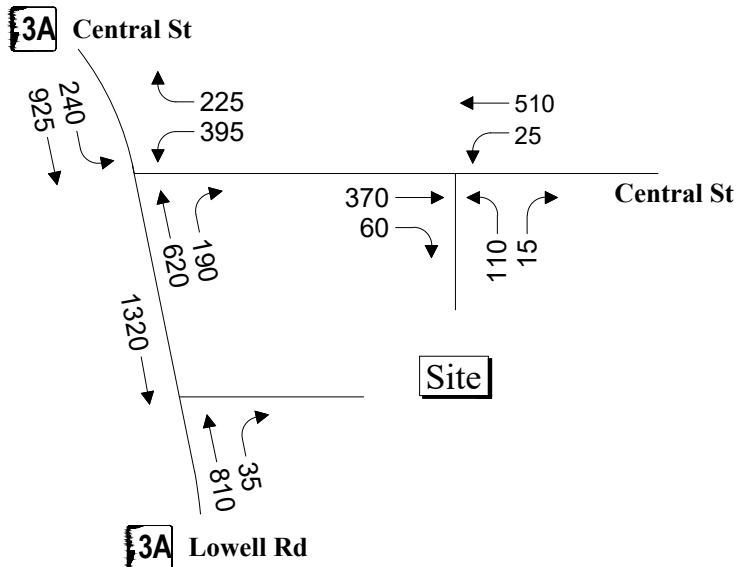
↑  
Not to Scale



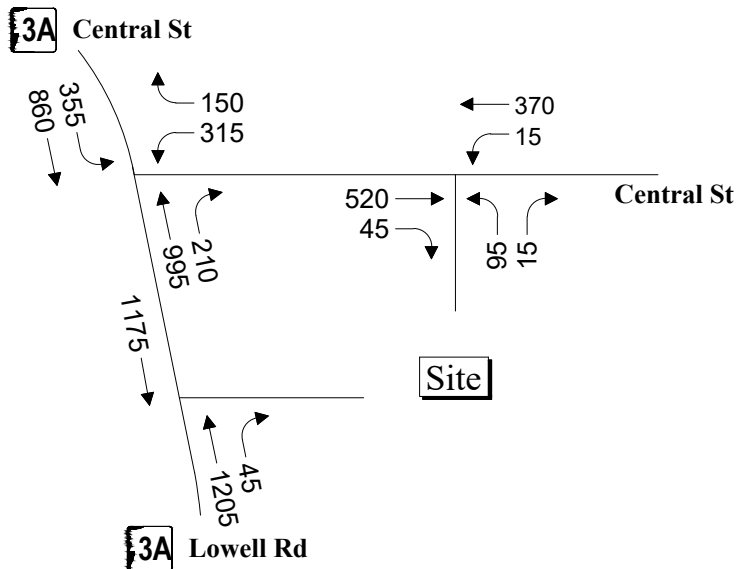
2023 Build  
Peak Hour Traffic Volumes

**Figure 8**

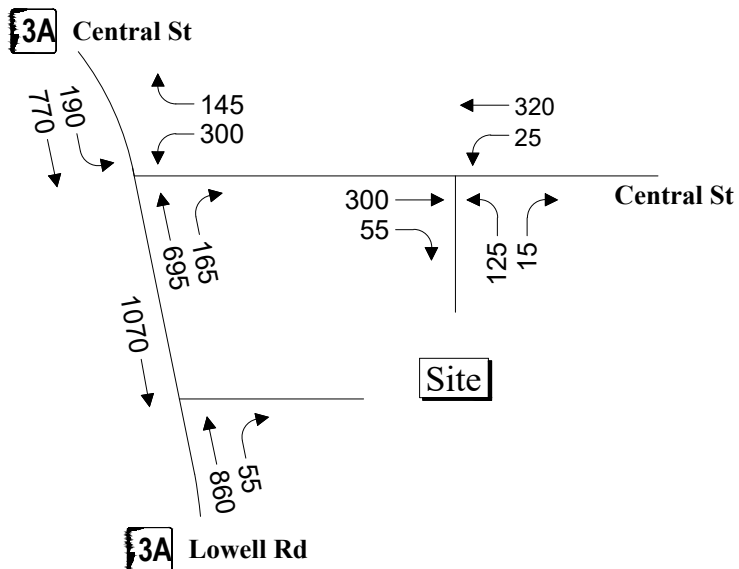
**Weekday Morning**



**Weekday Evening**



**Saturday Midday**





### Capacity and Queue Analyses

Analyses were performed for the study area intersections to examine operations under future traffic-volume conditions without the development (2023 and 2033 No-Build) and with the development (2023 and 2033 Build). The comparison of the No-Build and Build intersection operations help to demonstrate a project's impacts on the adjacent roadway network. A summary of the 2023 traffic-volume operations is reflected in Table 6 and the 2033 analyses are summarized in Table 7. The capacity analysis worksheets are provided in the Appendix.

The peak hour factor (PHF) is a measure of traffic demand fluctuations within the peak hour and the concentration of traffic volumes is not anticipated to remain stagnant with the increase in future traffic volumes. In conformance with NHDOT Bureau of Traffic's guidelines for intersection analyses, existing PHFs were increased to 0.90 for the 2033 No-Build and Build traffic volume conditions.<sup>14</sup> For those approaches where existing PHFs were observed to be above 0.90, the PHFs were used as observed without a reduction.

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<sup>14</sup> Ibid. 4.



**Table 6 Capacity Analysis Summary 2023 Opening Year Conditions**

Intersection/Peak Hour/ Critical Movement or Lane Group	2023 No-Build					2023 Build				
	v/c	Delay	LOS	50th % Queue	95th % Queue	v/c	Delay	LOS	50th % Queue	95th % Queue
<b>Lowell Road and Central Street</b>										
<b>Weekday AM</b>										
Central St WB Left	1.22	157.9	F	313	371	1.40	228.4	F	391	445
Central St WB Right	0.18	16.4	B	11	31	0.25	16.5	B	25	46
Lowell Rd NB Through	0.72	20.5	C	259	385	0.70	20.0	C	243	361
Lowell Rd NB Right	0.12	3.5	A	0	14	0.12	3.5	A	0	14
Central St SB Left	0.53	31.0	C	98	167	0.67	34.7	C	131	236
Central St SB Through	0.73	9.3	A	235	360	0.70	8.8	A	216	329
<i>Overall Intersection</i>	<i>0.86</i>	<i>37.9</i>	<i>D</i>	<i>--</i>	<i>--</i>	<i>0.88</i>	<i>53.5</i>	<i>D</i>	<i>--</i>	<i>--</i>
<b>Weekday PM</b>										
Central St WB Left	0.92	65.2	E	168	286	1.06	104.7	F	218	346
Central St WB Right	0.12	18.3	B	14	41	0.20	18.9	B	30	63
Lowell Rd NB Through	1.09	80.0	F	682	902	1.05	65.7	E	634	853
Lowell Rd NB Right	0.15	3.4	A	12	28	0.16	3.4	A	16	32
Central St SB Left	0.93	67.9	E	178	336	1.05	98.5	F	220	388
Central St SB Through	0.64	7.3	A	194	290	0.62	7.0	A	182	273
<i>Overall Intersection</i>	<i>1.02</i>	<i>46.8</i>	<i>D</i>	<i>--</i>	<i>--</i>	<i>1.05</i>	<i>50.1</i>	<i>D</i>	<i>--</i>	<i>--</i>

v/c = volume-to-capacity ratio.  
 Delay in seconds.  
 Queue lengths in feet (HCM 6<sup>th</sup> queues lengths in vehicles multiplied by 25 foot vehicle spacing).

**Table 6 Capacity Analysis Summary 2023 Opening Year Conditions (Continued)**

Intersection/Peak Hour/ Critical Movement or Lane Group	2023 No-Build						2023 Build					
	v/c	Delay	LOS	50th % Queue	95th % Queue		v/c	Delay	LOS	50th % Queue	95th % Queue	
<b>Lowell Road and Central Street</b>												
<b>Saturday Midday</b>												
Central St WB Left	0.78	42.1	D	146	246		0.89	54.0	D	184	325	
Central St WB Right	0.06	15.9	B	0	26		0.10	15.4	B	0	31	
Lowell Rd NB Through	0.77	21.5	C	301	444		0.74	21.1	C	270	398	
Lowell Rd NB Right	0.10	3.4	A	0	13		0.10	3.5	A	0	13	
Central St SB Left	0.39	29.3	C	72	125		0.54	30.8	C	103	170	
Central St SB Through	0.61	6.7	A	174	247		0.59	6.9	A	160	226	
<i>Overall Intersection</i>	<i>0.73</i>	<i>17.4</i>	<i>B</i>	<i>--</i>	<i>--</i>		<i>0.74</i>	<i>20.1</i>	<i>C</i>	<i>--</i>	<i>--</i>	
<b>Central Street and Site Driveway</b>												
<b>Weekday AM</b>												
Central St WB Left	--	--	--	--	--		0.02	8.3	A	--	2	
Site Driveway NB Approach	--	--	--	--	--		0.47	27.6	D	--	60	
<b>Weekday PM</b>												
Central St WB Left	--	--	--	--	--		0.02	8.7	A	--	1	
Site Driveway NB Approach	--	--	--	--	--		0.40	24.6	C	--	48	
<b>Saturday Midday</b>												
Central St WB Left	--	--	--	--	--		0.02	8.0	A	--	2	
Site Driveway NB Approach	--	--	--	--	--		0.37	19.1	C	--	42	

v/c = volume-to-capacity ratio.  
 Delay in seconds.  
 Queue lengths in feet (HCM 6<sup>th</sup> queue lengths in vehicles multiplied by 25 foot vehicle spacing).





**Table 7 Capacity Analysis Summary 2033 Design Year Conditions**

Intersection/Peak Hour/ Critical Movement or Lane Group	2033 No-Build					2033 Build				
	v/c	Delay	LOS	50th % Queue	95th % Queue	v/c	Delay	LOS	50th % Queue	95th % Queue
<b>Lowell Road and Central Street</b>										
<b>Weekday AM</b>										
Central St WB Left	1.15	130.3	F	269	443	1.28	181.2	F	329	510
Central St WB Right	0.15	17.3	B	7	47	0.22	17.3	B	19	65
Lowell Rd NB Through	0.78	22.3	C	303	450	0.75	21.3	C	281	416
Lowell Rd NB Right	0.13	3.4	A	0	15	0.14	3.5	A	5	20
Central St SB Left	0.60	34.1	C	111	186	0.75	40.5	D	146	268
Central St SB Through	0.80	11.7	B	294	465	0.77	10.6	B	269	416
<i>Overall Intersection</i>	<i>0.90</i>	<i>32.4</i>	<i>C</i>	<i>--</i>	<i>--</i>	<i>0.90</i>	<i>42.1</i>	<i>D</i>	<i>--</i>	<i>--</i>
<b>Weekday PM</b>										
Central St WB Left	0.94	71.1	E	173	331	1.08	109.6	F	224	393
Central St WB Right	0.13	18.4	C	19	51	0.22	19.1	B	37	79
Lowell Rd NB Through	1.19	118.1	F	793	1,034	1.15	102.0	F	747	988
Lowell Rd NB Right	0.18	3.5	A	18	36	0.18	3.5	A	21	41
Central St SB Left	1.03	94.2	F	214	382	1.15	131.0	F	260	433
Central St SB Through	0.71	8.5	A	233	356	0.69	8.1	A	220	334
<i>Overall Intersection</i>	<i>1.10</i>	<i>64.7</i>	<i>E</i>	<i>--</i>	<i>--</i>	<i>1.13</i>	<i>67.1</i>	<i>E</i>	<i>--</i>	<i>--</i>

v/c = volume-to-capacity ratio.  
 Delay in seconds.  
 Queue lengths in feet (HCM 6<sup>th</sup> queue lengths in vehicles multiplied by 25 foot vehicle spacing).

**Table 7 Capacity Analysis Summary 2033 Design Year Conditions (Continued)**

Intersection/Peak Hour/ Critical Movement or Lane Group	2033 No-Build						2033 Build					
	v/c	Delay	LOS	50th % Queue	95th % Queue		v/c	Delay	LOS	50th % Queue	95th % Queue	
<b>Lowell Road and Central Street</b>												
<b>Saturday MIDDAY</b>												
Central St WB Left	0.83	48.6	D	153	281		0.94	65.1	E	190	359	
Central St WB Right	0.06	16.9	B	0	28		0.10	16.5	B	0	35	
Lowell Rd NB Through	0.83	24.4	C	355	524		0.80	23.3	C	320	471	
Lowell Rd NB Right	0.11	3.4	A	0	14		0.11	3.4	A	0	14	
Central St SB Left	0.44	31.0	D	79	140		0.59	33.3	C	111	185	
Central St SB Through	0.65	7.2	A	200	300		0.64	7.4	A	184	274	
<i>Overall Intersection</i>	<i>0.78</i>	<i>19.4</i>	<i>B</i>	<i>--</i>	<i>--</i>		<i>0.79</i>	<i>22.4</i>	<i>C</i>	<i>--</i>	<i>--</i>	
<b>Central Street and Site Driveway</b>												
<b>Weekday AM</b>												
Central St WB Left	--	--	--	--	--		0.03	8.4	A	--	2	
Site Driveway NB Approach	--	--	--	--	--		0.54	34.1	D	--	72	
<b>Weekday PM</b>												
Central St WB Left	--	--	--	--	--		0.02	8.9	A	--	2	
Site Driveway NB Approach	--	--	--	--	--		0.46	29.4	D	--	58	
<b>Saturday MIDDAY</b>												
Central St WB Left	--	--	--	--	--		0.02	8.1	A	--	2	
Site Driveway NB Approach	--	--	--	--	--		0.41	21.1	C	--	50	

v/c = volume-to-capacity ratio.  
 Delay in seconds.  
 Queue lengths in feet (HCM 6<sup>th</sup> queue lengths in vehicles multiplied by 25 foot vehicle spacing).



### *Lowell Road and Central Street*

As previously documented, the Lowell Road and Central Street signalized intersection operates with constraints on the Central Street westbound left-turn lane during the weekday AM peak hour and the Lowell Road northbound through lane during the weekday PM peak hour. By increasing traffic volumes minimally within the lane groups that are overcapacity, delays increase exponentially based on HCM calculations. As shown with the addition of future traffic growth independent of the proposed development, the delays increase by 25.7 seconds within the Central Street westbound left-turn lane between 2022 Existing and 2032 No-Build weekday AM peak hour traffic conditions and by 20.9 seconds within the Lowell Road northbound through lane between 2022 Existing and 2032 No-Build weekday PM peak hour traffic conditions.

A comparison of the proposed development's traffic impacts can be shown under the No-Build and Build Saturday midday peak hour conditions as this condition is shown to have capacity available under existing and future traffic volumes. Under 2023 No-Build and Build conditions, the proposed development is shown to increase overall intersection operations by 2.7 seconds with the Saturday midday peak hour traffic volumes and capacity is shown to be available with the v/c ratios below 1.00. Similarly, the addition of site trips to the 2033 No-Build traffic volumes (i.e., 2033 Build) results in a minor increase of 3 seconds during the Saturday midday peak hour conditions.

### *Central Street and Proposed Site Driveway*

During the 2023 and 2033 Build traffic volume conditions, the critical movements at the Central Street and site driveway unsignalized intersection are projected to operate at LOS D or better for the weekday AM, weekday PM, and Saturday midday peak hours. Vehicle queues are projected to be less than 4 vehicles on the site driveway approach.

## **Improvements**

The final component of a traffic study is the identification of improvement measures that are expected to be effective in eliminating or improving anticipated deficiencies resulting from the combination of existing, background, and project-generated traffic. Existing operational deficiencies have been documented at the Lowell Road and Central Street signalized intersection during the weekday commuting peak hours. In an effort to help improve operations, there is an opportunity for Town of Hudson officials and the applicant to work together in widening Lowell Road south of Central Street. Since the applicant owns a portion of the property in this area (along the east side of Lowell Road south of Central Street and along Central Street east of Lowell Road), the following measures have been investigated and are proposed as part of the proposed development project. These measures will be coordinated with Town staff.

- › The Lowell Road site driveway will be located near the southern portion of the property.
- › The Lowell Road northbound approach at Central Street consists of a through lane and an exclusive right-turn lane.
  - Between Central Street and the proposed site driveway, Lowell Road will be widened to extend the northbound right-turn lane southerly to the location of the proposed site driveway set at the southern end of the property.
  - From the proposed site driveway to the south, Lowell Road will be widened to provide a northbound right-turn lane for vehicles to enter the site.



- › The Central Street westbound approach consists of an exclusive left-turn lane and an exclusive right-turn lane.
  - The full access driveway on Central Street will be placed to the eastern end of the property appropriately separated from the existing Melendy Road intersection.
  - The Central Street westbound two-lane approach will be lengthened.
    - This improvement extends the turn lane to the proposed site driveway.
    - The additional two-lane storage allows more access to the Central Street westbound right-turn lane (onto Central Street northbound) where the 2033 Build average queues on the left-turn lane are not projected to block the extended right-turn lane.
- › The traffic signal timings will be optimized to adjust to these improvements and the future traffic volume conditions.

In accordance with National Cooperative Highway Research Program (NCHRP) Report 457 guidelines,<sup>15</sup> an evaluation was conducted to determine if the Lowell Road northbound right turns at the proposed site driveway met the warrant for an exclusive right-turn lane. In summary, the traffic volumes show that a Lowell Road northbound right-turn lane is warranted with 2033 Build weekday PM and Saturday midday traffic volumes as well as with 2033 Build weekday AM peak hour traffic volumes. The auxiliary lane calculation worksheets are provided in the Appendix.

Intersection analyses were conducted with these proposed improvements in place as reflected in Table 8 for the 2033 Build peak hour traffic volumes. The capacity analysis worksheets are provided in the Appendix. As shown, these improvements would result in operations that mitigate the project's traffic impacts at the Lowell Road and Central Street signalized intersection during the weekday AM, weekday PM, and Saturday midday peak hour conditions. In addition, available capacity is shown to be provided on the lane groups (i.e., v/c ratios < 1.00) during the weekday AM and Saturday midday peak hour conditions. Due to the traffic volumes developed for the weekday PM peak hour conditions, an additional Lowell Road northbound through lane is needed independent of the proposed development. This additional travel lane would require widening along Central Street north of the signalized intersection to receive the two northbound through lanes that could then join with the two lane approach to the Library Street signalized intersection. Properties to the north of the Lowell Road signalized intersection, however, are not under the control of the applicant.

<sup>15</sup> Bonneson, James A. and Michael D. Fontaine. Evaluating Intersection Improvements: An Engineering Study Guide. National Cooperative Highway Research Program Report 457. Washington, DC. Transportation Research Board, 2001.



**Table 8 Capacity Analysis Summary 2033 Design Year Conditions with Improvements**

Intersection/Peak Hour/ Critical Movement or Lane Group	2033 No-Build					2033 Build with Improvements				
	v/c	Delay	LOS	50th % Queue	95th % Queue	v/c	Delay	LOS	50th % Queue	95th % Queue
<b>Lowell Road and Central Street</b>										
<b>Weekday AM</b>										
Central St WB Left	1.15	130.3	F	269	443	0.95	60.9	E	245	430
Central St WB Right	0.15	17.3	B	7	47	0.25	14.0	B	35	77
Lowell Rd NB Through	0.78	22.3	C	303	450	0.89	37.3	D	347	563
Lowell Rd NB Right	0.13	3.4	A	0	15	0.13	3.9	A	2	16
Central St SB Left	0.60	34.1	C	111	186	0.71	37.8	D	142	244
Central St SB Through	0.80	11.7	B	294	465	0.85	18.1	B	379	587
<i>Overall Intersection</i>	<i>0.90</i>	<i>32.4</i>	<i>C</i>	<i>--</i>	<i>--</i>	<i>0.90</i>	<i>29.6</i>	<i>C</i>	<i>--</i>	<i>--</i>
<b>Weekday PM</b>										
Central St WB Left	0.94	71.1	E	173	331	1.12	132.9	F	285	467
Central St WB Right	0.13	18.4	C	19	51	0.21	23.0	C	44	91
Lowell Rd NB Through	1.19	118.1	F	793	1,034	1.12	92.0	F	899	1150
Lowell Rd NB Right	0.18	3.5	A	18	36	0.18	4.2	A	25	46
Central St SB Left	1.03	94.2	F	214	382	1.08	115.1	F	305	494
Central St SB Through	0.71	8.5	A	233	356	0.67	8.0	A	259	370
<i>Overall Intersection</i>	<i>1.10</i>	<i>64.7</i>	<i>E</i>	<i>--</i>	<i>--</i>	<i>1.10</i>	<i>64.5</i>	<i>E</i>	<i>--</i>	<i>--</i>

v/c = volume-to-capacity ratio.  
 Delay in seconds.  
 Queue lengths in feet (HCM 6<sup>th</sup> queue lengths in vehicles multiplied by 25 foot vehicle spacing).

**Table 8 Capacity Analysis Summary 2033 Design Year Conditions with Improvements (Continued)**

Intersection/Peak Hour/ Critical Movement or Lane Group	2033 No-Build						2033 Build with Improvements					
	v/c	Delay	LOS	50th % Queue	95th % Queue		v/c	Delay	LOS	50th % Queue	95th % Queue	
<b>Lowell Road and Central Street</b>												
<b>Saturday Midday</b>												
Central St WB Left	0.83	48.6	D	153	281		0.81	42.5	D	179	311	
Central St WB Right	0.06	16.9	B	0	28		0.11	16.0	B	4	38	
Lowell Rd NB Through	0.83	24.4	C	355	524		0.81	24.5	C	336	496	
Lowell Rd NB Right	0.11	3.4	A	0	14		0.11	2.9	A	0	12	
Central St SB Left	0.44	31.0	D	79	140		0.67	37.0	D	115	210	
Central St SB Through	0.65	7.2	A	200	300		0.66	9.0	A	227	338	
<i>Overall Intersection</i>	<i>0.78</i>	<i>19.4</i>	<i>B</i>	<i>--</i>	<i>--</i>		<i>0.78</i>	<i>20.5</i>	<i>C</i>	<i>--</i>	<i>--</i>	
<b>Central Street and Site Driveway</b>												
<b>Weekday AM</b>												
Central St WB Left	--	--	--	--	--		0.03	8.4	A	--	2	
Site Driveway NB Approach	--	--	--	--	--		0.54	34.1	D	--	72	
<b>Weekday PM</b>												
Central St WB Left	--	--	--	--	--		0.02	8.9	A	--	2	
Site Driveway NB Approach	--	--	--	--	--		0.46	29.4	D	--	58	
<b>Saturday Midday</b>												
Central St WB Left	--	--	--	--	--		0.02	8.1	A	--	2	
Site Driveway NB Approach	--	--	--	--	--		0.41	21.1	C	--	50	

v/c = volume-to-capacity ratio.  
 Delay in seconds.  
 Queue lengths in feet (HCM 6<sup>th</sup> queue lengths in vehicles multiplied by 25 foot vehicle spacing).



## Summary of Findings

Existing and future conditions in the study area have been described, analyzed, and evaluated with respect to traffic operations and the impact of the proposed commercial development to be located on the southeast corner of the Lowell Road and Central Street signalized intersection. Common traffic engineering practice suggests that a development may have a noticeable impact if the addition of site trips increases traffic volumes at an intersection by 100 vehicles per hour or more. Based on the findings of this traffic study, the site trips for the proposed development do not trigger this threshold through the study area intersections.

With the location of the subject in relation to the Lowell Road and Central Street signalized intersection, there is an opportunity to widen Lowell Road and Central Street to extend the existing travel lanes approaching the intersection. As part of the proposed development, the applicant is proposing to implement the following measures. These improvements will be coordinated with Town staff.

- › Extend the Lowell Road northbound two-lane approach from Central Street to south of the proposed site driveway.
- › Extend the Central Street westbound two-lane approach from Lowell Road easterly to the proposed site driveway.
- › Optimize the traffic signal timings.

With these improvements constructed, intersection operations are projected to create available capacity within the currently oversaturated lane groups during the weekday AM and Saturday midday peak hours. These improvements are also envisioned to assist Town officials with future improvements along the corridor.





## Appendix

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Traffic Count Data

Traffic-Volume Adjustment Data

Existing Intersection Operational Analyses

Background Developments Data

Trip-Generation Calculations

Future Intersection Operational Analyses

Mitigated Intersection Operational Analyses



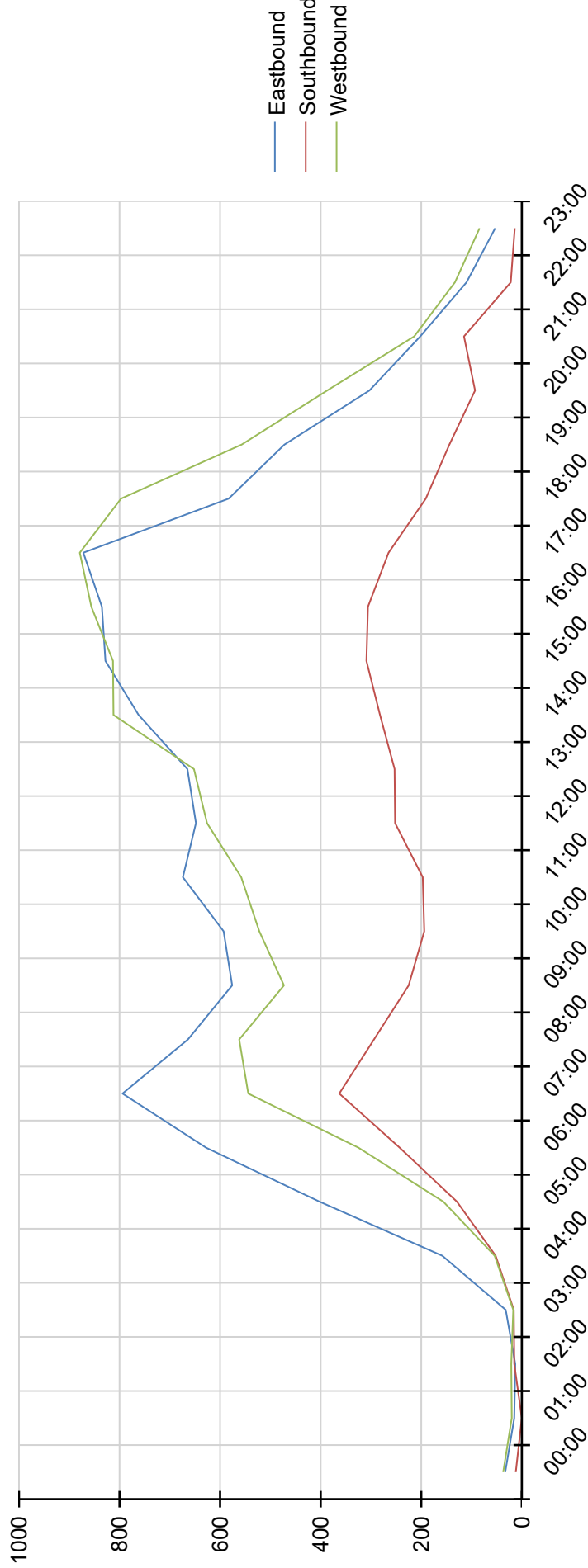
## Traffic Count Data

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**Intersection** Central & Lowell  
**Date** 9/7/2022

	Right	Through	Left	UTurn	Total
Eastbound	8	9211	1695	1	10915
Southbound	1312		2674		3986
Westbound	1875	8223	1		10099
<b>Total</b>	<b>3195</b>	<b>17434</b>	<b>4370</b>	<b>1</b>	<b>25000</b>





# Turning Movement Counts

Intersection Central & Lowell  
 Date 9/7/2022

	R	Eastbound			Southbound			Westbound		
		T	L	U	R	L	R	T	L	
00:00		26	7		5	7	5	32		
01:00		12	3				2	18		
02:00		13			1	14	3	18		
03:00		30	2		3	13	6	11		
04:00		149	9		7	45	6	48		
05:00		386	16		23	106	37	119		
06:00		576	52		71	172	51	274		
07:00	1	651	142		135	228	111	433		
08:00	1	599	64		92	202	89	473		
09:00	1	495	80		65	160	91	382		
10:00	1	531	61		50	144	101	421		
11:00		604	70		58	139	107	450	1	
12:00	2	573	73		72	180	129	497		
13:00		571	93	1	77	176	107	545		
14:00		626	136		118	164	135	677		
15:00	2	659	167		105	204	155	658		
16:00		630	205		114	192	142	714		
17:00		656	216		91	174	161	718		
18:00		489	94		63	128	151	646		
19:00		396	76		52	92	125	432		
20:00		242	61		35	58	90	297		
21:00		156	46		65	50	42	172		
22:00		97	13		4	18	18	115		
23:00		44	9		6	8	11	73		
<b>Total</b>	<b>8</b>	<b>9211</b>	<b>1695</b>	<b>1</b>	<b>1312</b>	<b>2674</b>	<b>1875</b>	<b>8223</b>	<b>1</b>	

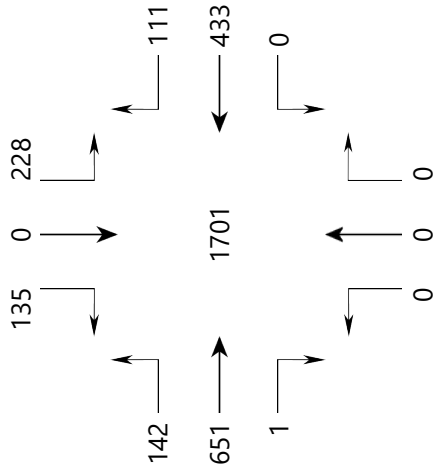
Meeting Date: 11/29/23

DIGITAL 2023 Central Gas Site Plan - Attachment D

Intersection Central & Lowell  
Date 9/7/2022

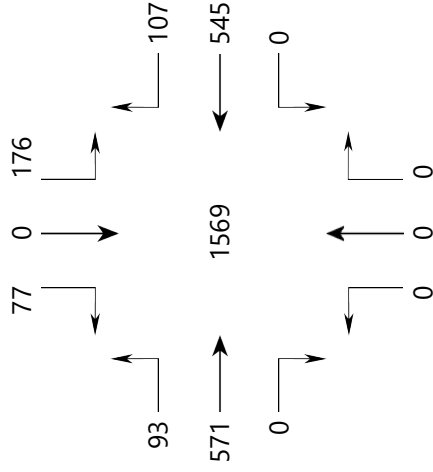
**AM PEAK HOUR VOLUME (0:00-10:45)**

FROM 07:00 TO 08:00



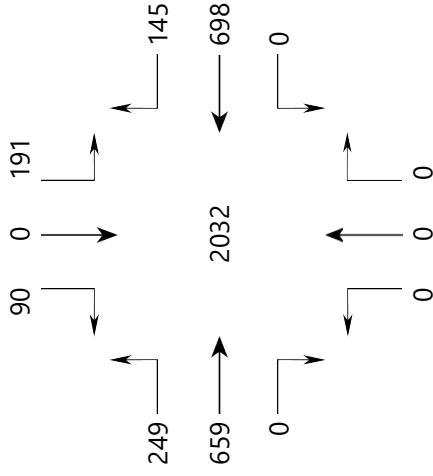
**MID-DAY PEAK HOUR VOLUME (11:00-14:00)**

FROM 13:00 TO 14:00



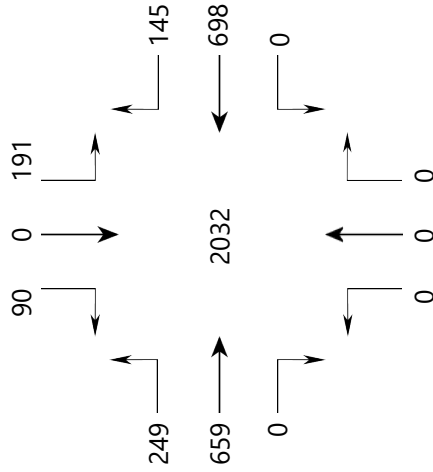
**PM PEAK HOUR VOLUME (14:15-23:45)**

FROM 16:45 TO 17:45



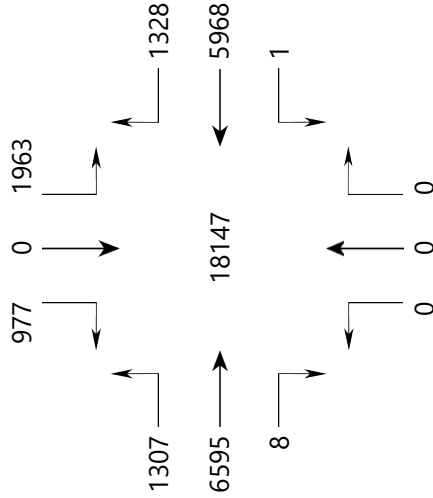
**OVERALL PEAK HOUR VOLUME**

FROM 16:45 TO 17:45



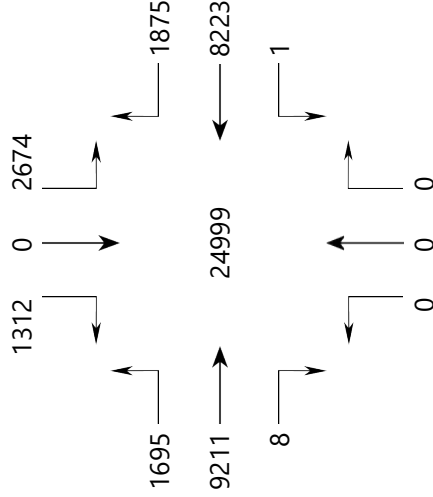
**DAYTIME TOTAL VOLUME**

FROM 07:00 TO 18:00



**SELECTED TIME VOLUME**

FROM 00:00 TO 23:59

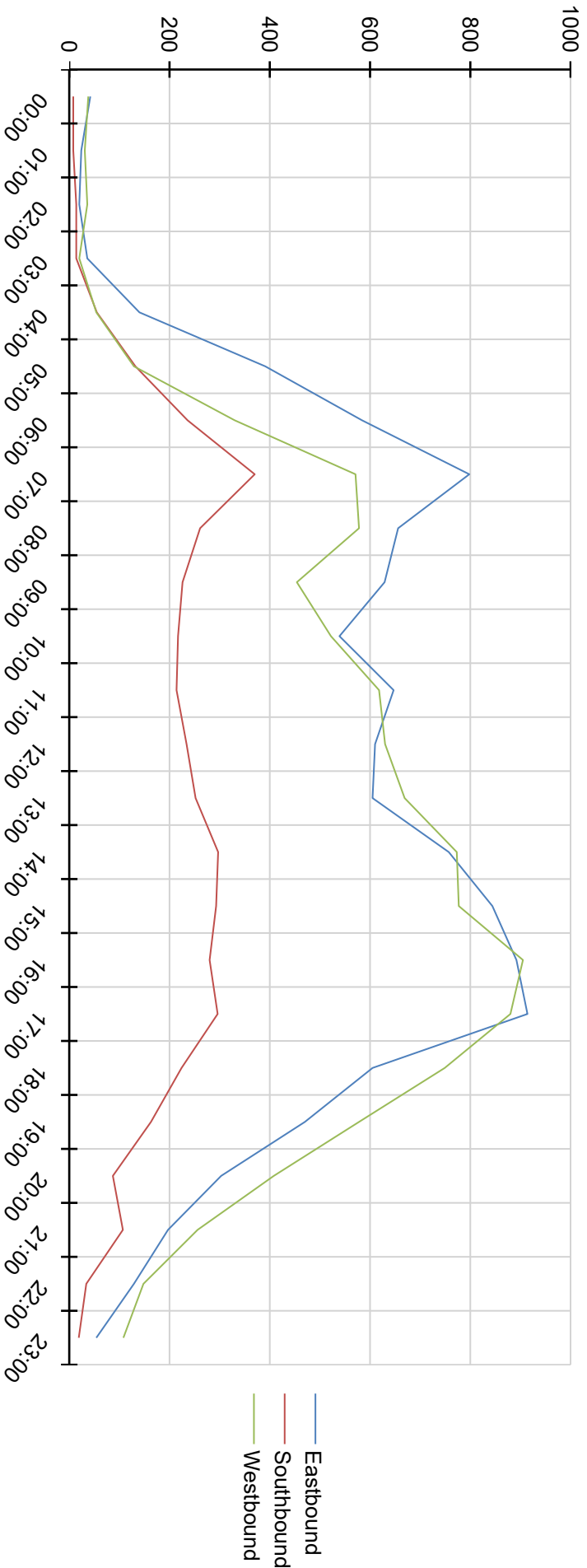


# GRIDS MART<sup>®</sup>

## Turning Movement Counts

Intersection Central & Lowell  
Date 9/8/2022

	Right	Through	Left	UTurn	Total
Eastbound	6	9188	1691	1	10886
Southbound	1273	1	2763	4	4041
Westbound	1925	8336		1	10262
<b>Total</b>	<b>3204</b>	<b>17525</b>	<b>4454</b>	<b>6</b>	<b>25189</b>







# Turning Movement Counts

Intersection Central & Lowell  
Date 9/8/2022

	Eastbound			Southbound			Westbound		
	R	T	U	R	T	U	R	T	U
00:00		31	11	2		6	5		33
01:00		22	2	4		4	7		24
02:00		20		3		11	3		33
03:00		33	3	2		12	10		10
04:00		132	8	11		44	9		45
05:00		374	17	24		107	28		101
06:00		528	56	63		172	54		276
07:00		665	133	129		241	128		443
08:00		598	58	92		169	100		478
09:00		559	70	65		161	84		370
10:00	1	482	56	61		155	99	1	423
11:00	1	576	70	54		160	118		500
12:00		541	69	62		172	140		490
13:00		536	69	83		169	127		542
14:00	1	609	147	116		181	170		603
15:00	1	659	184	92	1	199	129	1	648
16:00		683	209	87		193	172		733
17:00	1	663	250	85		211	154		725
18:00	1	498	105	73		151	110		639
19:00		399	71	65		98	116		462
20:00		256	47	26		61	87		321
21:00		162	35	53		54	39		217
22:00		115	14	12		22	18		130
23:00		47	7	9		10	18		90
<b>Total</b>	<b>6</b>	<b>9188</b>	<b>1691</b>	<b>1</b>	<b>1273</b>	<b>1</b>	<b>2763</b>	<b>4</b>	<b>8336</b>

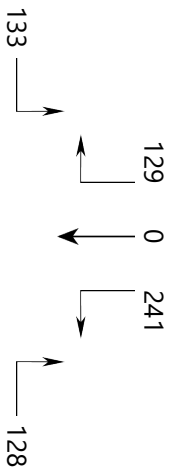
# GRIDS MART<sup>®</sup>

## Turning Movement Counts

Intersection Central & Lowell  
Date 9/8/2022

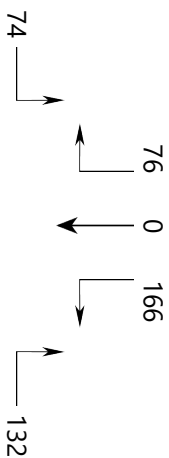
### AM PEAK HOUR VOLUME (0:00-10:45)

FROM 07:00 TO 08:00



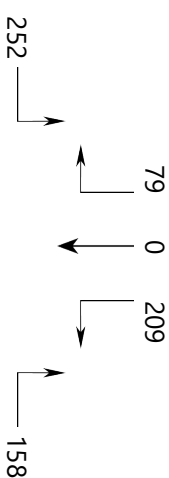
### MID-DAY PEAK HOUR VOLUME (11:00-14:00)

FROM 12:45 TO 13:45



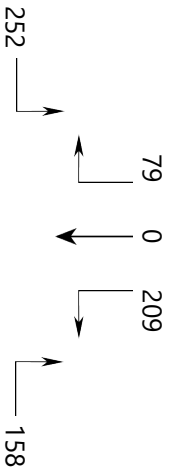
### PM PEAK HOUR VOLUME (14:15-23:45)

FROM 16:45 TO 17:45



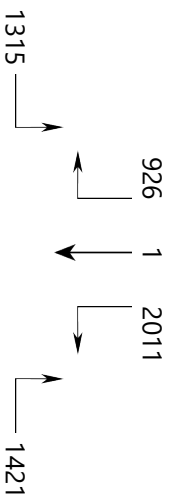
### OVERALL PEAK HOUR VOLUME

FROM 16:45 TO 17:45



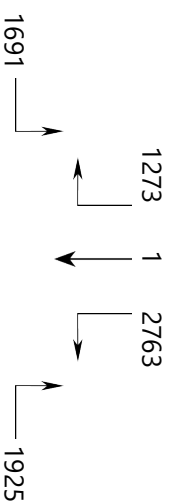
### DAYTIME TOTAL VOLUME

FROM 07:00 TO 18:00



### SELECTED TIME VOLUME

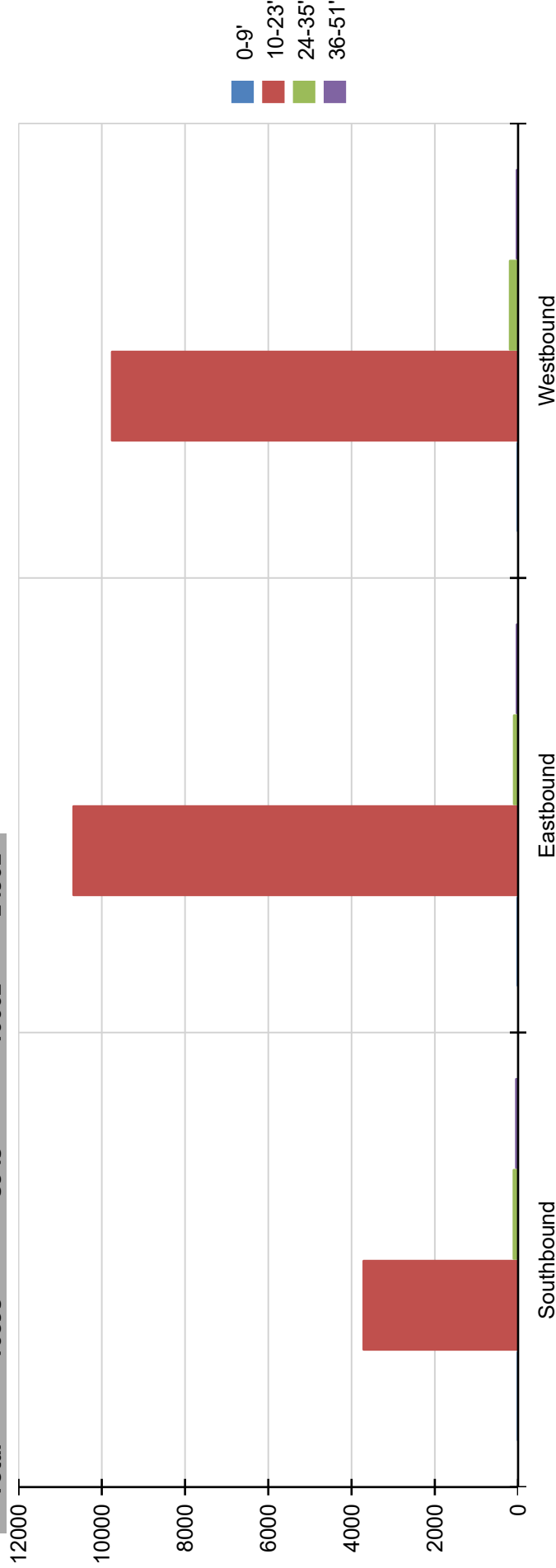
FROM 00:00 TO 23:59



Intersection Central & Lowell

Date 9/7/2022

	Eastbound	Southbound	Westbound	Total
0-9'	5	1	3	9
10-23'	10707	3738	9781	24226
24-35'	125	132	222	479
36-51'	58	74	56	188
<b>Total</b>	<b>10895</b>	<b>3945</b>	<b>10062</b>	<b>24902</b>





# Vehicle Classification Counts

Intersection Central & Lowell  
Date 9/7/2022

	Eastbound				Southbound				
	0-9'	10-23'	24-35'	36-51'	0-9'	10-23'	24-35'	36-51'	0-9'
00:00	0	27	4	1	0	7	3	2	0
01:00	0	14	0	0	0	0	0	0	0
02:00	0	11	2	0	0	7	4	4	0
03:00	0	31	1	0	0	7	6	1	0
04:00	0	138	8	8	0	28	10	8	0
05:00	0	376	13	8	0	86	29	11	0
06:00	0	625	1	2	1	230	5	4	0
07:00	1	779	10	3	0	350	9	1	0
08:00	1	660	3	0	0	287	2	1	0
09:00	0	568	8	0	0	223	1	1	0
10:00	0	583	6	4	0	188	4	2	0
11:00	0	669	3	2	0	194	1	0	0
12:00	1	641	2	4	0	246	3	2	0
13:00	1	659	3	2	0	243	6	2	2
14:00	0	753	7	2	0	273	3	2	0
15:00	0	823	5	0	0	304	1	2	0
16:00	1	832	0	2	0	295	5	3	0
17:00	0	871	1	0	0	264	1	0	0
18:00	0	582	1	0	0	187	2	2	1
19:00	0	462	8	1	0	134	4	4	0
20:00	0	272	20	9	0	73	8	12	0
21:00	0	184	7	7	0	93	12	7	0
22:00	0	99	9	1	0	10	9	2	0
23:00	0	48	3	2	0	9	4	1	0
<b>Total</b>	<b>5</b>	<b>10707</b>	<b>125</b>	<b>58</b>	<b>1</b>	<b>3738</b>	<b>132</b>	<b>74</b>	<b>3</b>



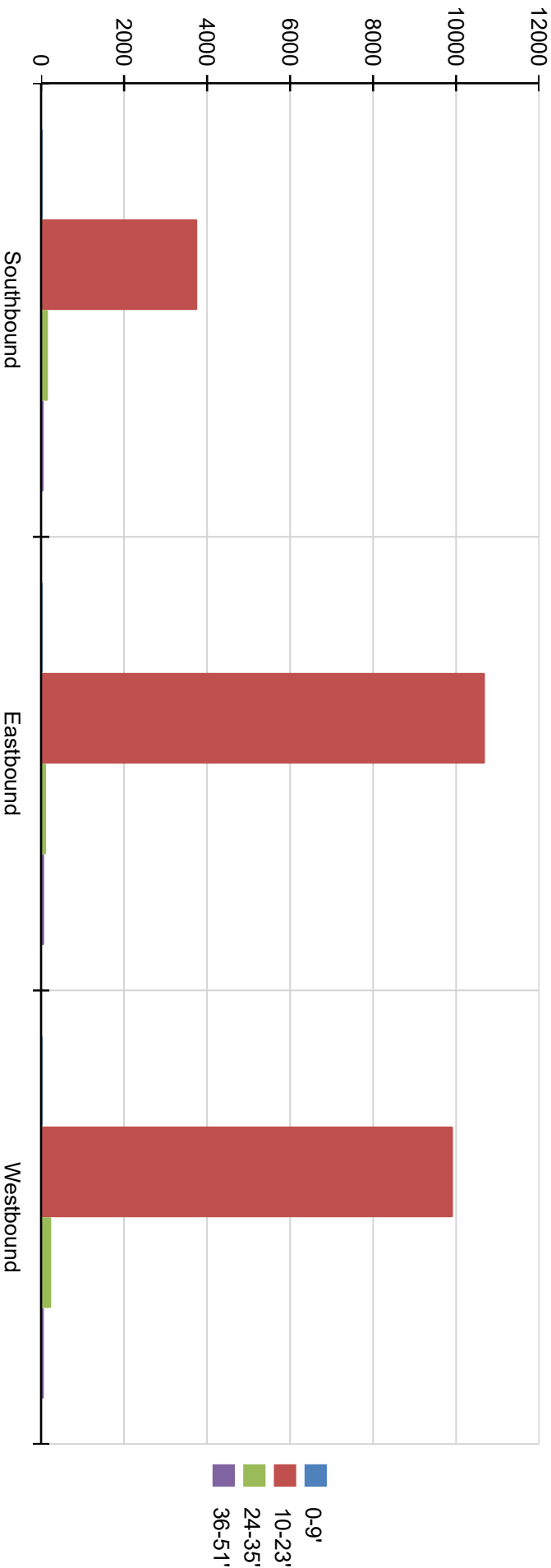
# Vehicle Classification Counts

Intersection Central & Lowell  
Date 9/7/2022

Westbound		
10-23'	24-35'	36-51'
34	3	0
19	1	0
17	3	1
15	2	0
48	4	2
137	8	5
314	10	1
532	9	1
537	17	4
466	5	0
510	10	2
547	7	2
616	7	2
644	4	2
800	9	2
795	12	5
845	8	0
872	6	1
791	3	1
528	21	4
338	32	11
177	28	6
121	8	3
78	5	1
<b>9781</b>	<b>222</b>	<b>56</b>

Intersection Central & Lowell  
Date 9/8/2022

	Eastbound	Southbound	Westbound	Total
0-9'	6	6	4	16
10-23'	10695	3762	9925	24382
24-35'	121	166	244	531
36-51'	48	63	66	177
<b>Total</b>	<b>10870</b>	<b>3997</b>	<b>10239</b>	<b>25106</b>



0-9'  
10-23'  
24-35'  
36-51'



# Vehicle Classification Counts

Intersection Central & Lowell  
Date 9/8/2022

	Eastbound				Southbound				
	0-9'	10-23'	24-35'	36-51'	0-9'	10-23'	24-35'	36-51'	0-9'
00:00	0	35	4	2	0	6	1	1	0
01:00	0	22	1	1	0	5	3	0	0
02:00	0	19	1	0	0	7	5	2	0
03:00	0	35	1	0	0	7	4	1	0
04:00	0	125	8	7	0	29	14	9	0
05:00	0	372	10	6	0	101	21	7	0
06:00	0	581	2	0	0	232	3	0	0
07:00	0	788	6	4	0	352	10	4	1
08:00	0	654	1	1	0	250	6	5	0
09:00	0	627	2	0	0	218	6	2	0
10:00	0	533	2	3	0	211	3	1	0
11:00	0	630	14	2	0	207	5	1	1
12:00	0	607	1	2	3	230	1	0	0
13:00	2	599	3	1	2	246	3	0	1
14:00	2	743	11	1	0	286	5	0	0
15:00	0	842	2	0	0	275	11	5	0
16:00	1	885	5	1	0	269	3	4	1
17:00	0	909	5	0	1	272	13	4	0
18:00	0	605	0	0	0	224	0	0	0
19:00	1	462	5	0	0	158	4	0	0
20:00	0	284	12	4	0	67	12	5	0
21:00	0	171	16	8	0	75	24	6	0
22:00	0	117	9	2	0	22	7	5	0
23:00	0	50	0	3	0	13	2	1	0
<b>Total</b>	<b>6</b>	<b>10695</b>	<b>121</b>	<b>48</b>	<b>6</b>	<b>3762</b>	<b>166</b>	<b>63</b>	<b>4</b>



# Vehicle Classification Counts

Intersection Central & Lowell  
Date 9/8/2022

Westbound			
10-23'	24-35'	36-51'	
36	1	1	
31	0	0	
33	3	0	
20	0	0	
42	12	0	
114	13	2	
318	9	3	
555	12	3	
557	16	5	
448	6	0	
504	12	4	
591	16	5	
621	8	1	
658	6	2	
760	12	1	
766	8	2	
895	6	1	
868	10	2	
747	1	1	
552	18	6	
360	33	10	
218	24	12	
136	8	3	
95	10	2	
<b>9925</b>	<b>244</b>	<b>66</b>	

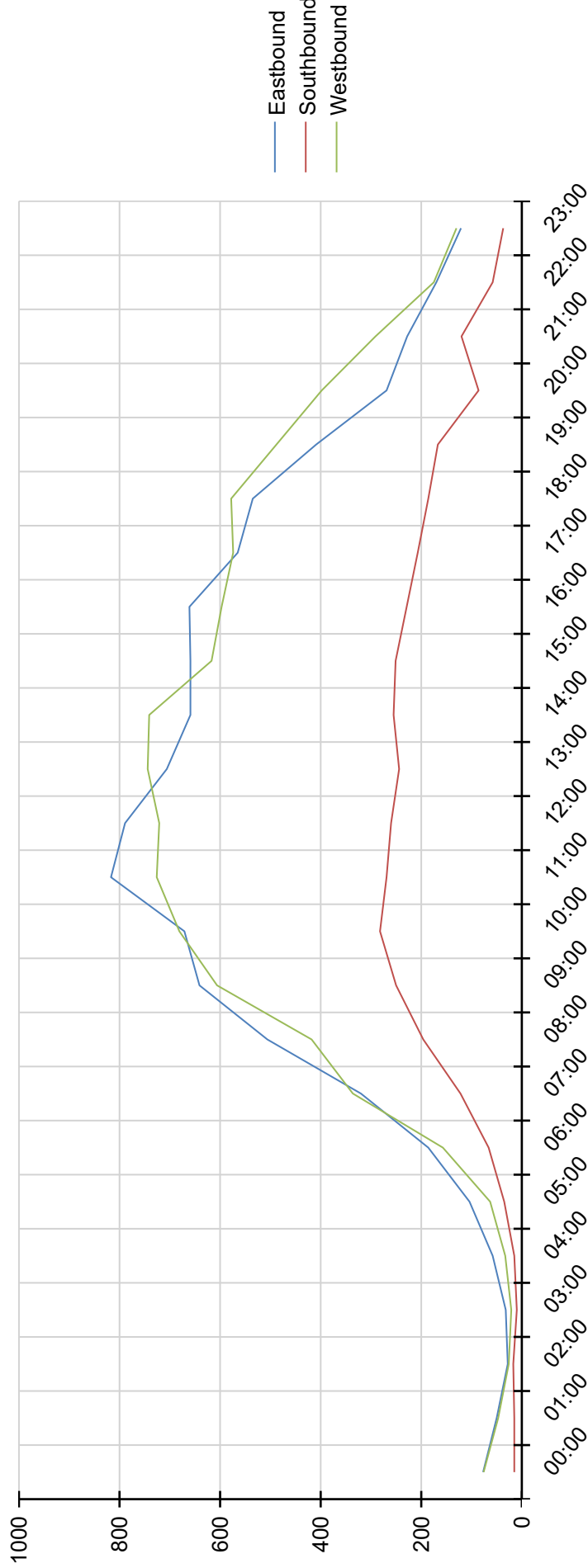
DIGITAL 10/8/23 Central Gas Site Plan - Attachment D

Meeting Date: 11/29/23



**Intersection** Central & Lowell  
**Date** 9/10/2022

	Right	Through	Left	UTurn	Total
Eastbound	9	8063	1189		9261
Southbound	1024	1	2366	1	3392
Westbound	1708	7536			9244
<b>Total</b>	<b>2741</b>	<b>15600</b>	<b>3555</b>	<b>1</b>	<b>21897</b>





# Turning Movement Counts

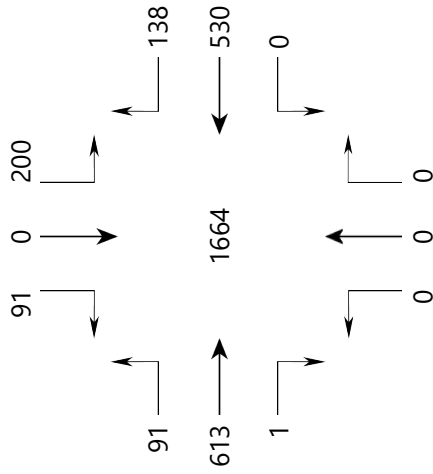
Intersection Central & Lowell  
 Date 9/10/2022

	Eastbound			Southbound			Westbound		
	R	T	L	R	L	U	R	T	
00:00	63	14	11	4	7	69			
01:00	41	9	7	8	7	40			
02:00	27	1	2	15	2	24			
03:00	31	1	1	9	3	18			
04:00	55	3	2	13	5	28			
05:00	98	6	12	23	17	46			
06:00	165	21	19	47	24	133			
07:00	289	31	44	78	51	285			
08:00	450	56	60	136	69	349			
09:00	564	77	84	166	104	502			
10:00	585	85	93	189	137	544			
11:00	720	94	74	195	134	592			
12:00	674	115	67	193	129	592			
13:00	616	90	58	186	129	615			
14:00	566	92	73	181	143	598			
15:00	563	93	82	169	129	488			
16:00	556	104	64	165	110	487			
17:00	485	80	57	149	106	468			
18:00	470	65	45	141	135	443			
19:00	362	47	53	114	85	403			
20:00	236	33	22	64	68	330			
21:00	193	35	61	59	56	235			
22:00	149	21	20	38	34	141			
23:00	105	16	13	24	24	106			
<b>Total</b>	<b>9</b>	<b>8063</b>	<b>1189</b>	<b>1024</b>	<b>1</b>	<b>2366</b>	<b>1</b>	<b>1708</b>	<b>7536</b>

Intersection Central & Lowell  
Date 9/10/2022

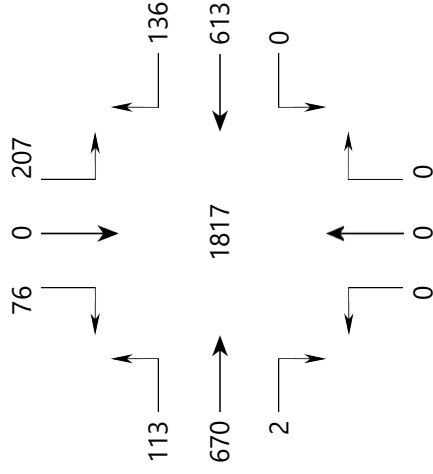
**AM PEAK HOUR VOLUME (0:00-10:45)**

FROM 09:45 TO 10:45



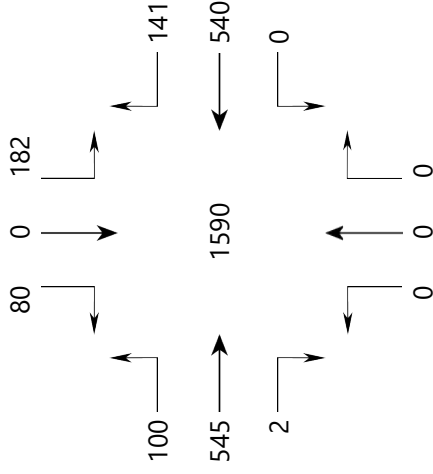
**MID-DAY PEAK HOUR VOLUME (11:00-14:00)**

FROM 11:30 TO 12:30



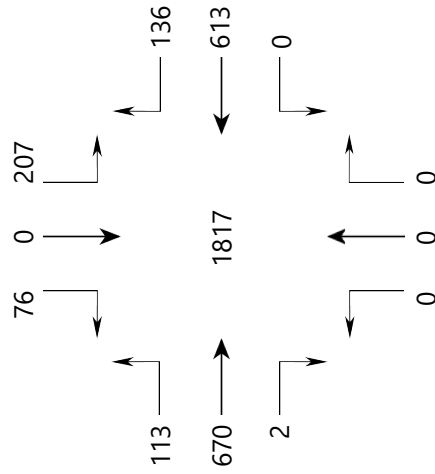
**PM PEAK HOUR VOLUME (14:15-23:45)**

FROM 14:15 TO 15:15



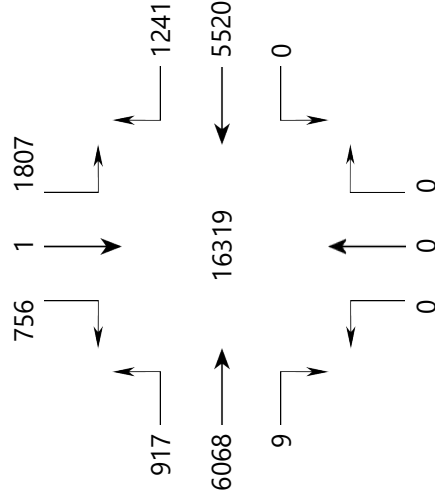
**OVERALL PEAK HOUR VOLUME**

FROM 11:30 TO 12:30



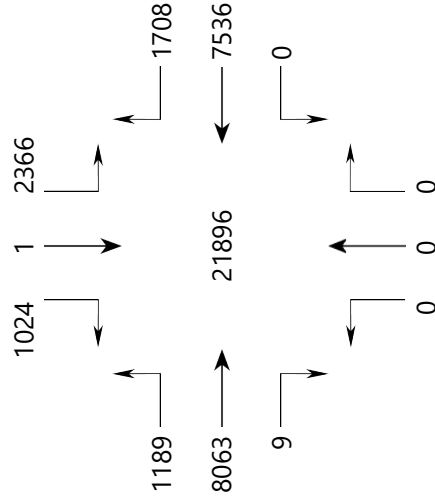
**DAYTIME TOTAL VOLUME**

FROM 07:00 TO 18:00



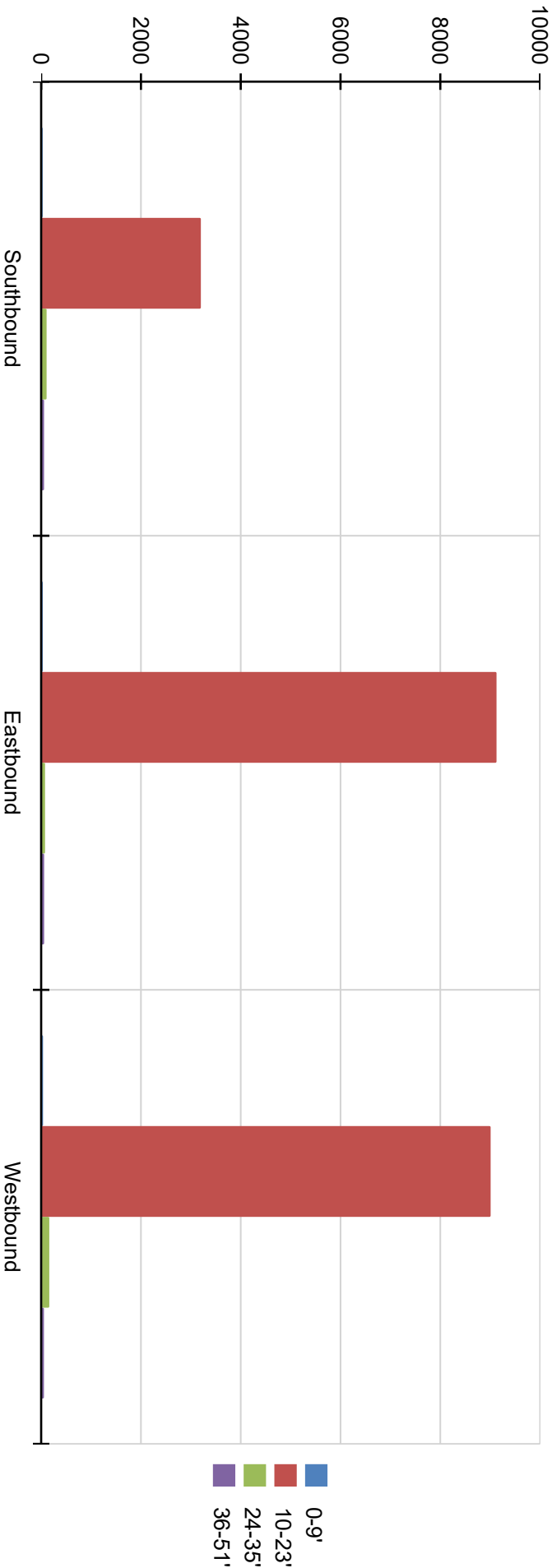
**SELECTED TIME VOLUME**

FROM 00:00 TO 23:59



Intersection Central & Lowell  
Date 9/10/2022

	Eastbound	Southbound	Westbound	Total
0-9'	7	3	16	26
10-23'	9127	3201	9009	21337
24-35'	78	109	163	350
36-51'	38	58	34	130
<b>Total</b>	<b>9250</b>	<b>3371</b>	<b>9222</b>	<b>21843</b>



0-9'  
10-23'  
24-35'  
36-51'



# Vehicle Classification Counts

**Intersection** Central & Lowell  
**Date** 9/10/2022

	Eastbound				Southbound				
	0-9'	10-23'	24-35'	36-51'	0-9'	10-23'	24-35'	36-51'	0-9'
00:00	0	70	4	2	0	12	1	2	0
01:00	0	42	3	4	0	11	2	0	0
02:00	0	28	0	0	0	12	2	2	0
03:00	0	31	1	0	0	3	3	2	0
04:00	0	53	3	2	0	4	8	2	0
05:00	0	98	3	2	0	22	6	4	0
06:00	0	184	0	2	0	64	0	1	0
07:00	1	318	0	1	0	122	0	0	0
08:00	1	502	3	0	0	193	1	1	0
09:00	0	637	2	2	0	246	3	1	0
10:00	0	671	0	0	0	281	1	0	0
11:00	0	816	1	0	0	264	3	2	1
12:00	1	787	0	1	2	257	1	0	3
13:00	1	702	3	0	0	242	1	1	2
14:00	0	659	0	0	1	250	3	1	3
15:00	1	655	2	1	0	246	5	0	4
16:00	2	655	4	0	0	223	4	1	1
17:00	0	565	0	0	0	205	1	1	1
18:00	0	534	0	1	0	185	0	1	1
19:00	0	402	5	1	0	157	8	2	0
20:00	0	249	11	9	0	54	23	7	0
21:00	0	207	13	4	0	89	14	14	0
22:00	0	154	13	3	0	37	10	7	0
23:00	0	108	7	3	0	22	9	6	0
<b>Total</b>	<b>7</b>	<b>9127</b>	<b>78</b>	<b>38</b>	<b>3</b>	<b>3201</b>	<b>109</b>	<b>58</b>	<b>16</b>



# Vehicle Classification Counts

Intersection Central & Lowell  
Date 9/10/2022

Westbound			
10-23'	24-35'	36-51'	
69	6	1	
42	5	0	
24	2	0	
18	3	0	
31	2	0	
58	4	1	
155	0	1	
325	9	1	
414	4	0	
602	4	0	
680	1	0	
721	3	0	
718	0	0	
736	6	0	
733	5	0	
612	1	0	
592	3	0	
571	2	0	
572	5	0	
458	19	6	
355	26	12	
258	20	7	
151	19	4	
114	14	1	
<b>9009</b>	<b>163</b>	<b>34</b>	

## Traffic-Volume Adjustment Data

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Year 2019 Monthly Data

Group 4 Averages: Urban Highways

Month	ADT	Adjustment to Average	Adjustment to Peak
January	11,431	1.12	1.23
February	11,848	1.08	1.18
March	12,141	1.06	1.15
April	12,860	1.00	1.09
May	13,551	0.95	1.03
June	13,785	0.93	1.02
July	13,942	0.92	1.01
August	14,016	0.92	1.00
September	13,379	0.96	1.05
October	13,339	0.96	1.05
November	12,265	1.05	1.14
December	11,496	1.12	1.22
Average ADT:	12,838		
Peak ADT:	14,016		

GROUP	COUNTER	TOWN	LOCATION
04	02051003	BOW	NH 3A south of Robinson Rd
04	02089001	CHICHESTER	NH 28 (Suncook Valley Rd) north of Bear Hill Rd
04	02091001	CLAREMONT	NH 12/103 east of Vermont SL
04	62099056	CONCORD	NH 106 (Sheep Davis Rd) at Loudon TL (north of Ashby Rd)
04	72099278	CONCORD	US 3 (Fisherville Rd) north of Sewalls Falls Rd
04	02125001	DOVER	Dover Point Rd south of Thornwood Ln
04	02133021	DURHAM	US 4 east of NH 108
04	82197076	HAMPTON	US 1 (Lafayette Rd) south of Ramp to NH 101
04	02229022	HUDSON*	Circumferential Hwy east of Nashua TL
04	02253025	LEBANON	NH 120 1 mile south of Hanover TL (south of Lahaye Dr)
04	02255001	LEE	NH 125 (Calef Hwy) north of Pinkham Rd
04	02287001	MARLBOROUGH	NH 12 at Swanzy TL
04	02297001	MERRIMACK	US 3 (Daniel Webster Hwy) north of Hilton Dr
04	02303001	MILFORD*	NH 101A at Amherst TL (west of Overlook Dr)
04	02315051	NASHUA*	NH 111 (Bridge / Ferry St) at Hudson TL
04	02339001	NEWPORT	NH 10 1 mile south of Croydon TL (north of Corbin Rd)
04	02345001	NORTH HAMPTON	US 1 (Lafayette Rd) north of North Rd
04	62387052	RINDGE*	US 202 at Jaffrey TL (north of County Rd)
04	02445001	TEMPLE	NH 101 at Wilton TL (west of Old County Farm Rd)
04	02489001	WINDHAM	NH 28 at Derry TL (north of Northland Rd)

\* denotes counter that is not included in calculation

LOCATION INFO	
Location ID	02297001
Type	SPOT
Funct'l Class	4
Located On	Daniel Webster Hwy
Loc On Alias	US 3 (DANIEL WEBSTER HWY) NORTH OF HILTON DR (SB-NB) (01297004-01297005)
Direction	2-WAY

County	HILLSBOROUGH
Community	MERRIMACK
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

**Weekday AM Peak:**  
 1,485/1,239 = x 1.198

**Weekday PM Peak:**  
 1,532/1,416 = x 1.082

**Weekday Daily:**  
 17,167/16,185 = x 1.061

INTERVAL:15-MIN						
Time	15-min Interval				Hourly Count	% Diff
	1st	2nd	3rd	4th		
0:00-1:00	20	15	12	10	57	-48.0
1:00-2:00	10	10	9	5	34	-50.5
2:00-3:00	7	8	8	8	31	17.5
3:00-4:00	6	11	12	16	45	30.8
4:00-5:00	21	27	33	35	116	111.4
5:00-6:00	46	64	99	96	305	128.8
6:00-7:00	124	167	226	257	774	141.3
7:00-8:00	284	310	336	309	1239	124.3
8:00-9:00	269	261	257	230	1017	69.0
9:00-10:00	216	209	229	214	868	14.6
10:00-11:00	210	206	215	217	848	-1.6
11:00-12:00	227	223	229	241	920	-3.6
12:00-13:00	247	248	246	236	977	-1.8
13:00-14:00	241	232	239	237	949	-3.0
14:00-15:00	260	269	296	296	1121	31.6
15:00-16:00	304	320	348	336	1308	40.1
16:00-17:00	338	347	362	351	1398	47.0
17:00-18:00	365	375	357	319	1416	61.1
18:00-19:00	291	255	222	192	960	37.8
19:00-20:00	179	171	163	143	656	27.0
20:00-21:00	142	126	114	102	484	37.5
21:00-22:00	100	89	76	63	328	21.2
22:00-23:00	61	54	47	39	201	8.3
23:00-24:00	43	34	31	25	133	20.7
<b>Total</b>	Counts = 22				16185	37.2

INTERVAL:60-MIN						
Time	60-min Interval				Hourly Count	% Diff
	1st	2nd	3rd	4th		
0:00-1:00	-	-	-	-	61	-41.6
1:00-2:00	-	-	-	-	33	-53.3
2:00-3:00	-	-	-	-	30	14.3
3:00-4:00	-	-	-	-	42	24.0
4:00-5:00	-	-	-	-	125	116.5
5:00-6:00	-	-	-	-	309	129.6
6:00-7:00	-	-	-	-	878	147.4
7:00-8:00	-	-	-	-	1485	134.8
8:00-9:00	-	-	-	-	1284	88.7
9:00-10:00	-	-	-	-	898	18.0
10:00-11:00	-	-	-	-	826	-4.3
11:00-12:00	-	-	-	-	868	-9.4
12:00-13:00	-	-	-	-	962	-3.4
13:00-14:00	-	-	-	-	921	-6.0
14:00-15:00	-	-	-	-	1092	29.1
15:00-16:00	-	-	-	-	1352	43.3
16:00-17:00	-	-	-	-	1490	53.0
17:00-18:00	-	-	-	-	1532	68.2
18:00-19:00	-	-	-	-	1061	47.3
19:00-20:00	-	-	-	-	683	30.9
20:00-21:00	-	-	-	-	503	41.2
21:00-22:00	-	-	-	-	369	32.8
22:00-23:00	-	-	-	-	219	16.8
23:00-24:00	-	-	-	-	144	28.6
<b>Total</b>	Counts = 21				17167	42.8

Count Criteria

Local Id	02297001
Start Date	09/01/2022
End Date	09/30/2022
Aggregation	AVG
Include Abnormal	False
Selected Days	Monday Tuesday Wednesday Thursday Friday

Count Criteria

Local Id	02297001
Start Date	09/01/2019
End Date	09/30/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Monday Tuesday Wednesday Thursday Friday

LOCATION INFO	
Location ID	02297001
Type	SPOT
Funct'l Class	4
Located On	Daniel Webster Hwy
Loc On Alias	US 3 (DANIEL WEBSTER HWY) NORTH OF HILTON DR (SB-NB) (01297004-01297005)
Direction	2-WAY

County	HILLSBOROUGH
Community	MERRIMACK
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

**Saturday Midday Peak:**  
 $1,137/1,109 = x 1.025$   
**Saturday Daily:**  
 $14,070/13,751 = x 1.023$

**INTERVAL:15-MIN**

Time	15-min Interval				Hourly Count	% Diff
	1st	2nd	3rd	4th		
0:00-1:00	34	30	22	17	103	10.2
1:00-2:00	19	11	14	13	57	0.0
2:00-3:00	7	8	9	11	35	29.5
3:00-4:00	8	6	8	11	33	0.0
4:00-5:00	16	14	16	15	61	59.6
5:00-6:00	16	25	32	38	111	50.8
6:00-7:00	34	53	70	64	221	49.7
7:00-8:00	84	94	117	120	415	35.8
8:00-9:00	143	146	174	182	645	26.3
9:00-10:00	210	221	237	253	921	20.5
10:00-11:00	238	254	271	272	1035	18.2
11:00-12:00	262	275	287	285	1109	15.0
12:00-13:00	285	276	268	259	1088	8.9
13:00-14:00	281	269	267	259	1076	9.5
14:00-15:00	273	258	259	283	1073	27.3
15:00-16:00	263	249	260	252	1024	16.1
16:00-17:00	258	244	240	244	986	13.0
17:00-18:00	245	242	257	220	964	24.6
18:00-19:00	206	214	180	199	799	19.8
19:00-20:00	178	163	164	150	655	26.8
20:00-21:00	140	137	117	104	498	40.3
21:00-22:00	102	96	101	82	381	35.9
22:00-23:00	80	78	71	56	285	42.6
23:00-24:00	48	49	37	42	176	47.9
<b>Total</b>	<b>Counts = 4</b>				<b>13751</b>	<b>21.2</b>

Count Criteria

Local Id	02297001
Start Date	09/01/2022
End Date	09/30/2022
Aggregation	AVG
Include Abnormal	False
Selected Days	Saturday

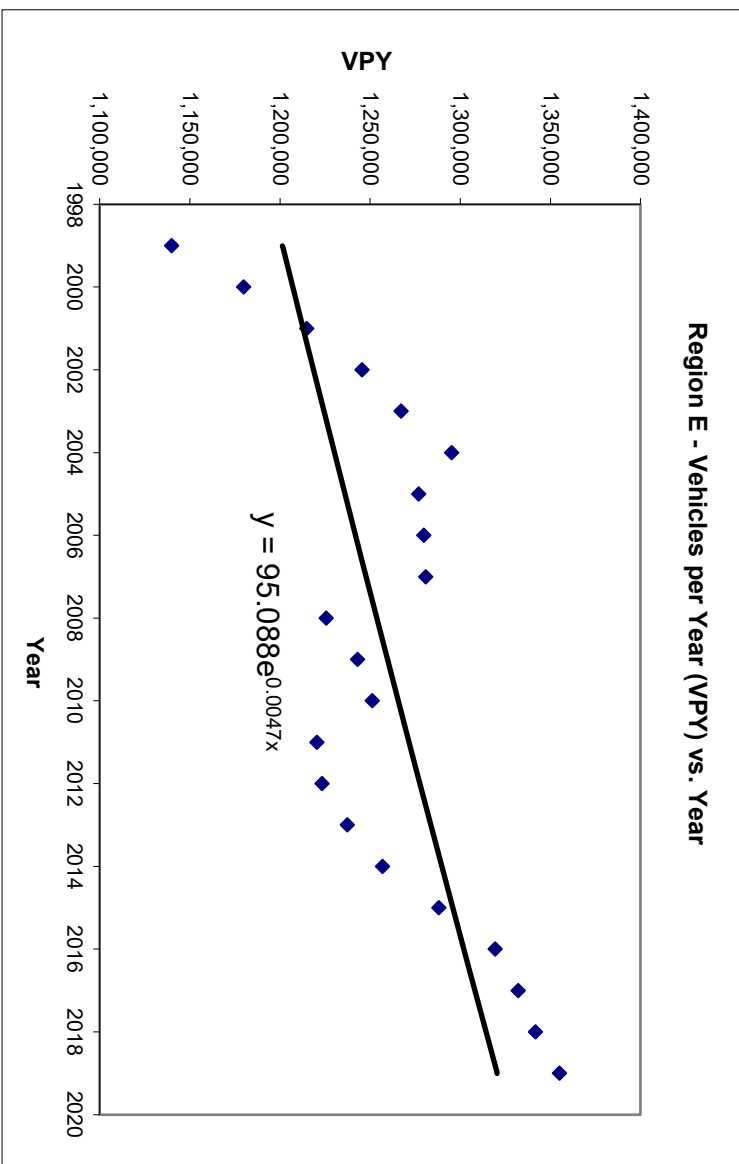
**INTERVAL:60-MIN**

Time	60-min Interval				Hourly Count	% Diff
	1st	2nd	3rd	4th		
0:00-1:00	-	-	-	-	125	29.4
1:00-2:00	-	-	-	-	70	20.5
2:00-3:00	-	-	-	-	43	49.3
3:00-4:00	-	-	-	-	33	0.0
4:00-5:00	-	-	-	-	67	68.0
5:00-6:00	-	-	-	-	113	52.5
6:00-7:00	-	-	-	-	247	60.0
7:00-8:00	-	-	-	-	449	43.4
8:00-9:00	-	-	-	-	686	32.3
9:00-10:00	-	-	-	-	885	16.5
10:00-11:00	-	-	-	-	1001	14.9
11:00-12:00	-	-	-	-	1137	17.5
12:00-13:00	-	-	-	-	1127	12.4
13:00-14:00	-	-	-	-	1109	12.6
14:00-15:00	-	-	-	-	1101	29.9
15:00-16:00	-	-	-	-	1086	22.0
16:00-17:00	-	-	-	-	1025	16.8
17:00-18:00	-	-	-	-	953	23.4
18:00-19:00	-	-	-	-	791	18.8
19:00-20:00	-	-	-	-	640	24.6
20:00-21:00	-	-	-	-	488	38.3
21:00-22:00	-	-	-	-	398	40.1
22:00-23:00	-	-	-	-	291	44.5
23:00-24:00	-	-	-	-	205	62.0
<b>Total</b>	<b>Counts = 4</b>				<b>14070</b>	<b>23.5</b>

Count Criteria

Local Id	02297001
Start Date	09/01/2019
End Date	09/30/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Saturday







Year	Total
1999	1139845
2000	1179765
2001	1214705
2002	1245438
2003	1267125
2004	1295120
2005	1276855
2006	1279750
2007	1280884
2008	1225648
2009	1242948
2010	1251134
2011	1220449
2012	1223328
2013	1237267
2014	1256764
2015	1288124
2016	1319354
2017	1332080
2018	1341624
2019	1354890
CAGR	0.87%
Exp	0.47%
Avg	0.67%



## Existing Intersection Operational Analyses













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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	412	216	603	174	183	928
v/c Ratio	1.16	0.27	0.70	0.15	0.50	0.68
Control Delay	132.6	4.6	22.0	0.8	36.9	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	132.6	4.6	22.0	0.8	36.9	9.3
Queue Length 50th (ft)	~291	9	236	0	94	216
Queue Length 95th (ft)	#355	28	350	13	163	329
Internal Link Dist (ft)	365		235			562
Turn Bay Length (ft)		105		105	260	
Base Capacity (vph)	355	814	1024	1171	366	1520
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	1.16	0.27	0.59	0.15	0.50	0.61

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	305	160	555	160	165	835
Future Volume (vph)	305	160	555	160	165	835
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1736	1553	1845	1568	1787	1881
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1736	1553	1845	1568	1787	1881
Peak-hour factor, PHF	0.74	0.74	0.92	0.92	0.90	0.90
Adj. Flow (vph)	412	216	603	174	183	928
RTOR Reduction (vph)	0	111	0	48	0	0
Lane Group Flow (vph)	412	105	603	126	183	928
Heavy Vehicles (%)	4%	4%	3%	3%	1%	1%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	15.1	36.2	37.2	58.3	15.1	56.3
Effective Green, g (s)	17.1	34.2	39.2	60.3	17.1	58.3
Actuated g/C Ratio	0.21	0.41	0.47	0.72	0.21	0.70
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	355	636	867	1133	366	1314
v/s Ratio Prot	c0.24	0.07	0.33	0.08	0.10	c0.49
v/s Ratio Perm						
v/c Ratio	1.16	0.16	0.70	0.11	0.50	0.71
Uniform Delay, d1	33.2	15.6	17.4	3.5	29.4	7.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	99.0	0.0	2.4	0.0	0.4	1.4
Delay (s)	132.2	15.6	19.8	3.5	29.8	8.9
Level of Service	F	B	B	A	C	A
Approach Delay (s)	92.1		16.2			12.3
Approach LOS	F		B			B




Intersection Summary

HCM 2000 Control Delay	33.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	83.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



1: US 3 & Central St  
Timing Report, Sorted By Phase

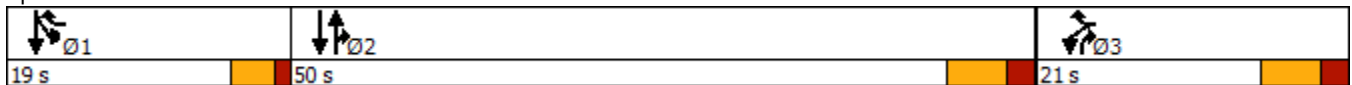
2022 Existing  
Weekday AM

			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	19	50	21
Maximum Split (%)	21.1%	55.6%	23.3%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	19	69
End Time (s)	19	69	0
Yield/Force Off (s)	15	63	84
Yield/Force Off 170(s)	15	63	84
Local Start Time (s)	71	0	50
Local Yield (s)	86	44	65
Local Yield 170(s)	86	44	65

Intersection Summary







Cycle Length	90
Control Type	Actuated-Uncoordinated
Natural Cycle	65

Splits and Phases: 1: US 3 & Central St















1: US 3 & Central St  
Queues

2022 Existing  
Weekday PM

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	280	107	994	202	310	832
v/c Ratio	0.88	0.15	1.03	0.17	0.92	0.59
Control Delay	64.2	6.2	60.9	1.7	69.4	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.2	6.2	60.9	1.7	69.4	7.3
Queue Length 50th (ft)	156	8	~614	10	175	177
Queue Length 95th (ft)	#261	34	#832	25	#329	263
Internal Link Dist (ft)	365		235			562
Turn Bay Length (ft)		105		105	260	
Base Capacity (vph)	325	692	964	1226	338	1405
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	0.86	0.15	1.03	0.16	0.92	0.59

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.




						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	235	90	885	180	285	765
Future Volume (vph)	235	90	885	180	285	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1719	1538	1881	1599	1787	1881
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1719	1538	1881	1599	1787	1881
Peak-hour factor, PHF	0.84	0.84	0.89	0.89	0.92	0.92
Adj. Flow (vph)	280	107	994	202	310	832
RTOR Reduction (vph)	0	51	0	32	0	0
Lane Group Flow (vph)	280	56	994	170	310	832
Heavy Vehicles (%)	5%	5%	1%	1%	1%	1%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	14.7	35.7	44.0	64.7	15.0	63.0
Effective Green, g (s)	16.7	33.7	46.0	66.7	17.0	65.0
Actuated g/C Ratio	0.19	0.38	0.51	0.74	0.19	0.72
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	320	577	964	1189	338	1363
v/s Ratio Prot	c0.16	0.04	c0.53	0.11	c0.17	0.44
v/s Ratio Perm						
v/c Ratio	0.88	0.10	1.03	0.14	0.92	0.61
Uniform Delay, d1	35.5	18.1	21.9	3.3	35.7	6.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.8	0.0	37.3	0.1	28.2	0.6
Delay (s)	57.2	18.2	59.1	3.4	63.8	6.7
Level of Service	E	B	E	A	E	A
Approach Delay (s)	46.4		49.7			22.2
Approach LOS	D		D			C

Intersection Summary

HCM 2000 Control Delay	37.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	89.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

1: US 3 & Central St  
Timing Report, Sorted By Phase

2022 Existing  
Weekday PM

			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	19	50	21
Maximum Split (%)	21.1%	55.6%	23.3%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	19	69
End Time (s)	19	69	0
Yield/Force Off (s)	15	63	84
Yield/Force Off 170(s)	15	63	84
Local Start Time (s)	71	0	50
Local Yield (s)	86	44	65
Local Yield 170(s)	86	44	65

Intersection Summary







Cycle Length		90
Control Type	Actuated-Uncoordinated	
Natural Cycle		90

Splits and Phases: 1: US 3 & Central St















1: US 3 & Central St  
Queues

2022 Existing  
SAT MIDDAY

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	262	93	702	154	136	818
v/c Ratio	0.77	0.12	0.76	0.13	0.37	0.58
Control Delay	50.1	4.2	23.8	0.8	34.7	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.1	4.2	23.8	0.8	34.7	7.1
Queue Length 50th (ft)	143	0	294	0	68	170
Queue Length 95th (ft)	#239	24	432	13	120	241
Internal Link Dist (ft)	365		235			562
Turn Bay Length (ft)		105		105	260	
Base Capacity (vph)	371	762	1058	1236	371	1529
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	0.71	0.12	0.66	0.12	0.37	0.53




Intersection Summary

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	225	80	660	145	120	720
Future Volume (vph)	225	80	660	145	120	720
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1805	1615	1900	1615	1805	1900
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1805	1615	1900	1615	1805	1900
Peak-hour factor, PHF	0.86	0.86	0.94	0.94	0.88	0.88
Adj. Flow (vph)	262	93	702	154	136	818
RTOR Reduction (vph)	0	57	0	42	0	0
Lane Group Flow (vph)	262	36	702	112	136	818
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	13.8	34.8	38.8	58.6	15.0	57.8
Effective Green, g (s)	15.8	32.8	40.8	60.6	17.0	59.8
Actuated g/C Ratio	0.19	0.39	0.49	0.72	0.20	0.72
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	341	633	927	1170	367	1359
v/s Ratio Prot	c0.15	0.02	c0.37	0.07	0.08	c0.43
v/s Ratio Perm						
v/c Ratio	0.77	0.06	0.76	0.10	0.37	0.60
Uniform Delay, d1	32.2	15.8	17.4	3.4	28.7	5.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.0	0.0	3.6	0.0	0.2	0.5
Delay (s)	41.2	15.8	21.0	3.4	28.9	6.5
Level of Service	D	B	C	A	C	A
Approach Delay (s)	34.5		17.8			9.7
Approach LOS	C		B			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			17.0		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.72			
Actuated Cycle Length (s)			83.6		Sum of lost time (s)	10.0
Intersection Capacity Utilization			63.9%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

1: US 3 & Central St  
Timing Report, Sorted By Phase

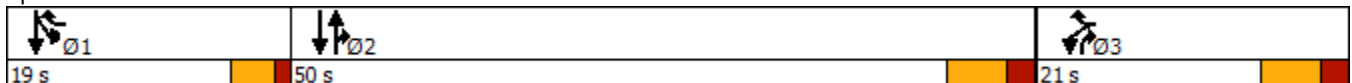
2022 Existing  
SAT MIDDAY

			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	19	50	21
Maximum Split (%)	21.1%	55.6%	23.3%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	19	69
End Time (s)	19	69	0
Yield/Force Off (s)	15	63	84
Yield/Force Off 170(s)	15	63	84
Local Start Time (s)	71	0	50
Local Yield (s)	86	44	65
Local Yield 170(s)	86	44	65

Intersection Summary

Cycle Length		90
Control Type	Actuated-Uncoordinated	
Natural Cycle		60

Splits and Phases: 1: US 3 & Central St



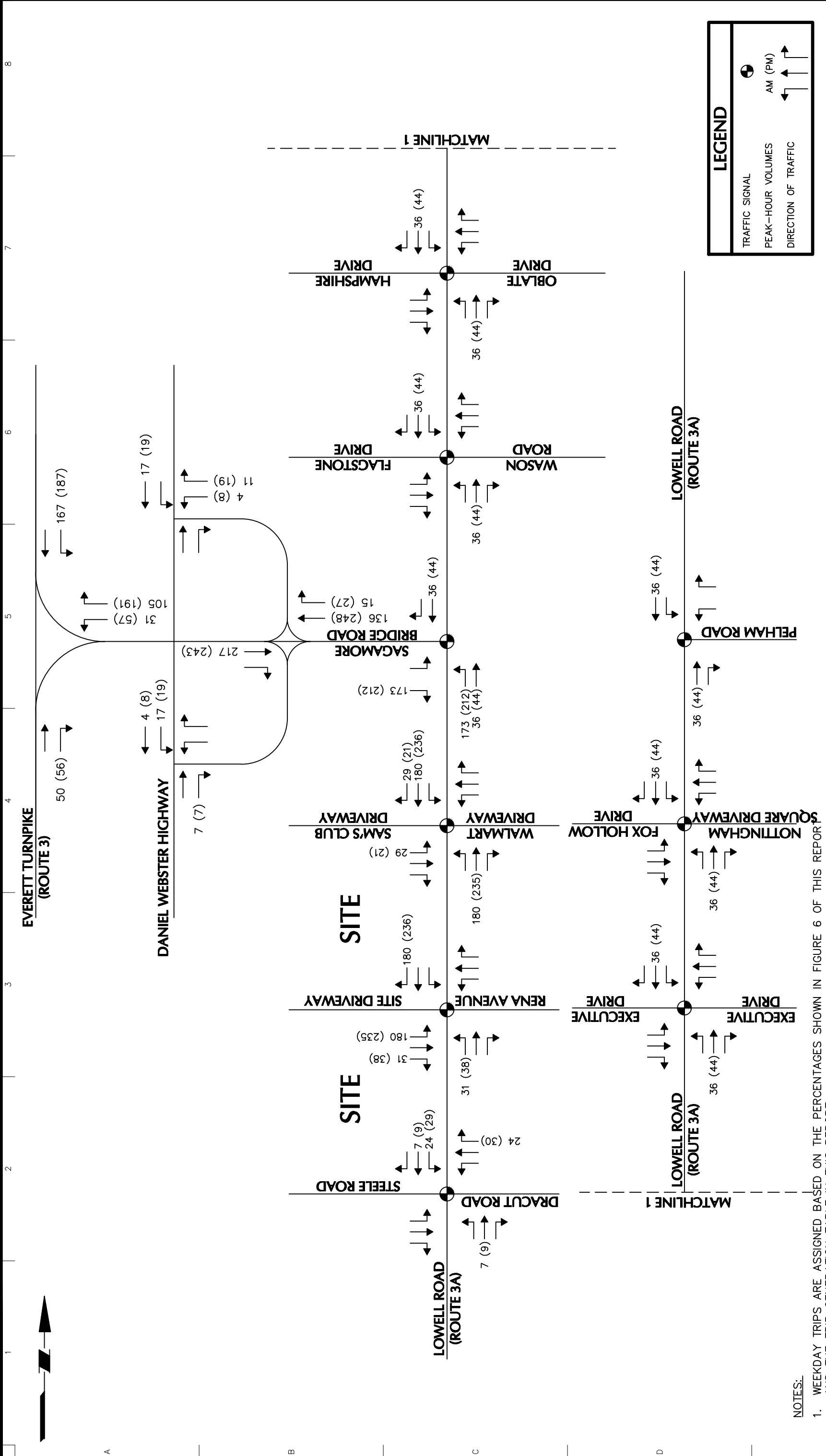




## Background Developments Data

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**LEGEND**

- TRAFFIC SIGNAL
- PEAK-HOUR VOLUMES
- DIRECTION OF TRAFFIC
- AM (PM)

**NOTES:**

1. WEEKDAY TRIPS ARE ASSIGNED BASED ON THE PERCENTAGES SHOWN IN FIGURE 6 OF THIS REPORT AND THE TRIP GENERATION TABLE IN THIS REPORT.
2. MORNING PEAK-HOUR: 7:15 A.M. - 8:15 A.M.
3. EVENING PEAK-HOUR: 4:30 P.M. - 5:30 P.M.

<p>LANGAN Langan Engineering and Environmental Services, Inc. www.langan.com</p>	<p>Project <b>HUDSON LOGISTICS CENTER</b></p>	<p>Drawing Title <b>TRIP ASSIGNMENT</b></p>	<p>Drawing No. <b>151010101</b></p>
	<p>Project <b>HUDSON LOGISTICS CENTER</b></p>	<p>Drawing Title <b>TRIP ASSIGNMENT</b></p>	<p>Date <b>08/26/2022</b></p>
<p>Project <b>HILLSBOROUGH COUNTY, NEW HAMPSHIRE</b></p>	<p>Project <b>HUDSON LOGISTICS CENTER</b></p>	<p>Drawing Title <b>TRIP ASSIGNMENT</b></p>	<p>Date <b>08/26/2022</b></p>
<p>Project <b>HILLSBOROUGH COUNTY, NEW HAMPSHIRE</b></p>	<p>Project <b>HUDSON LOGISTICS CENTER</b></p>	<p>Drawing Title <b>TRIP ASSIGNMENT</b></p>	<p>Drawn By <b>CJM</b></p>
<p>Project <b>HILLSBOROUGH COUNTY, NEW HAMPSHIRE</b></p>	<p>Project <b>HUDSON LOGISTICS CENTER</b></p>	<p>Drawing Title <b>TRIP ASSIGNMENT</b></p>	<p>Checked By <b>MGP</b></p>

**FIG. 7**

Sheet 10 of 12

**ITE TRIP GENERATION WORKSHEET**  
 (11th Edition, Updated 2021)

**LANDUSE:** Single-Family Detached Housing  
**LANDUSE CODE:** 210  
**SETTING/LOCATION:** General Urban / Suburban  
**JOB NAME:** **Frenette Gardens**  
**JOB NUMBER:** \_\_\_\_\_

Independent Variable --- Number of Units  
 \_\_\_\_\_ 9 units

**WEEKDAY**

RATES:	# Studies	R <sup>2</sup>	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	174	0.95	9.43	4.45	22.61	246	10	2,945	50%	50%
AM PEAK OF GENERATOR	169	0.91	0.75	0.34	2.27	217	10	2,945	26%	74%
PM PEAK OF GENERATOR	178	0.92	0.99	0.49	2.98	203	10	2,945	64%	36%
AM PEAK (ADJACENT ST)	192	0.90	0.70	0.27	2.27	226	10	2,945	26%	74%
PM PEAK (ADJACENT ST)	208	0.92	0.94	0.35	2.98	248	10	2,945	63%	37%

TRIPS:	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	86	43	43	112	56	56
AM PEAK OF GENERATOR	7	2	5	14	4	10
PM PEAK OF GENERATOR	9	6	3	11	7	4
AM PEAK (ADJACENT ST)	6	2	5	8	2	6
PM PEAK (ADJACENT ST)	8	5	3	10	6	4

**SATURDAY**

RATES:	# Studies	R <sup>2</sup>	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	63	0.91	9.48	3.36	16.52	179	15	1,000	50%	50%
PEAK OF GENERATOR	42	0.89	0.92	0.41	1.78	152	15	644	54%	46%

TRIPS:	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	86	43	43	94	47	47
PEAK OF GENERATOR	8	4	4	17	9	8

**SUNDAY**

RATES:	# Studies	R <sup>2</sup>	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	60	0.94	8.48	2.61	16.44	186	15	1,000	50%	50%
PEAK OF GENERATOR	40	0.92	0.83	0.36	1.67	163	15	644	53%	47%

TRIPS:	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	78	39	39	10	5	5
PEAK OF GENERATOR	7	4	4	12	6	6

**ITE TRIP GENERATION WORKSHEET**

(11th Edition, Updated 2021)

**LANDUSE:** Mini Warehouse  
**LANDUSE CODE:** 151  
**LOCATION:** General Urban / Suburban  
**JOB NAME:** Bluebird Self Storage  
**JOB NUMBER:**  
 Independent Variable --- 1,000 Sq. Feet Gross Floor Area  
**FLOOR AREA (KSF):** 118.2

**WEEKDAY**

RATES:	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	16	--	1.45	0.38	3.25	55	7.5	101	50%	50%
AM PEAK OF GENERATOR	11	--	0.18	0.07	0.79	66	7.5	114	51%	49%
PM PEAK OF GENERATOR	16	--	0.18	0.06	1.05	56	7.5	114	51%	49%
AM PEAK (ADJACENT ST)	13	--	0.09	0.04	0.17	70	27	114	59%	41%
PM PEAK (ADJACENT ST)	18	--	0.15	0.02	0.64	59	7.5	114	47%	53%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	171	86	86	N/A	N/A	N/A
AM PEAK OF GENERATOR	21	11	10	N/A	N/A	N/A
PM PEAK OF GENERATOR	21	11	10	N/A	N/A	N/A
AM PEAK (ADJACENT ST)	11	6	4	N/A	N/A	N/A
PM PEAK (ADJACENT ST)	18	8	9	N/A	N/A	N/A

**SATURDAY**

RATES:	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	6	0.57	1.77	1.21	3.29	43	20	87	50%	50%
PEAK OF GENERATOR	3	--	0.17	0.04	0.31	90	71	114	62%	38%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	209	105	105	151	76	76
PEAK OF GENERATOR	20	12	8	N/A	N/A	N/A

**SUNDAY**

RATES:	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	5	--	1.50	0.69	3.70	40	20	87	50%	50%
PEAK OF GENERATOR	2	--	0.20	0.16	0.23	79	71	87	45%	55%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	177	89	89	N/A	N/A	N/A
PEAK OF GENERATOR	24	11	13	N/A	N/A	N/A



## Trip-Generation Calculations

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**Proposed Gasoline Station/Convenience Store and Donut Shop**

Peak Hour/Direction	Total Trips <sup>a</sup>	Internal Trips <sup>b</sup>	External Trips <sup>c</sup>	Pass-By Trips <sup>d</sup>	New Trips <sup>e</sup>
<b>Weekday AM:</b>					
Enter	142	19	123	96	27
Exit	<u>141</u>	<u>19</u>	<u>122</u>	<u>96</u>	<u>26</u>
Total	283	38	245	192	53
<b>Weekday PM:</b>					
Enter	119	12	107	82	25
Exit	<u>119</u>	<u>12</u>	<u>107</u>	<u>82</u>	<u>25</u>
Total	238	24	214	164	50
<b>Saturday Midday:</b>					
Enter	156	21	135	103	32
Exit	<u>156</u>	<u>21</u>	<u>135</u>	<u>103</u>	<u>32</u>
Total	312	42	270	206	64

<sup>a</sup> ITE LUC 945 (Convenience Store/Gas Station for subcategory 9-15 vehicle fueling positions) for 3,760 sf and LUC 937 (Coffee/Donut Shop with Drive-Through Window) for 800 sf.

<sup>b</sup> Based on ITE Trip Generation Handbook and NCHRP 685 Internal Trip Capture Estimation Tool.

<sup>c</sup> Total Trips – Internal Trips.

<sup>d</sup> Based on ITE Trip Generation Handbook.

<sup>e</sup> External Trips – Pass-By Trips.

**Proposed Gasoline Station/Convenience Store Use**

<b>Peak Hour/Direction</b>	<b>Total Trips<sup>a</sup></b>	<b>Internal Trips<sup>b</sup></b>	<b>External Trips<sup>c</sup></b>	<b>Pass-By Trips<sup>d</sup></b>	<b>New Trips<sup>e</sup></b>
<b>Weekday AM:</b>					
Enter	107	5	102	75	27
Exit	<u>107</u>	<u>14</u>	<u>93</u>	<u>75</u>	<u>18</u>
Total	214	19	195	150	45
<b>Weekday PM:</b>					
Enter	103	7	96	73	23
Exit	<u>103</u>	<u>5</u>	<u>98</u>	<u>73</u>	<u>25</u>
Total	206	12	194	146	48
<b>Saturday Midday:</b>					
Enter	121	5	116	84	32
Exit	<u>121</u>	<u>16</u>	<u>105</u>	<u>84</u>	<u>21</u>
Total	242	21	221	168	53

<sup>a</sup> ITE LUC 945 (Convenience Store/Gas Station for subcategory 9-15 vehicle fueling positions) for 3,760 sf.

<sup>b</sup> Based on ITE Trip Generation Handbook and NCHRP 685 Internal Trip Capture Estimation Tool.

<sup>c</sup> Total Trips – Internal Trips.

<sup>d</sup> Based on ITE Trip Generation Handbook for LUC 945 (Convenience Store/Gas Station for sites with between 9-20 vfps), weekday AM = 76%, weekday PM = 75%, and Saturday midday = weekday AM.

<sup>e</sup> External Trips – Pass-By Trips.

**Proposed Donut Shop**

Peak Hour/Direction	Total Trips <sup>a</sup>	Internal Trips <sup>b</sup>	External Trips <sup>c</sup>	Pass-By Trips <sup>d</sup>	New Trips <sup>e</sup>
<b>Weekday AM:</b>					
Enter	35	14	21	21	0
<u>Exit</u>	<u>34</u>	<u>5</u>	<u>29</u>	<u>21</u>	<u>8</u>
Total	69	19	50	42	8
<b>Weekday PM:</b>					
Enter	16	5	11	9	2
<u>Exit</u>	<u>16</u>	<u>7</u>	<u>9</u>	<u>9</u>	<u>0</u>
Total	32	12	20	18	2
<b>Saturday Midday:</b>					
Enter	35	16	19	19	0
<u>Exit</u>	<u>35</u>	<u>5</u>	<u>30</u>	<u>19</u>	<u>11</u>
Total	70	21	49	38	11

<sup>a</sup> ITE LUC 937 (Coffee/Donut Shop with Drive-Through Window) for 800 sf.

<sup>b</sup> Based on ITE Trip Generation Handbook and NCHRP 685 Internal Trip Capture Estimation Tool.

<sup>c</sup> Total Trips – Internal Trips.

<sup>d</sup> Based on ITE Trip Generation Handbook for LUC 938 (Coffee/Donut Shop with Drive-Through Window and No Indoor Seating), weekday AM = 90% (limited to 84% to not result in negative new trips), weekday PM = 98% (limited to 90% to not result in negative new trips), and Saturday midday = 90% based on ITE weekday AM pass-by rate (limited to 78% to not result in negative new trips).

<sup>e</sup> External Trips – Pass-By Trips.

**ITE TRIP GENERATION WORKSHEET**  
 (11th Edition, Updated 2021)

**LANDUSE:** Convenience Store/ Gas Station - VFP (9-15)  
**LANDUSE CODE:** 945 Independent Variable --- 1,000 Sq. Feet Gross Floor Area  
**SETTING/LOCATION:** General Urban/Suburban  
**JOB NAME:** Sousa **FLOOR AREA (KSF):** 3.760  
**JOB NUMBER:** 52945

**WEEKDAY**

RATES:	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	11	0.51	700.43	419.93	1125.00	4.00	2.28	6.89	50%	50%
AM PEAK OF GENERATOR	34	--	57.56	14.17	150.67	4.00	2.02	9.67	51%	49%
PM PEAK OF GENERATOR	39	--	56.38	25.75	157.41	4.00	2.02	9.67	50%	50%
AM PEAK (ADJACENT ST)	34	--	56.52	14.17	150.67	4.00	2.02	9.67	50%	50%
PM PEAK (ADJACENT ST)	39	--	54.52	19.23	157.41	4.00	2.02	9.67	50%	50%

TRIPS:		BY AVERAGE			BY REGRESSION		
		Total	Enter	Exit	Total	Enter	Exit
DAILY		2,634	1,317	1,317	2,658	1,329	1,329
AM PEAK OF GENERATOR		216	110	106	--	--	--
PM PEAK OF GENERATOR		212	106	106	--	--	--
AM PEAK (ADJACENT ST)		214	107	107	--	--	--
PM PEAK (ADJACENT ST)		206	103	103	--	--	--

**SATURDAY**

RATES:	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	1	--	700.00	700.00	700.00	5.00	5.00	5.00	50%	50%
PEAK OF GENERATOR	8	--	64.13	25.72	192.76	4.00	2.19	6.00	50%	50%

TRIPS:		BY AVERAGE			BY REGRESSION		
		Total	Enter	Exit	Total	Enter	Exit
DAILY		2,632	1,316	1,316	--	--	--
PEAK OF GENERATOR		242	121	121	--	--	--

**SUNDAY**

RATES:	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	--	--	--	--	--	--	--	--	--	--
PEAK OF GENERATOR	1.00	--	31.85	31.85	31.85	10.00	10.00	10.00	51%	49%

TRIPS:		BY AVERAGE			BY REGRESSION		
		Total	Enter	Exit	Total	Enter	Exit
DAILY		--	--	--	--	--	--
PEAK OF GENERATOR		120	61	59	--	--	--

**ITE TRIP GENERATION WORKSHEET**  
 (11th Edition, Updated 2021)

**LANDUSE:** Coffee/Donut Shop with Drive-Through Window  
**LANDUSE CODE:** 937 Independent Variable --- 1,000 Sq. Feet Gross Floor Area  
**SETTING/LOCATION:** General Urban/Suburban  
**JOB NAME:** Sousa **FLOOR AREA (KSF):** 0.80  
**JOB NUMBER:** 52945

**WEEKDAY**

RATES:		# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
				Average	Low	High	Average	Low	High	Enter	Exit
	DAILY	6	--	533.57	309.41	869.00	2	1.19	2.50	50%	50%
	AM PEAK OF GENERATOR	62	--	101.27	40.82	282.05	2	0.39	5.39	50%	50%
	PM PEAK OF GENERATOR	34	--	43.65	18.37	92.31	2	0.39	5.39	50%	50%
	AM PEAK (ADJACENT ST)	78	--	85.88	18.51	282.05	2	0.39	5.39	51%	49%
	PM PEAK (ADJACENT ST)	36	--	38.99	13.78	92.31	2	0.39	5.39	50%	50%

**TRIPS:**

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	428	214	214	--	--	--
AM PEAK OF GENERATOR	82	41	41	--	--	--
PM PEAK OF GENERATOR	36	18	18	--	--	--
AM PEAK (ADJACENT ST)	69	35	34	--	--	--
PM PEAK (ADJACENT ST)	32	16	16	--	--	--

**SATURDAY**

RATES:		# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
				Average	Low	High	Average	Low	High	Enter	Exit
	DAILY	--	--	--	--	--	--	--	--	--	--
	PEAK OF GENERATOR	9	--	87.91	48.42	138.28	2	1.19	5.39	50%	50%

**TRIPS:**

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	--	--	--	--	--	--
PEAK OF GENERATOR	70	35	35	--	--	--

**SUNDAY**

RATES:		# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
				Average	Low	High	Average	Low	High	Enter	Exit
	DAILY	--	--	--	--	--	--	--	--	--	--
	PEAK OF GENERATOR	--	--	--	--	--	--	--	--	--	--

**TRIPS:**

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	--	--	--	--	--	--
PEAK OF GENERATOR	--	--	--	--	--	--

NCHRP 8-51 Internal Trip Capture Estimation Tool			
<b>Project Name:</b>	Sousa Development	<b>Organization:</b>	VHB, Inc.
<b>Project Location:</b>	Hudson, NH	<b>Performed By:</b>	MLG
<b>Scenario Description:</b>		<b>Date:</b>	11/2/2022
<b>Analysis Year:</b>		<b>Checked By:</b>	
<b>Analysis Period:</b>	AM Street Peak Hour	<b>Date:</b>	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	945	3,760	sf	214	107	107
Restaurant	937	800	sf	69	35	34
Cinema/Entertainment				0		
Residential				0		
Hotel				0		
All Other Land Uses <sup>2</sup>				0		
<b>Total</b>				<b>283</b>	<b>142</b>	<b>141</b>

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses <sup>2</sup>						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		14	0	0	0
Restaurant	0	5		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	283	142	141
Internal Capture Percentage	13%	13%	13%
External Vehicle-Trips <sup>3</sup>	245	123	122
External Transit-Trips <sup>4</sup>	0	0	0
External Non-Motorized Trips <sup>4</sup>	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	5%	13%
Restaurant	40%	15%
Cinema/Entertainment	N/A	N/A
Residential	N/A	N/A
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

<sup>3</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

<sup>4</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

*Estimation Tool Developed by the Texas Transportation Institute*

<b>Project Name:</b>	Sousa Development
<b>Analysis Period:</b>	AM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	107	107	1.00	107	107
Restaurant	1.00	35	35	1.00	34	34
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	0	0	1.00	0	0
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	31		14	0	15	0
Restaurant	11	5		0	1	1
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		34	8	0	0	0
Retail	0		18	0	0	0
Restaurant	0	9		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	18	7	0		0
Hotel	0	4	2	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	5	102	107	102	0	0
Restaurant	14	21	35	21	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	14	93	107	93	0	0
Restaurant	5	29	34	29	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A  
<sup>2</sup>Person-Trips  
<sup>3</sup>Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator  
\*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
<b>Project Name:</b>	Sousa Development	<b>Organization:</b>	VHB, Inc.
<b>Project Location:</b>	Hudson, NH	<b>Performed By:</b>	MLG
<b>Scenario Description:</b>		<b>Date:</b>	11/2/2022
<b>Analysis Year:</b>		<b>Checked By:</b>	
<b>Analysis Period:</b>	PM Street Peak Hour	<b>Date:</b>	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	945	3,760	sf	206	103	103
Restaurant	937	800	sf	32	16	16
Cinema/Entertainment				0		
Residential				0		
Hotel				0		
All Other Land Uses <sup>2</sup>				0		
<b>Total</b>				<b>238</b>	<b>119</b>	<b>119</b>

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses <sup>2</sup>						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		5	0	0	0
Restaurant	0	7		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	238	119	119
Internal Capture Percentage	10%	10%	10%
External Vehicle-Trips <sup>3</sup>	214	107	107
External Transit-Trips <sup>4</sup>	0	0	0
External Non-Motorized Trips <sup>4</sup>	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	7%	5%
Restaurant	31%	44%
Cinema/Entertainment	N/A	N/A
Residential	N/A	N/A
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

<sup>3</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

<sup>4</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

*Estimation Tool Developed by the Texas Transportation Institute*



<b>Project Name:</b>	Sousa Development
<b>Analysis Period:</b>	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	103	103	1.00	103	103
Restaurant	1.00	16	16	1.00	16	16
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	0	0	1.00	0	0
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	2		30	4	27	5
Restaurant	0	7		1	3	1
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		8	0	0	0	0
Retail	0		5	0	0	0
Restaurant	0	52		0	0	0
Cinema/Entertainment	0	4	0		0	0
Residential	0	10	2	0		0
Hotel	0	2	1	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	7	96	103	96	0	0
Restaurant	5	11	16	11	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	5	98	103	98	0	0
Restaurant	7	9	16	9	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

<sup>2</sup>Person-Trips

<sup>3</sup>Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

\*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Sousa Development	Organization:	VHB, Inc.
Project Location:	Hudson, NH	Performed By:	MLG
Scenario Description:		Date:	11/2/2022
Analysis Year:		Checked By:	
Analysis Period:	SAT Street Peak Hour	Date:	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	945	3,760	sf	242	121	121
Restaurant	937	800	sf	70	35	35
Cinema/Entertainment				0		
Residential				0		
Hotel				0		
All Other Land Uses <sup>2</sup>				0		
<b>Total</b>				<b>312</b>	<b>156</b>	<b>156</b>

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses <sup>2</sup>						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		16	0	0	0
Restaurant	0	5		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	312	156	156
Internal Capture Percentage	13%	13%	13%
External Vehicle-Trips <sup>3</sup>	270	135	135
External Transit-Trips <sup>4</sup>	0	0	0
External Non-Motorized Trips <sup>4</sup>	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	4%	13%
Restaurant	46%	14%
Cinema/Entertainment	N/A	N/A
Residential	N/A	N/A
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

<sup>3</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

<sup>4</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

*Estimation Tool Developed by the Texas Transportation Institute*

<b>Project Name:</b>	Sousa Development
<b>Analysis Period:</b>	SAT Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	121	121	1.00	121	121
Restaurant	1.00	35	35	1.00	35	35
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	0	0	1.00	0	0
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	35		16	0	17	0
Restaurant	11	5		0	1	1
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		39	8	0	0	0
Retail	0		18	0	0	0
Restaurant	0	10		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	21	7	0		0
Hotel	0	5	2	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	5	116	121	116	0	0
Restaurant	16	19	35	19	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	16	105	121	105	0	0
Restaurant	5	30	35	30	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0







<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A  
<sup>2</sup>Person-Trips  
<sup>3</sup>Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator  
\*Indicates computation that has been rounded to the nearest whole number.



## Future Intersection Operational Analyses













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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	426	223	641	185	189	967
v/c Ratio	1.22	0.28	0.72	0.16	0.53	0.71
Control Delay	156.7	5.0	22.9	0.8	38.1	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	156.7	5.0	22.9	0.8	38.1	9.8
Queue Length 50th (ft)	~313	11	259	0	98	235
Queue Length 95th (ft)	#371	31	385	14	167	360
Internal Link Dist (ft)	365		235			562
Turn Bay Length (ft)		105		105	260	
Base Capacity (vph)	348	801	1003	1191	359	1490
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	1.22	0.28	0.64	0.16	0.53	0.65

Intersection Summary




- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	315	165	590	170	170	870
Future Volume (vph)	315	165	590	170	170	870
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1736	1553	1845	1568	1787	1881
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1736	1553	1845	1568	1787	1881
Peak-hour factor, PHF	0.74	0.74	0.92	0.92	0.90	0.90
Adj. Flow (vph)	426	223	641	185	189	967
RTOR Reduction (vph)	0	112	0	50	0	0
Lane Group Flow (vph)	426	111	641	135	189	967
Heavy Vehicles (%)	4%	4%	3%	3%	1%	1%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	15.1	36.2	38.9	60.0	15.1	58.0
Effective Green, g (s)	17.1	34.2	40.9	62.0	17.1	60.0
Actuated g/C Ratio	0.20	0.40	0.48	0.73	0.20	0.71
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	348	624	886	1142	359	1326
v/s Ratio Prot	c0.25	0.07	0.35	0.09	0.11	c0.51
v/s Ratio Perm						
v/c Ratio	1.22	0.18	0.72	0.12	0.53	0.73
Uniform Delay, d1	34.0	16.4	17.6	3.4	30.4	7.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	123.9	0.0	2.9	0.0	0.6	1.7
Delay (s)	157.9	16.4	20.5	3.5	31.0	9.3
Level of Service	F	B	C	A	C	A
Approach Delay (s)	109.3		16.7			12.9
Approach LOS	F		B			B

Intersection Summary

HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	85.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

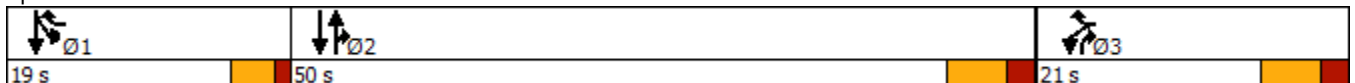








			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	19	50	21
Maximum Split (%)	21.1%	55.6%	23.3%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	19	69
End Time (s)	19	69	0
Yield/Force Off (s)	15	63	84
Yield/Force Off 170(s)	15	63	84
Local Start Time (s)	71	0	50
Local Yield (s)	86	44	65
Local Yield 170(s)	86	44	65

Intersection Summary

Cycle Length		90
Control Type	Actuated-Uncoordinated	
Natural Cycle		70













Splits and Phases: 1: US 3 & Central St



						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	298	113	1051	213	315	875
v/c Ratio	0.92	0.16	1.09	0.17	0.93	0.62
Control Delay	71.1	7.9	81.8	1.8	73.0	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.1	7.9	81.8	1.8	73.0	7.9
Queue Length 50th (ft)	168	14	~682	12	178	194
Queue Length 95th (ft)	#286	41	#902	28	#336	290
Internal Link Dist (ft)	365		235			562
Turn Bay Length (ft)		105		105	260	
Base Capacity (vph)	324	689	961	1221	337	1400
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	0.92	0.16	1.09	0.17	0.93	0.63

Intersection Summary




- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	250	95	935	190	290	805
Future Volume (vph)	250	95	935	190	290	805
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1719	1538	1881	1599	1787	1881
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1719	1538	1881	1599	1787	1881
Peak-hour factor, PHF	0.84	0.84	0.89	0.89	0.92	0.92
Adj. Flow (vph)	298	113	1051	213	315	875
RTOR Reduction (vph)	0	44	0	31	0	0
Lane Group Flow (vph)	298	69	1051	182	315	875
Heavy Vehicles (%)	5%	5%	1%	1%	1%	1%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	15.0	36.0	44.0	65.0	15.0	63.0
Effective Green, g (s)	17.0	34.0	46.0	67.0	17.0	65.0
Actuated g/C Ratio	0.19	0.38	0.51	0.74	0.19	0.72
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	324	581	961	1190	337	1358
v/s Ratio Prot	c0.17	0.05	c0.56	0.11	c0.18	0.47
v/s Ratio Perm						
v/c Ratio	0.92	0.12	1.09	0.15	0.93	0.64
Uniform Delay, d1	35.8	18.2	22.0	3.3	36.0	6.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	29.4	0.0	58.0	0.1	32.0	0.8
Delay (s)	65.2	18.3	80.0	3.4	67.9	7.3
Level of Service	E	B	F	A	E	A
Approach Delay (s)	52.3		67.1			23.3
Approach LOS	D		E			C

Intersection Summary

HCM 2000 Control Delay	46.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group







			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	19	50	21
Maximum Split (%)	21.1%	55.6%	23.3%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	19	69
End Time (s)	19	69	0
Yield/Force Off (s)	15	63	84
Yield/Force Off 170(s)	15	63	84
Local Start Time (s)	71	0	50
Local Yield (s)	86	44	65
Local Yield 170(s)	86	44	65

Intersection Summary

Cycle Length		90
Control Type	Actuated-Uncoordinated	
Natural Cycle		100













Splits and Phases: 1: US 3 & Central St



						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	267	99	713	160	142	830
v/c Ratio	0.78	0.13	0.77	0.13	0.39	0.59
Control Delay	51.0	4.1	24.4	0.8	35.0	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	4.1	24.4	0.8	35.0	7.3
Queue Length 50th (ft)	146	0	301	0	72	174
Queue Length 95th (ft)	#246	26	444	13	125	247
Internal Link Dist (ft)	365		235			562
Turn Bay Length (ft)		105		105	260	
Base Capacity (vph)	368	763	1052	1236	368	1520
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	0.73	0.13	0.68	0.13	0.39	0.55




Intersection Summary

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	230	85	670	150	125	730
Future Volume (vph)	230	85	670	150	125	730
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1805	1615	1900	1615	1805	1900
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1805	1615	1900	1615	1805	1900
Peak-hour factor, PHF	0.86	0.86	0.94	0.94	0.88	0.88
Adj. Flow (vph)	267	99	713	160	142	830
RTOR Reduction (vph)	0	60	0	44	0	0
Lane Group Flow (vph)	267	39	713	116	142	830
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	14.0	35.0	39.0	59.0	15.0	58.0
Effective Green, g (s)	16.0	33.0	41.0	61.0	17.0	60.0
Actuated g/C Ratio	0.19	0.39	0.49	0.73	0.20	0.71
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	343	634	927	1172	365	1357
v/s Ratio Prot	c0.15	0.02	c0.38	0.07	0.08	c0.44
v/s Ratio Perm						
v/c Ratio	0.78	0.06	0.77	0.10	0.39	0.61
Uniform Delay, d1	32.3	15.9	17.6	3.4	29.0	6.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.7	0.0	3.9	0.0	0.3	0.6
Delay (s)	42.1	15.9	21.5	3.4	29.3	6.7
Level of Service	D	B	C	A	C	A
Approach Delay (s)	35.0		18.2			10.0
Approach LOS	C		B			A

Intersection Summary

HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	84.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			







			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	19	50	21
Maximum Split (%)	21.1%	55.6%	23.3%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	19	69
End Time (s)	19	69	0
Yield/Force Off (s)	15	63	84
Yield/Force Off 170(s)	15	63	84
Local Start Time (s)	71	0	50
Local Yield (s)	86	44	65
Local Yield 170(s)	86	44	65

Intersection Summary

Cycle Length		90
Control Type	Actuated-Uncoordinated	
Natural Cycle		60

Splits and Phases: 1: US 3 & Central St















						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	493	277	614	185	244	928
v/c Ratio	1.40	0.34	0.70	0.16	0.67	0.68
Control Delay	225.0	6.5	22.2	0.8	43.3	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	225.0	6.5	22.2	0.8	43.3	9.2
Queue Length 50th (ft)	~391	25	243	0	131	216
Queue Length 95th (ft)	#445	46	361	14	#236	329
Internal Link Dist (ft)	365		235			562
Turn Bay Length (ft)		105		105	260	
Base Capacity (vph)	353	817	1017	1175	364	1510
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	1.40	0.34	0.60	0.16	0.67	0.61

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.






						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	365	205	565	170	220	835
Future Volume (vph)	365	205	565	170	220	835
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1736	1553	1845	1568	1787	1881
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1736	1553	1845	1568	1787	1881
Peak-hour factor, PHF	0.74	0.74	0.92	0.92	0.90	0.90
Adj. Flow (vph)	493	277	614	185	244	928
RTOR Reduction (vph)	0	120	0	51	0	0
Lane Group Flow (vph)	493	157	614	134	244	928
Heavy Vehicles (%)	4%	4%	3%	3%	1%	1%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	15.1	36.2	37.8	58.9	15.1	56.9
Effective Green, g (s)	17.1	34.2	39.8	60.9	17.1	58.9
Actuated g/C Ratio	0.20	0.41	0.47	0.72	0.20	0.70
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	353	632	874	1136	363	1318
v/s Ratio Prot	c0.28	0.10	0.33	0.09	0.14	c0.49
v/s Ratio Perm						
v/c Ratio	1.40	0.25	0.70	0.12	0.67	0.70
Uniform Delay, d1	33.5	16.4	17.4	3.5	30.9	7.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	194.9	0.1	2.6	0.0	3.8	1.4
Delay (s)	228.4	16.5	20.0	3.5	34.7	8.8
Level of Service	F	B	C	A	C	A
Approach Delay (s)	152.1		16.2			14.2
Approach LOS	F		B			B

Intersection Summary

HCM 2000 Control Delay	53.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	84.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

1: US 3 & Central St  
Timing Report, Sorted By Phase

2023 Build  
Weekday AM

			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	19	50	21
Maximum Split (%)	21.1%	55.6%	23.3%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	19	69
End Time (s)	19	69	0
Yield/Force Off (s)	15	63	84
Yield/Force Off 170(s)	15	63	84
Local Start Time (s)	71	0	50
Local Yield (s)	86	44	65
Local Yield 170(s)	86	44	65

Intersection Summary

Cycle Length	90
Control Type	Actuated-Uncoordinated
Natural Cycle	75

Splits and Phases: 1: US 3 & Central St



Intersection







Int Delay, s/veh 3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	330	60	25	460	110	15
Future Vol, veh/h	330	60	25	460	110	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	1	4	4	0	0
Mvmt Flow	367	67	28	511	122	17

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	434
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.236
Pot Cap-1 Maneuver	-	-	1115
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1115
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-













Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	27.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	295	-	-	1115	-
HCM Lane V/C Ratio	0.471	-	-	0.025	-
HCM Control Delay (s)	27.6	-	-	8.3	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	2.4	-	-	0.1	-

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	345	167	1011	213	353	848
v/c Ratio	1.06	0.24	1.05	0.18	1.05	0.61
Control Delay	105.5	10.0	67.5	2.2	99.6	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.5	10.0	67.5	2.2	99.6	7.6
Queue Length 50th (ft)	~218	30	~634	16	~220	182
Queue Length 95th (ft)	#346	63	#853	32	#388	273
Internal Link Dist (ft)	365		235			562
Turn Bay Length (ft)		105		105	260	
Base Capacity (vph)	324	694	961	1213	337	1400
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	1.06	0.24	1.05	0.18	1.05	0.61

Intersection Summary




- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	290	140	900	190	325	780
Future Volume (vph)	290	140	900	190	325	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1719	1538	1881	1599	1787	1881
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1719	1538	1881	1599	1787	1881
Peak-hour factor, PHF	0.84	0.84	0.89	0.89	0.92	0.92
Adj. Flow (vph)	345	167	1011	213	353	848
RTOR Reduction (vph)	0	49	0	23	0	0
Lane Group Flow (vph)	345	118	1011	190	353	848
Heavy Vehicles (%)	5%	5%	1%	1%	1%	1%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	15.0	36.0	44.0	65.0	15.0	63.0
Effective Green, g (s)	17.0	34.0	46.0	67.0	17.0	65.0
Actuated g/C Ratio	0.19	0.38	0.51	0.74	0.19	0.72
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	324	581	961	1190	337	1358
v/s Ratio Prot	c0.20	0.08	c0.54	0.12	c0.20	0.45
v/s Ratio Perm						
v/c Ratio	1.06	0.20	1.05	0.16	1.05	0.62
Uniform Delay, d1	36.5	18.9	22.0	3.3	36.5	6.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	68.2	0.1	43.7	0.1	62.0	0.6
Delay (s)	104.7	18.9	65.7	3.4	98.5	7.0
Level of Service	F	B	E	A	F	A
Approach Delay (s)	76.7		54.9			33.9
Approach LOS	E		D			C

Intersection Summary

HCM 2000 Control Delay	50.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

1: US 3 & Central St  
Timing Report, Sorted By Phase

			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	19	50	21
Maximum Split (%)	21.1%	55.6%	23.3%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	19	69
End Time (s)	19	69	0
Yield/Force Off (s)	15	63	84
Yield/Force Off 170(s)	15	63	84
Local Start Time (s)	71	0	50
Local Yield (s)	86	44	65
Local Yield 170(s)	86	44	65

Intersection Summary

Cycle Length	90
Control Type	Actuated-Uncoordinated
Natural Cycle	110

Splits and Phases: 1: US 3 & Central St









Intersection

Int Delay, s/veh	2.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	470	45	15	335	95	15
Future Vol, veh/h	470	45	15	335	95	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	1	5	5	0	0
Mvmt Flow	522	50	17	372	106	17

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	572	0	953
Stage 1	-	-	-	-	547
Stage 2	-	-	-	-	406
Critical Hdwy	-	-	4.15	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.245	-	3.5
Pot Cap-1 Maneuver	-	-	986	-	290
Stage 1	-	-	-	-	584
Stage 2	-	-	-	-	677
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	986	-	284
Mov Cap-2 Maneuver	-	-	-	-	284
Stage 1	-	-	-	-	584
Stage 2	-	-	-	-	662

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	24.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	304	-	-	986	-
HCM Lane V/C Ratio	0.402	-	-	0.017	-
HCM Control Delay (s)	24.6	-	-	8.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.9	-	-	0.1	-













						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	326	163	665	160	199	790
v/c Ratio	0.89	0.20	0.74	0.13	0.54	0.57
Control Delay	62.2	3.5	23.4	0.8	38.2	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.2	3.5	23.4	0.8	38.2	7.3
Queue Length 50th (ft)	184	0	270	0	103	160
Queue Length 95th (ft)	#325	31	398	13	170	226
Internal Link Dist (ft)	365		235			562
Turn Bay Length (ft)		105		105	260	
Base Capacity (vph)	367	824	1047	1202	367	1525
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	0.89	0.20	0.64	0.13	0.54	0.52

Intersection Summary




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



1: US 3 & Central St  
 HCM Signalized Intersection Capacity Analysis

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	280	140	625	150	175	695
Future Volume (vph)	280	140	625	150	175	695
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1805	1615	1900	1615	1805	1900
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1805	1615	1900	1615	1805	1900
Peak-hour factor, PHF	0.86	0.86	0.94	0.94	0.88	0.88
Adj. Flow (vph)	326	163	665	160	199	790
RTOR Reduction (vph)	0	97	0	44	0	0
Lane Group Flow (vph)	326	66	665	116	199	790
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	15.1	36.2	37.8	58.9	15.1	56.9
Effective Green, g (s)	17.1	34.2	39.8	60.9	17.1	58.9
Actuated g/C Ratio	0.20	0.41	0.47	0.72	0.20	0.70
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	367	657	900	1170	367	1332
v/s Ratio Prot	c0.18	0.04	c0.35	0.07	0.11	c0.42
v/s Ratio Perm						
v/c Ratio	0.89	0.10	0.74	0.10	0.54	0.59
Uniform Delay, d1	32.5	15.4	17.9	3.4	29.9	6.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.4	0.0	3.2	0.0	0.9	0.5
Delay (s)	54.0	15.4	21.1	3.5	30.8	6.9
Level of Service	D	B	C	A	C	A
Approach Delay (s)	41.1		17.7			11.7
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			20.1		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.74			
Actuated Cycle Length (s)			84.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			68.1%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

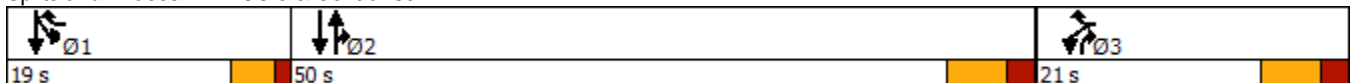
1: US 3 & Central St  
Timing Report, Sorted By Phase

			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	19	50	21
Maximum Split (%)	21.1%	55.6%	23.3%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	19	69
End Time (s)	19	69	0
Yield/Force Off (s)	15	63	84
Yield/Force Off 170(s)	15	63	84
Local Start Time (s)	71	0	50
Local Yield (s)	86	44	65
Local Yield 170(s)	86	44	65

Intersection Summary

Cycle Length		90
Control Type	Actuated-Uncoordinated	
Natural Cycle		60

Splits and Phases: 1: US 3 & Central St









Intersection

Int Delay, s/veh	3.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	270	55	25	295	125	15
Future Vol, veh/h	270	55	25	295	125	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	300	61	28	328	139	17

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	361	0	715
Stage 1	-	-	-	-	331
Stage 2	-	-	-	-	384
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1209	-	400
Stage 1	-	-	-	-	732
Stage 2	-	-	-	-	693
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1209	-	389
Mov Cap-2 Maneuver	-	-	-	-	389
Stage 1	-	-	-	-	732
Stage 2	-	-	-	-	674













Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	19.1
HCM LOS			C




Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	409	-	-	1209	-
HCM Lane V/C Ratio	0.38	-	-	0.023	-
HCM Control Delay (s)	19.1	-	-	8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.7	-	-	0.1	-

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	389	200	707	207	211	1072
v/c Ratio	1.15	0.26	0.78	0.17	0.61	0.77
Control Delay	131.1	4.5	24.9	0.8	41.4	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	131.1	4.5	24.9	0.8	41.4	11.9
Queue Length 50th (ft)	~269	7	303	0	111	294
Queue Length 95th (ft)	#443	47	450	15	186	465
Internal Link Dist (ft)	365		235			562
Turn Bay Length (ft)		105		105	260	
Base Capacity (vph)	338	778	975	1196	348	1447
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	1.15	0.26	0.73	0.17	0.61	0.74

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	350	180	650	190	190	965
Future Volume (vph)	350	180	650	190	190	965
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1736	1553	1845	1568	1787	1881
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1736	1553	1845	1568	1787	1881
Peak-hour factor, PHF	0.90	0.90	0.92	0.92	0.90	0.90
Adj. Flow (vph)	389	200	707	207	211	1072
RTOR Reduction (vph)	0	108	0	55	0	0
Lane Group Flow (vph)	389	92	707	152	211	1072
Heavy Vehicles (%)	4%	4%	3%	3%	1%	1%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	15.1	36.2	41.2	62.3	15.1	60.3
Effective Green, g (s)	17.1	34.2	43.2	64.3	17.1	62.3
Actuated g/C Ratio	0.20	0.39	0.49	0.74	0.20	0.71
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	339	607	911	1153	349	1340
v/s Ratio Prot	c0.22	0.06	0.38	0.10	0.12	c0.57
v/s Ratio Perm						
v/c Ratio	1.15	0.15	0.78	0.13	0.60	0.80
Uniform Delay, d1	35.2	17.2	18.1	3.4	32.1	8.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	95.2	0.0	4.2	0.1	2.0	3.3
Delay (s)	130.3	17.3	22.3	3.4	34.1	11.7
Level of Service	F	B	C	A	C	B
Approach Delay (s)	91.9		18.0			15.4
Approach LOS	F		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			32.4		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.90			
Actuated Cycle Length (s)			87.4		Sum of lost time (s)	10.0
Intersection Capacity Utilization			76.8%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						







			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	19	50	21
Maximum Split (%)	21.1%	55.6%	23.3%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	19	69
End Time (s)	19	69	0
Yield/Force Off (s)	15	63	84
Yield/Force Off 170(s)	15	63	84
Local Start Time (s)	71	0	50
Local Yield (s)	86	44	65
Local Yield 170(s)	86	44	65

Intersection Summary

Cycle Length		90
Control Type	Actuated-Uncoordinated	
Natural Cycle		70













Splits and Phases: 1: US 3 & Central St



						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	306	111	1144	233	348	962
v/c Ratio	0.94	0.16	1.19	0.19	1.03	0.69
Control Delay	75.9	9.6	120.0	2.4	95.7	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.9	9.6	120.0	2.4	95.7	9.2
Queue Length 50th (ft)	173	19	~793	18	~214	233
Queue Length 95th (ft)	#331	51	#1034	36	#382	356
Internal Link Dist (ft)	365		235			562
Turn Bay Length (ft)		105		105	260	
Base Capacity (vph)	324	680	961	1214	337	1400
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	0.94	0.16	1.19	0.19	1.03	0.69

Intersection Summary




- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	275	100	1030	210	320	885
Future Volume (vph)	275	100	1030	210	320	885
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1719	1538	1881	1599	1787	1881
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1719	1538	1881	1599	1787	1881
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.92	0.92
Adj. Flow (vph)	306	111	1144	233	348	962
RTOR Reduction (vph)	0	34	0	24	0	0
Lane Group Flow (vph)	306	77	1144	209	348	962
Heavy Vehicles (%)	5%	5%	1%	1%	1%	1%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	15.0	36.0	44.0	65.0	15.0	63.0
Effective Green, g (s)	17.0	34.0	46.0	67.0	17.0	65.0
Actuated g/C Ratio	0.19	0.38	0.51	0.74	0.19	0.72
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	324	581	961	1190	337	1358
v/s Ratio Prot	c0.18	0.05	c0.61	0.13	c0.19	0.51
v/s Ratio Perm						
v/c Ratio	0.94	0.13	1.19	0.18	1.03	0.71
Uniform Delay, d1	36.0	18.3	22.0	3.4	36.5	7.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	35.1	0.0	96.1	0.1	57.7	1.4
Delay (s)	71.1	18.4	118.1	3.5	94.2	8.5
Level of Service	E	B	F	A	F	A
Approach Delay (s)	57.1		98.7			31.3
Approach LOS	E		F			C

Intersection Summary

HCM 2000 Control Delay	64.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	97.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

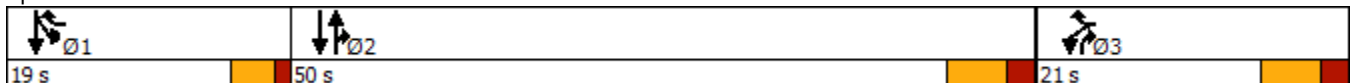








			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	19	50	21
Maximum Split (%)	21.1%	55.6%	23.3%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	19	69
End Time (s)	19	69	0
Yield/Force Off (s)	15	63	84
Yield/Force Off 170(s)	15	63	84
Local Start Time (s)	71	0	50
Local Yield (s)	86	44	65
Local Yield 170(s)	86	44	65

Intersection Summary

Cycle Length		90
Control Type	Actuated-Uncoordinated	
Natural Cycle		130













Splits and Phases: 1: US 3 & Central St



						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	278	100	787	176	156	894
v/c Ratio	0.82	0.13	0.83	0.14	0.44	0.63
Control Delay	56.2	4.0	27.6	0.8	36.6	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.2	4.0	27.6	0.8	36.6	8.0
Queue Length 50th (ft)	153	0	355	0	79	200
Queue Length 95th (ft)	#281	28	524	14	140	300
Internal Link Dist (ft)	365		235			562
Turn Bay Length (ft)		105		105	260	
Base Capacity (vph)	354	751	1011	1246	354	1472
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	0.79	0.13	0.78	0.14	0.44	0.61




Intersection Summary

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	250	90	740	165	140	805
Future Volume (vph)	250	90	740	165	140	805
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1805	1615	1900	1615	1805	1900
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1805	1615	1900	1615	1805	1900
Peak-hour factor, PHF	0.90	0.90	0.94	0.94	0.90	0.90
Adj. Flow (vph)	278	100	787	176	156	894
RTOR Reduction (vph)	0	62	0	47	0	0
Lane Group Flow (vph)	278	38	787	129	156	894
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	14.2	35.3	41.5	61.7	15.1	60.6
Effective Green, g (s)	16.2	33.3	43.5	63.7	17.1	62.6
Actuated g/C Ratio	0.19	0.38	0.50	0.73	0.20	0.72
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	336	619	952	1185	355	1370
v/s Ratio Prot	c0.15	0.02	c0.41	0.08	0.09	c0.47
v/s Ratio Perm						
v/c Ratio	0.83	0.06	0.83	0.11	0.44	0.65
Uniform Delay, d1	34.0	16.9	18.4	3.3	30.6	6.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.6	0.0	6.0	0.0	0.3	0.9
Delay (s)	48.6	16.9	24.4	3.4	31.0	7.2
Level of Service	D	B	C	A	C	A
Approach Delay (s)	40.2		20.6			10.8
Approach LOS	D		C			B

Intersection Summary

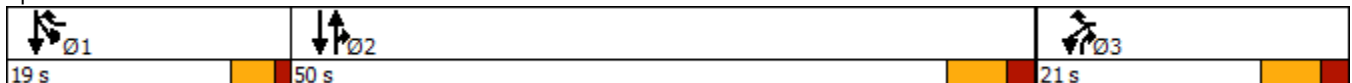
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	86.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			







			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	19	50	21
Maximum Split (%)	21.1%	55.6%	23.3%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	19	69
End Time (s)	19	69	0
Yield/Force Off (s)	15	63	84
Yield/Force Off 170(s)	15	63	84
Local Start Time (s)	71	0	50
Local Yield (s)	86	44	65
Local Yield 170(s)	86	44	65

Intersection Summary

Cycle Length		90
Control Type	Actuated-Uncoordinated	
Natural Cycle		65













Splits and Phases: 1: US 3 & Central St



						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	439	250	674	207	267	1028
v/c Ratio	1.28	0.31	0.75	0.17	0.76	0.75
Control Delay	179.4	5.8	23.8	1.2	49.3	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	179.4	5.8	23.8	1.2	49.3	10.9
Queue Length 50th (ft)	~329	19	281	5	146	269
Queue Length 95th (ft)	#510	65	416	20	#268	416
Internal Link Dist (ft)	365		235			562
Turn Bay Length (ft)		105		105	260	
Base Capacity (vph)	343	794	988	1190	353	1467
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	1.28	0.31	0.68	0.17	0.76	0.70

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.




						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	395	225	620	190	240	925
Future Volume (vph)	395	225	620	190	240	925
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1736	1553	1845	1568	1787	1881
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1736	1553	1845	1568	1787	1881
Peak-hour factor, PHF	0.90	0.90	0.92	0.92	0.90	0.90
Adj. Flow (vph)	439	250	674	207	267	1028
RTOR Reduction (vph)	0	117	0	46	0	0
Lane Group Flow (vph)	439	133	674	161	267	1028
Heavy Vehicles (%)	4%	4%	3%	3%	1%	1%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	15.1	36.2	40.1	61.2	15.1	59.2
Effective Green, g (s)	17.1	34.2	42.1	63.2	17.1	61.2
Actuated g/C Ratio	0.20	0.40	0.49	0.73	0.20	0.71
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	343	615	900	1148	354	1333
v/s Ratio Prot	c0.25	0.09	0.37	0.10	0.15	c0.55
v/s Ratio Perm						
v/c Ratio	1.28	0.22	0.75	0.14	0.75	0.77
Uniform Delay, d1	34.6	17.2	17.8	3.4	32.6	8.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	146.6	0.1	3.4	0.1	7.9	2.6
Delay (s)	181.2	17.3	21.3	3.5	40.5	10.6
Level of Service	F	B	C	A	D	B
Approach Delay (s)	121.7		17.1			16.8
Approach LOS	F		B			B

Intersection Summary

HCM 2000 Control Delay	42.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	86.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

1: US 3 & Central St  
Timing Report, Sorted By Phase

2023 Build  
Weekday AM

			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	19	50	21
Maximum Split (%)	21.1%	55.6%	23.3%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	19	69
End Time (s)	19	69	0
Yield/Force Off (s)	15	63	84
Yield/Force Off 170(s)	15	63	84
Local Start Time (s)	71	0	50
Local Yield (s)	86	44	65
Local Yield 170(s)	86	44	65

Intersection Summary

Cycle Length	90
Control Type	Actuated-Uncoordinated
Natural Cycle	75

Splits and Phases: 1: US 3 & Central St



Intersection

Int Delay, s/veh 4.1







Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	370	60	25	510	110	15
Future Vol, veh/h	370	60	25	510	110	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	1	4	4	0	0
Mvmt Flow	411	67	28	567	122	17

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	478
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.236
Pot Cap-1 Maneuver	-	-	1074
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1074
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	34.1
HCM LOS			D













Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	258	-	-	1074	-
HCM Lane V/C Ratio	0.538	-	-	0.026	-
HCM Control Delay (s)	34.1	-	-	8.4	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	2.9	-	-	0.1	-



						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	350	167	1106	233	386	935
v/c Ratio	1.08	0.24	1.15	0.19	1.15	0.67
Control Delay	110.0	11.6	103.9	2.7	130.0	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.0	11.6	103.9	2.7	130.0	8.8
Queue Length 50th (ft)	~224	37	~747	21	~260	220
Queue Length 95th (ft)	#393	79	#988	41	#433	334
Internal Link Dist (ft)	365		235			562
Turn Bay Length (ft)		105		105	260	
Base Capacity (vph)	324	684	961	1208	337	1400
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	1.08	0.24	1.15	0.19	1.15	0.67

Intersection Summary




- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	315	150	995	210	355	860
Future Volume (vph)	315	150	995	210	355	860
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1719	1538	1881	1599	1787	1881
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1719	1538	1881	1599	1787	1881
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.92	0.92
Adj. Flow (vph)	350	167	1106	233	386	935
RTOR Reduction (vph)	0	37	0	18	0	0
Lane Group Flow (vph)	350	130	1106	215	386	935
Heavy Vehicles (%)	5%	5%	1%	1%	1%	1%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	15.0	36.0	44.0	65.0	15.0	63.0
Effective Green, g (s)	17.0	34.0	46.0	67.0	17.0	65.0
Actuated g/C Ratio	0.19	0.38	0.51	0.74	0.19	0.72
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	324	581	961	1190	337	1358
v/s Ratio Prot	c0.20	0.08	c0.59	0.13	c0.22	0.50
v/s Ratio Perm						
v/c Ratio	1.08	0.22	1.15	0.18	1.15	0.69
Uniform Delay, d1	36.5	19.0	22.0	3.4	36.5	6.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	73.1	0.1	80.0	0.1	94.5	1.2
Delay (s)	109.6	19.1	102.0	3.5	131.0	8.1
Level of Service	F	B	F	A	F	A
Approach Delay (s)	80.3		84.9			44.0
Approach LOS	F		F			D

Intersection Summary

HCM 2000 Control Delay	67.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

1: US 3 & Central St  
Timing Report, Sorted By Phase

			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	19	50	21
Maximum Split (%)	21.1%	55.6%	23.3%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	19	69
End Time (s)	19	69	0
Yield/Force Off (s)	15	63	84
Yield/Force Off 170(s)	15	63	84
Local Start Time (s)	71	0	50
Local Yield (s)	86	44	65
Local Yield 170(s)	86	44	65

Intersection Summary

Cycle Length	90
Control Type	Actuated-Uncoordinated
Natural Cycle	130

Splits and Phases: 1: US 3 & Central St









Intersection

Int Delay, s/veh	3.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	520	45	15	370	95	15
Future Vol, veh/h	520	45	15	370	95	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	1	5	5	0	0
Mvmt Flow	578	50	17	411	106	17

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	628	0	1048
Stage 1	-	-	-	-	603
Stage 2	-	-	-	-	445
Critical Hdwy	-	-	4.15	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.245	-	3.5
Pot Cap-1 Maneuver	-	-	940	-	255
Stage 1	-	-	-	-	550
Stage 2	-	-	-	-	650
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	940	-	249
Mov Cap-2 Maneuver	-	-	-	-	249
Stage 1	-	-	-	-	550
Stage 2	-	-	-	-	635













Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	29.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	267	-	-	940	-
HCM Lane V/C Ratio	0.458	-	-	0.018	-
HCM Control Delay (s)	29.4	-	-	8.9	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	2.3	-	-	0.1	-

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	333	161	739	176	211	856
v/c Ratio	0.94	0.20	0.80	0.14	0.59	0.61
Control Delay	71.4	3.5	25.9	0.8	40.5	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.4	3.5	25.9	0.8	40.5	7.8
Queue Length 50th (ft)	190	0	320	0	111	184
Queue Length 95th (ft)	#359	35	471	14	185	274
Internal Link Dist (ft)	365		235			562
Turn Bay Length (ft)		105		105	260	
Base Capacity (vph)	356	802	1015	1228	356	1478
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	0.94	0.20	0.73	0.14	0.59	0.58

Intersection Summary




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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	300	145	695	165	190	770
Future Volume (vph)	300	145	695	165	190	770
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1805	1615	1900	1615	1805	1900
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1805	1615	1900	1615	1805	1900
Peak-hour factor, PHF	0.90	0.90	0.94	0.94	0.90	0.90
Adj. Flow (vph)	333	161	739	176	211	856
RTOR Reduction (vph)	0	97	0	47	0	0
Lane Group Flow (vph)	333	64	739	129	211	856
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	15.1	36.2	40.3	61.4	15.1	59.4
Effective Green, g (s)	17.1	34.2	42.3	63.4	17.1	61.4
Actuated g/C Ratio	0.20	0.40	0.49	0.73	0.20	0.71
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	356	638	929	1183	356	1348
v/s Ratio Prot	c0.18	0.04	c0.39	0.08	0.12	c0.45
v/s Ratio Perm						
v/c Ratio	0.94	0.10	0.80	0.11	0.59	0.64
Uniform Delay, d1	34.2	16.5	18.5	3.4	31.5	6.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	31.0	0.0	4.8	0.0	1.8	0.7
Delay (s)	65.1	16.5	23.3	3.4	33.3	7.4
Level of Service	E	B	C	A	C	A
Approach Delay (s)	49.3		19.4			12.5
Approach LOS	D		B			B

Intersection Summary

HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	86.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

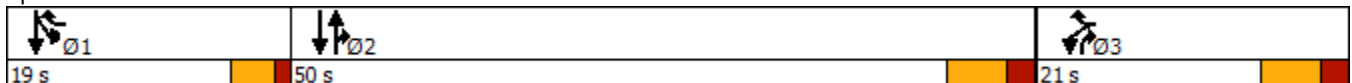
1: US 3 & Central St  
Timing Report, Sorted By Phase

			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	19	50	21
Maximum Split (%)	21.1%	55.6%	23.3%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	19	69
End Time (s)	19	69	0
Yield/Force Off (s)	15	63	84
Yield/Force Off 170(s)	15	63	84
Local Start Time (s)	71	0	50
Local Yield (s)	86	44	65
Local Yield 170(s)	86	44	65

Intersection Summary

Cycle Length	90
Control Type	Actuated-Uncoordinated
Natural Cycle	65

Splits and Phases: 1: US 3 & Central St



Intersection

Int Delay, s/veh	3.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	300	55	25	320	125	15
Future Vol, veh/h	300	55	25	320	125	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	333	61	28	356	139	17

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	394	0	776
Stage 1	-	-	-	-	364
Stage 2	-	-	-	-	412
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1176	-	369
Stage 1	-	-	-	-	707
Stage 2	-	-	-	-	673
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1176	-	358
Mov Cap-2 Maneuver	-	-	-	-	358
Stage 1	-	-	-	-	707
Stage 2	-	-	-	-	653

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	21.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	377	-	-	1176	-
HCM Lane V/C Ratio	0.413	-	-	0.024	-
HCM Control Delay (s)	21.1	-	-	8.1	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2	-	-	0.1	-



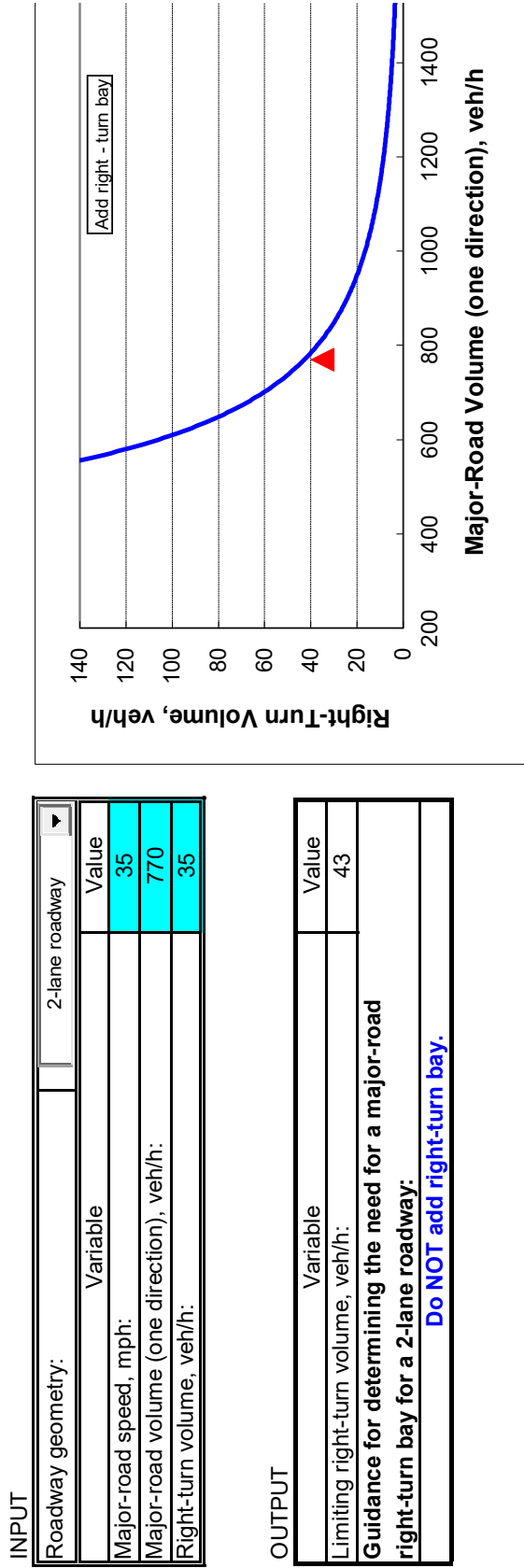
## Mitigated Intersection Operational Analyses

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2023 Build Weekday AM Peak Hour

**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**



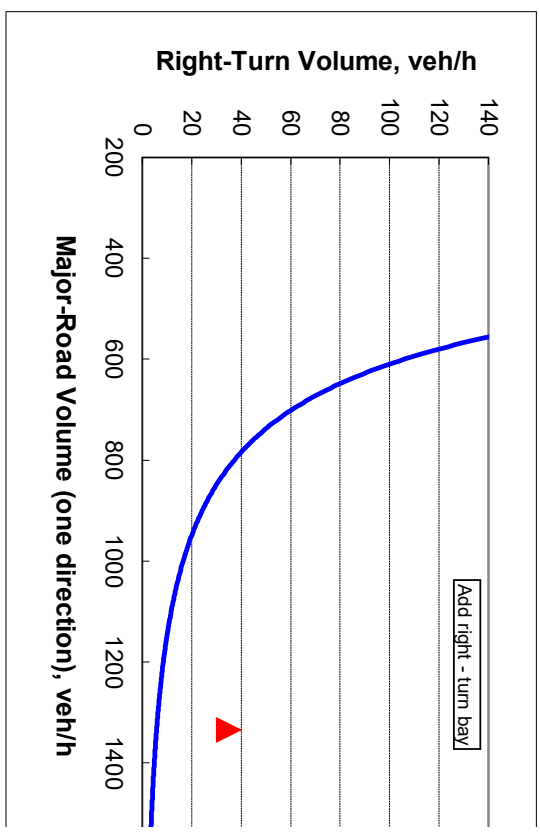
2023 Build Weekday PM Peak Hour

**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT	
Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	35
Major-road volume (one direction), veh/h:	1335
Right-turn volume, veh/h:	35

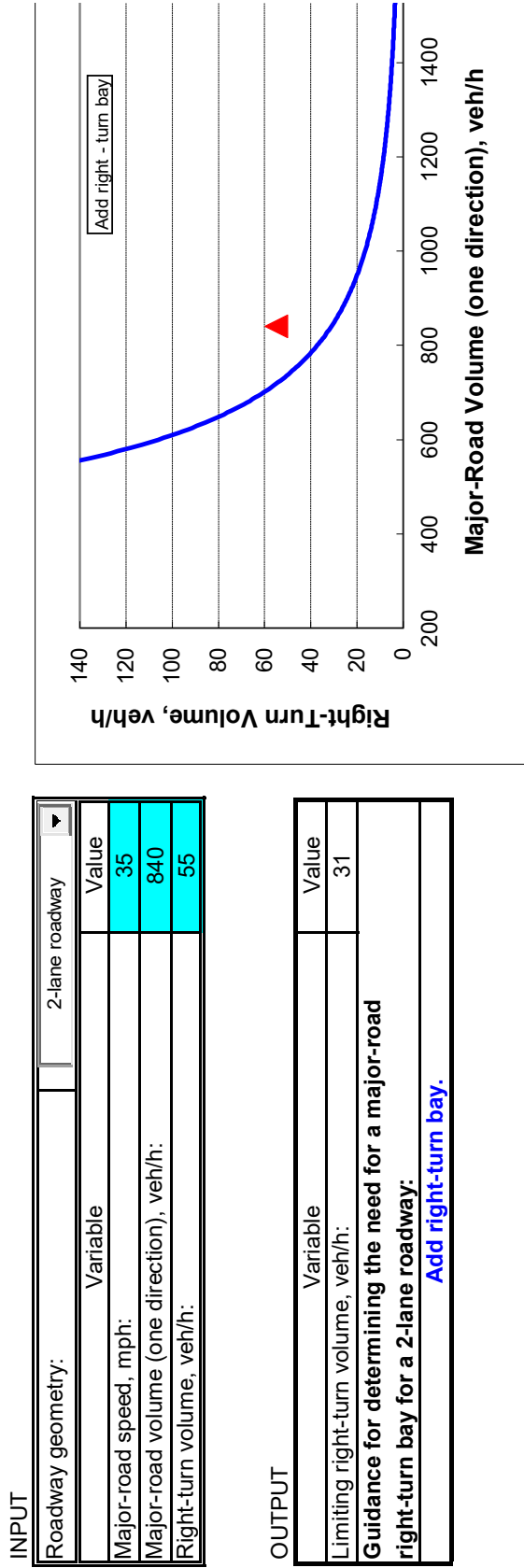
  

OUTPUT	
Variable	Value
Limiting right-turn volume, veh/h:	6
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
<b>Add right-turn bay.</b>	



2023 Build Saturday Midday Peak Hour

**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**



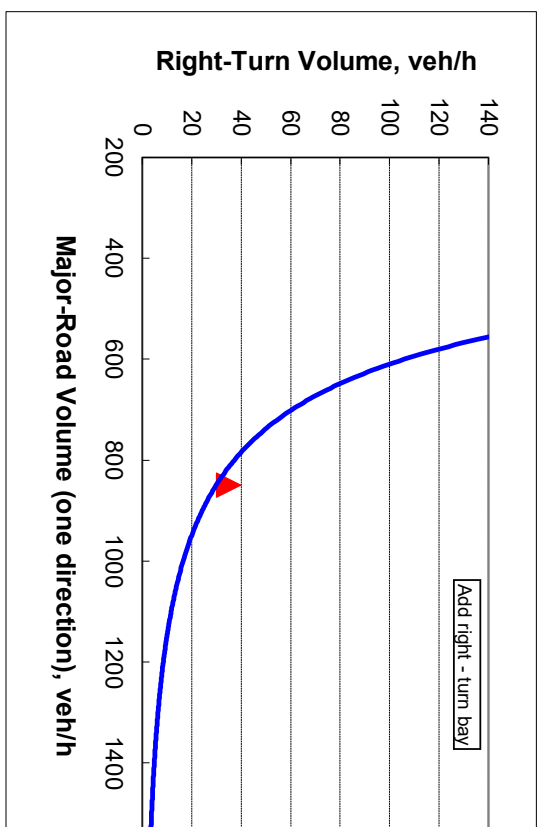
2033 Build Weekday AM Peak Hour

**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**







INPUT	
Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	35
Major-road volume (one direction), veh/h:	850
Right-turn volume, veh/h:	35

OUTPUT	
Variable	Value
Limiting right-turn volume, veh/h:	30
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
<b>Add right-turn bay.</b>	















Queues

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	439	250	674	207	267	1028
v/c Ratio	0.95	0.29	0.89	0.17	0.71	0.82
Control Delay	65.2	6.8	40.9	0.9	44.6	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.2	6.8	40.9	0.9	44.6	18.2
Queue Length 50th (ft)	245	35	347	0	142	379
Queue Length 95th (ft)	#430	77	#563	16	#244	587
Internal Link Dist (ft)	365		318			562
Turn Bay Length (ft)		300			260	
Base Capacity (vph)	463	871	759	1178	377	1255
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	0.95	0.29	0.89	0.18	0.71	0.82




Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	395	225	620	190	240	925
Future Volume (vph)	395	225	620	190	240	925
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1736	1553	1845	1568	1787	1881
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1736	1553	1845	1568	1787	1881
Peak-hour factor, PHF	0.90	0.90	0.92	0.92	0.90	0.90
Adj. Flow (vph)	439	250	674	207	267	1028
RTOR Reduction (vph)	0	65	0	58	0	0
Lane Group Flow (vph)	439	185	674	149	267	1028
Heavy Vehicles (%)	4%	4%	3%	3%	1%	1%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	22.0	45.0	34.9	62.9	17.0	55.9
Effective Green, g (s)	24.0	43.0	36.9	64.9	19.0	57.9
Actuated g/C Ratio	0.27	0.48	0.41	0.72	0.21	0.64
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	463	742	757	1131	377	1211
v/s Ratio Prot	c0.25	0.12	0.37	0.10	0.15	c0.55
v/s Ratio Perm						
v/c Ratio	0.95	0.25	0.89	0.13	0.71	0.85
Uniform Delay, d1	32.3	13.9	24.6	3.8	32.9	12.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	28.5	0.1	12.7	0.1	4.9	5.5
Delay (s)	60.9	14.0	37.3	3.9	37.8	18.1
Level of Service	E	B	D	A	D	B
Approach Delay (s)	43.8		29.4			22.1
Approach LOS	D		C			C
<b>Intersection Summary</b>						
HCM 2000 Control Delay			29.6		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.90			
Actuated Cycle Length (s)			89.9		Sum of lost time (s)	10.0
Intersection Capacity Utilization			77.8%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

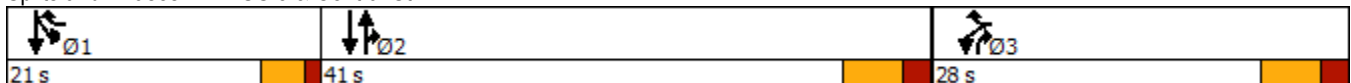


			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	21	41	28
Maximum Split (%)	23.3%	45.6%	31.1%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	21	62
End Time (s)	21	62	0
Yield/Force Off (s)	17	56	84
Yield/Force Off 170(s)	17	56	84
Local Start Time (s)	69	0	41
Local Yield (s)	86	35	63
Local Yield 170(s)	86	35	63

Intersection Summary

Cycle Length		90
Control Type	Actuated-Uncoordinated	
Natural Cycle		75

Splits and Phases: 1: US 3 & Central St



Intersection

Int Delay, s/veh 4.1







Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	370	60	25	510	110	15
Future Vol, veh/h	370	60	25	510	110	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	1	4	4	0	0
Mvmt Flow	411	67	28	567	122	17

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	478
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.236
Pot Cap-1 Maneuver	-	-	1074
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1074
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	34.1
HCM LOS			D













Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	258	-	-	1074	-
HCM Lane V/C Ratio	0.538	-	-	0.026	-
HCM Control Delay (s)	34.1	-	-	8.4	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	2.9	-	-	0.1	-




Queues

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	350	167	1106	233	386	935
v/c Ratio	1.12	0.25	1.12	0.19	1.08	0.65
Control Delay	130.0	13.3	92.7	3.0	113.4	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	130.0	13.3	92.7	3.0	113.4	8.7
Queue Length 50th (ft)	~285	44	~899	25	~305	259
Queue Length 95th (ft)	#467	91	#1150	46	#494	370
Internal Link Dist (ft)	365		318			562
Turn Bay Length (ft)		300			260	
Base Capacity (vph)	312	681	991	1213	357	1436
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	1.12	0.25	1.12	0.19	1.08	0.65

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	315	150	995	210	355	860
Future Volume (vph)	315	150	995	210	355	860
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1719	1538	1881	1599	1787	1881
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1719	1538	1881	1599	1787	1881
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.92	0.92
Adj. Flow (vph)	350	167	1106	233	386	935
RTOR Reduction (vph)	0	41	0	21	0	0
Lane Group Flow (vph)	350	126	1106	212	386	935
Heavy Vehicles (%)	5%	5%	1%	1%	1%	1%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	18.0	44.0	56.0	80.0	20.0	80.0
Effective Green, g (s)	20.0	42.0	58.0	82.0	22.0	82.0
Actuated g/C Ratio	0.18	0.38	0.53	0.75	0.20	0.75
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	312	587	991	1191	357	1402
v/s Ratio Prot	c0.20	0.08	c0.59	0.13	c0.22	0.50
v/s Ratio Perm						
v/c Ratio	1.12	0.21	1.12	0.18	1.08	0.67
Uniform Delay, d1	45.0	22.9	26.0	4.1	44.0	7.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	87.9	0.1	66.0	0.1	71.1	0.9
Delay (s)	132.9	23.0	92.0	4.2	115.1	8.0
Level of Service	F	C	F	A	F	A
Approach Delay (s)	97.4		76.7			39.3
Approach LOS	F		E			D
<b>Intersection Summary</b>						
HCM 2000 Control Delay			64.5		HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.10			
Actuated Cycle Length (s)			110.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			99.5%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	24	62	24
Maximum Split (%)	21.8%	56.4%	21.8%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	24	86
End Time (s)	24	86	0
Yield/Force Off (s)	20	80	104
Yield/Force Off 170(s)	20	80	104
Local Start Time (s)	86	0	62
Local Yield (s)	106	56	80
Local Yield 170(s)	106	56	80

Intersection Summary

Cycle Length		110
Control Type	Actuated-Uncoordinated	
Natural Cycle		130

Splits and Phases: 1: US 3 & Central St









Intersection						
Int Delay, s/veh	3.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	520	45	15	370	95	15
Future Vol, veh/h	520	45	15	370	95	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	1	5	5	0	0
Mvmt Flow	578	50	17	411	106	17

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	628	0	1048
Stage 1	-	-	-	-	603
Stage 2	-	-	-	-	445
Critical Hdwy	-	-	4.15	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.245	-	3.5
Pot Cap-1 Maneuver	-	-	940	-	255
Stage 1	-	-	-	-	550
Stage 2	-	-	-	-	650
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	940	-	249
Mov Cap-2 Maneuver	-	-	-	-	249
Stage 1	-	-	-	-	550
Stage 2	-	-	-	-	635

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	29.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	267	-	-	940	-
HCM Lane V/C Ratio	0.458	-	-	0.018	-
HCM Control Delay (s)	29.4	-	-	8.9	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	2.3	-	-	0.1	-













Queues

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	333	161	739	176	211	856
v/c Ratio	0.81	0.20	0.81	0.14	0.66	0.64
Control Delay	49.5	3.9	27.8	0.7	46.2	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	3.9	27.8	0.7	46.2	9.9
Queue Length 50th (ft)	179	4	336	0	115	227
Queue Length 95th (ft)	#311	38	496	12	#210	338
Internal Link Dist (ft)	365		318			562
Turn Bay Length (ft)		300			260	
Base Capacity (vph)	445	803	982	1276	318	1406
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	0.75	0.20	0.75	0.14	0.66	0.61

Intersection Summary




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

HCM Signalized Intersection Capacity Analysis

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	300	145	695	165	190	770
Future Volume (vph)	300	145	695	165	190	770
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0	4.0	4.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1805	1615	1900	1615	1805	1900
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1805	1615	1900	1615	1805	1900
Peak-hour factor, PHF	0.90	0.90	0.94	0.94	0.90	0.90
Adj. Flow (vph)	333	161	739	176	211	856
RTOR Reduction (vph)	0	89	0	43	0	0
Lane Group Flow (vph)	333	72	739	133	211	856
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	3	1 3	2	2 3	1	1 2
Permitted Phases						
Actuated Green, G (s)	17.5	36.6	39.2	62.7	13.1	56.3
Effective Green, g (s)	19.5	34.6	41.2	64.7	15.1	58.3
Actuated g/C Ratio	0.23	0.40	0.48	0.75	0.18	0.68
Clearance Time (s)	6.0		6.0		4.0	
Vehicle Extension (s)	2.0		3.0		2.0	
Lane Grp Cap (vph)	410	651	912	1217	317	1291
v/s Ratio Prot	c0.18	0.04	c0.39	0.08	c0.12	0.45
v/s Ratio Perm						
v/c Ratio	0.81	0.11	0.81	0.11	0.67	0.66
Uniform Delay, d1	31.4	16.0	19.0	2.8	33.0	8.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.0	0.0	5.5	0.0	4.1	1.0
Delay (s)	42.5	16.0	24.5	2.9	37.0	9.0
Level of Service	D	B	C	A	D	A
Approach Delay (s)	33.8		20.3			14.6
Approach LOS	C		C			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			20.5		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.78			
Actuated Cycle Length (s)			85.8		Sum of lost time (s)	10.0
Intersection Capacity Utilization			73.7%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						



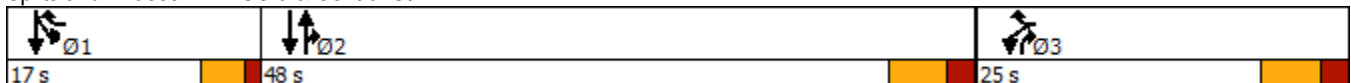
Timing Report, Sorted By Phase

			
Phase Number	1	2	3
Movement	SBTL	NBSB	WBL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize			
Recall Mode	None	Min	None
Maximum Split (s)	17	48	25
Maximum Split (%)	18.9%	53.3%	27.8%
Minimum Split (s)	15	15	15
Yellow Time (s)	3	4	4
All-Red Time (s)	1	2	2
Minimum Initial (s)	4	9	5
Vehicle Extension (s)	2	3	2
Minimum Gap (s)	2	3	2
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	17	65
End Time (s)	17	65	0
Yield/Force Off (s)	13	59	84
Yield/Force Off 170(s)	13	59	84
Local Start Time (s)	73	0	48
Local Yield (s)	86	42	67
Local Yield 170(s)	86	42	67

Intersection Summary

Cycle Length		90
Control Type	Actuated-Uncoordinated	
Natural Cycle		65

Splits and Phases: 1: US 3 & Central St



Intersection						
Int Delay, s/veh	3.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	300	55	25	320	125	15
Future Vol, veh/h	300	55	25	320	125	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	333	61	28	356	139	17

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	394	0	776
Stage 1	-	-	-	-	364
Stage 2	-	-	-	-	412
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1176	-	369
Stage 1	-	-	-	-	707
Stage 2	-	-	-	-	673
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1176	-	358
Mov Cap-2 Maneuver	-	-	-	-	358
Stage 1	-	-	-	-	707
Stage 2	-	-	-	-	653

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	21.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	377	-	-	1176	-
HCM Lane V/C Ratio	0.413	-	-	0.024	-
HCM Control Delay (s)	21.1	-	-	8.1	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2	-	-	0.1	-