



TRAFFIC STUDY

Pre-K Facility
119 Grove Street
Torrington, CT

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EXECUTIVE SUMMARY

This traffic study has been prepared for a Pre-K Facility at 119 Grove Street in Torrington, Connecticut. The study area is along a residential stretch of Grove Street. The project will consist of an ±17,500 square foot new Pre-K Building with associated parking. The project is located on a site currently unoccupied and opposite the Sacred Heart Roman Catholic Church and adjacent to the current convent building.

The Site is located on the westerly side of Grove Street equidistant between CT Route 4 (East Elm Street) and East Pearl Street. The Site is also just west of the CT Route 8, interchange 44, with CT Route 4 (East Elm Street). Land uses along Grove Street in close proximity to the project Site are primarily residential.

Access to and from the Site is proposed via two curb cuts, one entering and one exiting only. Visibility along Grove Street is acceptable in all directions and should be in excess of that required by the American Association of State Highway and Transportation Officials' (AASHTO) guidance.

This study investigated the potential traffic impacts of the proposed development during the weekday morning, evening and midday traffic periods. Peak hour manual turning movement traffic volumes, vehicle classification, and pedestrian counts were recorded at key intersections within the study area to assess existing traffic conditions in the vicinity of the Site. Turning movement counts (TMC) were collected at the unsignalized intersections of CT Route 4 (East Elm Street) at Grove Street, and East Pearl Street/Wall Street at Grove Street. The proposed development is projected to generate 73 trips in the AM peak hour (41 in/enter, 32 out/exit) and 25 trips in the PM peak hour (11 in/enter, 13 out/exit) and 60 trips in the afternoon peak hour (28 in/enter, 32 out/exit).

A detailed traffic analysis was conducted at key intersections and roadways in the general vicinity of the Site in accordance with methodologies outlined in the Highway Capacity Manual, 6th Edition, published by the Transportation Research Board.

After analyses of the Existing, No Build, and Build scenarios of the weekday morning, evening and afternoon peak hours, it is projected that the proposed development will have negligible impacts on the surrounding roadway network. All intersections during the three study peak periods are projected to generally perform adequately and have negligible impacts from the proposed development at 119 Grove Street.

The following is a summary of the results/recommendations for this Site:

- At the egressing driveway, install 12" white stop bar and stop sign at Site egress.

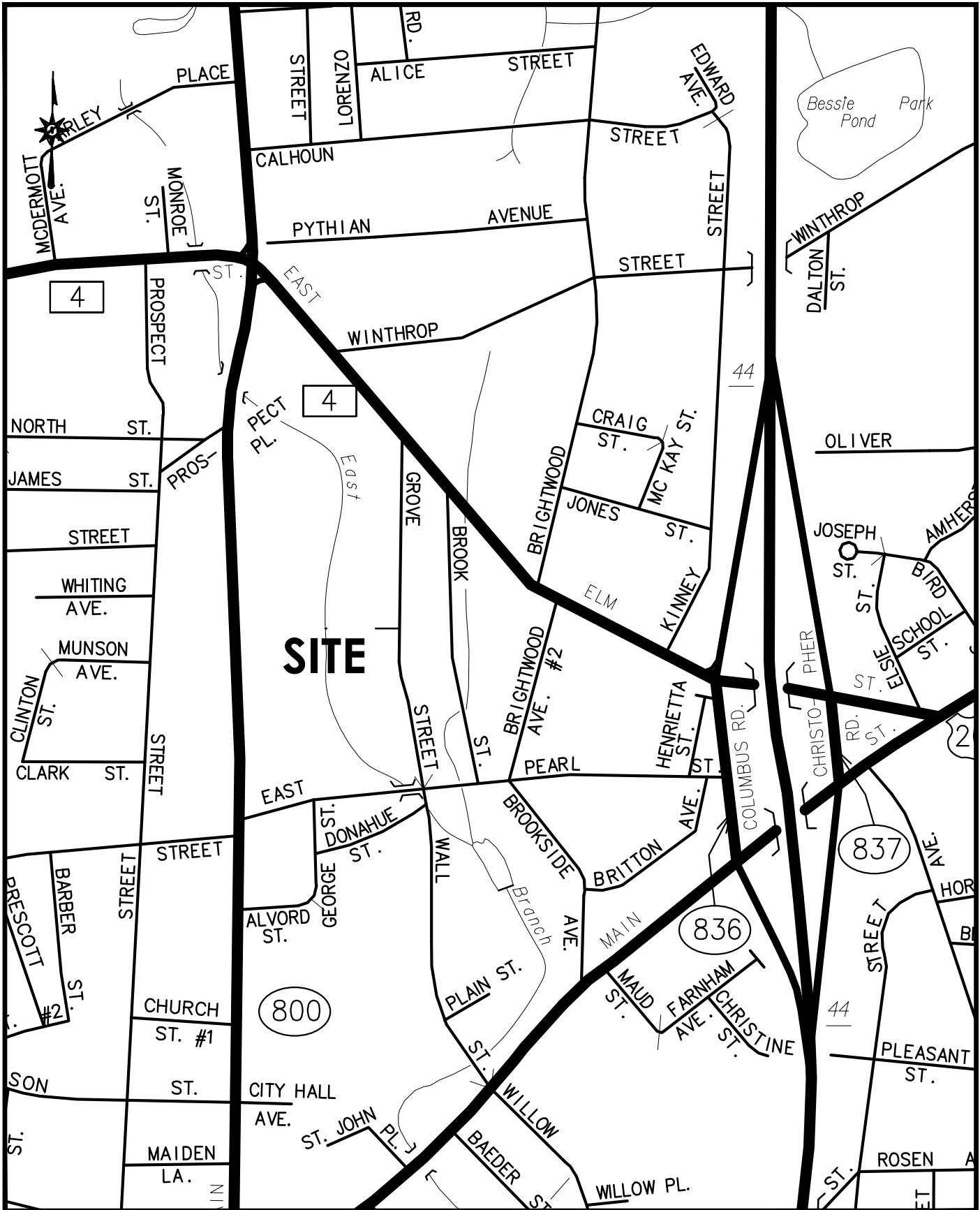
I. INTRODUCTION

This traffic study has been prepared for a Pre-K Facility at 119 Grove Street in Torrington, Connecticut. The study area is along a residential stretch of Grove Street. The project will consist of an ±17,500 square foot new Pre-K Building with associated parking. The project is located on a site currently unoccupied and opposite the Sacred Heart Roman Catholic Church and adjacent to the current convent building. See **Figure 1** for a location map. The Site is located on the westerly side of Grove Street equidistant between CT Route 4 (East Elm Street) and East Pearl Street. The Site is also just west of the CT Route 8, interchange 44, with CT Route 4 (East Elm Street). Land uses along Grove Street in close proximity to the project Site are primarily residential.

Access to and from the Site is proposed via two curb cuts, one in only and one exit only. Visibility along Grove Street is acceptable in all directions and should be in excess of that required by the American Association of State Highway and Transportation Officials' (AASHTO) guidance.

The focus of this study was to evaluate the traffic flows and operating conditions on the roadways and intersections projected to be used by motorists traveling to and from the proposed development and to quantify the potential traffic impacts on these roadways and intersections.

The Site is located on the westerly side of Grove Street equidistant between CT Route 4 (East Elm Street) and East Pearl Street. The Site is also just west of the CT Route 8, interchange 44, with CT Route 4 (East Elm Street). Land uses along Grove Street in close proximity to the project Site are primarily residential.



SITE LOCATION
 PROPOSED DEVELOPMENT
 119 GROVE STREET, TORRINGTON, CT
 SCHEMATIC, NOT TO SCALE

Project No. 2202472
 Date March 2023

FIGURE 1

II. EXISTING CONDITIONS

An investigation of the existing traffic conditions on the adjacent roadway network formed the basis for assessing any traffic issues associated with the proposed development. This investigation included a field reconnaissance, traffic counting, and research of pertinent planning and traffic data available with Connecticut Department of Transportation (CTDOT) and the City of Torrington.

Access Network

The project study area consisted of the following intersections:

- CT Route 4 (East Elm Street) at Grove Street
- East Pearl Street/Wall Street at Grove Street

Roadways in the vicinity of the project include CT Route 4 (East Elm Street), East Pearl Street, Wall Street and Grove Street.

CTtransit provides scheduled local bus services near the proposed Site with bus routes #926/927 and #450. The bus routes have stops within an approximately 10-minute walk from the Site.

CT Route 4 (East Elm Street) is an east-west oriented State maintained principal arterial that begins in the Town of Sharon and continues to the Town of West Hartford. The speed limit along CT Route 4 (East Elm Street) in the vicinity of the project area is 25 mph and has a single through lane in each direction with exclusive left and right turn lanes at key intersections. The only ADT recorded along CT Route 4 (East Elm Street) by CTDOT, in 2018, is east of its intersection with Main Street with average daily traffic of 13,400 vehicles. There are sidewalks present on both sides of CT Route 4 (East Elm Street) and utility pole mounted lighting on the north side of the road.

East Pearl Street is an east-west City maintained major collector that begins at the intersection of Main Street and terminates at its intersection with Columbus Road. The speed limit along East Pearl Street in the vicinity of the project area is 25 mph and has a

single through lane in each direction. The only ADT recorded along East Pearl Street by CTDOT, in 2012, is just west of Grove Street with average daily traffic of 4,800 vehicles. There was also an ADT recorded during the COVID 19 pandemic of 2021 which recorded average daily traffic of 4,900 vehicles. There are sidewalks present on both sides of East Pearl Street and utility pole mounted lighting on the north side of the road.

Grove Street is a local road that provides access to the residences and serves as a connection between CT Route 4 (East Elm Street) and East Pearl Street. The speed limit is 25 miles per hour and there are no ADT recorded by CTDOT. There are sidewalks present on both sides of Wall Street. There is utility pole mounted illumination on the west side of the road. There is a no parking restriction on the west side of the street.

Wall Street is a local road that provides access to the residences and the O&G Industries Corporate Headquarters and supply store. The speed limit is 25 miles per hour and there are no ADT recorded by CTDOT. There are sidewalks present on both sides and utility pole mounted illumination.

Intersection Characteristics

Three key intersections were reviewed in this study to determine if they would be impacted by the expected Site traffic volumes. They are as follows:

CT Route 4 (East Elm Street) at Grove Street is a T-stop controlled intersection where the approaches of CT Route 4 (East Elm Street) have free movements and the approach of Grove Street is stop-controlled.

East Pearl Street/Wall Street at Grove Street is a signalized intersection. All approaches have a single lane. The signal is a two-phase operation where East Pearl Street moves and then Grove Street moves. The signal is in a coordinated system and operates on a 65 second cycle in the AM and PM peak hours.

Sight Distances

The American Association of State Highway and Transportation Officials' (AASHTO) publication, A Policy on Geometric Design, 2018 Edition, defines minimum sight

distances at intersections based on roadway geometry and the 85th percentile speed. The CTDOT follows the AASHTO geometry design methods for unsignalized and signalized intersections as outlined in the CTDOT Highway Design Manual. Two distances to consider are the stopping sight distance (SSD) for vehicles traveling along the main road and intersection sight distance (ISD) from the proposed driveways, as shown in **Table 1**. Access to and from the Site is proposed via one curb cut approximately 650 ft from the East Pearl Street/Wall Street intersection and approximately 700 ft from the CT Route 4 (East Elm Street) intersection. Visibility along Grove Street is acceptable in both directions and should be in excess of that required.

Table 1 – Sight Lines Project Access Points

Intersection	Direction	Design Speed (mph)	ISD Required (ft)	ISD Available (ft)
Grove Street and Site Drive	Eastbound/ Westbound	30 *	355	>500
Route 4 (East Elm Street at Grove Street)	Eastbound/ Westbound	30 *	355	>400

Note: The posted speed limit is 25 mph, thus Design Speed of 30 mph used. These distances are estimated.

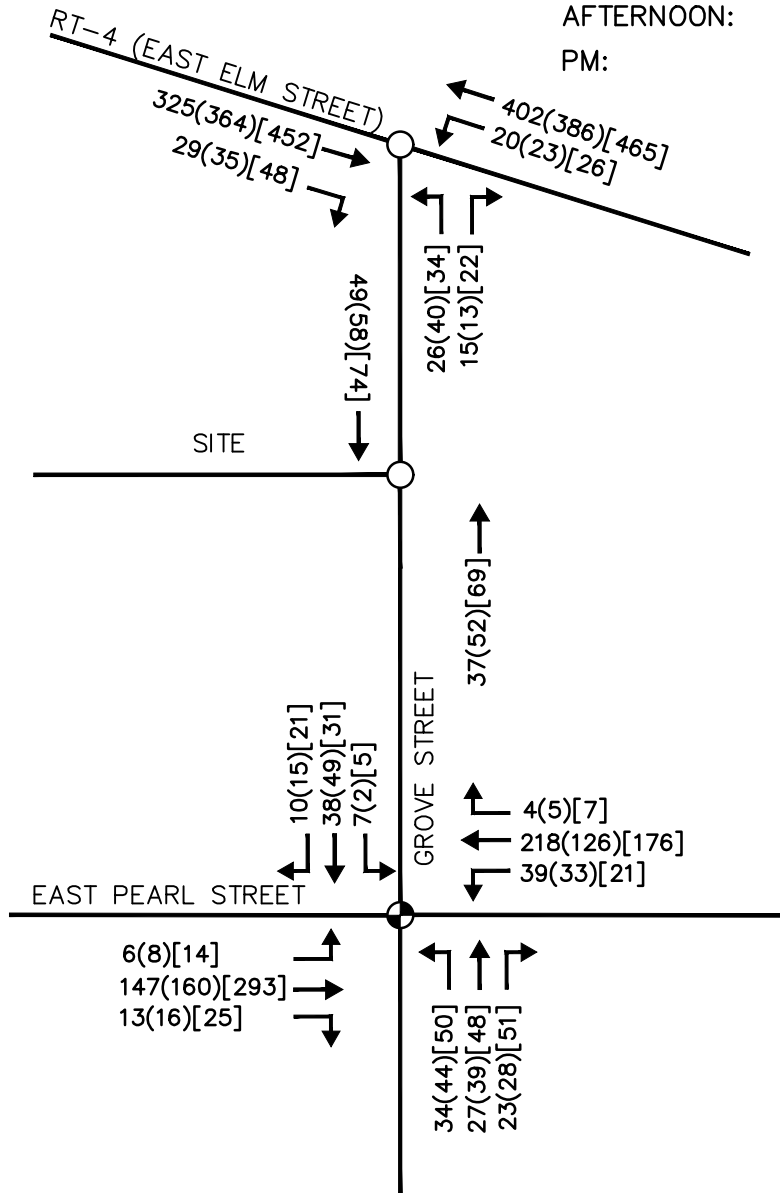
Existing Traffic Volumes

Weekday afternoon and weekend midday peak hour traffic volumes were counted during the week of February 13, 2023. Using historical counts collected by CTDOT, traffic counts obtained from other traffic impact studies in the vicinity of the study area and comparing these counts to those collected in 2023, a 1% growth rate was applied to the volumes. The current peak hour traffic volumes for the intersections are illustrated in **Figure 2**.



LEGEND

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- WEEKDAY AM: XXX
- AFTERNOON: (XXX)
- PM: [XXX]



EXISTING TRAFFIC VOLUMES (2023)

PROPOSED DEVELOPMENT
 119 GROVE STREET, TORRINGTON, CT
 SCHEMATIC, NOT TO SCALE

Project No. 2202472
 Date March 2023

FIGURE 2

Non-Vehicle Accommodations

In the study area, there are sidewalks present along the stretch of CT Route 4 (East Elm Street), East Pearl Street and Grove Street. No bike accommodations are present at this time.

Public Transit

Connecticut Transit (CT*transit*), a CTDOT-owned bus service, provides bus services near the proposed Site with bus routes #926/927 and #450.

The bus route #450 provides a weekday connection between Waterbury and Torrington.

The bus route #926/927, provides a weekday connection between Torrington and Hartford. The buses originate in Torrington Plaza and provide connection to Central Row in Hartford.

Crash Data Review

As part of the existing conditions analysis, a review of 4 years (1/1/2019-12/31/2022) of crash data from the UCONN Crash Data Repository indicated there were twenty-one (21) reported crashes within the study area. Grove Street between CT Route 4 (East Elm Street) and East Pearl Street had 11 crashes, accounting for 52% of the total crashes in the study area. The intersection of CT Route 4 (East Elm Street) had a total of two (2) crashes (10%) and the East Pearl Street at Grove Street intersection had eight (8) crashes (38%).

The majority of crashes were angle crashes at thirty-eight percent (38%) followed by front to rear at nineteen percent (19%). There were no fatal crashes and one (1) crash with serious injuries reported during the 4 years reviewed. The majority of crashes reported had no apparent injury at seventy-six percent (76%) or with possible injury at ten percent (10%). No particular crash pattern was evident along Grove Street.

Below, **Table 2** summarizes the crash data.

Table 2 – Crash Data Summary

Proposed Development, Torrington, CT				
	Grove Street at East Elm Street	Grove Street between East Elm Street and East Pearl Street	Grove Street at East Pearl Street and Wall Street	Total
Year				
2019	0	5	4	9
2020	1	4	1	6
2021	0	2	3	5
2022	1	0	0	1
Total	2	11	8	21
Crash Type				
Angle	1	2	5	8
Front to Front	0	0	0	0
Front to Rear	1	1	2	4
Not Applicable	0	1	1	2
Other	0	1	0	1
Rear to Rear	0	1	0	1
Rear to Side	0	1	0	1
Sideswipe, Same Direction	0	4	0	4
Unknown	0	0	0	0
Total	2	11	8	21
Severity				
Fatal Injury (K)	0	0	0	0
Suspected Serious Injury (A)	0	0	1	1
Suspected Minor Injury (B)	1	0	1	2
Possible Injury (C)	0	0	2	2
No Apparent Injury (O)	1	11	4	16
Total	2	11	8	21
Note: Data collected from the Connecticut Crash Data Repository				

III. PROJECTED TRAFFIC CONDITIONS

In order to evaluate traffic conditions when the proposed development is completed in 2025, future traffic volumes were forecasted under the 2025 No Build Conditions (without the proposed development) and under 2025 Build Conditions (with the proposed development). The projected traffic volumes on the roadway network under 2025 No Build Conditions were assumed to include all existing traffic and new traffic resulting from background sources of traffic growth, independent of the proposed development. The projected traffic volumes on the roadway network under 2025 Build Conditions were assumed to include the anticipated project site-generated traffic volumes, in addition to the assumed background traffic growth.

No Build Traffic Volumes

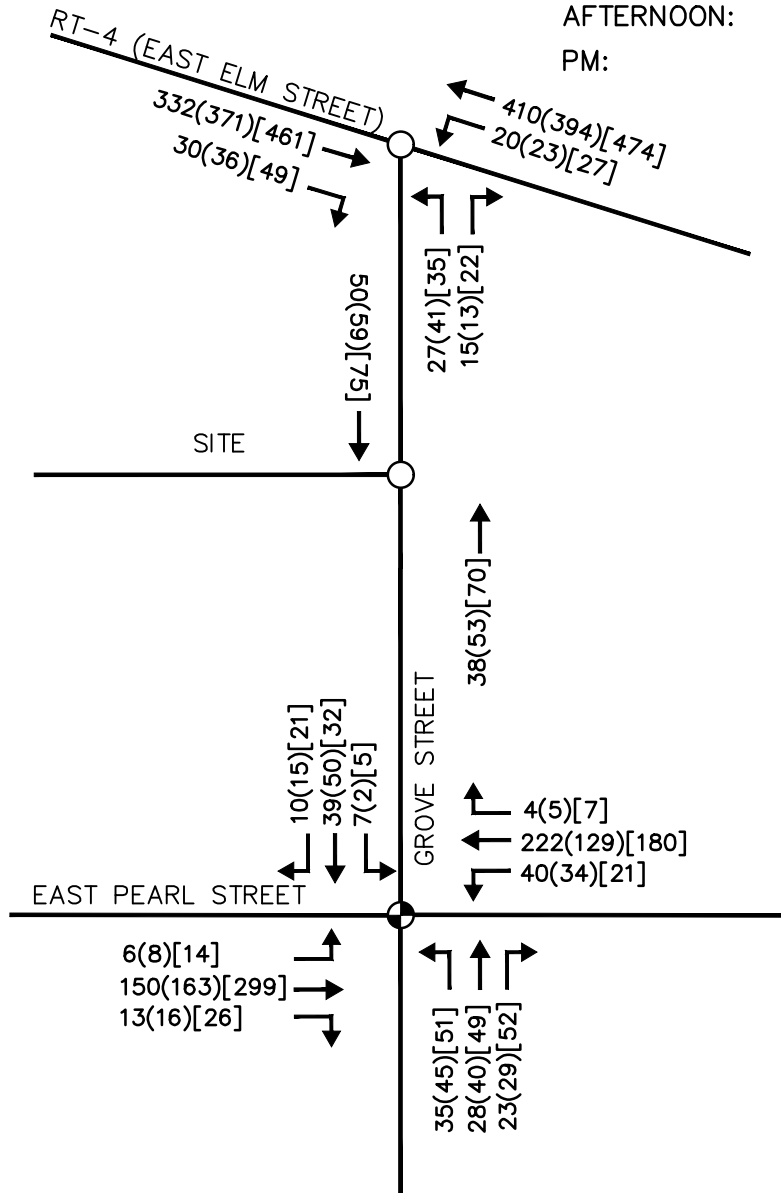
A 1% annual growth rate was applied to the existing traffic volumes to develop the 2025 No Build traffic volumes. In addition to applying a growth rate, any approved or pending developments in the area that may add substantial traffic volume to the study intersections were considered. In discussions with CTDOT and the City of Torrington there are no proposed developments that may add substantial traffic volume to the area.

Figure 3 graphically illustrates the No Build Traffic Volumes.



LEGEND

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- WEEKDAY AM: XXX
- AFTERNOON: (XXX)
- PM: [XXX]



NO BUILD TRAFFIC VOLUMES (2025)

PROPOSED DEVELOPMENT
 119 GROVE STREET, TORRINGTON, CT
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 Date March 2023

FIGURE 3

Trip Generation

The anticipated traffic volumes generated by the proposed development were projected based upon guidelines set forth by CTDOT and data provided by the ITE Trip Generation Manual 11th Edition. This widely used reference manual provided trip generation rates for various land uses based on traffic count data collected at similar Sites. The following table shows projected trip generation for the Pre-K facility (Land Use Code 565 – Day Care Center), using the average rate during the adjacent street peak hour for AM peak hour, PM peak hour and afternoon peak hour generator.

Table 3 illustrates the trip generation for the proposed development. It is projected that the proposed development will generate approximately 73 trips in the AM peak hour (41 in/enter, 32 out/exit), 60 trips in the afternoon peak hour (28 in/enter, 32 exit) and approximately 25 trips in the PM peak hour (11 in/enter, 13 out/exit). A portion of trips generated are classified as “pass-by” traffic. Pass-by traffic consists of vehicles already on the roadway that are attracted to the Site when passing through the area. The primary destination of this traffic is elsewhere, and the primary trip will be resumed following a stop at the proposed development.

Table 3 – Peak Hour Trip Generation

Proposed Development Torrington, Pre-K											
Land Use	ITE Land Use Code	Size (Students)	Trips								
			AM Peak Hour			Afternoon Peak Hour			PM Peak Hour		
			Total	In	Out	Total	In	Out	Total	In	Out
Pre-K	930-Private School (k-8)	120	92	52	40	75	35	40	31	14	17
Gross New Trips			92	52	40	75	35	40	31	14	17
Pass-By Trips (20%)			-18	-10	-8	-15	-7	-8	-6	-3	-3
Total Net New Trips			73	41	32	60	28	32	25	11	13

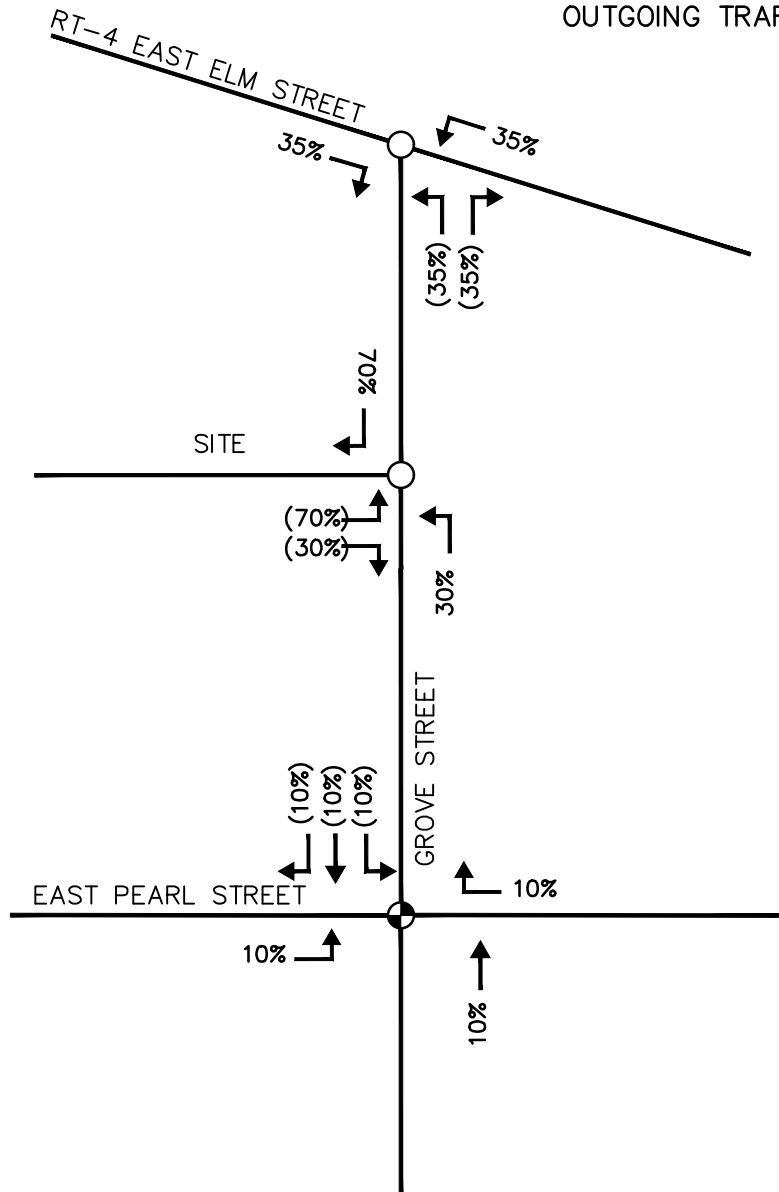
Trip Distribution

The directional distribution of traffic is typically a function of population densities, competing opportunities, existing travel patterns adjacent to the Site, and the efficiency and limitations of the existing roadway system. The distribution of the anticipated traffic volumes was based on arrival/departure patterns shown in **Figure 4**.



LEGEND

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- INCOMING TRAFFIC XX%
- OUTGOING TRAFFIC (XX%)



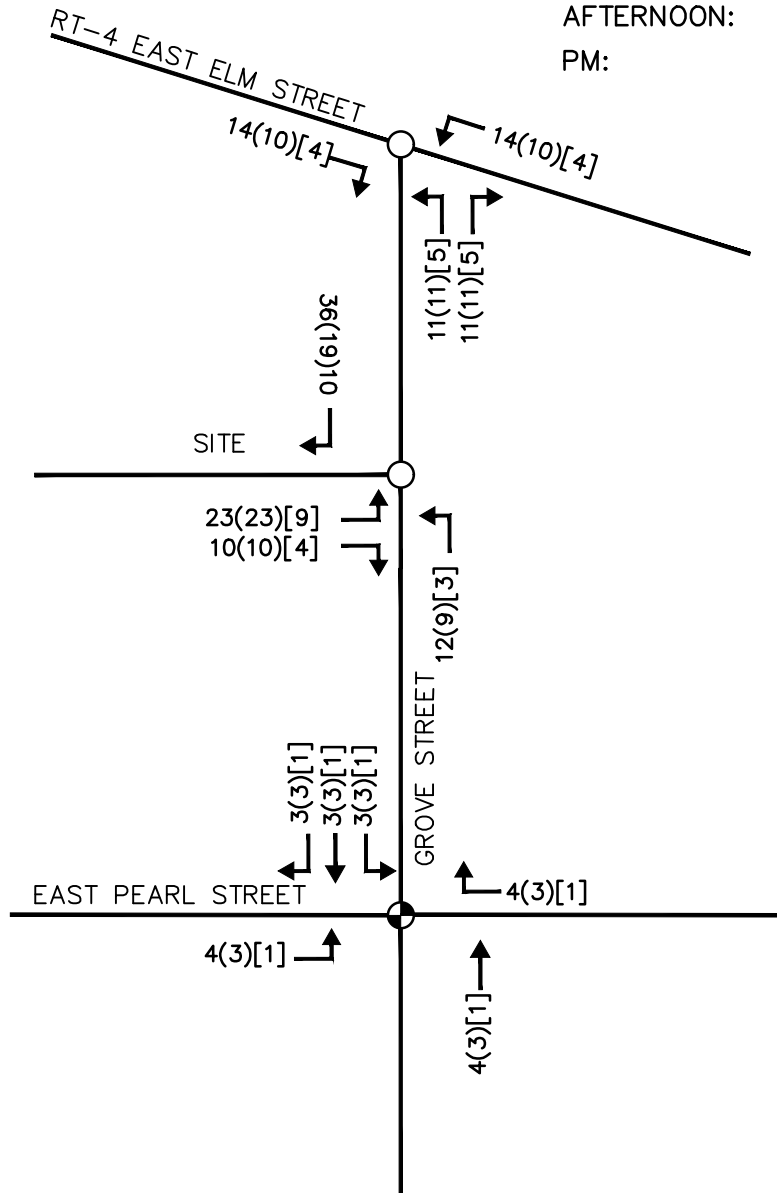
Assigned Site Generated Traffic Volumes

The generated trips are multiplied by the corresponding proportions to ascertain the site-generated traffic volumes. **Figure 5** shows the peak hour traffic generated by the Site assigned to the nearby roadway network. The pass-by traffic volumes were assigned and are shown in **Figure 6**.



LEGEND

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- WEEKDAY AM: XXX
- AFTERNOON: (XXX)
- PM: [XXX]



SITE GENERATED TRAFFIC VOLUMES

PROPOSED DEVELOPMENT
 119 GROVE STREET, TORRINGTON, CT
 SCHEMATIC, NOT TO SCALE

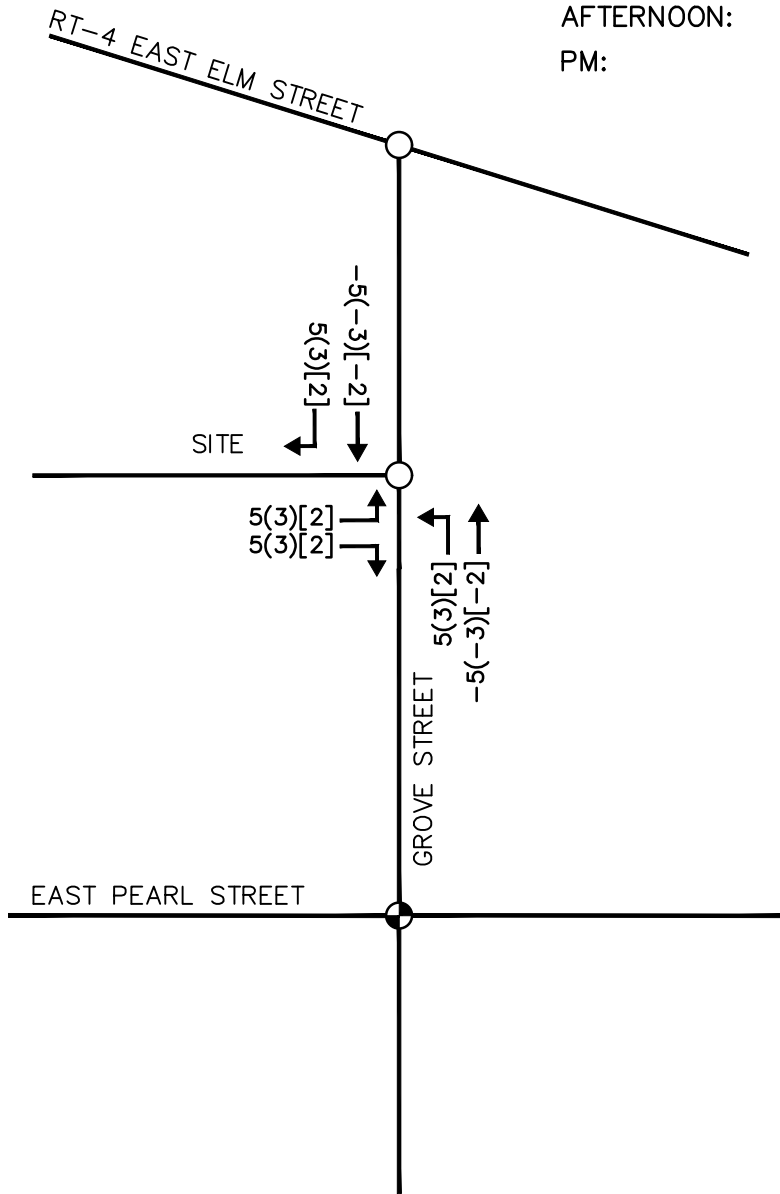
Project No. 2202472
 Date March 2023

FIGURE 5



LEGEND

- ⊕ SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- WEEKDAY AM: XXX
- AFTERNOON: (XXX)
- PM: [XXX]



PASS-BY TRAFFIC VOLUME

PROPOSED DEVELOPMENT
 119 GROVE STREET, TORRINGTON, CT
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Project No. 2202472
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FIGURE 6

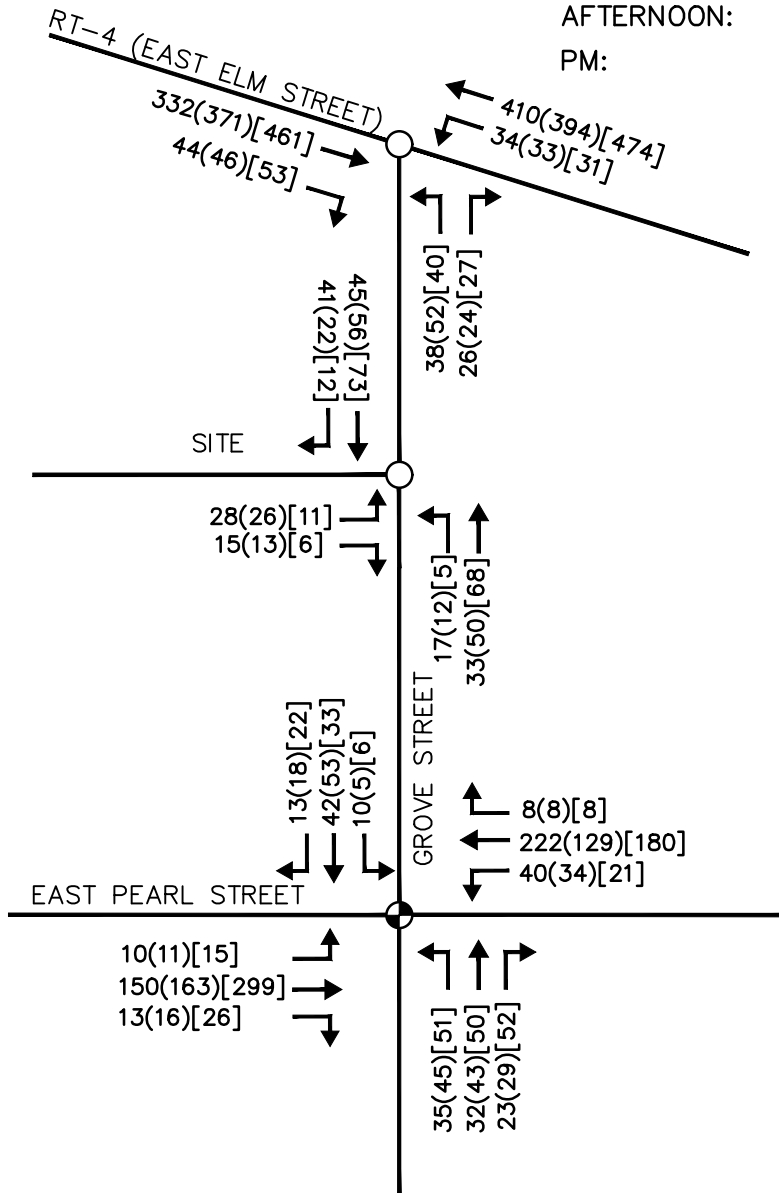
Build Traffic Volumes

The assigned site-generated traffic volumes were superimposed onto the 2025 No Build Traffic volumes to establish the future 2025 Build Traffic volumes, as illustrated in **Figure 7**.



LEGEND

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- WEEKDAY AM: XXX
- AFTERNOON: (XXX)
- PM: [XXX]



BUILD TRAFFIC VOLUMES (2025)

PROPOSED DEVELOPMENT
 119 GROVE STREET, TORRINGTON, CT
 SCHEMATIC, NOT TO SCALE

Project No. 2202472
 Date March 2023

FIGURE 7

IV. ROADWAY ADEQUACY

The intersection capacity analyses were prepared using the methodology described in the Highway Capacity Manual (HCM), published by the Transportation Research Board (TRB) for the Existing, No Build, and Build traffic volume scenarios to simulate the traffic impact of a proposed development on the adjacent roadway network. As documented in the HCM, intersection performance is influenced by several factors, including traffic demand; lane configurations; lane widths; turning restrictions; roadway grades; and signal phasing. The existing physical roadway characteristics were determined by observing conditions in the field. The signal phasing and timing settings were determined by reviewing the current traffic control signal plan provided by the Town.

Synchro™ software (Version 11) was used to model the study intersections based on the parameters mentioned above. The Synchro software is widely utilized by the traffic engineering industry and is consistent with the procedures in the HCM.

Signalized Intersections

Signalized intersections are analyzed in terms of vehicle capacity and motorist delay. Capacity is the maximum rate of vehicle flow through an intersection given typical operating conditions. The number of vehicles traveling through an intersection is divided by the capacity of the intersection to determine an overall volume-to-capacity ratio (v/c). A v/c value under 1.00 indicates that the number of vehicles traveling through an intersection is less than capacity.

As stated in the HCM, Level of Service for signalized intersections is defined in terms of control delay. Control delay measures the increase in delay a motorist experiences while encountering a traffic control signal. These factors include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. This delay is measured per vehicle for a 15-minute analysis period and is associated with the levels of service, which are summarized in **Table 4** below:

Table 4 – Signalized Intersection – Level of Service

<u>Level of Service¹</u>	<u>Average Control Delay (seconds per vehicle)</u>
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

¹If volume-to-capacity ratio is over 1.0 for a lane group, LOS F. Intersection and approach-based LOS is based solely on control delay.

Level of Service A represents the optimum level where most motorists arrive at the subject intersection during the green phase and thus, experience virtually no delay. Conversely, Level of Service F indicates that motorists are delayed over 80 seconds while traveling through the intersection and can often imply a complete breakdown of that location. Level of Service D is generally considered the limit of acceptable motorist delay.

Unsignalized Intersections

Unsignalized intersections are generally evaluated in terms of average side street delay, as well as the capacity of the roadway approach. This analysis is based on the random arrival of vehicles and the associated gaps generated by this random arrival within the traffic stream. There is no overall level of service for unsignalized intersections. The relationship between levels of service and average side street delay are summarized in **Table 5** below:

Table 5 – Unsignalized Intersection – Level of Service

<u>Level of Service¹</u>	<u>Average Control Delay (seconds per vehicle)</u>
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

¹If volume-to-capacity ratio is over 1.0 for a lane group, LOS F. Intersection and approach-based LOS is based solely on control delay.

It should be noted that unsignalized levels of service do not correspond to those for signalized intersections, nor do they constitute warrants for the installation of traffic control signals. It is also recognized that the methodology is overly conservative and that computations can indicate operations at poor levels of service (E or F) with even very low side street volumes, although they often function without serious problems in the real world.

Capacity Analyses Results

Table 6 shows the levels of service (LOS) and other operational parameters at the subject intersections.

Table 6 – Peak Hour Traffic Operations

	AM Peak Hour			Midday Peak Hour			PM Peak Hour		
	2023 Existing	2025 No Build	2025 Build	2023 Existing	2025 No Build	2025 Build	2023 Existing	2025 No Build	2025 Build
Route 4 (East Elm Street) at Grove Street	-	-	-	-	-	-	-	-	-
Grove Street NB Left / Right	C/0.13/15.5/25	C/0.14/15.8/25	C/0.21/17.3/25	C/0.19/17.6/25	C/0.20/18.0/25	C/0.28/18.0/30	C/0.24/19.3/25	C/0.25/23.9/25	D/0.30/25.0/30
Route 4 (East Elm Street) EB Through / Right	-	-	-	-	-	-	-	-	-
Route 4 (East Elm Street) WB Left / Through	A/0.02/8.1/25	A/0.02/8.2/25	A/0.03/8.3/25	A/0.02/8.3/25	A/0.02/8.3/25	A/0.03/8.3/25	A/0.03/8.8/25	A/0.03/8.8/25	A/0.04/8.8/25
Grove Street at Site Drive	-	-	-	-	-	-	-	-	-
Site Eastbound Left / Right	-	-	A/0.05/9.3/25	-	-	A/0.05/9.3/25	-	-	A/0.02/9.2/25
S. Main Street Northbound Left / Through	-	-	A/0.01/2.5/25	-	-	A/0.01/1.4/25	-	-	A/0.0/0.5/25
S. Main Street Southbound Through / Right	-	-	A/0.05/0.0/0	-	-	A/0.05/0.0/0	-	-	A/0.05/0.0/0
East Pearl Street at Grove Street/Wall Street	B/15.2	B/15.3	B/15.3	B/12.3	B/12.3	B/12.2	B/16.7	B/16.9	B/16.9
East Pearl Street Eastbound Left / Through / Right	B/0.36/15.1/80	B/0.36/15.2/80	B/0.38/15.3/80	B/0.34/15.4/85	B/0.34/15.5/85	B/0.35/15.6/90	C/0.73/22.1/150	C/0.73/22.5/155	C/0.74/22.5/155
East Pearl Street Westbound Left / Through / Right	B/0.57/19.5/130	B/0.58/19.6/135	B/0.58/19.7/135	B/0.36/16.2/85	B/0.36/16.3/85	B/0.37/16.2/85	B/0.37/14.3/95	B/0.37/14.4/95	B/0.37/14.3/100
Wall Street NB Left / Through / Right	A/0.11/6.5/35	A/0.12/6.6/35	A/0.12/6.8/35	A/0.13/5.8/35	A/0.13/5.8/35	A/0.14/5.9/35	A/0.23/9.0/65	A/0.23/9.2/70	A/0.24/9.3/70
Grove Street SB Left / Through / Right	A/0.07/6.8/25	A/0.07/6.9/30	A/0.09/7.0/30	A/0.07/5.6/25	A/0.07/5.6/25	A/0.08/5.5/25	A/0.09/8.0/30	A/0.10/8.1/30	A/0.10/8.2/30

Overall Intersection – X/XX.X - Level of Service / Intersection Signal Delay in sec/veh
 Approaches - X/X.XX/X.XX/XXX – Level of Service / Volume to Capacity Ratio / Average Delay in sec per veh / 95% Queue Length in ft
 # – 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
 m – Volume for 95th percentile queue is metered by upstream signal.

As illustrated in **Table 6**, weekday AM, PM peak hour and afternoon peak hour, Existing and No Build scenario traffic operations were analyzed as the base conditions for comparison with the Build scenarios. In total, there are two unsignalized curbs to the Site. In addition, there is one existing unsignalized intersection as well as one signalized intersection analyzed using HCM.

During the weekday AM peak hour, traffic operations for the overall intersection LOS and individual movements at the signalized intersections are projected to be negligibly impacted by the proposed development. The signalized intersection (East Pearl Street at Grove Street/Wall Street) remains at LOS B between Existing, No Build and Build Scenarios. The intersection signal delay remains within a tenth of a second in all three scenarios.

Similarly, during the afternoon midday peak hour, traffic operations for the overall intersection LOS and individual movements at the signalized intersections of East Pearl Street at Grove Street/Wall Street is projected to be negligibly impacted by the proposed development. The intersection signal delay does not increase between the 2025 No Build and 2025 Build scenarios at the intersection.

During the PM peak hour, traffic operations for the overall intersection LOS and individual movements at the signalized intersections of East Pearl Street at Grove Street/Wall Street is projected to be negligibly impacted by the proposed development. The intersection signal delay does not increase between the 2025 No Build and 2025 Build scenarios at the intersection.

In addition, the unsignalized intersection of CT Route 4 (East Elm Street) at Grove Street operates at acceptable LOS in all three peak hours for all scenarios. All three peak hours experience an increase in delay of less than 1 second.

V. CONCLUSIONS AND RECOMMENDATIONS

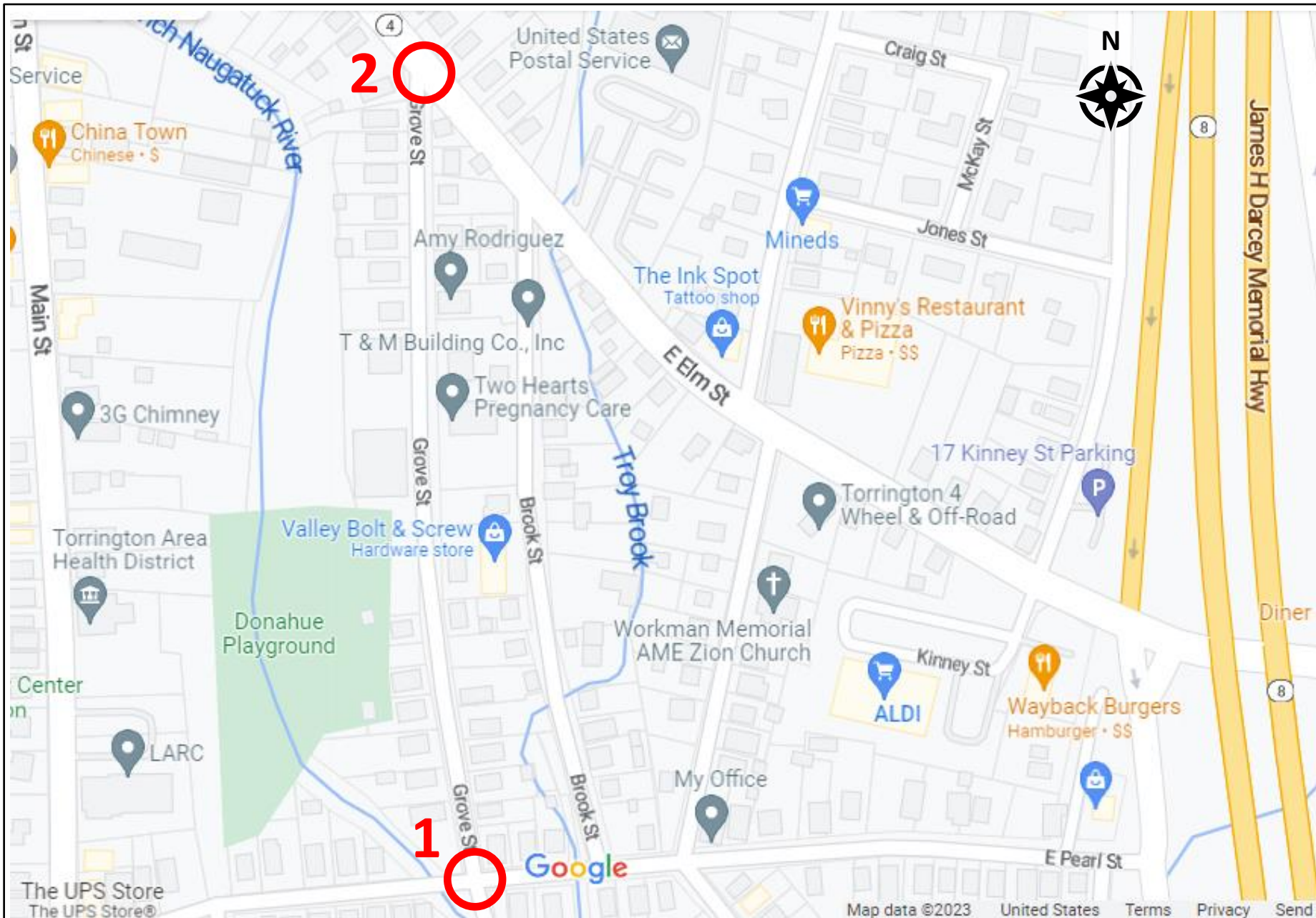
This traffic study has been prepared for a Pre-K Facility at 119 Grove Street in Torrington, Connecticut. The study area is along a residential stretch of Grove Street. The project will consist of an ±17,500 square foot new Pre-K Building with associated parking. The project is located on a Site currently unoccupied and opposite the Sacred Heart Roman Catholic Church and adjacent to the current convent building.


After analyses of the Existing, No Build, and Build scenarios of the AM, afternoon peak and PM peak hours, it is projected that the proposed development will have negligible impacts on the surrounding roadway network. All intersections during the three study peak periods are projected to generally perform adequately and have negligible impacts from the proposed development at 119 Grove Street.

The following is a summary of the results/recommendations for this Site:

- At the egressing driveway, install 12" white stop bar and stop sign.

TRAFFIC COUNTS



	ID: 1194_1_BL	Torrington, CT	# of TMC's: 02	Client: BL Companies
		Collected on February 16, 2023	# of ATR's: 00	Contact: Michael Dion, P.E., PTOE, Principal

Client: Michael Dion, P.E., PTOE
 Project #: 1194_1_BL
 BTM #: Location 1
 Location: Torrington, CT
 Street 1: East Pearl Street
 Street 2: Grove Street & Wall Street
 Count Date: 2/16/2023
 Day of Week: Thursday
 Weather: Clouds & Sun, 40°F



PO Box 1723
 Framingham, MA 01701

PASSENGER CARS & HEAVY VEHICLES COMBINED

Start Time	Wall Street Northbound				Grove Street Southbound				East Pearl Street Eastbound				East Pearl Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	3	3	9	0	1	6	0	0	3	36	2	0	11	28	0
7:15 AM	0	5	5	2	0	0	7	1	0	0	36	2	0	8	41	1
7:30 AM	0	7	8	6	0	0	12	2	0	2	50	0	0	6	45	0
7:45 AM	0	10	4	6	0	1	8	2	0	1	35	6	0	14	48	0
8:00 AM	0	9	8	5	0	0	13	2	0	2	25	5	0	13	59	1
8:15 AM	0	8	7	6	0	6	5	4	0	1	37	2	0	6	66	3
8:30 AM	0	16	7	4	0	0	10	4	0	2	36	4	0	5	44	1
8:45 AM	0	18	11	4	0	2	10	3	0	1	41	1	0	2	38	2
1:00 PM	0	12	14	6	0	0	16	3	0	2	38	5	0	6	31	2
1:15 PM	0	11	10	7	0	1	10	5	0	2	42	2	0	12	32	2
1:30 PM	0	8	7	6	0	1	13	1	0	3	40	4	0	7	25	0
1:45 PM	0	13	8	9	0	0	10	6	0	1	40	5	0	8	38	1
2:00 PM	0	10	14	6	0	4	6	2	0	2	38	5	0	4	26	1
2:15 PM	0	13	10	7	0	0	8	1	0	2	42	2	0	8	32	1
2:30 PM	0	8	7	6	0	0	12	5	0	2	40	4	0	8	32	0
2:45 PM	0	13	8	9	0	1	15	1	0	2	40	5	0	3	41	1
4:00 PM	0	10	10	9	0	0	19	4	0	8	82	5	0	4	47	2
4:15 PM	0	13	7	13	0	1	10	3	0	2	39	7	0	5	39	2
4:30 PM	0	11	10	12	0	3	9	7	0	3	73	6	0	6	36	0
4:45 PM	0	12	14	8	0	0	8	6	0	5	59	5	0	5	49	4
5:00 PM	0	13	14	17	0	1	9	3	0	4	108	5	0	3	40	2
5:15 PM	0	14	10	14	0	1	5	5	0	2	53	9	0	7	51	1
5:30 PM	0	5	7	6	0	1	12	2	0	4	39	3	0	4	44	1
5:45 PM	0	8	8	7	0	1	8	2	0	1	29	2	0	2	25	1

AM PEAK HOUR 7:30 AM to 8:30 AM	Wall Street Northbound				Grove Street Southbound				East Pearl Street Eastbound				East Pearl Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	34	27	23	0	7	38	10	0	6	147	13	0	39	218	4
PHF	0.95				0.92				0.80				0.87			
HV %	0.0%	2.9%	0.0%	21.7%	0.0%	28.6%	2.6%	10.0%	0.0%	0.0%	1.4%	0.0%	0.0%	7.7%	2.3%	50.0%

MID PEAK HOUR 1:00 PM to 2:00 PM	Wall Street Northbound				Grove Street Southbound				East Pearl Street Eastbound				East Pearl Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	44	39	28	0	2	49	15	0	8	160	16	0	33	126	5
PHF	0.87				0.87				0.98				0.87			
HV %	0.0%	0.0%	2.6%	0.0%	0.0%	0.0%	2.0%	6.7%	0.0%	0.0%	5.0%	0.0%	0.0%	3.0%	0.8%	0.0%

PM PEAK HOUR 4:30 PM to 5:30 PM	Wall Street Northbound				Grove Street Southbound				East Pearl Street Eastbound				East Pearl Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	50	48	51	0	5	31	21	0	14	293	25	0	21	176	7
PHF	0.85				0.75				0.71				0.86			
HV %	0.0%	0.0%	0.0%	0.0%	0.0%	20.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%

Client: Michael Dion, P.E., PTOE
 Project #: 1194_1_BL
 BTD #: Location 1
 Location: Torrington, CT
 Street 1: East Pearl Street
 Street 2: Grove Street & Wall Street
 Count Date: 2/16/2023
 Day of Week: Thursday
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 Framingham, MA 01701

HEAVY VEHICLES

Start Time	Wall Street Northbound				Grove Street Southbound				East Pearl Street Eastbound				East Pearl Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	1	0	0	0	0	0	0	0	2	0	0	3	0	0
7:15 AM	0	0	2	0	0	0	1	0	0	0	1	0	0	0	2	0
7:30 AM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0
7:45 AM	0	0	0	3	0	0	0	1	0	0	1	0	0	0	2	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0
8:15 AM	0	0	0	2	0	2	0	0	0	0	0	0	0	1	2	2
8:30 AM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	0
1:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
2:00 PM	0	0	0	0	0	1	0	0	0	0	3	0	0	1	0	0
2:15 PM	0	2	0	0	0	0	0	0	0	0	1	0	0	1	3	0
2:30 PM	0	0	1	0	0	0	2	0	0	0	1	1	0	0	1	0
2:45 PM	0	0	0	0	0	0	1	0	0	0	4	0	0	0	1	0
4:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0

AM PEAK HOUR 7:00 AM to 8:00 AM PHF	Wall Street Northbound				Grove Street Southbound				East Pearl Street Eastbound				East Pearl Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	1	3	3	0	0	2	1	0	0	4	0	0	3	5	0
	0.58				0.75				0.50				0.67			

MID PEAK HOUR 1:00 PM to 2:00 PM PHF	Wall Street Northbound				Grove Street Southbound				East Pearl Street Eastbound				East Pearl Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	0	1	0	0	0	1	1	0	0	8	0	0	1	1	0
	0.25				0.50				0.50				0.25			

PM PEAK HOUR 2:00 PM to 3:00 PM PHF	Wall Street Northbound				Grove Street Southbound				East Pearl Street Eastbound				East Pearl Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	2	1	0	0	1	3	0	0	0	9	1	0	2	5	0
	0.38				0.50				0.63				0.44			

Client: Michael Dion, P.E., PTOE
 Project #: 1194_1_BL
 BTM #: Location 1
 Location: Torrington, CT
 Street 1: East Pearl Street
 Street 2: Grove Street & Wall Street
 Count Date: 2/16/2023
 Day of Week: Thursday
 Weather: Clouds & Sun, 40°F



PO Box 1723
 Framingham, MA 01701

PEDESTRIANS & BICYCLES

Start Time	Wall Street Northbound				Grove Street Southbound				East Pearl Street Eastbound				East Pearl Street Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	1	0	0	0	4	0	0	0	1
1:15 PM	0	0	0	1	0	0	0	3	0	0	0	2	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
2:15 PM	0	0	0	4	0	0	0	6	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1
4:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:30 AM to 8:30 AM	Wall Street Northbound				Grove Street Southbound				East Pearl Street Eastbound				East Pearl Street Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0

MID PEAK HOUR 1:00 PM to 2:00 PM	Wall Street Northbound				Grove Street Southbound				East Pearl Street Eastbound				East Pearl Street Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	1	0	0	0	5	0	0	0	6	0	0	0	1

PM PEAK HOUR 4:30 PM to 5:30 PM	Wall Street Northbound				Grove Street Southbound				East Pearl Street Eastbound				East Pearl Street Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Client: Michael Dion, P.E., PTOE
 Project #: 1194_1_BL
 BTM #: Location 2
 Location: Torrington, CT
 Street 1: East Elm Street
 Street 2: Grove Street
 Count Date: 2/16/2023
 Day of Week: Thursday
 Weather: Clouds & Sun, 40°F



PO Box 1723
 Framingham, MA 01701

PASSENGER CARS & HEAVY VEHICLES COMBINED

Start Time	Grove Street Northbound				Southbound				East Elm Street Eastbound				East Elm Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	4	0	2	0	0	0	0	0	0	80	6	0	1	64	0
7:15 AM	0	5	0	4	0	0	0	0	0	0	91	4	0	3	90	0
7:30 AM	0	6	0	4	0	0	0	0	0	0	81	9	0	3	85	0
7:45 AM	0	4	0	3	0	0	0	0	0	0	86	5	0	6	107	0
8:00 AM	0	5	0	3	0	0	0	0	0	0	82	12	0	5	96	0
8:15 AM	0	10	0	3	0	0	0	0	0	0	88	4	0	3	97	0
8:30 AM	0	7	0	6	0	0	0	0	0	0	69	8	0	6	102	0
8:45 AM	0	10	0	5	0	0	0	0	0	0	85	8	0	3	87	0
1:00 PM	0	14	0	3	0	0	0	0	0	0	78	10	0	10	99	0
1:15 PM	0	8	0	5	0	0	0	0	0	0	88	10	0	7	91	0
1:30 PM	0	10	0	2	0	0	0	0	0	0	96	9	0	3	92	0
1:45 PM	0	8	0	3	0	0	0	0	0	0	102	6	0	3	104	0
2:00 PM	0	11	0	7	0	0	0	0	0	0	73	10	1	3	94	0
2:15 PM	0	11	0	7	0	0	0	0	0	0	110	6	0	3	89	0
2:30 PM	0	9	0	3	0	0	0	0	0	0	104	17	0	4	94	0
2:45 PM	0	10	0	2	0	0	0	0	0	0	101	9	0	8	99	0
4:00 PM	0	11	0	4	0	0	0	0	0	0	135	14	0	8	103	0
4:15 PM	0	5	0	6	0	0	0	0	0	0	105	14	0	5	145	0
4:30 PM	0	9	0	7	0	0	0	0	0	0	109	11	0	8	101	0
4:45 PM	0	9	0	5	0	0	0	0	0	0	103	9	0	5	116	0
5:00 PM	0	8	0	10	0	0	0	0	0	0	124	10	0	5	111	0
5:15 PM	0	5	0	4	0	0	0	0	0	0	111	14	0	6	110	0
5:30 PM	0	7	0	7	0	0	0	0	0	0	100	10	0	6	98	0
5:45 PM	0	7	0	6	0	0	0	0	0	0	79	8	0	9	100	0

AM PEAK HOUR 7:45 AM to 8:45 AM	Grove Street Northbound				Southbound				East Elm Street Eastbound				East Elm Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	26	0	15	0	0	0	0	0	0	325	29	0	20	402	0
PHF	0.79				0.00				0.94				0.93			
HV %	0.0%	7.7%	0.0%	13.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.4%	6.9%	0.0%	5.0%	5.0%	0.0%

MID PEAK HOUR 1:00 PM to 2:00 PM	Grove Street Northbound				Southbound				East Elm Street Eastbound				East Elm Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	40	0	13	0	0	0	0	0	0	364	35	0	23	386	0
PHF	0.78				0.00				0.92				0.94			
HV %	0.0%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.1%	2.9%	0.0%	4.3%	2.8%	0.0%

PM PEAK HOUR 4:00 PM to 5:00 PM	Grove Street Northbound				Southbound				East Elm Street Eastbound				East Elm Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	34	0	22	0	0	0	0	0	0	452	48	0	26	465	0
PHF	0.88				0.00				0.84				0.82			
HV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	2.1%	0.0%	0.0%	1.3%	0.0%

Client: Michael Dion, P.E., PTOE
 Project #: 1194_1_BL
 BTM #: Location 2
 Location: Torrington, CT
 Street 1: East Elm Street
 Street 2: Grove Street
 Count Date: 2/16/2023
 Day of Week: Thursday
 Weather: Clouds & Sun, 40°F



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HEAVY VEHICLES

Start Time	Grove Street Northbound				Southbound				East Elm Street Eastbound				East Elm Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	1	0	0	0	0	0	0	0	0	3	0	0	1	3	0
7:15 AM	0	2	0	0	0	0	0	0	0	0	2	0	0	1	5	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	6	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	1	6	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	0
8:15 AM	0	1	0	2	0	0	0	0	0	0	2	0	0	0	7	0
8:30 AM	0	1	0	0	0	0	0	0	0	0	4	1	0	0	4	0
8:45 AM	0	1	0	0	0	0	0	0	0	0	1	0	0	0	7	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	1	2	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	1	0
1:30 PM	0	1	0	0	0	0	0	0	0	0	4	0	0	0	3	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	5	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	4	0
2:15 PM	0	1	0	0	0	0	0	0	0	0	6	1	0	1	2	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	5	1	0	0	1	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	4	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:00 AM to 8:00 AM PHF	Grove Street Northbound				Southbound				East Elm Street Eastbound				East Elm Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	3	0	0	0	0	0	0	0	0	12	0	0	3	20	0
	0.38				0.00				0.75				0.82			

MID PEAK HOUR 1:00 PM to 2:00 PM PHF	Grove Street Northbound				Southbound				East Elm Street Eastbound				East Elm Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	1	0	0	0	0	0	0	0	0	15	1	0	1	11	0
	0.25				0.00				0.67				0.60			

PM PEAK HOUR 2:00 PM to 3:00 PM PHF	Grove Street Northbound				Southbound				East Elm Street Eastbound				East Elm Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	1	0	0	0	0	0	0	0	0	18	3	0	1	11	0
	0.25				0.00				0.75				0.75			

Client: Michael Dion, P.E., PTOE
 Project #: 1194_1_BL
 BTD #: Location 2
 Location: Torrington, CT
 Street 1: East Elm Street
 Street 2: Grove Street
 Count Date: 2/16/2023
 Day of Week: Thursday
 Weather: Clouds & Sun, 40°F



PO Box 1723
 Framingham, MA 01701

PEDESTRIANS & BICYCLES

Start Time	Grove Street Northbound				Southbound				East Elm Street Eastbound				East Elm Street Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	4
1:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
1:45 PM	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0
2:00 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:45 AM to 8:45 AM	Grove Street Northbound				Southbound				East Elm Street Eastbound				East Elm Street Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

MID PEAK HOUR 1:00 PM to 2:00 PM	Grove Street Northbound				Southbound				East Elm Street Eastbound				East Elm Street Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	6	0	0	0	0	0	0	0	2	0	0	0	4

PM PEAK HOUR 4:00 PM to 5:00 PM	Grove Street Northbound				Southbound				East Elm Street Eastbound				East Elm Street Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

CAPACITY ANALYSES

EXISTING

Lanes, Volumes, Timings
 1: Grove Street & Route 4 (E Elm Street)

Existing AM
 02/24/2023



Lane Group	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (vph)	26	15	325	29	20	402
Future Volume (vph)	26	15	325	29	20	402
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.951		0.989			
Flt Protected	0.969					0.998
Satd. Flow (prot)	1592	0	1790	0	0	1806
Flt Permitted	0.969					0.998
Satd. Flow (perm)	1592	0	1790	0	0	1806
Link Speed (mph)	25		25			25
Link Distance (ft)	660		178			214
Travel Time (s)	18.0		4.9			5.8
Peak Hour Factor	0.79	0.79	0.94	0.94	0.93	0.93
Heavy Vehicles (%)	10%	10%	5%	5%	5%	5%
Adj. Flow (vph)	33	19	346	31	22	432
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	377	0	0	454
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.4%
ICU Level of Service	A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	1.1					
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	26	15	325	29	20	402
Future Vol, veh/h	26	15	325	29	20	402
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	79	79	94	94	93	93
Heavy Vehicles, %	10	10	5	5	5	5
Mvmt Flow	33	19	346	31	22	432

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	838	362	0	0	377
Stage 1	362	-	-	-	-
Stage 2	476	-	-	-	-
Critical Hdwy	6.5	6.3	-	-	4.15
Critical Hdwy Stg 1	5.5	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-
Follow-up Hdwy	3.59	3.39	-	-	2.245
Pot Cap-1 Maneuver	326	665	-	-	1165
Stage 1	687	-	-	-	-
Stage 2	609	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	318	665	-	-	1165
Mov Cap-2 Maneuver	318	-	-	-	-
Stage 1	687	-	-	-	-
Stage 2	594	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	15.5	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	393	1165	-	-	-
HCM Lane V/C Ratio	0.132	0.018	-	-	-
HCM Control Delay (s)	15.5	8.1	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	0.5	0.1	-	-	-

Lanes, Volumes, Timings
2: Wall Street/Grove Street & East Pearl Street

Existing AM
02/24/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	6	147	13	39	218	4	34	27	23	7	38	10
Future Volume (vph)	6	147	13	39	218	4	34	27	23	7	38	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.990			0.998			0.963			0.975	
Fl _t Protected		0.998			0.993			0.980			0.993	
Satd. Flow (prot)	0	1861	0	0	1818	0	0	1677	0	0	1720	0
Fl _t Permitted		0.983			0.924			0.899			0.975	
Satd. Flow (perm)	0	1833	0	0	1692	0	0	1538	0	0	1689	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			2			24			11	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		414			175			105			775	
Travel Time (s)		11.3			4.8			2.9			21.1	
Peak Hour Factor	0.80	0.80	0.80	0.87	0.87	0.87	0.95	0.95	0.95	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	7%	2%	50%	3%	0%	21%	28%	2%	10%
Adj. Flow (vph)	8	184	16	45	251	5	36	28	24	8	41	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	208	0	0	301	0	0	88	0	0	60	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	34.4	34.4		34.4	34.4		30.6	30.6		30.6	30.6	
Total Split (%)	52.9%	52.9%		52.9%	52.9%		47.1%	47.1%		47.1%	47.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		16.3			16.3			25.6			25.6	
Actuated g/C Ratio		0.31			0.31			0.49			0.49	
v/c Ratio		0.36			0.57			0.11			0.07	
Control Delay		15.1			19.5			6.5			6.8	
Queue Delay		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings
 2: Wall Street/Grove Street & East Pearl Street

Existing AM
 02/24/2023

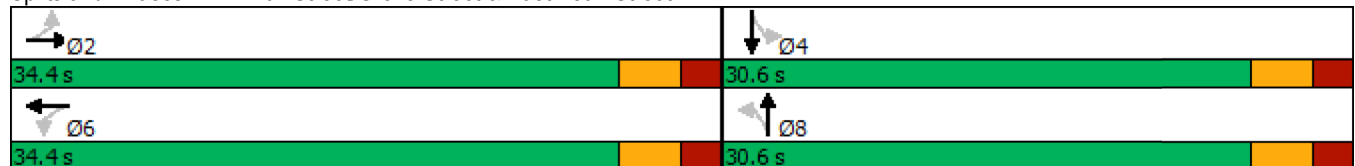


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		15.1			19.5			6.5			6.8	
LOS		B			B			A			A	
Approach Delay		15.1			19.5			6.5			6.8	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		46			75			9			7	
Queue Length 95th (ft)		77			129			32			25	
Internal Link Dist (ft)		334			95			25			695	
Turn Bay Length (ft)												
Base Capacity (vph)		1043			960			771			839	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.20			0.31			0.11			0.07	

Intersection Summary

Area Type:	Other
Cycle Length:	65
Actuated Cycle Length:	51.9
Natural Cycle:	50
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.57
Intersection Signal Delay:	15.2
Intersection LOS:	B
Intersection Capacity Utilization:	48.5%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 2: Wall Street/Grove Street & East Pearl Street



Lanes, Volumes, Timings
5: Grove Street & Site

Existing AM
02/24/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	37	49	0
Future Volume (vph)	0	0	0	37	49	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	132			775	660	
Travel Time (s)	3.6			21.1	18.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	40	53	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	40	53	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	6.7%
ICU Level of Service	A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	0	0	0	37	49	0
Future Vol, veh/h	0	0	0	37	49	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	40	53	0










Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	93	53	53	0	0
Stage 1	53	-	-	-	-
Stage 2	40	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	907	1014	1553	-	-
Stage 1	970	-	-	-	-
Stage 2	982	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	907	1014	1553	-	-
Mov Cap-2 Maneuver	907	-	-	-	-
Stage 1	970	-	-	-	-
Stage 2	982	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1553	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Lanes, Volumes, Timings
 1: Grove Street & Route 4 (E Elm Street)

Existing Afternoon
 02/24/2023

						
Lane Group	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (vph)	40	13	364	35	23	386
Future Volume (vph)	40	13	364	35	23	386
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.966		0.988			
Flt Protected	0.964					0.997
Satd. Flow (prot)	1730	0	1807	0	0	1838
Flt Permitted	0.964					0.997
Satd. Flow (perm)	1730	0	1807	0	0	1838
Link Speed (mph)	25		25			25
Link Distance (ft)	660		178			214
Travel Time (s)	18.0		4.9			5.8
Peak Hour Factor	0.78	0.78	0.92	0.92	0.93	0.94
Heavy Vehicles (%)	3%	0%	4%	3%	4%	3%
Adj. Flow (vph)	51	17	396	38	25	411
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	0	434	0	0	436
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	49.1%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	1.5					
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	40	13	364	35	23	386
Future Vol, veh/h	40	13	364	35	23	386
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	78	78	92	92	93	94
Heavy Vehicles, %	3	0	4	3	4	3
Mvmt Flow	51	17	396	38	25	411

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	876	415	0	0	434
Stage 1	415	-	-	-	-
Stage 2	461	-	-	-	-
Critical Hdwy	6.43	6.2	-	-	4.14
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.3	-	-	2.236
Pot Cap-1 Maneuver	318	642	-	-	1115
Stage 1	664	-	-	-	-
Stage 2	633	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	309	642	-	-	1115
Mov Cap-2 Maneuver	309	-	-	-	-
Stage 1	664	-	-	-	-
Stage 2	615	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	17.6	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	354	1115	-	-	-
HCM Lane V/C Ratio	0.192	0.022	-	-	-
HCM Control Delay (s)	17.6	8.3	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	0.7	0.1	-	-	-

Lanes, Volumes, Timings
2: Wall Street/Grove Street & East Pearl Street

Existing Afternoon
02/24/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	8	160	16	33	126	5	44	39	28	2	49	15
Future Volume (vph)	8	160	16	33	126	5	44	39	28	2	49	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.988			0.996			0.966			0.969	
Fl _t Protected		0.998			0.990			0.980			0.999	
Satd. Flow (prot)	0	1795	0	0	1848	0	0	1780	0	0	1788	0
Fl _t Permitted		0.982			0.918			0.890			0.996	
Satd. Flow (perm)	0	1766	0	0	1714	0	0	1616	0	0	1783	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			3			30			17	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		414			175			105			775	
Travel Time (s)		11.3			4.8			2.9			21.1	
Peak Hour Factor	0.98	0.98	0.98	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	5%	0%	3%	1%	0%	0%	3%	0%	0%	2%	6%
Adj. Flow (vph)	8	163	16	38	145	6	51	45	32	2	56	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	187	0	0	189	0	0	128	0	0	75	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	34.4	34.4		34.4	34.4		30.6	30.6		30.6	30.6	
Total Split (%)	52.9%	52.9%		52.9%	52.9%		47.1%	47.1%		47.1%	47.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		15.1			15.1			29.6			29.6	
Actuated g/C Ratio		0.31			0.31			0.60			0.60	
v/c Ratio		0.34			0.36			0.13			0.07	
Control Delay		15.4			16.2			5.8			5.6	
Queue Delay		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings
 2: Wall Street/Grove Street & East Pearl Street

Existing Afternoon
 02/24/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		15.4			16.2			5.8			5.6	
LOS		B			B			A			A	
Approach Delay		15.4			16.2			5.8			5.6	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		41			43			14			8	
Queue Length 95th (ft)		84			84			33			22	
Internal Link Dist (ft)		334			95			25			695	
Turn Bay Length (ft)												
Base Capacity (vph)		1068			1035			989			1085	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.18			0.18			0.13			0.07	

Intersection Summary

Area Type:	Other
Cycle Length:	65
Actuated Cycle Length:	49
Natural Cycle:	50
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.36
Intersection Signal Delay:	12.3
Intersection LOS:	B
Intersection Capacity Utilization:	41.9%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 2: Wall Street/Grove Street & East Pearl Street

Ø2	Ø4
34.4 s	30.6 s
Ø6	Ø8
34.4 s	30.6 s

Lanes, Volumes, Timings
5: Grove Street & Site

Existing Afternoon
02/24/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	52	58	0
Future Volume (vph)	0	0	0	52	58	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	132			775	660	
Travel Time (s)	3.6			21.1	18.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	57	63	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	57	63	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	6.7%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	TT			TT	TT	
Traffic Vol, veh/h	0	0	0	52	58	0
Future Vol, veh/h	0	0	0	52	58	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	57	63	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	120	63	63	0	0
Stage 1	63	-	-	-	-
Stage 2	57	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	876	1002	1540	-	-
Stage 1	960	-	-	-	-
Stage 2	966	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	876	1002	1540	-	-
Mov Cap-2 Maneuver	876	-	-	-	-
Stage 1	960	-	-	-	-
Stage 2	966	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1540	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Lanes, Volumes, Timings
 1: Grove Street & Route 4 (E Elm Street)

Existing PM
 02/24/2023



Lane Group	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (vph)	34	22	452	48	26	465
Future Volume (vph)	34	22	452	48	26	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.947		0.987			
Flt Protected	0.970					0.997
Satd. Flow (prot)	1745	0	1855	0	0	1877
Flt Permitted	0.970					0.997
Satd. Flow (perm)	1745	0	1855	0	0	1877
Link Speed (mph)	25		25			25
Link Distance (ft)	660		178			214
Travel Time (s)	18.0		4.9			5.8
Peak Hour Factor	0.88	0.88	0.84	0.84	0.82	0.82
Heavy Vehicles (%)	0%	0%	1%	2%	0%	1%
Adj. Flow (vph)	39	25	538	57	32	567
Shared Lane Traffic (%)						
Lane Group Flow (vph)	64	0	595	0	0	599
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	55.7%
ICU Level of Service	B
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	1.4					
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	34	22	452	48	26	465
Future Vol, veh/h	34	22	452	48	26	465
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	84	84	82	82
Heavy Vehicles, %	0	0	1	2	0	1
Mvmt Flow	39	25	538	57	32	567

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1198	567	0	0	595
Stage 1	567	-	-	-	-
Stage 2	631	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	207	527	-	-	991
Stage 1	572	-	-	-	-
Stage 2	534	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	197	527	-	-	991
Mov Cap-2 Maneuver	197	-	-	-	-
Stage 1	572	-	-	-	-
Stage 2	509	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	23.2	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	261	991	-	-	-
HCM Lane V/C Ratio	0.244	0.032	-	-	-
HCM Control Delay (s)	23.2	8.8	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	0.9	0.1	-	-	-

Lanes, Volumes, Timings
2: Wall Street/Grove Street & East Pearl Street

Existing PM
02/24/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	14	293	25	21	176	7	50	48	51	5	31	21
Future Volume (vph)	14	293	25	21	176	7	50	48	51	5	31	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.990			0.995			0.954			0.950	
Fl _t Protected		0.998			0.995			0.983			0.995	
Satd. Flow (prot)	0	1798	0	0	1865	0	0	1782	0	0	1763	0
Fl _t Permitted		0.982			0.940			0.893			0.978	
Satd. Flow (perm)	0	1769	0	0	1762	0	0	1619	0	0	1733	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			4			48			28	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		414			175			105			775	
Travel Time (s)		11.3			4.8			2.9			21.1	
Peak Hour Factor	0.71	0.71	0.71	0.86	0.86	0.86	0.85	0.85	0.85	0.75	0.75	0.75
Heavy Vehicles (%)	0%	5%	0%	0%	1%	0%	0%	0%	0%	20%	0%	0%
Adj. Flow (vph)	20	413	35	24	205	8	59	56	60	7	41	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	468	0	0	237	0	0	175	0	0	76	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	34.4	34.4		34.4	34.4		30.6	30.6		30.6	30.6	
Total Split (%)	52.9%	52.9%		52.9%	52.9%		47.1%	47.1%		47.1%	47.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		20.4			20.4			25.8			25.8	
Actuated g/C Ratio		0.36			0.36			0.46			0.46	
v/c Ratio		0.73			0.37			0.23			0.09	
Control Delay		22.1			14.3			9.0			8.0	
Queue Delay		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings
 2: Wall Street/Grove Street & East Pearl Street

Existing PM
 02/24/2023

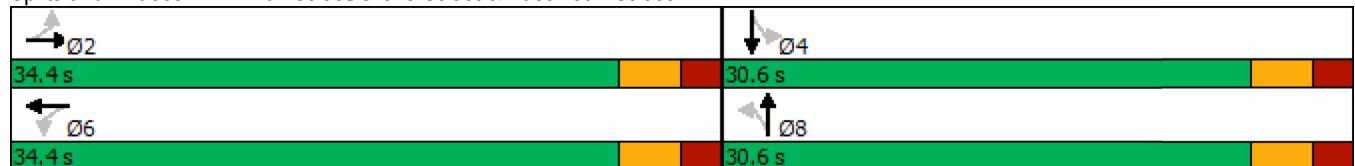


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		22.1			14.3			9.0			8.0	
LOS		C			B			A			A	
Approach Delay		22.1			14.3			9.0			8.0	
Approach LOS		C			B			A			A	
Queue Length 50th (ft)		128			55			23			8	
Queue Length 95th (ft)		149			94			65			27	
Internal Link Dist (ft)		334			95			25			695	
Turn Bay Length (ft)												
Base Capacity (vph)		935			930			768			809	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.50			0.25			0.23			0.09	

Intersection Summary

Area Type:	Other
Cycle Length:	65
Actuated Cycle Length:	56.3
Natural Cycle:	50
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	16.7
Intersection LOS:	B
Intersection Capacity Utilization:	43.3%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 2: Wall Street/Grove Street & East Pearl Street



Lanes, Volumes, Timings
5: Grove Street & Site

Existing PM
02/24/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	69	74	0
Future Volume (vph)	0	0	0	69	74	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	132			775	660	
Travel Time (s)	3.6			21.1	18.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	75	80	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	75	80	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	7.2%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	69	74	0
Future Vol, veh/h	0	0	0	69	74	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	75	80	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	155	80	80	0	0
Stage 1	80	-	-	-	-
Stage 2	75	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	836	980	1518	-	-
Stage 1	943	-	-	-	-
Stage 2	948	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	836	980	1518	-	-
Mov Cap-2 Maneuver	836	-	-	-	-
Stage 1	943	-	-	-	-
Stage 2	948	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1518	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

NO BUILD

Lanes, Volumes, Timings
 1: Grove Street & Route 4 (E Elm Street)

No Build AM
 02/24/2023



Lane Group	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (vph)	27	15	332	30	20	410
Future Volume (vph)	27	15	332	30	20	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.952		0.989			
Flt Protected	0.969					0.998
Satd. Flow (prot)	1593	0	1790	0	0	1806
Flt Permitted	0.969					0.998
Satd. Flow (perm)	1593	0	1790	0	0	1806
Link Speed (mph)	25		25			25
Link Distance (ft)	660		178			214
Travel Time (s)	18.0		4.9			5.8
Peak Hour Factor	0.79	0.79	0.94	0.94	0.93	0.93
Heavy Vehicles (%)	10%	10%	5%	5%	5%	5%
Adj. Flow (vph)	34	19	353	32	22	441
Shared Lane Traffic (%)						
Lane Group Flow (vph)	53	0	385	0	0	463
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.9%
ICU Level of Service	A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	1.1					
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	27	15	332	30	20	410
Future Vol, veh/h	27	15	332	30	20	410
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	79	79	94	94	93	93
Heavy Vehicles, %	10	10	5	5	5	5
Mvmt Flow	34	19	353	32	22	441

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	854	369	0	0	385
Stage 1	369	-	-	-	-
Stage 2	485	-	-	-	-
Critical Hdwy	6.5	6.3	-	-	4.15
Critical Hdwy Stg 1	5.5	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-
Follow-up Hdwy	3.59	3.39	-	-	2.245
Pot Cap-1 Maneuver	319	659	-	-	1157
Stage 1	682	-	-	-	-
Stage 2	603	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	311	659	-	-	1157
Mov Cap-2 Maneuver	311	-	-	-	-
Stage 1	682	-	-	-	-
Stage 2	588	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	15.9	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	383	1157	-	-	-
HCM Lane V/C Ratio	0.139	0.019	-	-	-
HCM Control Delay (s)	15.9	8.2	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	0.5	0.1	-	-	-

Lanes, Volumes, Timings
2: Wall Street/Grove Street & East Pearl Street

No Build AM
02/24/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	6	150	13	40	222	4	35	28	23	7	39	10
Future Volume (vph)	6	150	13	40	222	4	35	28	23	7	39	10
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.990			0.998			0.964			0.976	
Fl _t Protected		0.998			0.993			0.980			0.993	
Satd. Flow (prot)	0	1861	0	0	1819	0	0	1680	0	0	1723	0
Fl _t Permitted		0.984			0.923			0.898			0.975	
Satd. Flow (perm)	0	1835	0	0	1690	0	0	1540	0	0	1692	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			2			24			11	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		414			175			105			775	
Travel Time (s)		11.3			4.8			2.9			21.1	
Peak Hour Factor	0.80	0.80	0.80	0.87	0.87	0.87	0.95	0.95	0.95	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	7%	2%	50%	3%	0%	21%	28%	2%	10%
Adj. Flow (vph)	8	188	16	46	255	5	37	29	24	8	42	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	212	0	0	306	0	0	90	0	0	61	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	34.4	34.4		34.4	34.4		30.6	30.6		30.6	30.6	
Total Split (%)	52.9%	52.9%		52.9%	52.9%		47.1%	47.1%		47.1%	47.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		16.3			16.3			25.6			25.6	
Actuated g/C Ratio		0.31			0.31			0.49			0.49	
v/c Ratio		0.36			0.58			0.12			0.07	
Control Delay		15.2			19.6			6.6			6.9	
Queue Delay		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings
 2: Wall Street/Grove Street & East Pearl Street

No Build AM
 02/24/2023

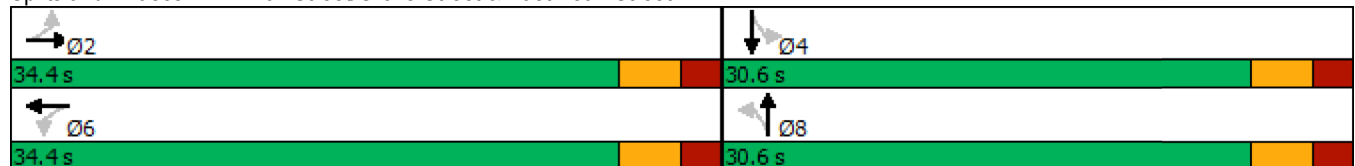


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		15.2			19.6			6.6			6.9	
LOS		B			B			A			A	
Approach Delay		15.2			19.6			6.6			6.9	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		47			76			9			7	
Queue Length 95th (ft)		78			131			33			26	
Internal Link Dist (ft)		334			95			25			695	
Turn Bay Length (ft)												
Base Capacity (vph)		1042			957			771			839	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.20			0.32			0.12			0.07	

Intersection Summary

Area Type:	Other
Cycle Length:	65
Actuated Cycle Length:	52
Natural Cycle:	50
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.58
Intersection Signal Delay:	15.3
Intersection LOS:	B
Intersection Capacity Utilization:	49.5%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 2: Wall Street/Grove Street & East Pearl Street



Lanes, Volumes, Timings
5: Grove Street & Site

No Build AM
02/24/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	38	50	0
Future Volume (vph)	0	0	0	38	50	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	132			775	660	
Travel Time (s)	3.6			21.1	18.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	41	54	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	41	54	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	6.7%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	0	0	0	38	50	0
Future Vol, veh/h	0	0	0	38	50	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	41	54	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	95	54	54	0	0
Stage 1	54	-	-	-	-
Stage 2	41	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	905	1013	1551	-	-
Stage 1	969	-	-	-	-
Stage 2	981	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	905	1013	1551	-	-
Mov Cap-2 Maneuver	905	-	-	-	-
Stage 1	969	-	-	-	-
Stage 2	981	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1551	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Lanes, Volumes, Timings
1: Grove Street & Route 4 (E Elm Street)

No Build Afternoon
02/24/2023



Lane Group	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (vph)	41	13	371	36	23	394
Future Volume (vph)	41	13	371	36	23	394
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.967		0.988			
Flt Protected	0.964					0.997
Satd. Flow (prot)	1732	0	1807	0	0	1838
Flt Permitted	0.964					0.997
Satd. Flow (perm)	1732	0	1807	0	0	1838
Link Speed (mph)	25		25			25
Link Distance (ft)	660		178			214
Travel Time (s)	18.0		4.9			5.8
Peak Hour Factor	0.78	0.78	0.92	0.92	0.93	0.94
Heavy Vehicles (%)	3%	0%	4%	3%	4%	3%
Adj. Flow (vph)	53	17	403	39	25	419
Shared Lane Traffic (%)						
Lane Group Flow (vph)	70	0	442	0	0	444
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.5%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	1.5					
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	41	13	371	36	23	394
Future Vol, veh/h	41	13	371	36	23	394
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	78	78	92	92	93	94
Heavy Vehicles, %	3	0	4	3	4	3
Mvmt Flow	53	17	403	39	25	419

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	892	423	0	0	442
Stage 1	423	-	-	-	-
Stage 2	469	-	-	-	-
Critical Hdwy	6.43	6.2	-	-	4.14
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.3	-	-	2.236
Pot Cap-1 Maneuver	311	635	-	-	1107
Stage 1	659	-	-	-	-
Stage 2	628	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	302	635	-	-	1107
Mov Cap-2 Maneuver	302	-	-	-	-
Stage 1	659	-	-	-	-
Stage 2	610	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	18	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	346	1107	-	-	-
HCM Lane V/C Ratio	0.2	0.022	-	-	-
HCM Control Delay (s)	18	8.3	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	0.7	0.1	-	-	-

Lanes, Volumes, Timings
2: Wall Street/Grove Street & East Pearl Street

No Build Afternoon
02/24/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	8	163	16	34	129	5	45	40	29	2	50	15
Future Volume (vph)	8	163	16	34	129	5	45	40	29	2	50	15
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.996			0.966			0.970	
Flt Protected		0.998			0.990			0.981			0.999	
Satd. Flow (prot)	0	1797	0	0	1848	0	0	1782	0	0	1790	0
Flt Permitted		0.982			0.916			0.889			0.996	
Satd. Flow (perm)	0	1768	0	0	1710	0	0	1615	0	0	1785	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			3			31			17	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		414			175			105			775	
Travel Time (s)		11.3			4.8			2.9			21.1	
Peak Hour Factor	0.98	0.98	0.98	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	5%	0%	3%	1%	0%	0%	3%	0%	0%	2%	6%
Adj. Flow (vph)	8	166	16	39	148	6	52	46	33	2	57	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	190	0	0	193	0	0	131	0	0	76	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	34.4	34.4		34.4	34.4		30.6	30.6		30.6	30.6	
Total Split (%)	52.9%	52.9%		52.9%	52.9%		47.1%	47.1%		47.1%	47.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		15.1			15.1			29.6			29.6	
Actuated g/C Ratio		0.31			0.31			0.61			0.61	
v/c Ratio		0.34			0.36			0.13			0.07	
Control Delay		15.5			16.3			5.8			5.6	
Queue Delay		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings
 2: Wall Street/Grove Street & East Pearl Street

No Build Afternoon
 02/24/2023

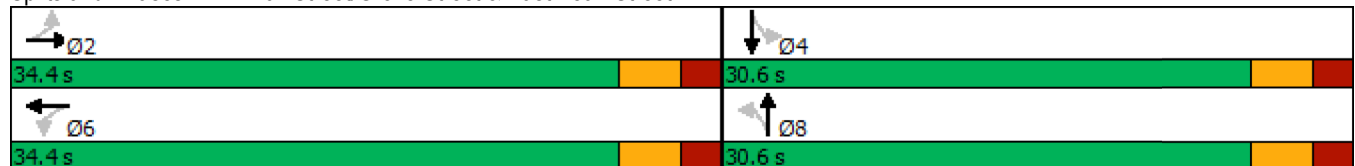


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		15.5			16.3			5.8			5.6	
LOS		B			B			A			A	
Approach Delay		15.5			16.3			5.8			5.6	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		41			44			14			8	
Queue Length 95th (ft)		85			85			34			22	
Internal Link Dist (ft)		334			95			25			695	
Turn Bay Length (ft)												
Base Capacity (vph)		1073			1035			989			1086	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.18			0.19			0.13			0.07	

Intersection Summary

Area Type:	Other
Cycle Length:	65
Actuated Cycle Length:	48.9
Natural Cycle:	50
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.36
Intersection Signal Delay:	12.3
Intersection LOS:	B
Intersection Capacity Utilization:	42.8%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 2: Wall Street/Grove Street & East Pearl Street



Lanes, Volumes, Timings
5: Grove Street & Site

No Build Afternoon
02/24/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	53	59	0
Future Volume (vph)	0	0	0	53	59	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	132			775	660	
Travel Time (s)	3.6			21.1	18.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	58	64	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	58	64	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	6.7%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	53	59	0
Future Vol, veh/h	0	0	0	53	59	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	58	64	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	122	64	64	0	0
Stage 1	64	-	-	-	-
Stage 2	58	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	873	1000	1538	-	-
Stage 1	959	-	-	-	-
Stage 2	965	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	873	1000	1538	-	-
Mov Cap-2 Maneuver	873	-	-	-	-
Stage 1	959	-	-	-	-
Stage 2	965	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1538	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Lanes, Volumes, Timings
 1: Grove Street & Route 4 (E Elm Street)

No Build PM
 02/24/2023



Lane Group	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (vph)	35	22	461	49	27	474
Future Volume (vph)	35	22	461	49	27	474
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.948		0.987			
Flt Protected	0.970					0.997
Satd. Flow (prot)	1747	0	1855	0	0	1877
Flt Permitted	0.970					0.997
Satd. Flow (perm)	1747	0	1855	0	0	1877
Link Speed (mph)	25		25			25
Link Distance (ft)	660		178			214
Travel Time (s)	18.0		4.9			5.8
Peak Hour Factor	0.88	0.88	0.84	0.84	0.82	0.82
Heavy Vehicles (%)	0%	0%	1%	2%	0%	1%
Adj. Flow (vph)	40	25	549	58	33	578
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	0	607	0	0	611
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	57.0%
Analysis Period (min)	15
	ICU Level of Service B

Intersection						
Int Delay, s/veh	1.5					
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	35	22	461	49	27	474
Future Vol, veh/h	35	22	461	49	27	474
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	84	84	82	82
Heavy Vehicles, %	0	0	1	2	0	1
Mvmt Flow	40	25	549	58	33	578

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1222	578	0	0	607	0
Stage 1	578	-	-	-	-	-
Stage 2	644	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	200	519	-	-	981	-
Stage 1	565	-	-	-	-	-
Stage 2	527	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	190	519	-	-	981	-
Mov Cap-2 Maneuver	190	-	-	-	-	-
Stage 1	565	-	-	-	-	-
Stage 2	501	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	24.2	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	252	981	-	-	-
HCM Lane V/C Ratio	0.257	0.034	-	-	-
HCM Control Delay (s)	24.2	8.8	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	1	0.1	-	-	-

Lanes, Volumes, Timings
2: Wall Street/Grove Street & East Pearl Street

No Build PM
02/24/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	14	299	26	21	180	7	51	49	52	5	32	21
Future Volume (vph)	14	299	26	21	180	7	51	49	52	5	32	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.990			0.996			0.954			0.952	
Fl _t Protected		0.998			0.995			0.984			0.996	
Satd. Flow (prot)	0	1798	0	0	1867	0	0	1784	0	0	1770	0
Fl _t Permitted		0.982			0.941			0.892			0.978	
Satd. Flow (perm)	0	1769	0	0	1765	0	0	1617	0	0	1738	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			3			47			28	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		414			175			105			775	
Travel Time (s)		11.3			4.8			2.9			21.1	
Peak Hour Factor	0.71	0.71	0.71	0.86	0.86	0.86	0.85	0.85	0.85	0.75	0.75	0.75
Heavy Vehicles (%)	0%	5%	0%	0%	1%	0%	0%	0%	0%	20%	0%	0%
Adj. Flow (vph)	20	421	37	24	209	8	60	58	61	7	43	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	478	0	0	241	0	0	179	0	0	78	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	34.4	34.4		34.4	34.4		30.6	30.6		30.6	30.6	
Total Split (%)	52.9%	52.9%		52.9%	52.9%		47.1%	47.1%		47.1%	47.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		20.7			20.7			25.8			25.8	
Actuated g/C Ratio		0.37			0.37			0.46			0.46	
v/c Ratio		0.73			0.37			0.23			0.10	
Control Delay		22.5			14.4			9.2			8.1	
Queue Delay		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings
 2: Wall Street/Grove Street & East Pearl Street

No Build PM
 02/24/2023

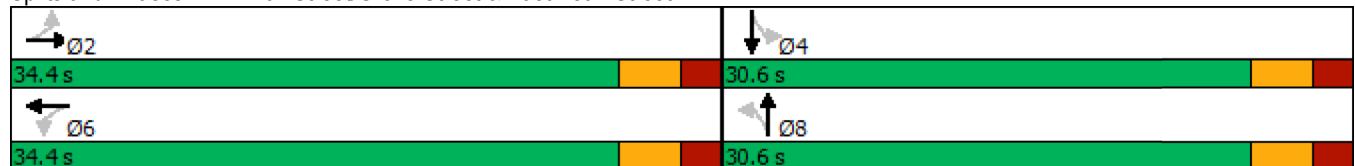


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		22.5			14.4			9.2			8.1	
LOS		C			B			A			A	
Approach Delay		22.5			14.4			9.3			8.1	
Approach LOS		C			B			A			A	
Queue Length 50th (ft)		132			57			24			9	
Queue Length 95th (ft)		153			95			67			28	
Internal Link Dist (ft)		334			95			25			695	
Turn Bay Length (ft)												
Base Capacity (vph)		931			926			763			808	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.51			0.26			0.23			0.10	

Intersection Summary

Area Type:	Other
Cycle Length:	65
Actuated Cycle Length:	56.6
Natural Cycle:	50
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	16.9
Intersection LOS:	B
Intersection Capacity Utilization	43.8%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 2: Wall Street/Grove Street & East Pearl Street



Lanes, Volumes, Timings
5: Grove Street & Site

No Build PM
02/24/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	70	75	0
Future Volume (vph)	0	0	0	70	75	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	132			775	660	
Travel Time (s)	3.6			21.1	18.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	76	82	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	76	82	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	7.3%
ICU Level of Service	A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	70	75	0
Future Vol, veh/h	0	0	0	70	75	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	76	82	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	158	82	82	0	0
Stage 1	82	-	-	-	-
Stage 2	76	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	833	978	1515	-	-
Stage 1	941	-	-	-	-
Stage 2	947	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	833	978	1515	-	-
Mov Cap-2 Maneuver	833	-	-	-	-
Stage 1	941	-	-	-	-
Stage 2	947	-	-	-	-

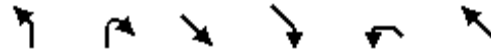
Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1515	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

BUILD

Lanes, Volumes, Timings
 1: Grove Street & Route 4 (E Elm Street)

Build AM
 02/27/2023



Lane Group	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (vph)	38	26	332	44	34	410
Future Volume (vph)	38	26	332	44	34	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.945		0.984			
Flt Protected	0.971					0.996
Satd. Flow (prot)	1585	0	1781	0	0	1802
Flt Permitted	0.971					0.996
Satd. Flow (perm)	1585	0	1781	0	0	1802
Link Speed (mph)	25		25			25
Link Distance (ft)	660		178			214
Travel Time (s)	18.0		4.9			5.8
Peak Hour Factor	0.79	0.79	0.94	0.94	0.93	0.93
Heavy Vehicles (%)	10%	10%	5%	5%	5%	5%
Adj. Flow (vph)	48	33	353	47	37	441
Shared Lane Traffic (%)						
Lane Group Flow (vph)	81	0	400	0	0	478
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	57.3%
ICU Level of Service	B
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	1.8					
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	38	26	332	44	34	410
Future Vol, veh/h	38	26	332	44	34	410
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	79	79	94	94	93	93
Heavy Vehicles, %	10	10	5	5	5	5
Mvmt Flow	48	33	353	47	37	441

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	892	377	0	0	400
Stage 1	377	-	-	-	-
Stage 2	515	-	-	-	-
Critical Hdwy	6.5	6.3	-	-	4.15
Critical Hdwy Stg 1	5.5	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-
Follow-up Hdwy	3.59	3.39	-	-	2.245
Pot Cap-1 Maneuver	302	652	-	-	1143
Stage 1	676	-	-	-	-
Stage 2	584	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	289	652	-	-	1143
Mov Cap-2 Maneuver	289	-	-	-	-
Stage 1	676	-	-	-	-
Stage 2	559	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	17.3	0	0.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	373	1143	-	-	-
HCM Lane V/C Ratio	0.217	0.032	-	-	-
HCM Control Delay (s)	17.3	8.3	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	0.8	0.1	-	-	-

Lanes, Volumes, Timings
2: Wall Street/Grove Street & East Pearl Street

Build AM
02/27/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	10	150	13	40	222	8	35	32	23	10	42	13
Future Volume (vph)	10	150	13	40	222	8	35	32	23	10	42	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.990			0.996			0.966			0.973	
Fl _t Protected		0.997			0.993			0.981			0.992	
Satd. Flow (prot)	0	1859	0	0	1805	0	0	1691	0	0	1704	0
Fl _t Permitted		0.971			0.923			0.899			0.968	
Satd. Flow (perm)	0	1811	0	0	1677	0	0	1550	0	0	1663	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			3			24			14	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		414			175			105			775	
Travel Time (s)		11.3			4.8			2.9			21.1	
Peak Hour Factor	0.80	0.80	0.80	0.87	0.87	0.87	0.95	0.95	0.95	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	7%	2%	50%	3%	0%	21%	28%	2%	10%
Adj. Flow (vph)	13	188	16	46	255	9	37	34	24	11	46	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	217	0	0	310	0	0	95	0	0	71	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	24.5	24.5		24.5	24.5		24.5	24.5		24.5	24.5	
Total Split (s)	34.4	34.4		34.4	34.4		30.6	30.6		30.6	30.6	
Total Split (%)	52.9%	52.9%		52.9%	52.9%		47.1%	47.1%		47.1%	47.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		16.5			16.5			25.7			25.7	
Actuated g/C Ratio		0.32			0.32			0.49			0.49	
v/c Ratio		0.38			0.58			0.12			0.09	
Control Delay		15.3			19.7			6.8			7.0	
Queue Delay		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings
 2: Wall Street/Grove Street & East Pearl Street

Build AM
 02/27/2023

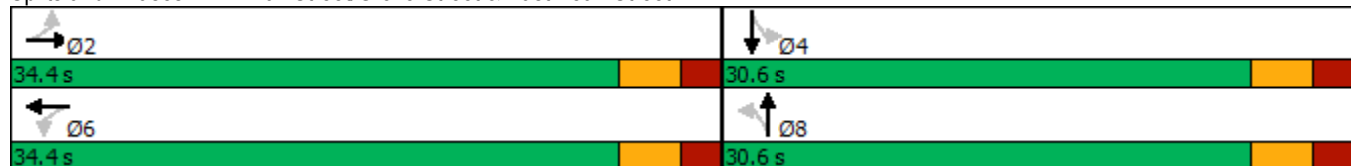


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		15.3			19.7			6.8			7.0	
LOS		B			B			A			A	
Approach Delay		15.3			19.7			6.8			7.0	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		49			77			10			8	
Queue Length 95th (ft)		80			133			35			29	
Internal Link Dist (ft)		334			95			25			695	
Turn Bay Length (ft)												
Base Capacity (vph)		1026			948			774			825	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.21			0.33			0.12			0.09	

Intersection Summary

Area Type:	Other
Cycle Length:	65
Actuated Cycle Length:	52.2
Natural Cycle:	50
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.58
Intersection Signal Delay:	15.3
Intersection LOS:	B
Intersection Capacity Utilization:	44.7%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 2: Wall Street/Grove Street & East Pearl Street



Lanes, Volumes, Timings
5: Grove Street & Site

Build AM
02/27/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	28	15	17	33	45	41
Future Volume (vph)	28	15	17	33	45	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.953				0.935	
Fl _t Protected	0.968			0.984		
Satd. Flow (prot)	1718	0	0	1833	1742	0
Fl _t Permitted	0.968			0.984		
Satd. Flow (perm)	1718	0	0	1833	1742	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	132			775	660	
Travel Time (s)	3.6			21.1	18.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	16	18	36	49	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	46	0	0	54	94	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	19.3%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	28	15	17	33	45	41
Future Vol, veh/h	28	15	17	33	45	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	16	18	36	49	45

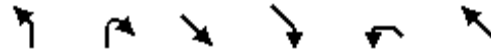
Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	144	72	94	0	0
Stage 1	72	-	-	-	-
Stage 2	72	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	849	990	1500	-	-
Stage 1	951	-	-	-	-
Stage 2	951	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	839	990	1500	-	-
Mov Cap-2 Maneuver	839	-	-	-	-
Stage 1	940	-	-	-	-
Stage 2	951	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	2.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1500	-	886	-	-
HCM Lane V/C Ratio	0.012	-	0.053	-	-
HCM Control Delay (s)	7.4	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lanes, Volumes, Timings
 1: Grove Street & Route 4 (E Elm Street)

Build Afternoon
 02/27/2023



Lane Group	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (vph)	52	24	371	46	33	394
Future Volume (vph)	52	24	371	46	33	394
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.957		0.985			
Flt Protected	0.967					0.996
Satd. Flow (prot)	1723	0	1801	0	0	1836
Flt Permitted	0.967					0.996
Satd. Flow (perm)	1723	0	1801	0	0	1836
Link Speed (mph)	25		25			25
Link Distance (ft)	660		178			214
Travel Time (s)	18.0		4.9			5.8
Peak Hour Factor	0.78	0.78	0.92	0.92	0.93	0.94
Heavy Vehicles (%)	3%	0%	4%	3%	4%	3%
Adj. Flow (vph)	67	31	403	50	35	419
Shared Lane Traffic (%)						
Lane Group Flow (vph)	98	0	453	0	0	454
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	59.0%
ICU Level of Service	B
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	2.2					
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	52	24	371	46	33	394
Future Vol, veh/h	52	24	371	46	33	394
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	78	78	92	92	93	94
Heavy Vehicles, %	3	0	4	3	4	3
Mvmt Flow	67	31	403	50	35	419

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	917	428	0	0	453
Stage 1	428	-	-	-	-
Stage 2	489	-	-	-	-
Critical Hdwy	6.43	6.2	-	-	4.14
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.3	-	-	2.236
Pot Cap-1 Maneuver	301	631	-	-	1097
Stage 1	655	-	-	-	-
Stage 2	614	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	288	631	-	-	1097
Mov Cap-2 Maneuver	288	-	-	-	-
Stage 1	655	-	-	-	-
Stage 2	588	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	19.3	0	0.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	348	1097	-	-	-
HCM Lane V/C Ratio	0.28	0.032	-	-	-
HCM Control Delay (s)	19.3	8.4	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	1.1	0.1	-	-	-

Lanes, Volumes, Timings
2: Wall Street/Grove Street & East Pearl Street

Build Afternoon
02/27/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	11	163	16	34	129	8	45	43	29	5	53	18
Future Volume (vph)	11	163	16	34	129	8	45	43	29	5	53	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.989			0.994			0.967			0.968	
Fl _t Protected		0.997			0.990			0.981			0.997	
Satd. Flow (prot)	0	1796	0	0	1845	0	0	1783	0	0	1783	0
Fl _t Permitted		0.975			0.917			0.888			0.987	
Satd. Flow (perm)	0	1757	0	0	1709	0	0	1614	0	0	1766	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			5			30			21	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		414			175			105			775	
Travel Time (s)		11.3			4.8			2.9			21.1	
Peak Hour Factor	0.98	0.98	0.98	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	5%	0%	3%	1%	0%	0%	3%	0%	0%	2%	6%
Adj. Flow (vph)	11	166	16	39	148	9	52	49	33	6	61	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	193	0	0	196	0	0	134	0	0	88	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	34.4	34.4		34.4	34.4		30.6	30.6		30.6	30.6	
Total Split (%)	52.9%	52.9%		52.9%	52.9%		47.1%	47.1%		47.1%	47.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		15.1			15.1			29.5			29.5	
Actuated g/C Ratio		0.31			0.31			0.61			0.61	
v/c Ratio		0.35			0.37			0.14			0.08	
Control Delay		15.6			16.2			5.9			5.5	
Queue Delay		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings
 2: Wall Street/Grove Street & East Pearl Street

Build Afternoon
 02/27/2023

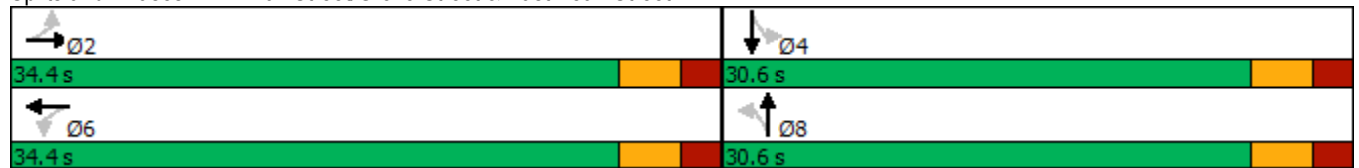


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		15.6			16.2			5.9			5.5	
LOS		B			B			A			A	
Approach Delay		15.6			16.2			5.9			5.5	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		42			44			15			9	
Queue Length 95th (ft)		86			85			35			25	
Internal Link Dist (ft)		334			95			25			695	
Turn Bay Length (ft)												
Base Capacity (vph)		1070			1040			988			1076	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.18			0.19			0.14			0.08	

Intersection Summary

Area Type:	Other
Cycle Length:	65
Actuated Cycle Length:	48.7
Natural Cycle:	50
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.37
Intersection Signal Delay:	12.2
Intersection LOS:	B
Intersection Capacity Utilization:	40.9%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 2: Wall Street/Grove Street & East Pearl Street



Lanes, Volumes, Timings
5: Grove Street & Site

Build Afternoon
02/27/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	26	13	12	50	56	23
Future Volume (vph)	26	13	12	50	56	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.955				0.961	
Flt Protected	0.968			0.990		
Satd. Flow (prot)	1722	0	0	1844	1790	0
Flt Permitted	0.968			0.990		
Satd. Flow (perm)	1722	0	0	1844	1790	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	132			775	660	
Travel Time (s)	3.6			21.1	18.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	14	13	54	61	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	42	0	0	67	86	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	20.0%
ICU Level of Service	A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	26	13	12	50	56	23
Future Vol, veh/h	26	13	12	50	56	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	14	13	54	61	25

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	154	74	86	0	0
Stage 1	74	-	-	-	-
Stage 2	80	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	838	988	1510	-	-
Stage 1	949	-	-	-	-
Stage 2	943	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	830	988	1510	-	-
Mov Cap-2 Maneuver	830	-	-	-	-
Stage 1	940	-	-	-	-
Stage 2	943	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	1.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1510	-	877	-	-
HCM Lane V/C Ratio	0.009	-	0.048	-	-
HCM Control Delay (s)	7.4	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lanes, Volumes, Timings
 1: Grove Street & Route 4 (E Elm Street)

Build PM
 02/27/2023



Lane Group	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (vph)	40	27	461	53	31	474
Future Volume (vph)	40	27	461	53	31	474
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.945		0.986			
Flt Protected	0.971					0.997
Satd. Flow (prot)	1743	0	1853	0	0	1877
Flt Permitted	0.971					0.997
Satd. Flow (perm)	1743	0	1853	0	0	1877
Link Speed (mph)	25		25			25
Link Distance (ft)	660		178			214
Travel Time (s)	18.0		4.9			5.8
Peak Hour Factor	0.88	0.88	0.84	0.84	0.82	0.82
Heavy Vehicles (%)	0%	0%	1%	2%	0%	1%
Adj. Flow (vph)	45	31	549	63	38	578
Shared Lane Traffic (%)						
Lane Group Flow (vph)	76	0	612	0	0	616
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 60.9% ICU Level of Service B
 Analysis Period (min) 15

Intersection						
Int Delay, s/veh	1.7					
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	40	27	461	53	31	474
Future Vol, veh/h	40	27	461	53	31	474
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	84	84	82	82
Heavy Vehicles, %	0	0	1	2	0	1
Mvmt Flow	45	31	549	63	38	578

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1235	581	0	0	612	0
Stage 1	581	-	-	-	-	-
Stage 2	654	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	197	517	-	-	977	-
Stage 1	563	-	-	-	-	-
Stage 2	521	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	186	517	-	-	977	-
Mov Cap-2 Maneuver	186	-	-	-	-	-
Stage 1	563	-	-	-	-	-
Stage 2	491	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	25.5	0	0.5
HCM LOS	D		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	251	977	-	-	-
HCM Lane V/C Ratio	0.303	0.039	-	-	-
HCM Control Delay (s)	25.5	8.8	0	-	-
HCM Lane LOS	D	A	A	-	-
HCM 95th %tile Q(veh)	1.2	0.1	-	-	-

Lanes, Volumes, Timings
2: Wall Street/Grove Street & East Pearl Street

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	15	299	26	21	180	8	51	50	52	6	33	22
Future Volume (vph)	15	299	26	21	180	8	51	50	52	6	33	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.990			0.995			0.954			0.952	
Fl _t Protected		0.998			0.995			0.984			0.995	
Satd. Flow (prot)	0	1798	0	0	1865	0	0	1784	0	0	1765	0
Fl _t Permitted		0.981			0.941			0.892			0.975	
Satd. Flow (perm)	0	1768	0	0	1764	0	0	1617	0	0	1729	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			4			47			29	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		414			175			105			775	
Travel Time (s)		11.3			4.8			2.9			21.1	
Peak Hour Factor	0.71	0.71	0.71	0.86	0.86	0.86	0.85	0.85	0.85	0.75	0.75	0.75
Heavy Vehicles (%)	0%	5%	0%	0%	1%	0%	0%	0%	0%	20%	0%	0%
Adj. Flow (vph)	21	421	37	24	209	9	60	59	61	8	44	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	479	0	0	242	0	0	180	0	0	81	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	34.4	34.4		34.4	34.4		30.6	30.6		30.6	30.6	
Total Split (%)	52.9%	52.9%		52.9%	52.9%		47.1%	47.1%		47.1%	47.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		20.7			20.7			25.8			25.8	
Actuated g/C Ratio		0.37			0.37			0.46			0.46	
v/c Ratio		0.74			0.37			0.24			0.10	
Control Delay		22.5			14.3			9.3			8.2	
Queue Delay		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings
 2: Wall Street/Grove Street & East Pearl Street

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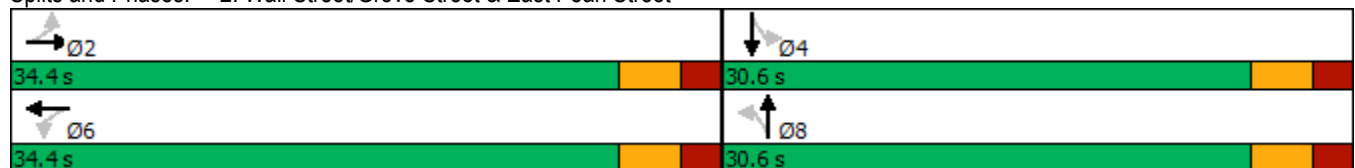


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		22.5			14.3			9.3			8.2	
LOS		C			B			A			A	
Approach Delay		22.5			14.3			9.3			8.2	
Approach LOS		C			B			A			A	
Queue Length 50th (ft)		133			57			25			9	
Queue Length 95th (ft)		153			96			67			28	
Internal Link Dist (ft)		334			95			25			695	
Turn Bay Length (ft)												
Base Capacity (vph)		930			926			763			804	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.52			0.26			0.24			0.10	

Intersection Summary

Area Type:	Other
Cycle Length:	65
Actuated Cycle Length:	56.6
Natural Cycle:	50
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.74
Intersection Signal Delay:	16.9
Intersection LOS:	B
Intersection Capacity Utilization:	44.1%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 2: Wall Street/Grove Street & East Pearl Street



Lanes, Volumes, Timings
5: Grove Street & Site

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	11	6	5	68	73	12
Future Volume (vph)	11	6	5	68	73	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.950			0.981		
Fl _t Protected	0.969			0.997		
Satd. Flow (prot)	1715	0	0	1857	1827	0
Fl _t Permitted	0.969			0.997		
Satd. Flow (perm)	1715	0	0	1857	1827	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	132			775	660	
Travel Time (s)	3.6			21.1	18.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	7	5	74	79	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	0	79	92	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.7% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	6	5	68	73	12
Future Vol, veh/h	11	6	5	68	73	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	7	5	74	79	13

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	170	86	92	0	0
Stage 1	86	-	-	-	-
Stage 2	84	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	820	973	1503	-	-
Stage 1	937	-	-	-	-
Stage 2	939	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	818	973	1503	-	-
Mov Cap-2 Maneuver	818	-	-	-	-
Stage 1	934	-	-	-	-
Stage 2	939	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1503	-	867	-	-
HCM Lane V/C Ratio	0.004	-	0.021	-	-
HCM Control Delay (s)	7.4	0	9.2	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-