



# TOWN OF WAKEFIELD

## TRAFFIC ADVISORY COMMITTEE

NOTICE OF MEETING  
June 24<sup>th</sup>, 2022 | 8:30 a.m.

Via Zoom: <https://us02web.zoom.us/j/82394160197?pwd=S1pDRVksSFZMZHozZUdBajlsVE1MUT09>

Consistent with the Governor's orders extending certain provisions of the Open Meeting Law every effort will be made to allow the public to view and/or listen to the meeting in real time. If you do not have a camera or microphone on your computer you may use the following dial in number: 1-312-626-6799 Meeting ID 823 9416 0197 Passcode 783545. Please only use dial in or computer and not both as feedback will distort the meeting. This meeting will be audio and video recorded. In compliance with the Americans with Disability Act, this location is accessible to people with disabilities, Wakefield provides reasonable accommodations and/or language assistance free of charge upon request. If you are a person with a disability and require information or materials in an alternate format, or if you require any other accommodation, please contact the Town's Disability Coordinator, William Renault-Town Engineer at 781-246-6308 as far in advance of the event as possible. Every effort will be made to grant your request. Advance notification will enable the Town to make reasonable arrangements to remove an accessibility barrier for you.

### ITEM 1 | Call to order

### ITEM 2 | Attendance

### ITEM 3 | Pledge of Allegiance

### ITEM 4 | Public Engagement

Any member of the public who wishes to address the Traffic Advisory Committee is asked to submit any comments or concerns to <https://www.wakefield.ma.us/public-participation> at least two hours prior to the start of the meeting. Alternatively, members of the public are invited to participate via the Zoom virtual meeting, using the instructions listed above.

### ITEM 5 | Approval of Meeting Minutes

- A. Approval of September 3<sup>rd</sup>, 2021 Traffic Advisory Meeting Minutes.
- B. Approval of November 5<sup>th</sup>, 2021 Traffic Advisory Meeting Minutes.

### ITEM 6 | Intersection Review

Citizen request to review restrictions at 4-way intersection following a recent crash and history of motor vehicle crashes.

### ITEM 7 | Northeast Metro Tech School

Review proposed traffic plan for new vocational school.



**ITEM 8 | Bicycle & Pedestrian Improvements**

MAPC to present draft recommendations to Traffic Advisory Committee.

**ITEM 9 | Other Business**

Schedule leave of absence for Traffic Advisory Chair Lt. Anderson.

**ITEM 10 | Matters Not Anticipate for Agenda**

Any matters not anticipated prior to the 48-hour public notice requirement necessitating immediate action by the Traffic Advisory Committee.

**ITEM 11 | Adjournment**

# 4.1.2 - 03

TRAFFIC ANALYSIS



**Nitsch Engineering**

# Traffic Impact Study

**Northeast Metropolitan  
Regional Vocational High School  
Wakefield, MA**

June 29, 2021

Prepared for:

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Nitsch Project #13872.2





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## 1 Executive Summary

Nitsch Engineering has completed a detailed Traffic Impact Study (TIS) to evaluate the potential impacts of constructing a new Northeast Metropolitan Regional Vocational High School (NEMT) building and grounds on the existing NEMT site to accommodate 1,600 students.

The proposed school option will provide many enhancements to traffic circulations and controls such as providing a new access road from Farm Street south of Hemlock Road, an extended parent queue on site, dedicated bus loop to separate cars and buses, providing a dedicated delivery access and increased parking.

### 1.1 Trip Generation and Access

The new school is anticipated to generate 3,248 daily trips, 880 weekday morning peak school hour trips, 528 weekday afternoon peak school hour trips, and 160 Saturday midday peak hour trips. Per the traffic volume data collected at the intersection of Farm Street and Hemlock Road, this represents an increase in 686 daily trips, 220 trips during the weekday morning peak school hour, 132 trips during the weekday evening peak school hour, and 40 trips during the Saturday midday peak hour.

The Proposed School will be accessed from two driveways on Farm Street. All school traffic, including parental drop-off and pick-up, as well as the teachers and staff, will be encouraged to use the new driveway on Farm Street south of Hemlock Road. Parents dropping off and picking up their students will circulate around the new parking area in front of the main school entrance and then continue to exit the site via the new driveway. The bus pick-up/drop-off will occur at the designated bus circle located east of the school building. A dedicated loop road will be provided on-site for authorized vehicles only. The road will be used for either deliveries to the loading dock located at the west of the school building or for emergency vehicle access.

The addition of the new driveway will divert school traffic away from the Farm Street/Hemlock Road intersection. It is anticipated that 352 vehicles will be diverted during the weekday morning peak school hour, 211 vehicles will be diverted during the weekday afternoon peak school hour, and 64 vehicles during the Saturday midday peak hour.

### 1.2 Parental Drop-off/Pick-up

During the morning drop-off, 880 vehicles (parents and staff) will arrive via Hemlock Street and the new driveway on Farm Street between 7:00 AM and 7:45 AM to drop-off their students. The students will be dropped-off at the car loop, and the vehicles will exit to Farm Street.

During the afternoon pick-up, 528 vehicles will start arriving between 1:30 PM and 2:10 PM. Once the parents have picked up their students, they will proceed to exit the school lot via either Hemlock Street or the new driveway to Farm Street.

### 1.3 Parking

The school parking lot, when complete, will provide 484 striped parking spaces that include 11 accessible spaces, as well as 22 spaces designated for Green Vehicles and 10 spaces equipped with Electric Vehicle charging stations. This number exceeds the 416 parking spaces recommended by the Institute of Transportation Engineers (ITE) Parking Generation for land code 530 to facilitate parental parking during drop-off and pick-up times (see






Table 1). The curb at the car loop is approximately 360 linear feet, which can accommodate an additional 18 vehicles.

#### **1.4 Mitigation and Recommendations**

To determine the required infrastructure improvements associated with the new driveway, Nitsch Engineering conducted a Traffic Signal Warrant Analysis based on the regulations set forth in the *Manual of Uniform Traffic Control Devices* (MUTCD). Based on the analysis, a traffic signal is not warranted. However, to optimize traffic operations at the new intersection, a traffic signal with increased lane capacity is recommended.



## 2 Introduction

Nitsch Engineering has been retained by Drumney Rosane Anderson, Inc. (“DRA”) to prepare a Traffic Impact Study (TIS) based on the schematic design for the planned on-site improvements at the Northeast Metropolitan Regional Vocational High School (“NEMT”) in Wakefield, MA. As part of the Feasibility Study, the team was tasked to observe the existing traffic circulation and queue lengths on adjacent streets during drop-off and pick-up periods at the school and assess the site access alternatives. The access alternatives included:

- Existing access to remain off Hemlock Road only;
- An additional access road from Water Street; or
- An additional access road from Farm Street south of Hemlock Road.

It was determined and described in the Preferred Schematic Report (PSR), that the school will build the additional driveway from Farm Street approximately ½-mile south of Hemlock Road, near the intersection of Farm Street and Old Nahant Road.

This TIS will review the existing and proposed traffic volumes, operations, and safety of the adjacent surrounding roadways and intersections; as well as traffic patterns associated with the existing NEMT and Breakheart Reservation, including site access/egress, parent and bus pick-up/drop-off, traffic circulation, and parking supply/demand. This TIS will also analyze existing and future conditions at the intersections within the study area to establish the impact the proposed improvements would have on traffic operations.

### 2.1 Study Area

The study area includes five roadways and five intersections within and adjacent to the Project site that are affected by the development.

#### **Roadways**

- Water Street (Route 129);
- Farm Street;
- Nahant Street;
- Hemlock Road; and
- Old Nahant Road.

#### **Intersections**

- Water Street and Farm Street (signalized);
- Farm Street and Hemlock Road/Nahant Street (unsignalized);
- Hemlock Road and WMHS Back Parking Lot Drive (signalized);
- Farm Street and Old Nahant Road North (unsignalized); and
- Farm Street and Old Nahant Road South (unsignalized).



## 2.2 Methodology

The traffic analysis herein is summarized in the following sections:

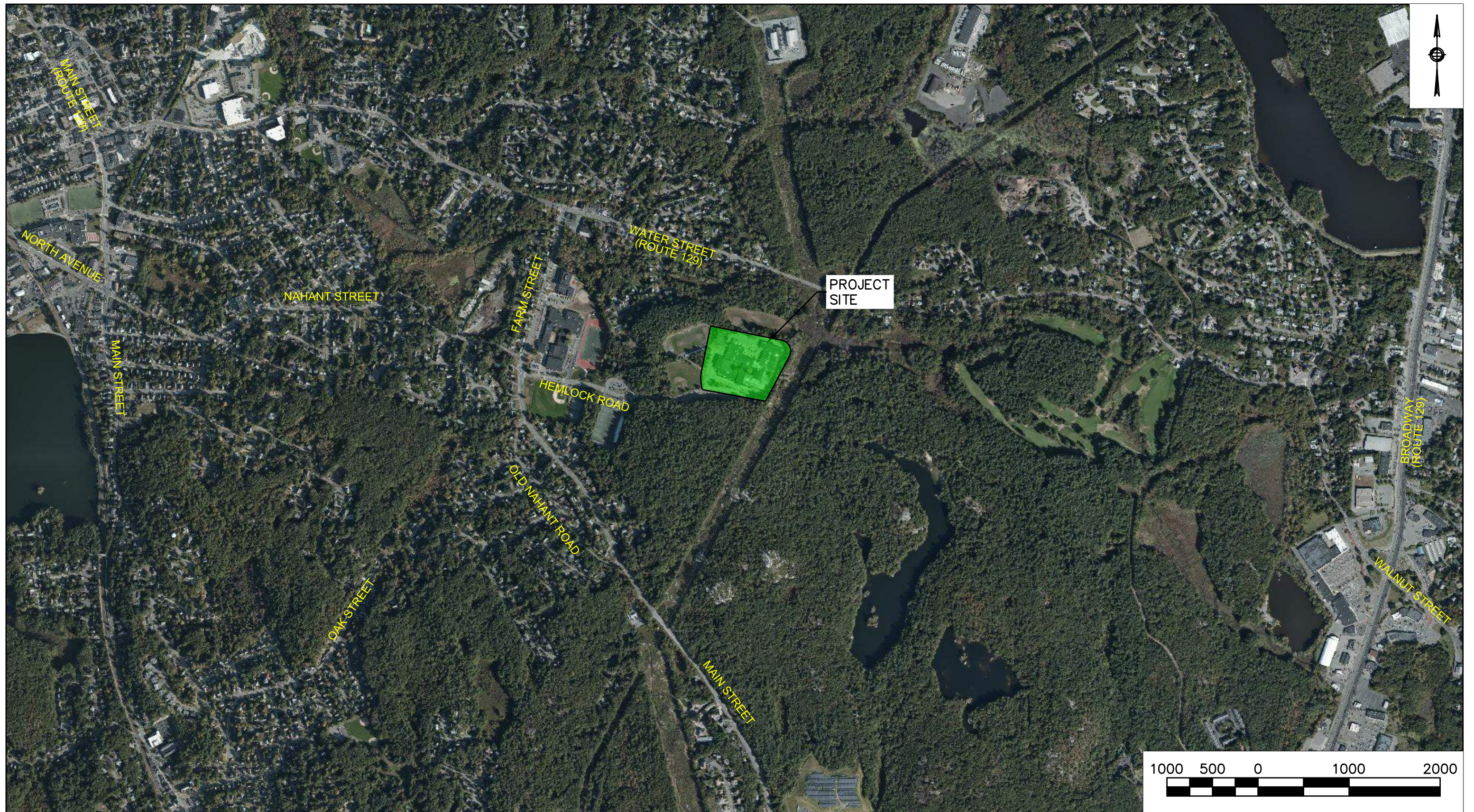
1. An inventory of existing transportation conditions, including roadway capacities, parking, transit, pedestrian and bicycle circulation, and site conditions.
2. An evaluation of future transportation conditions and an assessment of potential traffic impacts associated with the Project and other neighboring projects. Long-term impacts are evaluated for the year 2028, based on a seven-year horizon from the 2021 base year. Expected roadway, parking, transit, and pedestrian conditions and deficiencies are identified. This section includes the following scenarios:
  - a. The No-Build Scenario (2028) includes general background growth and additional vehicular traffic associated with specific proposed or planned developments and roadway changes in the vicinity of the Project site; and
  - b. The Build Scenario (2028) includes specific travel demand forecasts for the Project.
3. An identification of appropriate measures to mitigate Project-related impacts.

The standards used for analysis conform to the 2009 edition of the Manual on Uniform Traffic Control Devices (MUTCD) and the 2010 edition of the Highway Capacity Manual.

The following conditions are analyzed in this report:

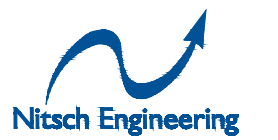
- Existing 2021 “Normal” Conditions;
- Future 2028 No-Build;
- Future 2028 Build; and

Figure 1 is the Locus Map showing the proximity of the Project Site and the surrounding roadway network. Figure 2 identifies the study intersections.



**Figure 1: Locus Map**  
Northeast Metropolitan Regional Vocational High School  
Wakefield, MA

Data Source: BingMaps  
Nitsch Project #: 13872.2





**Figure 2: Study Intersections**  
 Northeast Metropolitan Regional Vocational High School  
 Wakefield, MA



## 3 Existing Conditions

### 3.1 Existing Site

The existing NEMT, located at 100 Hemlock Road in Wakefield, was formed in an agreement in 1964 by the twelve Massachusetts communities of Chelsea, Malden, Melrose, North Reading, Reading, Revere, Saugus, Stoneham, Wakefield, Winchester, Winthrop, and Woburn. The school serves Grades 9 through 12 with a total enrollment of about 1,250 students.

The site includes the school building, parking lot, baseball and football field, and basketball court. It is bound by Water Street and residential properties to the north, Breakheart Reservation to the east and south, and Wakefield Memorial High School (WMHS) to the west.

Site access is provided via Hemlock Road, which is a two-way roadway. Hemlock Road extends from Farm Lane, where it forms a three-legged unsignalized intersection, to the entrance to the NEMT. The road also serves as a main access point to the WMHS.

### 3.2 Breakheart Reservation

Breakheart Reservation is a public recreation area covering 652 acres in the towns of Saugus and Wakefield. The reservation features a hardwood forest, two freshwater lakes, a winding stretch of the Saugus River, and scenic views of Boston and rural New England from rocky hilltops. The park is managed by the Massachusetts Department of Conservation and Recreation.

### 3.3 Roadways

To examine the existing conditions, we studied and collected data at the following roadways:

#### ***Water Street (Route 129)***

Water Street (Route 129) is classified by the MassDOT as an urban principal arterial that runs in a general east-west direction from its eastern terminus at Saugus Town Line to its western terminus at North Avenue. Water Street is 40 feet wide with one travel lane in each direction separated by a double yellow center line (DYCL). The roadway provides one 12-foot-wide lane and an eight-foot-wide shoulder in each direction. Bituminous concrete sidewalk is present on both sides of Water Street east of Farm Street and south side of Water Street west of Farm Street. The roadway is maintained by the Town of Wakefield. The posted speed limit along the roadway is 30 MPH. Bicycle accommodations are not present on Water Street. Land use along Water Street is primarily residential.

#### ***Farm Street***

Farm Street is classified by the MassDOT as an urban minor arterial that runs in a general north-south direction, with its northern terminus at Water Street (Route 129) and its southern terminus at Saugus Town Line. South of Hemlock Road, Farm Street is 44 feet wide with one 18-foot-wide travel lane and a four-foot-wide shoulder in each direction separated by a DYCL. Bituminous concrete sidewalk is present on the west side of Farm Street from Water Street to Old Nahant Road (south) and on the east side of Farm Street from Water Street to June Circle. The roadway is maintained by the Town of Wakefield. The posted speed limit along the roadway is 30 MPH. Land use along Farm Street is residential.



### ***Hemlock Road***

Hemlock Road is classified by the MassDOT as a local roadway and runs in a general west-east direction and provides access to the WMHS, NEMT, and the Breakheart Reservation. Hemlock Road is 32 feet wide with one travel lane in each direction separated by a DYCL. Bituminous concrete sidewalks are present on both sides of the roadway east of the WMHS Parking Lot Driveway. The roadway is maintained by the Department of Conservation and Recreation (DCR). The posted speed limit along the roadway is 15 MPH. A signalized midblock pedestrian crossing is present approximately 210 feet east of Farm Street that connects the High School parking lot and James M. Walsh Athletic Field.

### ***Nahant Street***

Nahant Street is classified by the MassDOT as an urban minor arterial and runs in a general west-east direction, with its western terminus at Main Street and its eastern terminus at Farm Street. Nahant Street is 28 feet wide with one 12-foot-wide travel lane and a two-foot-wide shoulder in each direction separated by a DYCL. Bituminous concrete sidewalk is present on the north side of the roadway. Nahant Street is maintained by the Town of Wakefield. The posted speed limit along the roadway is 20 MPH. Land use along Nahant Street is residential.

### ***Old Nahant Road***

Old Nahant Road is classified by the MassDOT as an urban collector and runs with a horseshoe pattern in a north-south direction with both its northern and southern terminuses at Farm Street. Old Nahant Road is 22 feet wide with one 11 travel lane in each direction separated by a DYCL. Bituminous concrete sidewalks are present on both sides of the roadway north of Oak Street and west side of the roadway south of Oak Street. The roadway is maintained by the Town of Wakefield. The posted speed limit along the roadway is 25 MPH. Land use along Old Nahant Road is residential.

## **3.4 Study Intersections**

The study area includes four intersections (Figure 2). To examine the existing conditions, we designated the following intersections as the main intersections of the study.


### ***Water Street (Route 129) and Farm Street***

Water Street and Farm Street intersect to form a three-way signalized intersection, with Water Street approaching from the east and west, and Farm Street from the south.

The Farm Street northbound approach consists of a dedicated right-turn lane transitioning onto Water Street eastbound and an dedicated left-turn lane. The Water Street westbound approach consists of a through lane and an dedicated left-turn lane; and the Water Street eastbound approach consists of a through lane and an dedicated right-turn lane.

The intersection includes eight-foot-wide ADA accessible crosswalks across all the approaches. Bicycle accommodations are not present on any of the approaches.

The fully actuated traffic signal operates in four phases. The following movements are permitted or protected, as noted, during each of the phases.



First phase:

- Water Street westbound (protected left turn);
- Water Street westbound; and
- Farm Street northbound (right turn overlap)

Second phase:

- Water Street eastbound and westbound (permitted left turn).

Third phase (if actuated):

- Exclusive pedestrian phase for crossing Water Street eastbound, Water Street westbound, and Farm Street northbound.

Fourth phase:

- Farm Street northbound (protected left and right turn); and
- Water Street eastbound (right turn overlap).

***Farm Street and Hemlock Road/Nahant Street***

Farm Street and Hemlock Road/Nahant Street intersect to form a four-way off-set unsignalized intersection, with Farm Street approaching from the north and south, Nahant Street approaching from the west, and Hemlock Road approaching from the east. Farm Street operates freely with no stop control while Nahant Street and Hemlock Road operate with stop control.

All approaches provide one approach lane except for the Farm Street southbound approach to Hemlock Road which provides a through lane and an dedicated left-turn lane. The intersection includes eight-foot-wide ADA accessible crosswalks across the Farm Street southbound approach, the Nahant Street eastbound approach, and the Hemlock Street westbound approach.

***Hemlock Road and WMHS Back Parking Lot Drive***

Hemlock Road and WMHS Back Parking Lot Drive intersect to form a three-way intersection equipped with flashing beacon, with Hemlock Road approaching from the east and west, and WMHS Back Parking Lot Drive approaching from the north.


All approaches to the intersection provide one approach lane. The intersection includes an eight-foot-wide ADA accessible crosswalks across the Hemlock Road eastbound approach.

The traffic signal at this intersection operated on flash mode, with Hemlock Road eastbound and westbound having the yellow indication and WMHS having the red indication. Upon actuation the traffic signal switches to exclusive pedestrian phase for crossing Hemlock Road eastbound.

***Farm Street and Old Nahant Road (North Intersection)***

Farm Street and Old Nahant Road intersect to form a three-way unsignalized intersection with Farm Street approaching from the north and south, and Old Nahant Road approaching from the west. Farm Street operates freely with no control, and Old Nahant Road operates with stop control.





All approaches to the intersection provide one approach lane. The intersection includes an eight-foot-wide ADA accessible crosswalk across the Old Nahant Road approach.

***Farm Street and Old Nahant Road (South Intersection)***

Farm Street and Old Nahant Road intersect to form a three-way unsignalized intersection with Farm Street approaching from the north and south, and Old Nahant Road approaching from the west. Farm Street operates freely with no control, and Old Nahant Road operates with stop control.

All approaches to the intersection provide one approach lane. The intersection includes an eight-foot-wide ADA accessible crosswalk across the Old Nahant Road approach.

**3.5 NEMT School Site Observations**

Nitsch Engineering conducted a site visit on Tuesday, February 25, 2020 to observe the site circulation associated with the weekday morning drop-off period and the weekday afternoon pick-up period. The observations occurred during overcast conditions.

**3.6 Off-site Traffic Observations**

To understand the magnitude of traffic along the adjacent roadways, we conducted 15-minute spot counts on Water Street just northwest of Montrose Avenue and at the intersection of Farm Street and Old Nahant Road, shown in Tables 1 and 2.

**Table 1 – Traffic Count at Water Street (Route 129) near Montrose Avenue**

Direction	Count	Directional Split
Morning - 9:15-9:30 AM		
Westbound towards Farm Street	72	51%
Eastbound away from Farm Street	69	49%
Afternoon - 3:00-3:15 PM		
Westbound towards Farm Street	82	53%
Eastbound away from Farm Street	74	47%

**Table 2 – Traffic Count at Farm Street near Old Nahant Road**

Direction	Count	Directional Split
Morning - 9:40-9:55 AM		
Northbound towards Hemlock Road	69	59%
Southbound away from Hemlock Road	47	41%
Afternoon - 3:00-3:15 PM		
Northbound towards Hemlock Road	102	48%
Southbound away from Hemlock Road	109	52%

As shown, the volumes are slightly higher in the weekday afternoon period however an approximate 50-50 directional distribution is maintained on both roadways.

We also observed the existing traffic conditions at the intersections of Hemlock Road and Farm Street; and Hemlock Street and the Wakefield Memorial High School driveway to understand the effects the school traffic has during the peak arrival and dismissal periods. The following is a summary:

- The Wakefield Memorial High School dismissal is at 2:00 PM, and only a few cars remained on Hemlock Road as the Northeast Metropolitan Regional Vocational High School traffic was exiting school property.
- Approximately 70% of vehicles were turning right from Hemlock Road onto Farm Street
- Most of the vehicles were taking a left from Farm Street onto Hemlock Road for pick-up
- Queueing quickly cleared at the end of Hemlock Road

### 3.7 On-site Traffic Observations

#### 3.7.1 Parking Supply and Demand

As shown in Table 3 the parking lot has approximately 418 spaces, 11 of which are accessible spaces. This meets the Massachusetts Architectural Access Board (MAAB) Regulations (521 CMR) for the required number of handicapped parking spaces. Student, Breakheart Reservation, visitor, reserved and some faculty parking are in front of the school, with faculty-only parking behind the building.

**Table 3 – Parking Utilization**

		<b>Total Spaces</b>	<b>Unoccupied</b>
Back of Building	Faculty (White Striping)	154	19
Front of Building	Faculty (White Striping)	61	0
	Student / Resident (Yellow Striping)	156	10
	Handicap and Van Access	11	9
	Reserved	20	9
	Visitor	10	6
	Breakheart Reserved	5	2
	Co-Op	1	1
<b>Total</b>		<b>418</b>	<b>56</b>

Each student is required to have a parking sticker, which is checked at the front gate by a security guard. To the best of the guard’s ability, the parking stickers are quickly checked to keep drop-off traffic moving. As shown in the tables, there are equal amount of parking stickers as there are dedicated student spaces. There were also 26 vehicles without license plates observed in the parking lot behind the building which were assumed to be for the automotive classes. The limited parking capacity becomes an issue as the school year approaches summer when patrons looking to visit Breakheart Reservation occupy the student parking spaces and as newly licensed drivers begin to drive to school without parking stickers. This results in the excess student vehicles occupying faculty parking behind the building or park outside of school property.

It was observed that student cars and buses all enter the site via the single entrance off Hemlock Road. Student pick-up and drop-off operates via one-way circulation at the front entrance to the building and buses circulate around the building to drop off students at the back entrance. Traffic circulation is illustrated in Figure 3.

Buses and pick-up vehicles arrive between 1:45 PM and 2:45 PM, with the school dismissal at 2:30 PM. Queueing will then occur on all exit routes as shown in Figure 4. A flagger will stop pick-up and student vehicles to let buses exit from the back of the building. This exit point is also a conflict area as students and faculty will come from behind the building to try and merge with the pick-up vehicles from the front of the building.

Below are the detailed field notes of the on-site observations made during our site visit.

**Morning Drop-Off (7:00 AM – 8:00 AM)**

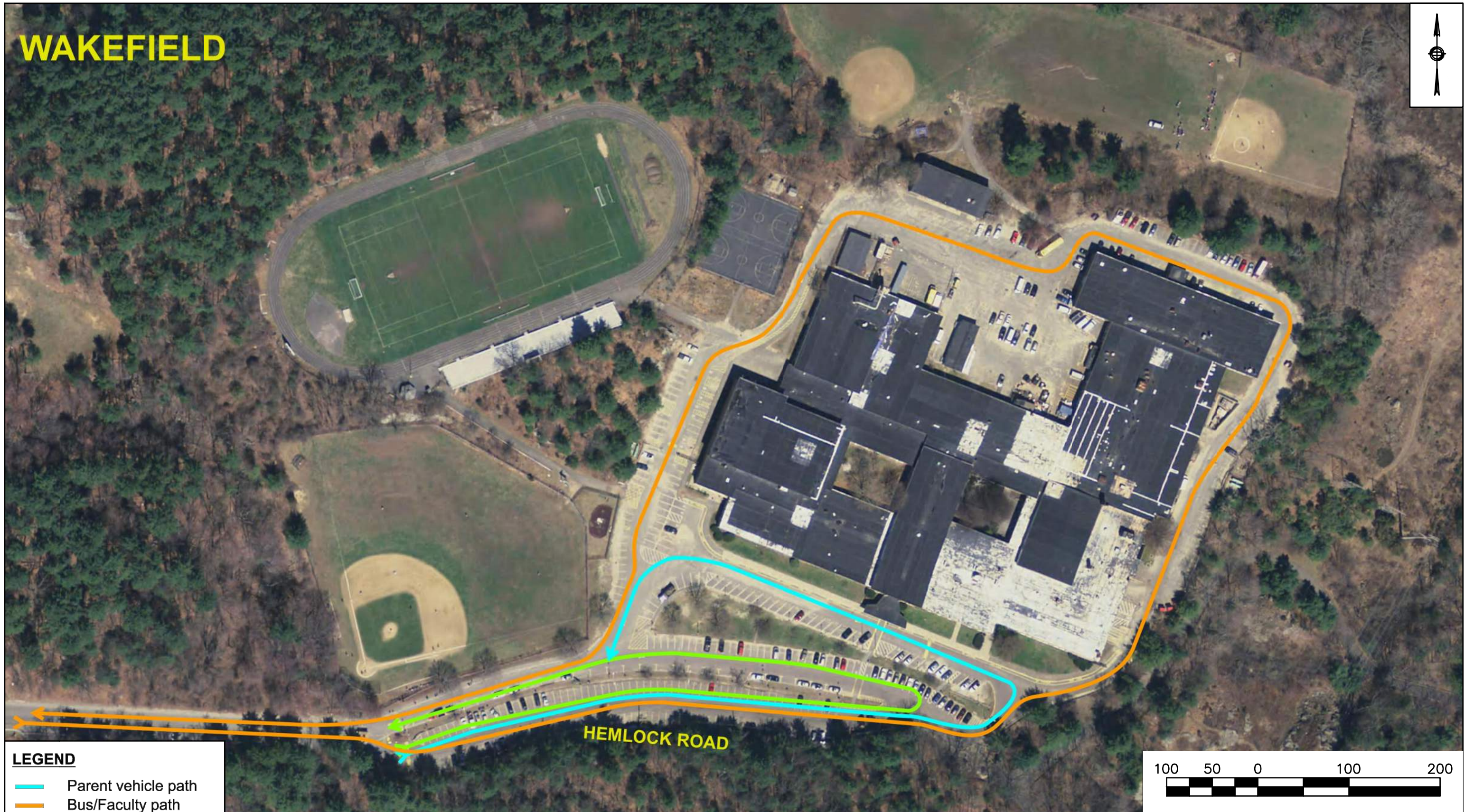
- Security guard’s shift at the gate starts at 7:00 AM
- Student parking requires paid parking decal
- Few students were observed in the parking lot before 7:00 AM
- School buses park around the back
- First bus was observed at 7:06 AM
- Total of 20 buses in the morning
- Cars start queueing up at the gate by 7:15 AM
- 15+ cars observed in queue at 7:30 AM
- There was no queue observed at the front of the school after 7:25 AM
- First bell occurred at 7:45 AM and due to queue vehicles were still pulling into parking lot

- Gate to exit back parking lot closes at 7:55 AM
- There is also a preschool and restaurant at this school
- 8 Reserved parking spaces for preschool drop off, restaurant and Reading Cooperative Bank
- Preschool drop off does not happen until 8:15 – 8:20 AM, when queues and traffic has calmed down
- Restaurant does not open until 11:30 AM, with 8 parking spaces reserved
- Of the 286 Seniors, 115 have parking decals and of 304 Juniors, 41 have decals
- Separate parking for faculty and students
- Students compete with the local community for parking due to Breakheart Reservation, which has an entrance near the front entrance of the school
- There are also 5 spots reserved with signs for Breakheart Reservation, and when these are full residents will take student parking
- Once student parking is full, they will circulate to the back of the building where it is faculty only parking and take vacant spaces

#### ***Afternoon Pick-Up (1:45 PM – 3:15 PM)***

- Parents start to show up around 1:45 PM
- School dismissal is at 2:30 PM
- Buses park in the back waiting for dismissal
- Total of 18 buses in the afternoon
- Buses started to show up as early as 1:55 PM
- Queue outside entrance grew to 49 and stretched down the entire side of building before students were released
- There were vehicles parked illegally and in handicap spaces waiting to pick-up students
- As vehicles started to exit, there was a dangerous point of conflict where pick-up and faculty/students from the rear of the school were forced to merge but had limited sight due to parked cars in between
- There is a flagger controlling exiting vehicles, directing traffic from the student parking lot, the entrance pick-up vehicles and buses/faculty and students coming from the rear of the school
- Buses receive priority when ready to exit from the back of the building
- Queueing in student parking lot circulated all the way to the security at the gate
- Students could not back out of parking spaces due to this queue
- Queue from student parking lot cleared at 2:45 PM
- Flagger left at 2:50 PM
- There were only 11 unoccupied faculty spaces at 2:50 PM Site Access and Egress

# WAKEFIELD



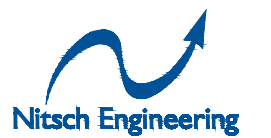
**LEGEND**

- Parent vehicle path
- Bus/Faculty path

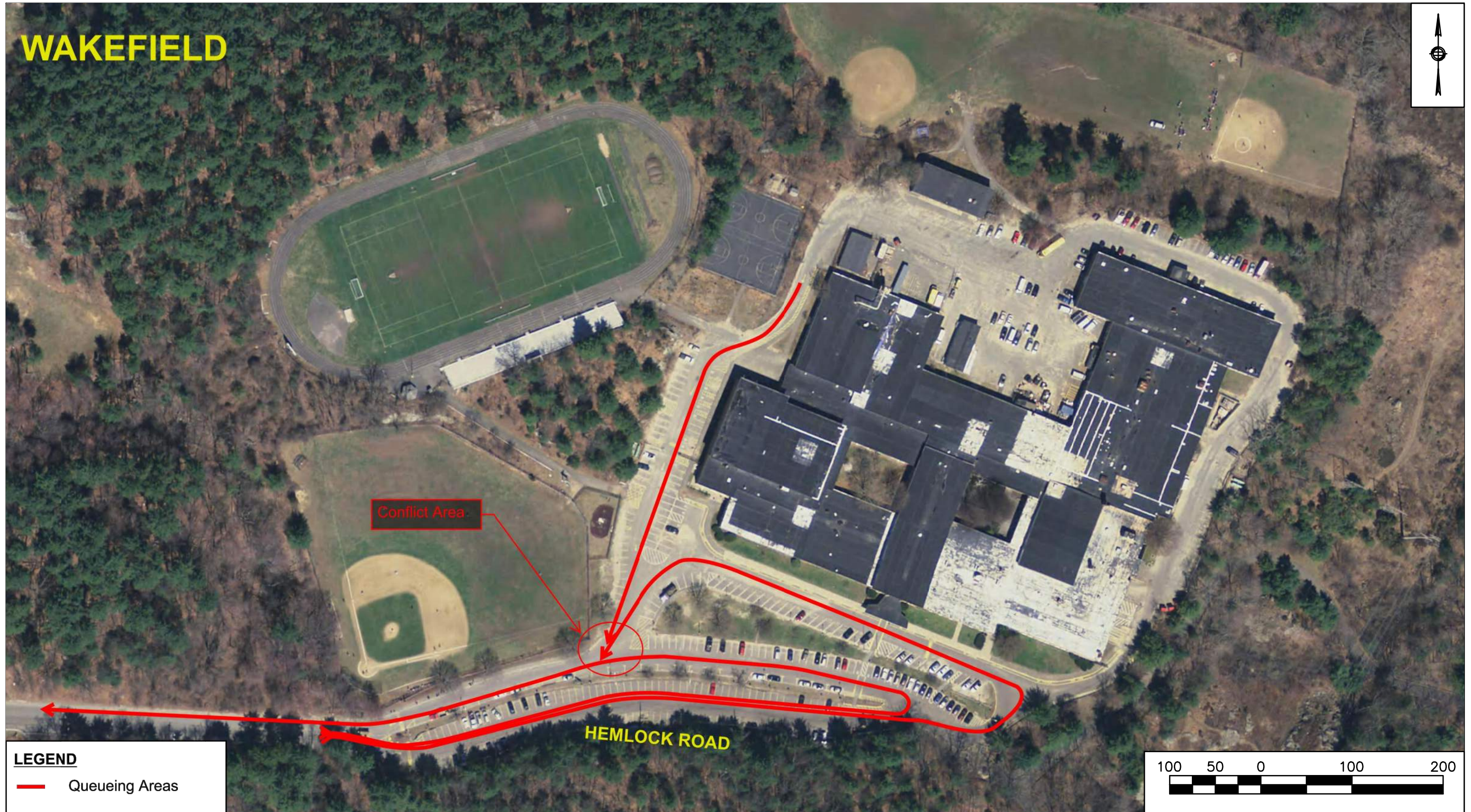
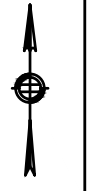


**Figure 3: Travel Path**  
Northeast Metropolitan Regional Vocational High School  
Wakefield, MA

Data Source: BingMaps  
Nitsch Project #: 13872.2



# WAKEFIELD

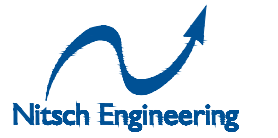


**LEGEND**  
— Queueing Areas



**Figure 4: Queue Location**  
Northeast Metropolitan Regional Vocational High School  
Wakefield, MA

Data Source: BingMaps  
Nitsch Project #: 13872.2



## 4 Existing Traffic Conditions

### 4.1 Traffic Count Data

#### **Automatic Traffic Recorder (ATR) Data**

Nitsch Engineering retained Precision Data Industries, LLC (PDI) of Hudson, Massachusetts to conduct 48-hour Automatic Traffic Recorder (ATR) vehicle traffic counts throughout the study area from Tuesday, May 25, 2021 to Thursday, May 27, 2021. Table 4 summarizes the ATR data. A copy of the raw traffic count data is included in Appendix A-1.

**Table 4 – Automatic Traffic Recorder (ATR) Summary**

Location	Period	ADT <sup>a</sup>		Peak Hour Traffic			K Factor <sup>d</sup>
		Volumes (VPD) <sup>b</sup>	Directional Distribution	Period	Volumes (VPH) <sup>c</sup>	Directional Distribution	
Water St west of Farm St	Weekday	10,955	52.0% WB	Morning	897	57.9% WB	0.08
				Afternoon	883	54.7% WB	0.08
Farm St south of Hemlock Rd	Weekday	7,319	50.1% NB	Morning	488	53.1% NB	0.07
				Afternoon	1,035	56.3% NB	0.14

<sup>a</sup> Average Daily Traffic; <sup>b</sup> Vehicles per day; <sup>c</sup> Vehicles per hour; <sup>d</sup> Percent of daily traffic

#### **Turning Movement Count (TMC) Data**

PDI also conducted continuous Turning Movement Counts (TMC) data for the five main intersections of the study area on Saturday, May 22, 2021, from 11:00 AM to 1:00 PM to capture the Saturday midday peak period; and Thursday, May 27, 2021 from 7:00 AM to 9:00 AM and 2:00 PM to 4:00 PM to capture the weekday morning and afternoon peak school periods. The TMC data included bicycle and pedestrian counts. The peak hours within the study area were established as 7:15 AM to 8:15 AM during the morning period, and 2:30 PM to 3:30 PM during the afternoon period. Note, as part of this study, TMC data was only collected at the four main intersections along Farm Street. Since data was not collected at the Woodville Circle and Kennedy Circle intersections with Farm Street, Nitsch used the Institute of Transportation Engineers' (ITE) publication *Trip Generation, 10th Edition* (Land Use Code 210: Single-Family detached Housing) to estimate the vehicle trip rates for the approaches to the intersections.

### 4.2 Seasonal Adjustment

Nitsch Engineering used the MassDOT 2017 Weekday Seasonal Adjustment Factors to establish if the traffic counts needed to be seasonally adjusted. The composition of the study area falls within "Group U4-7 Urban Arterials." Counts within Group U4-7 collected during the month of May experience a value that is approximately 8% higher than an average month. Therefore, no seasonal adjustment factors were applied.



### 4.3 COVID-19 Adjustment


Since early 2020, the COVID-19 pandemic has caused the State of Massachusetts to close most businesses, schools, retail stores, and restaurants, therefore significantly altering daily traffic operations. Specific to this project, the operation at the school had been hybrid until Monday May 3, 2021, when full in-person classes resumed at the school. Since the data collection was conducted on May 25 through 27, 2021 it includes the school-related traffic volumes for both the Wakefield High School and NEMT; therefore, a COVID adjustment for the school-related volumes is not needed.

In April 2020, MassDOT published a new Engineering Directive E-20-005, to provide guidance on how to estimate existing and future traffic counts due to traffic counts taken after March 13, 2020, which may undercount the baseline for which future years are based. Because of this, it is widely accepted to use 2019 data for baseline. Since our TMC data was collected during the pandemic but with schools open, we assessed adjusting the commuter related traffic volumes to better represent the baseline.

To do so, Nitsch Engineering used the 2019 and 2021 volumes from MassDOT's Traffic Data Management System (TDMS) portal. The data from the nearest MassDOT continuous count station # 5099, located on Yankee Division Highway south of the Walnut Street to Route 95 Southbound ramp, was used to compare the 2019 hourly ATR data collected on Thursday May 30, 2019 with the 2021 hourly ATR data collected in Thursday May 27, 2021 to make the appropriate TMC volume adjustments and calculate the background traffic growth. Table 5 presents the daily traffic volume comparison.



**Table 5 – Daily Traffic Volume Comparison**

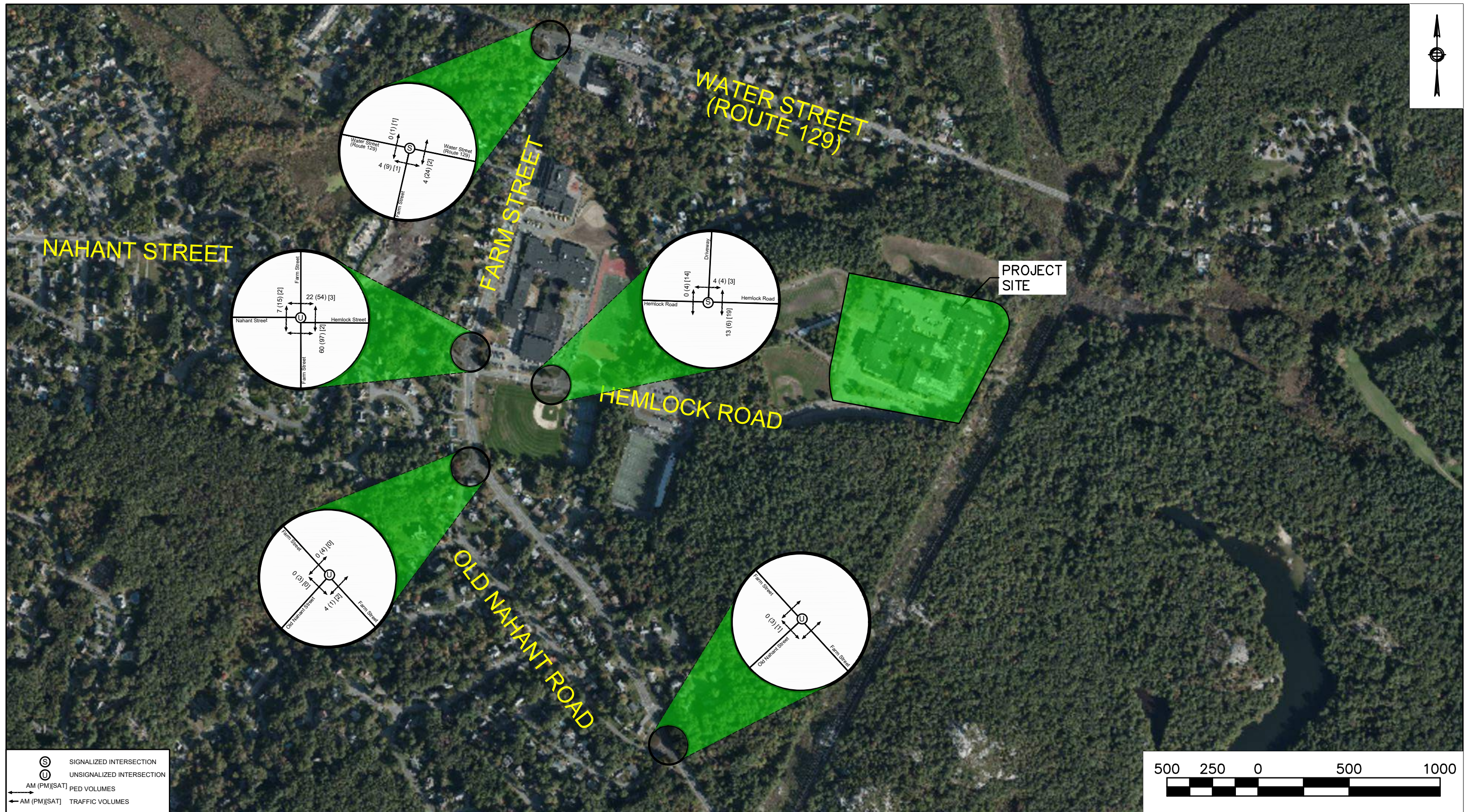
Time	2019	2021 COVID	Net Change
12:00 AM - 1:00 AM	1,084	742	-32%
1:00 AM - 2:00 AM	615	470	-24%
2:00 AM - 3:00 AM	455	381	-16%
3:00 AM - 4:00 AM	563	555	-1%
4:00 AM - 5:00 AM	1,409	1,225	-13%
5:00 AM - 6:00 AM	5,412	4,244	-22%
6:00 AM - 7:00 AM	8,895	8,520	-4%
7:00 AM - 8:00 AM	10,135	9,877	-3%
8:00 AM - 9:00 AM	9,185	9,299	1%
9:00 AM - 10:00 AM	8,848	9,185	4%
10:00 AM - 11:00 AM	8,785	9,094	4%
11:00 AM - 12:00 PM	8,789	9,476	8%
12:00 PM - 1:00 PM	8,965	9,525	6%
1:00 PM - 2:00 PM	9,682	9,345	-3%
2:00 PM - 3:00 PM	10,526	10,130	-4%
3:00 PM - 4:00 PM	10,676	9,414	-12%
4:00 PM - 5:00 PM	10,408	742	-9%
5:00 PM - 6:00 PM	10,246	470	-3%
6:00 PM - 7:00 PM	9,685	381	-4%
7:00 PM - 8:00 PM	7,758	555	-5%
8:00 PM - 9:00 PM	5,808	1,225	-4%
9:00 PM - 10:00 PM	4,611	4,244	-6%
10:00 PM - 11:00 PM	3,120	8,520	-3%
11:00 PM - 12:00 AM	2,051	1,915	-7%
Daily	157,711	152,439	-3%
 School peak hour			

Comparing the 2019 hourly ATR data with the 2021 hourly ATR data, the average daily traffic has decreased by approximately 3% during the weekday morning peak school hour and by approximately 4% during the weekday afternoon peak school hour. As a conservative measure for our analysis, we applied a 4% growth rate to non-school related commuter traffic volumes along the adjacent roadways to estimate the base morning and afternoon traffic volumes. The adjusted 2021 Existing Traffic Volumes are shown in Figure 5. The Existing Peak Hour Pedestrian Volumes are shown in Figure 6.



**Figure 5: 2021 Existing Peak Hour Volumes**  
 Northeast Metropolitan Regional Vocational High School  
 Wakefield, MA

Data Source: BingMaps  
 Nitsch Project #: 13872.2



**Figure 6: 2021 Existing Peak Hour Pedestrian Volumes**  
 Northeast Metropolitan Regional Vocational High School  
 Wakefield, MA

Data Source: BingMaps  
 Nitsch Project #: 13872.2

## 5 Safety Analysis

### 5.1 Crash Data

As part of the safety analysis, it is recommended to summarize the crash data for the five most recent “closed” years. To date, 2018 is the latest year for which the crash data is finalized (closed) therefore crash data from MassDOT from 2014 to 2018 was collected and reviewed for the study area intersections. The total crashes, severity, manner of collision, and percentage that occurred during peak hours and/or wet/icy weather conditions for each intersection are presented in Table 6. A copy of the crash data is included in the Appendix.

**Table 6 – Crash Summary**

Location	Number of Crashes			Severity				Manner of Collision					Percent During	
	Year	Total Crashes	Avg	PD <sup>a</sup>	PI <sup>b</sup>	NR <sup>c</sup>	F <sup>d</sup>	A <sup>e</sup>	RE <sup>f</sup>	HO <sup>g</sup>	Other <sup>h</sup>	Incl. Ped-Bike <sup>j</sup>	Peak Hours <sup>k</sup>	Wet/Icy Conditions
Water Street and Farm Street	2014	1	2.4	1	0	0	0	0	1	0	0	0	100%	100%
	2015	1		1	0	0	0	0	1	0	0	0	0%	100%
	2016	4		4	0	0	0	0	1	0	3	0	0%	100%
	2017	3		1	2	0	0	1	0	0	2	0	0%	0%
	2018	3		2	1	0	0	1	1	0	1	0	0%	100%
	<b>Total</b>	<b>12</b>		<b>9</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0%</b>	<b>67%</b>
Hemlock Road and Driveway	2014	0	0.0	0	0	0	0	0	0	0	0	0	0%	0%
	2015	0		0	0	0	0	0	0	0	0	0	0%	0%
	2016	0		0	0	0	0	0	0	0	0	0	0%	0%
	2017	0		0	0	0	0	0	0	0	0	0	0%	0%
	2018	0		0	0	0	0	0	0	0	0	0	0%	0%
	<b>Total</b>	<b>0</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0%</b>	<b>0%</b>
Farm Street and Hemlock Road/Nahant Street	2014	2	3.6	2	0	0	0	1	0	0	1	0	50%	0%
	2015	4		3	1	0	0	3	1	0	0	0	50%	0%
	2016	4		3	1	0	0	3	1	0	0	0	75%	0%
	2017	2		2	0	0	0	0	2	0	0	0	0%	0%
	2018	6		5	1	0	0	5	1	0	0	0	67%	17%
	<b>Total</b>	<b>18</b>		<b>15</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>55%</b>	<b>6%</b>
Farm Street and Old Nahant Road North	2014	0	0.4	0	0	0	0	0	0	0	0	0	0%	0%
	2015	0		0	0	0	0	0	0	0	0	0	0%	0%
	2016	0		0	0	0	0	0	0	0	0	0	0%	0%
	2017	2		1	1	0	0	1	1	0	0	0	50%	0%
	2018	0		0	0	0	0	0	0	0	0	0	0%	0%
	<b>Total</b>	<b>2</b>		<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>50%</b>	<b>0%</b>
Farm Street and Old Nahant Road South	2014	1	0.6	1	0	0	0	0	1	0	0	0	100%	0%
	2015	1		0	1	0	0	0	0	0	1	0	0%	0%
	2016	0		0	0	0	0	0	0	0	0	0	0%	0%
	2017	0		0	0	0	0	0	0	0	0	0	0%	0%
	2018	1		0	1	0	0	0	1	0	0	0	0%	0%
	<b>Total</b>	<b>3</b>		<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>33%</b>	<b>0%</b>
<b>Total</b>	<b>ALL</b>	<b>35</b>		<b>26</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>12</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>46%</b>	<b>14%</b>

<sup>a</sup>Property Damage Only; <sup>b</sup>Personal Injury Only (non-Fatal Injury); <sup>c</sup>Not Reported; <sup>d</sup>Fatality; <sup>e</sup>Angle; <sup>f</sup>Rear end; <sup>g</sup>Head on; <sup>h</sup>Sideswipe, opposite direction; sideswipe, same direction, single vehicle crash, rear-to-rear, not reported, unknown, etc.; <sup>i</sup>Includes pedestrian or cyclist; <sup>k</sup>Occurred between 7-9am or 4-6pm

A total of 35 crashes were reported for the study area intersections. In terms of severity, 26 reported property damage and nine reported personal injury. In terms of the type of collision, 15 reported an angle collision, 12 were rear-end collisions, and another eight were reported as other (sideswipe and single vehicle). None of the reported crashes included a bicycle or a pedestrian. 14% of the collisions occurred during wet/icy conditions and 46% of the collisions occurred during peak traffic hours of 7:00 AM – 9:00 AM or 4:00 PM – 6:00 PM. Analyzing the crash data, as the crashes were of angle, rear-end or sideswipe type, the crashes were most likely caused by driver carelessness or inattentiveness.

## 5.2 Intersection Crash Rates

The intersection crash rate is recognized as an effective tool to measure the safety of intersections. For intersections, crash rates are expressed by the number of crashes per million entering vehicles (MEV). As of June 26, 2018, the average statewide crash rate for unsignalized intersections is 0.57 crashes per MEV and 0.78 crashes per MEV for signalized intersections. For District 4, which includes the Town of Wakefield, the rate for unsignalized intersections is 0.57 crashes per MEV and 0.73 crashes per MEV for signalized intersections. As shown in Table 7, the four study Intersections are below both Statewide and Districtwide averages. Crash rate worksheets can be found in Appendix A-3.

**Table 7 – Crash Rate Summary**

Location	Control	Total Crashes	Crash Rate <sup>c</sup>	Compared to Average <sup>d</sup>		Compared to Average <sup>d</sup>	
				Statewide	District 4	Statewide	District 3
Water Street and Farm Street	Signalized	12	0.32	0.78	0.73	Below	Below
Hemlock Road and Driveway	Signalized	0	0.00	0.78	0.73	Below	Below
Farm Street and Hemlock Road/Nahant Street	Unsignalized	18	0.43	0.57	0.57	Below	Below
Farm Street and Old Nahant Road North	Unsignalized	2	0.06	0.57	0.57	Below	Below
Farm Street and Old Nahant Road South	Unsignalized	3	0.12	0.57	0.57	Below	Below



## 6 Future No-Build Traffic Conditions

Nitsch Engineering used the 2021 existing traffic volumes as the baseline for projecting traffic volumes to future 2028 No-Build conditions. To determine future 2028 conditions, the following steps are included:

- Project existing 2021 traffic volumes seven years in the future to the horizon year (2028) using an annual background traffic growth factor to account for regional growth;
- Add traffic volumes associated with any planned developments that may impact the study area; and
- Analyze the study area location to determine future traffic operations.

### 6.1 Background Growth

Nitsch Engineering used the data from the MassDOT TDMS portal at the nearest MassDOT count station #4126, located on Main Street north of Water Street (Route 129), to calculate the background traffic growth. The data indicates that Average Annual Daily Traffic (AADT) was recorded at:

- 15,739 vehicles in 2009;
- 15,911 vehicles in 2010;
- 14,627 vehicles in 2011;
- 15,330 vehicles in 2012;
- 15,547 vehicles in 2013;
- 16,402 vehicles in 2014;
- 16,582 vehicles in 2015;
- 16,798 vehicles in 2016;
- 12,400 vehicles in 2017;
- 12,574 vehicles in 2018; and
- 12,624 vehicles in 2019.

As shown, the traffic has been decreasing in this area at an average rate of approximately 2% per year. However, to provide a conservative analysis, we used an annual background traffic growth rate of 0.5%, which is also consistent with recent MassDOT projects in eastern Massachusetts. We also believe that any potential additional traffic as a result of planned developments and area roadway improvements will be accounted for within the 0.5% per-year background growth along the adjacent roadways.

### 6.2 Planned Development

The Project team is aware that the Wakefield Memorial High School is expected to be redeveloped and there is potential for traffic increases as a result. However, currently there is no official program in-place, and it is expected that the full build-out of the NEMT will occur prior to the full build-out of the WMHS.

### 6.3 2028 No-Build Traffic Volumes

The 2028 No-Build Traffic Volumes are shown in Figure 7 and are derived by applying the traffic growth rate of 0.5% per year over the seven-year design horizon to project the 2021 existing traffic volumes.



**Figure 7: 2028 No-Build Peak Hour Volumes**  
 Northeast Metropolitan Regional Vocational High School  
 Wakefield, MA

Data Source: BingMaps  
 Nitsch Project #: 13872.2



## 7 Proposed Future Conditions

### 7.1 Proposed Development

The existing NEMT building will be demolished, and a new school will be constructed to accommodate 1,600 students. The site will be expanded to include a larger building, more parking and longer queuing lengths to accommodate the additional project-generated trips which include additional busses, additional parent drop-off/pick-up, and additional faculty.

Access to the site will be provided via two driveways; the existing Hemlock Road extension, and a new driveway connecting to Farm Street south of Hemlock Street. The new driveway at Farm Street will create a three-way intersection, with the new driveway approaching from the east, and Farm Street approaching from the north and the south.

The bus drop-off/pick-up will occur at the designated bus loop located at the south of the school. A total of 484 parking spaces will be provided on-site, including 11 accessible parking stalls, as well as 22 spaces designated for Green Vehicles and 10 spaces equipped with Electric Vehicle charging stations. Significant queuing capacity is proposed on-site so parents will be able to circulate through the site and park on the side of the drive aisles instead of utilizing the parking spaces temporarily.

### 7.2 Proposed Trip Generation

Nitsch Engineering used the Institute of Transportation Engineers' (ITE) publication *Trip Generation, 10th Edition* to estimate the vehicle trip rates for the existing NEMT and the proposed reconstructed school and establish the net trips. These trips include parents, faculty, and busses.

Trip generation rates for the High School were based on Land Use Code (LUC) 530 (High School). The weekday morning drop-off and weekday afternoon pick-up trips are outlined in Table 8.



**Table 8 – Existing and Proposed Trip Generation**

Time	High School (LUC 530)		
	NEMT School		
	Existing with 1,200 Students	Redeveloped with 1,600 Students	Net Increase
Weekday Daily	2562	3248	686
Entering	1281	1624	343
Exiting	1281	1624	343
Weekday Morning Peak	660	880	220
Entering	449	598	149
Exiting	211	282	71
Weekday Afternoon Peak	396	528	132
Entering	127	169	42
Exiting	269	359	90
Saturday Peak	120	160	40
Entering	76	101	25
Exiting	44	59	15

As illustrated in Table 8, the proposed redeveloped School with 1,600 students would result in approximately 686 additional daily trips (343 trips in and 343 trips out), with 220 additional trips (149 trips in and 71 trips out) during the weekday morning drop-off time and 132 additional trips (42 trips in and 90 trips out) during the weekday afternoon pick-up time. The school building and its athletic fields will also generate 40 additional trips (25 trips in and 15 trips out) during the peak hour of community and recreational activities on Saturdays.

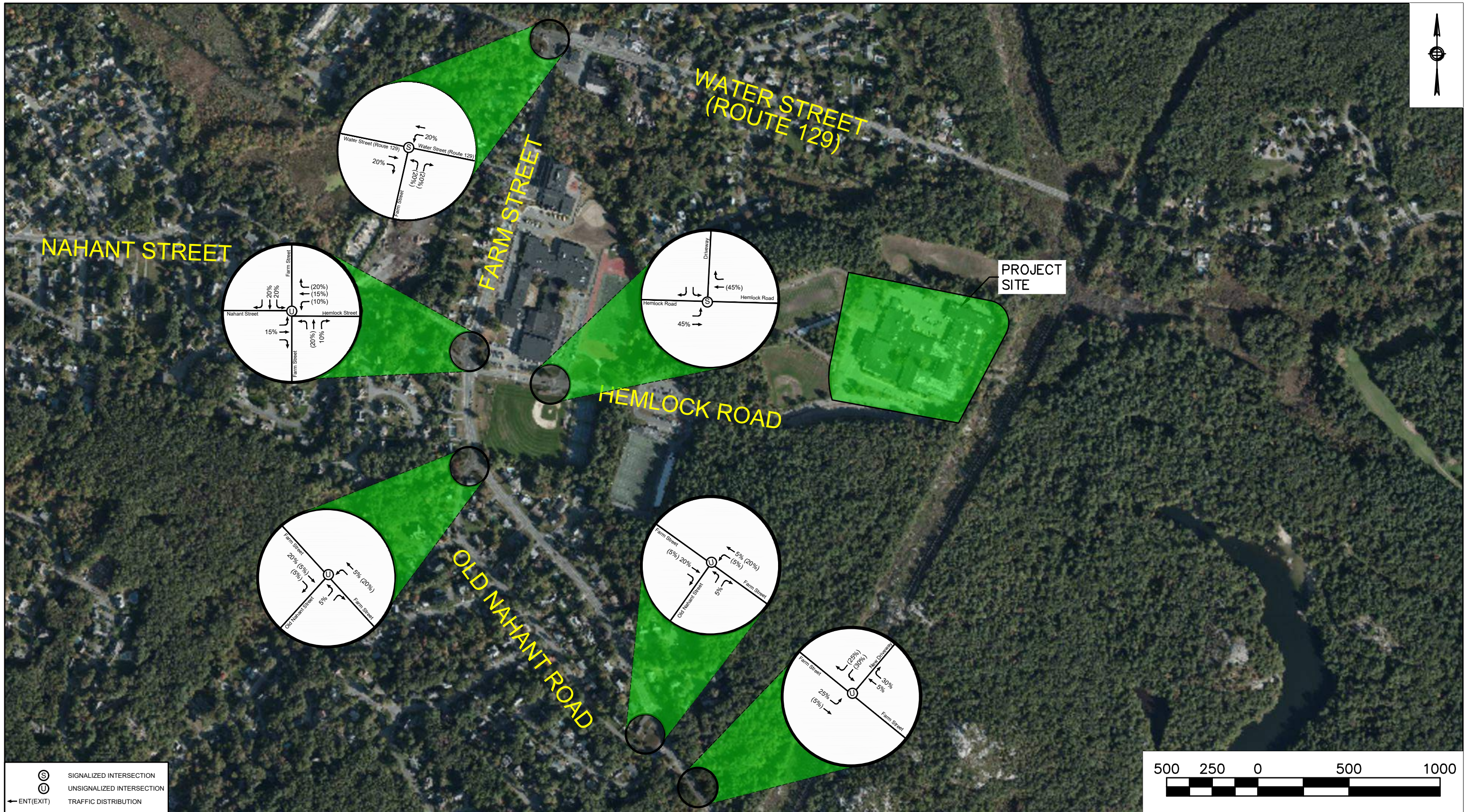
### 7.3 Trip Distribution and Assignment

The trips to/from the proposed school will be distributed and assigned based on the existing travel patterns and logical travel routes through the existing roadway network within the Town of Wakefield. The Trip Distribution percentages specific to the proposed school are shown in Figure 8.

The resultant net trip assignment volumes were calculated by multiplying the trip distribution by the additional school-related trips from Table 8. The existing school trips were also redistributed based on the future trip distribution resulting in a traffic volume decrease on Hemlock Road; 352 vehicles during the weekday morning peak school hour, 211 vehicles during the weekday afternoon peak school hour, and 64 vehicles during the Saturday midday peak hour. The net trip assignment volumes are shown in Figure 9 for the weekday morning and the weekday afternoon peak hours.

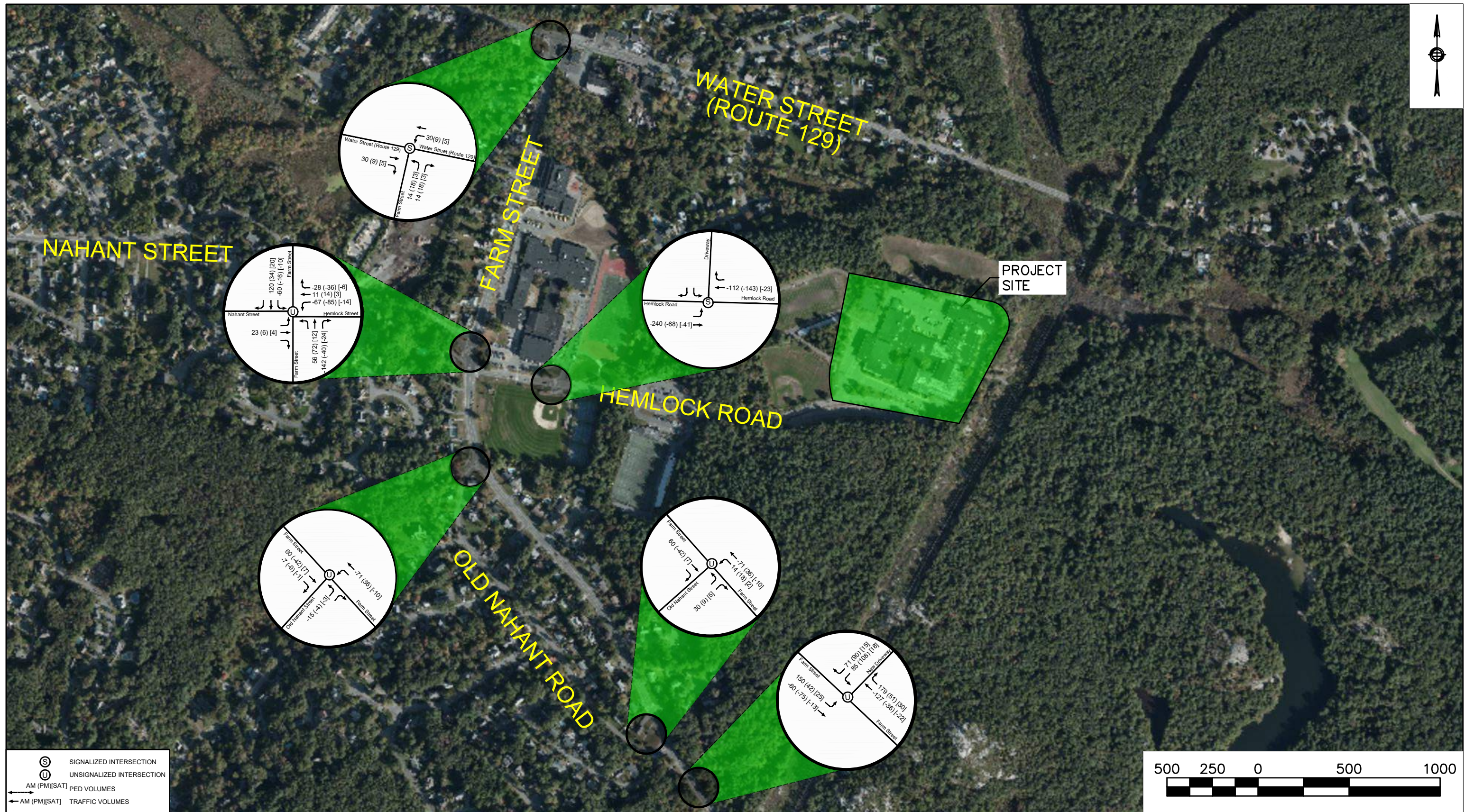
### 7.4 Proposed 2028 Build Volumes

For the proposed school, the corresponding trip assignment volumes were added to the 2028 No-Build Volumes to yield the 2028 Build Volumes. The 2028 Build Volumes are shown in Figure 10.

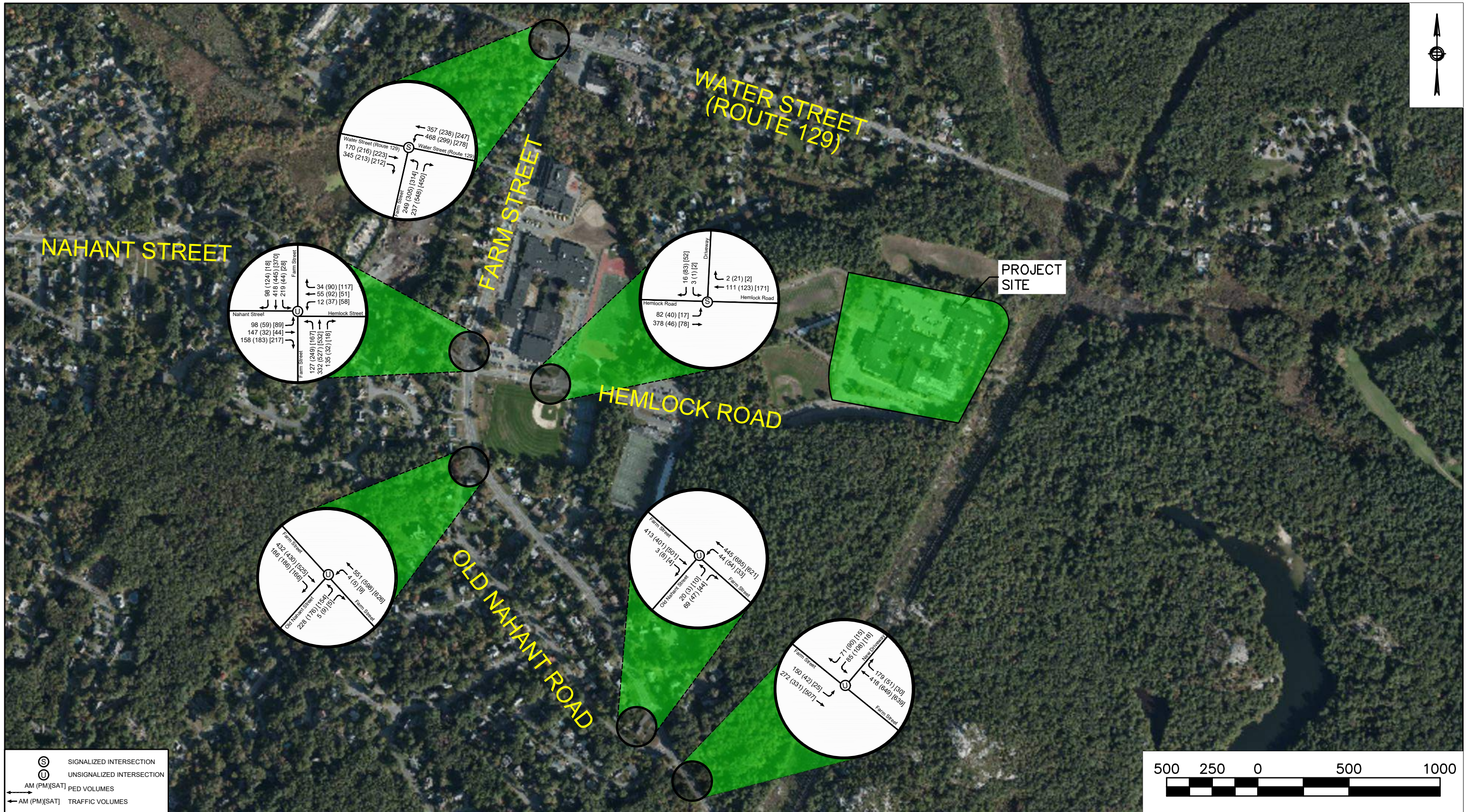


**Figure 8: Trip Distribution**  
 Northeast Metropolitan Regional Vocational High School  
 Wakefield, MA

Data Source: BingMaps  
 Nitsch Project #: 13872.2



**Figure 9: Trip Assignment**  
 Northeast Metropolitan Regional Vocational High School  
 Wakefield, MA



**Figure 10: 2028 Build Peak Hour Volumes**  
 Northeast Metropolitan Regional Vocational High School  
 Wakefield, MA

Data Source: BingMaps  
 Nitsch Project #: 13872.2

## 7.5 Parking Generation and Adequacy

Nitsch Engineering used the Institute of Transportation Engineers' (ITE) publication *Parking Generation Manual, 5th Edition* to estimate the parking demand for the proposed development. Parking generation rates for the proposed school were based on Land Use Code (LUC) 530 (High School). The calculated parking demand for the combined school with projected student population of 1,600 students is 416 spaces.

Therefore, the 484 striped parking spaces in addition to the 18 live drop-off spaces exceeds the 416 parking spaces recommended by the Institute of Transportation Engineers (ITE) Parking Generation for LUC 530 to facilitate parental parking during drop-off and pick-up times (see Table 9).

**Table 9 – Proposed Parking Summary**

Parking Spaces Provided	Parking Spaces Required by ITE Parking Generation for LUC 530
484 Striped (11 Accessible)	416
18 Live Drop-Off	

## 8 Traffic Operations

### 8.1 Evaluation Criteria

Traffic operations at intersections are evaluated using the performance measures of average vehicular delay, level of service (LOS), volume-to-capacity (v/c) ratio, and average and 95th percentile queue lengths.

LOS is a qualitative measure that describes operating conditions through letter designations, from A to F. It is defined for intersections in terms of average control delay per vehicle. LOS A indicates the most favorable condition, with minimum traffic delay. LOS F represents the worst condition where there is significant traffic delay. LOS D or better is typically considered desirable for peak-hour operation in urban and suburban settings. The delay designations for each LOS level differ slightly between signalized and unsignalized intersections due to driver expectations and behavior. Table 10 summarizes the LOS criteria for intersections as used in this analysis.

**Table 10 – Intersection Level of Service Criteria**

Level of Service	Average Control Delay (sec/veh)	
	Signalized	Unsignalized
A	0-10	0-10
B	>10-20	>10-15
C	>20-35	>15-25
D	>35-55	>25-35
E	>55-80	>35-50
F	>80	>50

Source: HCM 2000

For signalized intersections, LOS is reported by lane group, by approach, and for the entire intersection. For unsignalized intersections, the analysis assumes that the traffic on the mainline is not affected by traffic on the side street. As such, an unsignalized intersection's LOS is generally reported for left-turns on the mainline and all side street movements, and an overall intersection LOS is not determined.

The v/c ratio is a measure of congestion at an intersection approach. The capacity of a facility is the maximum hourly rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway under prevailing roadway, traffic, and control conditions. A v/c ratio below one indicates that the intersection approach has adequate capacity to serve the arriving traffic demand. A v/c ratio that approaches or exceeds 1.0 indicates traffic congestion or poor operating conditions. In that situation, vehicles arrive faster than they can be served, so queue lengths can theoretically grow indefinitely, which is the unstable condition.

Since arrival volumes fluctuate throughout the peak hour, queue lengths vary. The average (50th percentile) queue length represents the maximum back of queue on a typical cycle for a signalized intersection. Average queue lengths are not reported for unsignalized intersections. The 95th percentile queue, reported for both signalized and unsignalized intersections, occurs with 95th percentile traffic volumes, and its length commonly denotes the farthest extent of the vehicle queue.



## 8.2 Capacity Analyses

Nitsch Engineering performed traffic analyses to evaluate traffic operations for the 2021 Existing Conditions, 2028 No-Build Conditions, and 2028 Build Conditions during the weekday morning and weekday afternoon peak school hours, as well as Saturday midday peak hour at the study intersections using Trafficware's Synchro 10 software. Synchro uses, in part, the traffic operational analysis methodology of the Transportation Research Board's *Highway Capacity Manual* (HCM).<sup>1</sup> We generated the results of the capacity analyses using Synchro's Percentile Delay Method for delay, v/c ratio, and queue lengths, supported by HCM 2000 methodology for unsignalized intersection analysis. The Synchro output sheets for the capacity analyses are included in Appendix A-4.

## 8.3 2021 Existing Capacity Analysis

Nitsch Engineering analyzed the 2021 Existing Conditions traffic operations at the study intersections based on the existing traffic counts performed by PDI in May 2021. The Level of Service Summaries are shown in Tables 11a and 11b.

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<sup>1</sup> *Highway Capacity Manual 2000 (HCM 2000)*, Transportation Research Board, Washington, D.C., 2000.

**Table 11a – Capacity Analysis Summary: 2021 Existing Conditions**

Location	Direction / Movement <sup>a</sup>	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
		v/c Ratio <sup>b</sup>	Delay <sup>c</sup>	LOS	Queue <sup>d</sup>		v/c Ratio <sup>b</sup>	Delay <sup>c</sup>	LOS	Queue <sup>d</sup>	
					50th	95th				50th	95th
Water St. at Farm Dr. [signalized]	Water St. EB - T	0.48	43.7	D	136	185	0.50	40.5	D	163	225
	Water St. EB - R	0.53	2.7	A	0	0	0.25	1.5	A	0	13
	Water St. WB - L	0.77	33.8	C	216	457	0.69	30.6	C	161	236
	Water St. WB - T	0.50	25.1	C	211	300	0.39	23.2	C	153	188
	Farm St. NB - L	0.83	57.4	E	248	212	0.84	57.9	E	253	270
	Farm St. NB - R	0.27	2.7	A	0	0	0.56	3.7	A	0	58
	Total	0.83	25.7	C			0.84	24.9	C	-	
Farm St. at Nahant St. [unsignalized]	Nahant St. EB - LR	1.43	237.1	F	-	661	4.65	Error	F	-	Error
	Farm St. NB - LT	0.24	5.7	A	-	23	0.56	14.0	B	-	87
	Farm St. SB - TR	0.46	0.0	A	-	0	0.46	0.0	A	-	0
Farm St. at Hemlock St. [unsignalized]	Hemlock St. WB - LR	12.47	Error	F	-	Error	3.14	Error	F	-	Error
	Farm St. NB - TR	0.50	0.0	A	-	0	0.54	0.0	A	-	0
	Farm St. SB - L	0.62	16.8	C	-	110	0.15	10.7	B	-	13
	Farm St. SB - T	0.30	0.0	A	-	0	0.41	0.0	A	-	0
Hemlock St. at WMHS Dr. [unsignalized]	Hemlock St. EB - LT	0.16	3.7	A	-	14	0.04	2.8	A	-	3
	Hemlock St. WB - TR	0.25	0.0	A	-	0	0.24	0.0	A	-	0
	WMHS Dr. SB - LR	0.12	17.5	C	-	10	0.23	12.0	B	-	22
Farm St. at Old Nahant Rd (North) [unsignalized]	Old Nahant EB - LR	1.14	142.2	F	-	312	1.02	110.3	F	-	245
	Farm St. NB - LT	0.02	0.4	A	-	0	0.41	0.0	A	-	0
	Farm St. SB - TR	0.37	0.0	A	-	1	0.01	0.4	A	-	1
Farm St. at Old Nahant Rd (South) [unsignalized]	Old Nahant EB - LR	0.25	18.5	C	-	24	0.10	12.9	B	-	8
	Farm St. NB - LT	0.04	1.1	A	-	3	0.05	1.3	A	-	4
	Farm St. SB - TR	0.24	0.0	A	-	0	0.27	0.0	A	-	0

<sup>a</sup> Direction: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound;  
 Movement: L = Left-turn, T = Through movement, R = Right-turn  
<sup>b</sup> Overall v/c ratio is the maximum v/c ratio among lane groups  
<sup>c</sup> Average vehicle delay (seconds)  
<sup>d</sup> 50th and 95th percentile queue lengths (feet) based upon average vehicle length of 25 feet  
 ~ Volume exceeds capacity, queue is theoretically infinite; queue shown is maximum after two cycles  
 # 95th percentile volume exceeds capacity, queue may be longer; queue shown is maximum after two cycles



**Table 11b – Capacity Analysis Summary: 2021 Existing Conditions**

Location	Direction / Movement <sup>a</sup>	Saturday Midday Peak Hour				
		v/c Ratio <sup>b</sup>	Delay <sup>c</sup>	LOS	Queue <sup>d</sup>	
					50th	95th
Water St. at Farm Dr. <i>[signalized]</i>	Water St. EB - T	0.44	38.6	D	149	240
	Water St. EB - R	0.23	1.6	A	0	17
	Water St. WB - L	0.64	27.2	C	153	216
	Water St. WB - T	0.31	21.3	C	124	199
	Farm St. NB - L	0.84	58.7	Error	250	304
	Farm St. NB - R	0.50	3.4	A	0	50
	Total	0.84	24.8	C		
Farm St. at Nahant St. <i>[unsignalized]</i>	Nahant St. EB - LR	1.63	336.5	F	-	623
	Farm St. NB - LT	0.25	5.6	A	-	24
	Farm St. SB - TR	0.32	0.0	A	-	0
Farm St. at Hemlock St. <i>[unsignalized]</i>	Hemlock St. WB - LR	1.59	328.2	F	-	540
	Farm St. NB - TR	0.47	0.0	A	-	0
	Farm St. SB - L	0.11	10.0	A	-	9
	Farm St. SB - T	0.37	0.0	A	-	0
Hemlock St. at WMHS Dr. <i>[signalized]</i>	Hemlock St. EB - LT	0.02	1.5	A	-	2
	Hemlock St. WB - TR	0.15	0.0	A	-	0
	WMHS Dr. SB - LR	0.14	10.4	B	-	12
Farm St. at Old Nahant Rd (North) <i>[unsignalized]</i>	Old Nahant EB - LR	0.96	101.9	F	-	202
	Farm St. NB - LT	0.45	0.0	A	-	0
	Farm St. SB - TR	0.02	0.5	A	-	1
Farm St. at Old Nahant Rd (South) <i>[unsignalized]</i>	Old Nahant EB - LR	0.33	23.9	C	-	35
	Farm St. NB - LT	0.04	1.1	A	-	3
	Farm St. SB - TR	0.31	0.0	A	-	0

Under 2021 Existing conditions, at the intersection of Water Street (Route 129) and Farm Street, the Farm Street northbound left-turn lane operates at LOS E in both the morning and afternoon peak school hours, as well as Saturday midday. The remaining lane groups at the intersection operate at LOS C or better in both the morning and afternoon peak school hours, as well as Saturday midday. Overall, the intersection operates at LOS C in both the morning and afternoon peak hours, as well as Saturday midday.

All approaches at the signalized intersection of Hemlock Street and Wakefield Memorial High School Driveway operate at LOS C or better in both the morning and afternoon peak school hours, as well as Saturday midday.

At the intersection of Nahant Street and Farm Street, the Nahant Street eastbound approach operates at LOS F in both the morning and afternoon peak school hours, as well as Saturday midday. The remaining lane groups at the intersection operate at LOS C or better in both the morning and afternoon peak hours, as well as Saturday midday.

At the intersection of Hemlock Street and Farm Street, the Hemlock Street westbound approach operates at LOS F in both the morning and afternoon peak school hours, as well as Saturday midday. The remaining lane groups



at the intersection operate at LOS C or better in both the morning and afternoon peak school hours, as well as Saturday midday.

At the northern intersection of Old Nahant Road and Farm Street, the Old Nahant Road eastbound approach operates at LOS F in both the morning and afternoon peak school hours, as well as Saturday midday. The remaining lane groups at the intersection operate at LOS C or better in both the morning and afternoon peak school hours, as well as Saturday midday.

Most of the approaches at the remaining unsignalized intersections operate at LOS C or better and the approaches at these intersections are experiencing minimal queueing.

## 8.4 2028 No-Build Capacity Analysis

Nitsch Engineering analyzed the 2028 No-Build Conditions traffic operations at the study intersections. The 2028 No-Build Condition represents the 2021 Existing Conditions and projects a traffic increase at the rate of 0.5% per year between 2021 and 2028. The Level of Service Summaries are shown in Tables 12a and 12b.

**Table 12a – Capacity Analysis Summary: 2028 No-Build Conditions**

Location	Direction / Movement <sup>a</sup>	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
		v/c Ratio <sup>b</sup>	Delay <sup>c</sup>	LOS	Queue <sup>d</sup>		v/c Ratio <sup>b</sup>	Delay <sup>c</sup>	LOS	Queue <sup>d</sup>	
					50th	95th				50th	95th
Water St. at Farm Dr. [signalized]	Water St. EB - T	0.53	45.7	D	148	187	0.53	41.8	D	175	231
	Water St. EB - R	0.55	2.7	A	0	0	0.25	1.5	A	0	13
	Water St. WB - L	0.47	38.3	D	231	567	0.75	34.6	C	172	292
	Water St. WB - T	0.46	26.2	C	225	314	0.41	24.3	C	163	198
	Farm St. NB - L	0.25	56.9	E	256	216	0.84	56.7	E	262	278
	Farm St. NB - R	0.49	2.7	A	0	40	0.57	3.8	A	0	59
	Total	0.55	27.0	C			0.84	25.7	C		
Farm St. at Nahant St. [unsignalized]	Nahant St. EB – LR	1.64	330.0	F	-	790	5.67	Error	F	-	Error
	Farm St. NB - LT	0.24	5.9	A	-	24	0.58	15.3	C	-	96
	Farm St. SB - TR	0.47	0.0	A	-	0	0.47	0.0	A	-	0
Farm St. at Hemlock St. [unsignalized]	Hemlock St. WB - LR	13.02	Error	F	-	Error	3.38	Error	F	-	Error
	Farm St. NB - TR	0.51	0.0	B	-	0	0.56	0.0	A	-	0
	Farm St. SB - L	0.63	17.2	C	-	114	0.15	10.8	B	-	13
	Farm St. SB - T	0.30	0.0	A	-	0	0.43	0.0	A	-	0
Hemlock St. at WMHS Dr. [unsignalized]	Hemlock St. EB - LT	0.16	3.7	A	-	14	0.04	2.8	A	-	3
	Hemlock St. WB - TR	0.25	0.0	A	-	0	0.24	0.0	A	-	0
	WMHS Dr. SB - LR	0.12	17.5	C	-	10	0.23	12.0	B	-	22
Farm St. at Old Nahant Rd (North) [unsignalized]	Old Nahant EB - LR	1.33	218.8	F	-	391	1.39	252.0	F	-	390
	Farm St. NB - LT	0.39	0.0	A	-	0	0.43	0.0	A	-	0
	Farm St. SB - TR	0.01	0.3	A	-	1	0.01	0.4	A	-	1
Farm St. at Old Nahant Rd (South) [unsignalized]	Old Nahant EB - LR	0.27	19.7	C	-	27	0.10	13.1	B	-	8
	Farm St. NB - LT	0.04	1.1	A	-	3	0.05	1.4	A	-	4
	Farm St. SB - TR	0.25	0.0	A	-	0	0.28	0.0	A	-	0

<sup>a</sup> Direction: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound;  
 Movement: L = Left-turn, T = Through movement, R = Right-turn  
<sup>b</sup> Overall v/c ratio is the maximum v/c ratio among lane groups  
<sup>c</sup> Average vehicle delay (seconds)  
<sup>d</sup> 50th and 95th percentile queue lengths (feet) based upon average vehicle length of 25 feet  
 ~ Volume exceeds capacity, queue is theoretically infinite; queue shown is maximum after two cycles  
 # 95th percentile volume exceeds capacity, queue may be longer; queue shown is maximum after two cycles

**Table 12b – Capacity Analysis Summary: 2028 No-Build Conditions**


Location	Direction / Movement <sup>a</sup>	Saturday Midday Peak Hour				
		v/c Ratio <sup>b</sup>	Delay <sup>c</sup>	LOS	Queue <sup>d</sup>	
					50th	95th
Water St. at Farm Dr. [signalized]	Water St. EB - T	0.48	40.5	D	160	245
	Water St. EB - R	0.24	1.5	A	0	17
	Water St. WB - L	0.68	30.0	C	163	227
	Water St. WB - T	0.33	22.1	C	131	208
	Farm St. NB - L	0.84	57.8	Error	258	313
	Farm St. NB - R	0.51	3.4	A	0	51
	Total	0.84	25.4	C		
Farm St. at Nahant St. [unsignalized]	Nahant St. EB - LR	1.93	472.8	F	-	740
	Farm St. NB - LT	0.26	5.8	A	-	26
	Farm St. SB - TR	0.33	0.0	A	-	0
Farm St. at Hemlock St. [unsignalized]	Hemlock St. WB - LR	1.69	373.5	F	-	571
	Farm St. NB - TR	0.49	0.0	A	-	0
	Farm St. SB - L	0.11	10.1	B	-	10
	Farm St. SB - T	0.39	0.0	A	-	0
Hemlock St. at WMHS Dr. [unsignalized]	Hemlock St. EB - LT	0.02	1.5	A	-	2
	Hemlock St. WB - TR	0.15	0.0	A	-	0
	WMHS Dr. SB - LR	0.14	10.4	B	-	12
Farm St. at Old Nahant Rd (North) [unsignalized]	Old Nahant EB - LR	1.22	196.1	F	-	281
	Farm St. NB - LT	0.46	0.0	A	-	0
	Farm St. SB - TR	0.02	0.5	A	-	1
Farm St. at Old Nahant Rd (South) [unsignalized]	Old Nahant EB - LR	0.23	19.5	C	-	22
	Farm St. NB - LT	0.05	1.2	A	-	4
	Farm St. SB - TR	0.32	0.0	A	-	0

Under 2028 No-Build conditions, at the intersection of Water Street (Route 129) and Farm Street, the Farm Street northbound left-turn lane will continue to operate at LOS E in both the morning and afternoon peak school hours, as well as Saturday midday. The remaining lane groups at the intersection will operate at LOS C or better in both the morning and afternoon peak school hours, as well as Saturday midday. Overall, the intersection will continue to operate at LOS C in both the morning and afternoon peak hours, as well as Saturday midday.

All approaches at the intersection of Hemlock Street and Wakefield High School Driveway will continue to operate at LOS C or better in both the morning and afternoon peak hours, as well as Saturday midday.

At the intersection of Nahant Street and Farm Street, the Nahant Street eastbound approach will continue to operate at LOS F in both the morning and afternoon peak school hours, as well as Saturday midday. The remaining lane groups at the intersection will operate at LOS C or better in both the morning and afternoon peak hours, as well as Saturday midday.

At the intersection of Hemlock Street and Farm Street, the Hemlock Street westbound approach will continue to operate at LOS F in both the morning and afternoon peak school hours, as well as Saturday midday. The remaining



lane groups at the intersection will operate at LOS C or better in both the morning and afternoon peak school hours, as well as Saturday midday.

At the northern intersection of Old Nahant Road and Farm Street, the Old Nahant Road eastbound approach will continue to operate at LOS F in both the morning and afternoon peak school hours, as well as Saturday midday. The remaining lane groups at the intersection will operate at LOS C or better in both the morning and afternoon peak school hours, as well as Saturday midday.

Most of the approaches at the remaining unsignalized intersections will operate at LOS C or better and the approaches at these intersections are experiencing minimal queueing.

### **8.5 2028 Build Capacity Analysis**

Nitsch Engineering analyzed the 2028 Build Conditions traffic operations at the study intersections for the proposed schools. The 2028 Build Conditions represent the 2028 No-Build Conditions traffic volumes in addition to the proposed school net volumes. The Level of Service Summaries are shown in Tables 13a and 13b.

**Table 13a – Capacity Analysis Summary: 2028 Build Conditions**

Location	Direction / Movement <sup>a</sup>	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
		v/c Ratio <sup>b</sup>	Delay <sup>c</sup>	LOS	Queue <sup>d</sup>		v/c Ratio <sup>b</sup>	Delay <sup>c</sup>	LOS	Queue <sup>d</sup>	
					50th	95th				50th	95th
Water St. at Farm Dr. [signalized]	Water St. EB - T	0.62	50.7	D	149	184	0.57	44.2	D	183	231
	Water St. EB - R	0.59	3.1	A	0	0	0.26	1.4	A	0	13
	Water St. WB - L	0.89	48.4	D	263	658	0.80	40.4	D	186	346
	Water St. WB - T	0.54	27.7	C	235	320	0.43	25.7	C	169	202
	Farm St. NB - L	0.84	55.0	E	267	226	0.84	54.7	D	275	291
	Farm St. NB - R	0.28	2.7	A	0	42	0.57	3.7	A	0	60
	Total	0.89	29.2	C			0.84	26.8	C		
Farm St. at Nahant St. [unsignalized]	Nahant St. EB - LR	2.29	625.2	F	-	1092	7.21	E	F	-	E
	Farm St. NB - LT	0.28	6.6	A	-	28	0.62	16.1	C	-	110
	Farm St. SB - TR	0.51	0.0	A	-	0	0.49	0.0	A	-	0
Farm St. at Hemlock St. [unsignalized]	Hemlock St. WB - LR	1.89	498.5	F	-	425	1.65	364.9	F	-	496
	Farm St. NB - TR	0.44	0.0	A	-	0	0.59	0.0	A	-	0
	Farm St. SB - L	0.51	13.5	B	-	75	0.14	11.0	B	-	12
	Farm St. SB - T	0.39	0.0	A	-	0	0.45	0.0	A	-	0
Hemlock St. at WMHS Dr. [unsignalized]	Hemlock St. EB - LT	0.14	3.3	A	-	12	0.04	4.0	A	-	3
	Hemlock St. WB - TR	0.14	0.0	A	-	0	0.14	0.0	A	-	0
	WMHS Dr. SB - LR	0.08	12.7	B	-	6	0.19	10.4	B	-	17
Farm St. at Old Nahant Rd (North) [unsignalized]	Old Nahant EB - LR	1.13	141.2	F	-	303	0.99	98.6	F	-	233
	Farm St. NB - LT	0.42	0.0	A	-	0	0.39	0.0	A	-	0
	Farm St. SB - TR	0.01	0.4	A	-	1	0.01	0.4	A	-	1
Farm St. at Old Nahant Rd (South) [unsignalized]	Old Nahant EB - LR	0.37	21.6	C	-	41	0.13	13.4	B	-	11
	Farm St. NB - LT	0.07	1.8	A	-	5	0.08	2.0	A	-	6
	Farm St. SB - TR	0.29	0.0	A	-	0	0.26	0.0	A	-	0
Farm St. at New Dr. (unsignalized)	New Dr. WB - L	0.46	37.3	E	-	55	0.57	43.5	E	-	78
	New Dr. WB - R	0.13	11.8	B	-	11	0.22	15.6	C	-	21
	Farm St. NB - T	0.27	0.0	A	-	0	0.41	0.0	A	-	0
	Farm St NB - R	0.11	0.0	A	-	0	0.03	0.0	A	-	0
	Farm St. SB - L	0.17	9.6	A	-	16	0.05	9.5	A	-	4
	Farm St. SB - T	0.17	0.0	A	-	0	0.21	0.0	A	-	0


<sup>a</sup> Direction: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound;  
 Movement: L = Left-turn, T = Through movement, R = Right-turn  
<sup>b</sup> Overall v/c ratio is the maximum v/c ratio among lane groups  
<sup>c</sup> Average vehicle delay (seconds)  
<sup>d</sup> 50th and 95th percentile queue lengths (feet) based upon average vehicle length of 25 feet  
 ~ Volume exceeds capacity, queue is theoretically infinite; queue shown is maximum after two cycles  
 # 95th percentile volume exceeds capacity, queue may be longer; queue shown is maximum after two cycles

**Table 13b – Capacity Analysis Summary: 2028 Build Conditions**

Location	Direction / Movement <sup>a</sup>	Saturday Midday Peak Hour				
		v/c Ratio <sup>b</sup>	Delay <sup>c</sup>	LOS	Queue <sup>d</sup>	
					50th	95th
Water St. at Farm Dr. [signalized]	Water St. EB - T	0.49	40.9	D	161	245
	Water St. EB - R	0.25	1.5	A	0	17
	Water St. WB - L	0.70	31.0	C	167	232
	Water St. WB - T	0.33	22.3	C	132	209
	Farm St. NB - L	0.84	57.5	E	260	316
	Farm St. NB - R	0.51	3.4	A	0	51
	Total	0.84	25.2	C		
Farm St. at Nahant St. [unsignalized]	Nahant St. EB - LR	2.05	529.3	F	-	782
	Farm St. NB - LT	0.26	6.0	A	-	27
	Farm St. SB - TR	0.34	0.0	A	-	0
Farm St. at Hemlock St. [unsignalized]	Hemlock St. WB - LR	1.47	277.2	F	-	470
	Farm St. NB - TR	0.48	0.0	A	-	0
	Farm St. SB - L	0.10	10.0	A	-	9
	Farm St. SB - T	0.40	0.0	A	-	0
Hemlock St. at WMHS Dr. [unsignalized]	Hemlock St. EB - LT	0.02	1.9	A	-	2
	Hemlock St. WB - TR	0.13	0.0	A	-	0
	WMHS Dr. SB - LR	0.14	10.2	B	-	12
Farm St. at Old Nahant Rd (North) [unsignalized]	Old Nahant EB - LR	1.03	123.0	F	-	223
	Farm St. NB - LT	0.47	0.0	A	-	0
	Farm St. SB - TR	0.02	0.5	A	-	1
Farm St. at Old Nahant Rd (South) [unsignalized]	Old Nahant EB - LR	0.29	23.4	C	-	30
	Farm St. NB - LT	0.05	1.3	A	-	4
	Farm St. SB - TR	0.32	0.0	A	-	0
Farm St. at New Dr. (signalized)	New Dr. WB - L	0.12	28.6	D	-	10
	New Dr. WB - R	0.04	13.4	B	-	3
	Farm St. NB - T	0.41	0.0	A	-	0
	Farm St. NB - R	0.02	0.0	A	-	0
	Farm St. SB - L	0.03	9.2	A	-	2
	Farm St. SB - T	0.32	0.0	A	-	0

Under 2028 Build conditions, at the intersection of Water Street (Route 129) and Farm Street, the Farm Street northbound left-turn lane will continue to operate at LOS E in the morning and Saturday midday peak hours but will improve to LOS D in the afternoon peak hours. The remaining lane groups at the intersection will operate at LOS D or better in both the morning and afternoon peak hours, as well as Saturday midday. Overall, the intersection will continue to operate at LOC C in both the morning and afternoon peak hours, as well as Saturday midday.

All approached at the intersection of Hemlock Street and Wakefield High School Driveway will operate at LOC B or better in both the morning and afternoon peak hours, as well as Saturday midday.



At the new intersection of Farm Street and the New Driveway, the New Driveway westbound left-turn lane will operate at LOS E in the morning and afternoon peak hours, and at LOS D in the Saturday midday peak hours. The remaining lane groups at the intersection will operate at LOS B or better in both the morning and afternoon peak hours, as well as Saturday midday.

At the intersection of Nahant Street and Farm Street, the Nahant Street eastbound approach will continue to operate at LOS F in both the morning and afternoon peak hours, as well as Saturday midday. The remaining lane groups at the intersection will operate at LOS C or better in both the morning and afternoon peak hours, as well as Saturday midday.

At the intersection of Hemlock Street and Farm Street, the Hemlock Street westbound approach will continue to operate at LOS F in both the morning and afternoon peak hours, as well as Saturday midday. The remaining lane groups at the intersection will operate at LOS C or better in both the morning and afternoon peak hours, as well as Saturday midday.

At the northern intersection of Old Nahant Road and Farm Street, the Old Nahant Road eastbound approach will continue to operate at LOS F in both the morning and afternoon peak hours, as well as Saturday midday. The remaining lane groups at the intersection will operate at LOS C or better in both the morning and afternoon peak hours, as well as Saturday midday.

Most of the approaches at the remaining unsignalized intersections will operate at LOS C or better and the approaches at these intersections are experiencing minimal queueing.



## 9 Sight Distance

Stopping Sight Distance (SSD) is the length of the roadway ahead that is visible to the driver and should be sufficiently long to enable a vehicle traveling at or near the design speed to stop before reaching a stationary object in its path. Stopping sight distance is the sum of the distance traversed by the vehicle from the instant the driver sights an object necessitating a stop to the instant the brakes are applied, and the distance needed to stop the vehicle from the instant brake application begins.

Intersection Sight Distance (ISD) is the length of the leg of the departure sight triangle along the major road in both directions for a vehicle stopped on the minor road waiting to depart. The critical departure sight triangles for the new school driveway are for traffic approaching from either the left or right for left turns from the driveway onto Farm Street. The methods for determining the sight distances needed by drivers approaching intersections are based on the same principles as stopping sight distance, but incorporate modified assumptions based on observed driver behavior at intersections.

The SSD and ISD values associated with a given design speed are shown in Table 14. The sight distance evaluations for the intersection are shown in Table 15.

**Table 14 – Sight Distance Criteria**

Design Speed (MPH)	Design Stopping Sight Distance Value <sup>1</sup> (SSD) (FT)	Recommended Intersection Sight Distance Value <sup>2</sup> (ISD) (FT)
15	80	170
20	115	225
25	155	280
30	200	335
35	250	390
40	305	445
45	360	500
50	425	555
55	495	610
60	570	665
65	645	720
70	730	775
75	820	830
80	910	885

Source: *A Policy on Geometric Design of Highways and Streets*, AASHTO, Washington DC (2011)

<sup>1</sup>Design value based on a grade of less than 3%, a brake reaction distance predicted on a time of 2.5 seconds and a deceleration rate of 11.2 ft/s<sup>2</sup>

<sup>2</sup>Recommended value based on Case B1 - a stopped passenger car to turn left onto a two-lane highway with no median and grades 3% or less

The posted speed limit for Farm Street at the project site is 30 MPH, with the 85<sup>th</sup> percentile speeds of 47 MPH at the southbound direction and 50 MPH at the northbound direction. To be conservative, we used the 85<sup>th</sup> percentile speed of 50 MPH for the sight distance analysis.

**Table 15 – Proposed Sight Distance Evaluation**

Intersection	Posted Speed (MPH)	85 <sup>th</sup> Speed (MPH)	Minimum (FEET) <sup>1,2</sup>	Measured (FEET)	Obstruction
<i>Farm Street at the School Driveway</i>					
Stopping Sight Distance:					
Farm Street Northbound	30	50	425	380	Vertical curve
Farm Street Southbound	30	50	425	680	
Intersection Sight Distance:					
Looking to the right from Driveway	30	50	555	680	
Looking to the left from Driveway	30	50	555	380	Vertical curve
<i>Source: A Policy on Geometric Design of Highways and Streets, AASHTO, Washington DC (2011)</i>					
<sup>1</sup> Table 3-1. Stopping Sight Distance on Level Roadways					
<sup>2</sup> Table 9-6. Design Intersection Sight Distance - Case B1, Left Turn from Stop					

As shown in Table 15 both SSD and ISD values at the new driveway for the southbound traffic on Farm Street exceed the minimum values. However, because of the vertical curve on Farm Street south of the new driveway, the SSD and ISD values do not meet the minimum required distances. The installation of the traffic signal system will improve conditions related to the sight distance.

## 10 Mitigation

### 10.1 Traffic Signal Warrant Analysis

We performed Traffic Signal Warrant Analyses for the new intersection of Farm Street at the New School Drive based on the procedures outlined in the *Manual on Uniform Traffic Control Devices*<sup>2</sup> (MUTCD), 2009 edition. The MUTCD indicates nine separate conditions under which a traffic signal warrant can be met, and they are shown below.

1. Warrant 1: Eight-Hour Vehicular Volume;
2. Warrant 2: Four-Hour Vehicular Volume;
3. Warrant 3: Peak Hour;
4. Warrant 4: Pedestrian Volume;
5. Warrant 5: School Crossing;
6. Warrant 6: Coordinated Signal System;
7. Warrant 7: Crash Experience;
8. Warrant 8: Roadway Network; and
9. Warrant 9: Intersection Near a Grade Crossing.

Given the criteria set forth in the MUTCD and the assumptions above, none of the warrants are met for the intersection of Farm Street at the new driveway. The Traffic Signal Warrant Analysis is included in Appendix A-5.

### 10.2 Recommended Mitigation

Although a traffic signal is not warranted per the MUTCD, Tables 13a and 13b indicate that the intersection of Farm Street and the new driveway has approaches that will operate at LOS E or worse and delays up to 43.5 seconds. In addition, the SSD and ISD values do not meet the minimum required distances due to the vertical curve on Farm Street south of the new driveway. Therefore, to mitigate the delays, improve conditions related to the sight distance and address the speeding on Farm Street we recommend implementing a traffic signal with additional lane capacity at the intersection.

Based on our analysis to optimize operations, the signalized intersection will be a semi-actuated traffic signal operating in three phases. The following movements are permitted or protected, as noted, during each of the phases.

#### First phase:

- Farm Street southbound (protected left turn); and
- Farm Street southbound through traffic.

#### Second phase:

- Farm Street northbound and southbound.

#### Third phase:

- New driveway westbound (protected left and right turn).

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<sup>2</sup> Manual on Uniform Traffic Control Devices for Streets and Highways, 2009 Edition, Federal Highway Administration

The new driveway approach will consist of two lanes; one dedicated right-turn lane and one dedicated left-turn lane. The Farm Street southbound approach will consist of two lanes; one dedicated left-turn lane and one through lane. The Farm Street northbound approach will consist of two lanes; one dedicated right-turn lane and one through lane.

The Level of Service Summary for this 2028 Build with Mitigation for the intersection of Farm Street and the new driveway is shown in Tables 16a and 16b.

**Table 16a – Capacity Analysis Summary: 2028 Build with Mitigation Conditions**

Location	Direction / Movement <sup>a</sup>	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
		v/c Ratio <sup>b</sup>	Delay <sup>c</sup>	LOS	Queue <sup>d</sup>		v/c Ratio <sup>b</sup>	Delay <sup>c</sup>	LOS	Queue <sup>d</sup>	
					50th	95th				50th	95th
Farm St. at New Dr. (signalized)	New Dr. WB - L	0.35	30.7	C	36	76	0.43	32.2	C	46	92
	New Dr. WB - R	0.12	4.0	A	0	21	0.17	4.7	A	0	27
	Farm St. NB - T	0.48	14.1	B	113	219	0.61	14.3	B	205	360
	Farm St NB - R	0.17	1.0	A	0	17	0.04	0.8	A	0	6
	Farm St. SB - L	0.55	33.7	C	65	115	0.18	28.7	C	17	47
	Farm St. SB - T	0.22	3.4	A	30	55	0.25	3.4	A	37	75
	Total	0.55	12.7	B			0.61	12.2	B		

<sup>a</sup> Direction: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound;  
 Movement: L = Left-turn, T = Through movement, R = Right-turn  
<sup>b</sup> Overall v/c ratio is the maximum v/c ratio among lane groups  
<sup>c</sup> Average vehicle delay (seconds)  
<sup>d</sup> 50th and 95th percentile queue lengths (feet) based upon average vehicle length of 25 feet  
 ~ Volume exceeds capacity, queue is theoretically infinite; queue shown is maximum after two cycles  
 # 95th percentile volume exceeds capacity, queue may be longer; queue shown is maximum after two cycles

**Table 16b – Capacity Analysis Summary: 2028 Build Conditions**

Location	Direction / Movement <sup>a</sup>	Saturday Midday Peak Hour				
		v/c Ratio <sup>b</sup>	Delay <sup>c</sup>	LOS	Queue <sup>d</sup>	
					50th	95th
Farm St. at New Dr. (signalized)	New Dr. WB - L	0.05	24.1	C	7	24
	New Dr. WB - R	0.05	12.3	B	0	15
	Farm St. NB - T	0.93	43.9	D	300	517
	Farm St NB - R	0.05	8.1	A	3	19
	Farm St. SB - L	0.07	23.4	C	10	29
	Farm St. SB - T	0.44	6.8	A	98	153
	Total	0.93	26.7	C		

All lane groups at the new signalized intersection of Farm Street and the new driveway will operate at LOS C or better in both the morning and afternoon peak school hours, and at LOS D or better in Saturday midday. Overall, the intersection will operate at LOS B in both the morning and afternoon peak hours, and at LOS C in Saturday midday.

## 11 Conclusions and Recommendations

### 11.1 Conclusions

Nitsch Engineering has been retained by Drumney Rosane Anderson, Inc. (“DRA”) to prepare a Traffic Impact Study (TIS) based on the schematic design for the planned on-site improvements at the Northeast Metropolitan Regional Vocational High School (“NEMT”) in Wakefield, including the construction of the new driveway off Farm Street south of Hemlock Road.

We studied five intersections, two signalized and three unsignalized, to establish the impacts the new school with additional enrollment would have on intersection traffic operations.

To be conservative in our analysis, we used the Institute of Transportation Engineers (ITE) publication *Trip Generation, 10th Edition* to estimate the vehicle trip rates for the existing NEMT School and the proposed school to establish the net trips. Assuming transportation proportions remain approximately the same for the design year of 2028, it will result in approximately 686 new daily trips (343 trips in and 343 trips out) with 220 new trips (149 trips in and 71 trips out) during weekday morning drop-off times, and 132 new trips (42 trips in and 90 trips out) during weekday afternoon pick-up times.

We examined the build condition with respect to the projected student enrollment at the proposed school. During the morning drop-off, 880 vehicles (parents and staff) will arrive via Hemlock Street and the new driveway on Farm Street between 7:00 AM and 7:45 AM to drop-off their students. The students will be dropped-off at the car loop, and the vehicles will exit to Farm Street. Our analysis indicates that during the morning drop-off, the 95<sup>th</sup> Percentile Queue length exiting the new driveway for the left turns onto Farm Street will be 76 (approximately 4 vehicles) and for the right turns onto Farm Street will be 21 feet (approximately 1 vehicle). The 95<sup>th</sup> Percentile Queue length entering the new driveway from the left turns onto Farm Street will be 115 (approximately 6 vehicles).

During the afternoon pick-up, 528 vehicles will start arriving between 1:30 and 2:10pm. Once the parents have picked up their students, they will proceed to exit the school lot via either Hemlock Street or the new driveway onto Farm Street. Our analysis indicates that during the afternoon pick-up, the 95<sup>th</sup> Percentile Queue length exiting the new driveway for the left turns onto Farm Street will be 92 (approximately 5 vehicles) and for the right turns onto Farm Street will be 27 feet (approximately 3 vehicles). The 95<sup>th</sup> Percentile Queue length entering the new driveway from the left turns onto Farm Street will be 47 (approximately 3 vehicles).

The bus pick-up/drop-off will occur at the designated bus loop located south of the school.

### 11.2 Recommendations

Based on the proposed school, Nitsch Engineering offers the following recommendations:

- Signalization of the intersection of the New School Driveway and Farm Street will help improve the sight distance at the intersection.
- Consider appropriate measures to discourage speeding on Farm Street, which experiences an 85<sup>th</sup> percentile speed of 50 MPH.



**Nitsch Engineering**

# Appendices

## Northeast Metropolitan Regional Vocational High School Wakefield, MA

June 29, 2021

Prepared for:

Drumney Rosane Anderson, Inc.  
235 Bear Hill Road, 4th  
Waltham, MA 02451

Submitted by:

Nitsch Engineering  
2 Center Plaza, Suite 430  
Boston, MA 02108

Nitsch Project #13872.2

# CONTENTS

<b>Section Number</b>	<b>DESCRIPTION</b>
A-1	Traffic Count Data
A-2	Weekday Seasonal Adjustment Factors
A-3	Crash Data
A-4	Traffic Signal Warrant Analysis
A-5	Capacity Analysis

Section A-I

Traffic Count Data

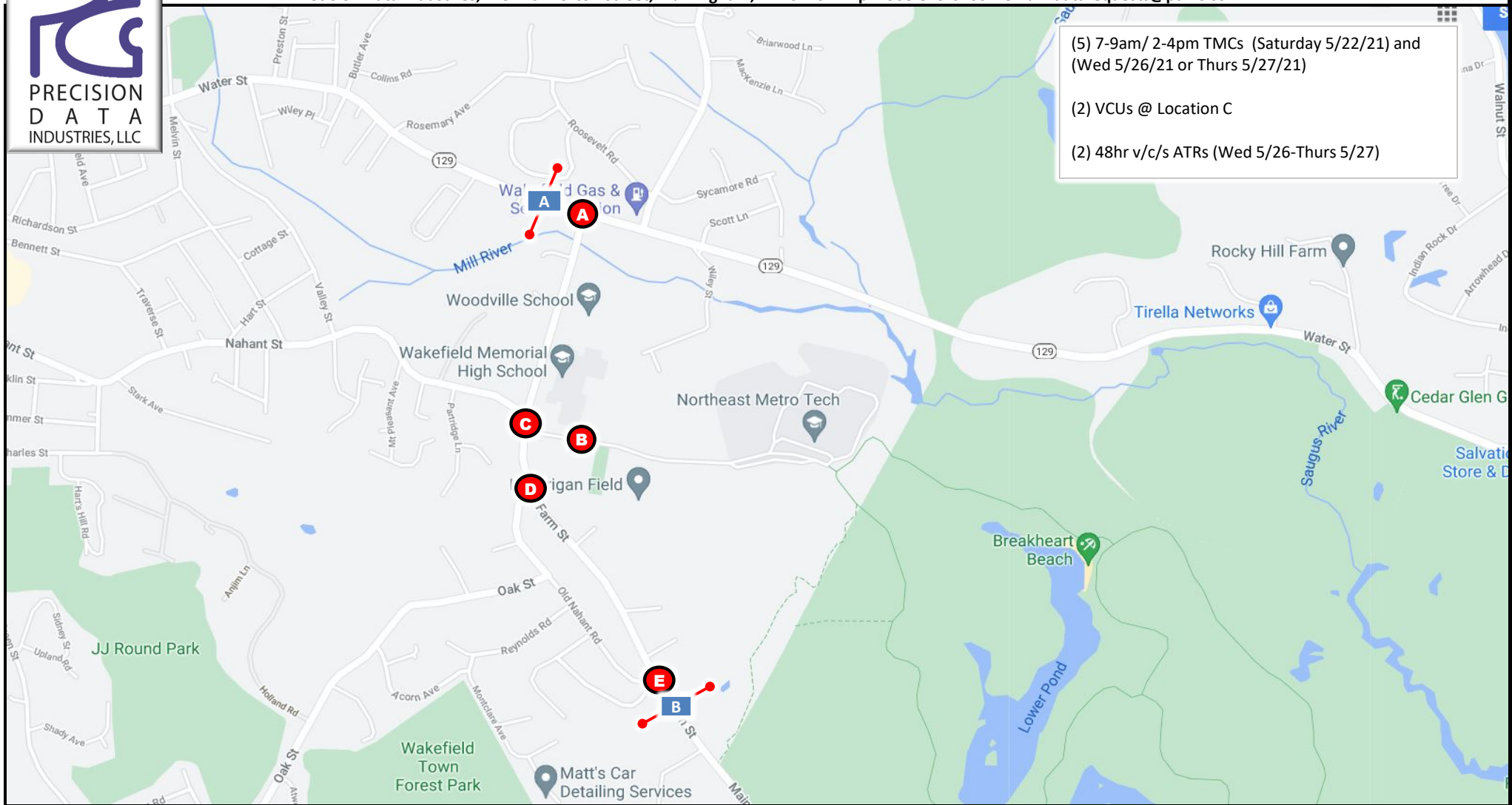




PRECISION  
DATA  
INDUSTRIES, LLC

## Location Map: 217949 Wakefield, MA

Precision Data Industries, LLC 46 Morton Street, Framingham, MA 01702 ph: 508-875-0100 email: [datarequests@pdillc.com](mailto:datarequests@pdillc.com)



Client:

Nitsch Engineering

Engineer:

D. Birru

Site Code:

13872.2

Date:

Sat 5/22/21 thru Thurs 5/27/2021

PDI Job #

217949

City, State:

Wakefield, MA

Water Street  
west of Farm Street  
City, State: Wakefield, MA  
Client: Nitsch/ D. Birru  
Site Code: 13872.2



PDI File #: 217949 ATR-A

Count Date:  
Wednesday, May, 26, 2021

**Volume**

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<b>P.H.F.</b>	<b>0.822</b>		<b>0.820</b>			<b>P.H.F.</b>	<b>0.786</b>		<b>0.940</b>			<b>P.H.F.</b>	<b>0.860</b>		<b>0.928</b>		

Water Street  
west of Farm Street  
City, State: Wakefield, MA  
Client: Nitsch/ D. Birru  
Site Code: 13872.2



PDI File #: 217949 ATR-A

Count Date:

Thursday, May 27, 2021

**Volume**

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Percent	39.17%		60.83%			Percent	34.19%		65.81%			Percent	36.78%		63.22%		
Day Total			5696			Day Total			5259			Day Total			10955		
Peak Hour	7:30 AM		2:00 PM			Peak Hour	6:45 AM		5:45 PM			Peak Hour	7:15 AM		2:00 PM		
Volume	519		483			Volume	430		440			Volume	897		883		
P.H.F.	0.927		0.929			P.H.F.	0.726		0.940			P.H.F.	0.866		0.883		

Water Street  
west of Farm Street  
City, State: Wakefield, MA  
Client: Nitsch/ D. Birru  
Site Code: 13872.2



PDI File #: 217949 ATR-A

Count Date  
Wednesday, May, 26, 2021

**Classification (60-minute)**

WB														
Start Time:	Cycles	Cars and Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
12:00 AM	0	8	8	0	4	0	0	0	0	0	0	0	0	20
1:00 AM	0	8	5	0	0	0	0	0	0	0	0	0	0	13
2:00 AM	0	2	1	0	0	0	0	0	0	0	0	0	0	3
3:00 AM	0	5	0	0	0	0	0	0	0	0	0	0	0	5
4:00 AM	0	10	4	0	3	1	0	0	0	0	0	0	0	18
5:00 AM	0	48	16	1	11	0	0	0	0	0	0	0	0	76
6:00 AM	1	112	55	1	47	3	1	1	0	0	0	0	0	221
7:00 AM	2	270	87	2	51	1	2	11	0	0	0	0	0	426
8:00 AM	3	289	108	2	38	2	5	11	1	0	1	0	0	460
9:00 AM	3	177	83	7	28	3	2	1	0	0	0	0	0	304
10:00 AM	0	193	74	2	42	2	0	2	1	0	0	0	0	316
11:00 AM	1	179	65	3	39	2	1	4	0	0	0	0	0	294
12:00 PM	1	207	67	5	38	5	6	4	0	0	0	0	0	333
1:00 PM	2	222	67	7	31	3	1	5	0	1	0	0	0	339
2:00 PM	2	297	109	10	35	1	0	5	0	1	0	0	0	460
3:00 PM	3	284	110	8	42	3	0	5	1	1	0	0	0	457
4:00 PM	4	285	111	5	36	0	0	3	0	0	0	0	0	444
5:00 PM	5	284	95	4	28	1	0	0	0	0	0	0	0	417
6:00 PM	6	234	79	0	18	0	0	1	0	0	0	0	0	338
7:00 PM	2	193	86	0	21	0	0	1	1	0	0	0	0	304
8:00 PM	1	126	37	0	16	0	0	1	1	0	0	0	0	182
9:00 PM	0	64	22	0	9	0	0	0	0	0	0	0	0	95
10:00 PM	0	39	12	0	3	0	0	0	0	0	0	0	0	54
11:00 PM	1	24	4	0	2	0	0	0	0	0	0	0	0	31
<b>Total</b>	<b>37</b>	<b>3560</b>	<b>1305</b>	<b>57</b>	<b>542</b>	<b>27</b>	<b>18</b>	<b>55</b>	<b>5</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>5610</b>
<b>Percent</b>	<b>0.66%</b>	<b>63.46%</b>	<b>23.26%</b>	<b>1.02%</b>	<b>9.66%</b>	<b>0.48%</b>	<b>0.32%</b>	<b>0.98%</b>	<b>0.09%</b>	<b>0.05%</b>	<b>0.02%</b>	<b>0.00%</b>	<b>0.00%</b>	

AM Peak	8:00 AM	8:00 AM	8:00 AM	9:00 AM	7:00 AM	6:00 AM	8:00 AM	7:00 AM	8:00 AM		8:00 AM			8:00 AM
Volume	3	289	108	7	51	3	5	11	1	0	1	0	0	460
PM Peak	6:00 PM	2:00 PM	4:00 PM	2:00 PM	3:00 PM	12:00 PM	12:00 PM	1:00 PM	3:00 PM	1:00 PM				2:00 PM
Volume	6	297	111	10	42	5	6	5	1	1	0	0	0	460

Cycles:	37	0.7%
Cars and Light Trucks:	4865	86.7%
Heavy Vehicles:	708	12.6%

Water Street  
west of Farm Street  
City, State: Wakefield, MA  
Client: Nitsch/ D. Birru  
Site Code: 13872.2



PDI File #: 217949 ATR-A

Count Date  
Wednesday, May, 26, 2021

**Classification (60-minute)**

EB														
Start Time:	Cycles	Cars and Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
12:00 AM	0	7	1	0	1	0	0	0	0	0	0	0	0	9
1:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	3
2:00 AM	0	3	1	0	0	0	0	0	0	0	0	0	0	4
3:00 AM	0	5	0	0	1	1	0	0	0	0	0	0	0	7
4:00 AM	0	8	2	0	2	0	0	0	0	0	0	0	0	12
5:00 AM	1	23	12	2	8	0	0	0	0	0	0	0	0	46
6:00 AM	0	111	32	3	17	0	2	2	0	0	0	0	0	167
7:00 AM	3	306	79	6	30	4	0	6	0	0	0	0	0	434
8:00 AM	1	238	64	8	34	5	0	6	0	0	0	0	0	356
9:00 AM	0	161	51	3	15	6	0	2	1	0	0	0	0	239
10:00 AM	4	208	71	4	25	5	0	3	0	1	0	0	0	321
11:00 AM	2	199	49	2	33	3	1	5	0	0	0	0	0	294
12:00 PM	4	212	50	4	28	6	1	2	1	0	0	0	0	308
1:00 PM	3	260	61	5	31	4	0	3	0	0	0	0	0	367
2:00 PM	1	264	74	13	34	2	0	2	0	0	0	0	0	390
3:00 PM	4	282	63	7	27	2	0	2	0	0	0	0	0	387
4:00 PM	0	309	93	3	45	1	0	7	0	0	0	0	0	458
5:00 PM	6	322	83	2	38	0	0	6	1	0	0	1	0	459
6:00 PM	1	247	53	4	27	0	0	1	0	0	0	0	0	333
7:00 PM	0	181	51	0	17	0	0	0	0	0	0	0	0	249
8:00 PM	0	133	17	0	11	1	0	0	0	0	0	0	0	162
9:00 PM	0	76	20	1	6	0	0	0	1	0	0	0	0	104
10:00 PM	0	44	12	1	2	0	0	0	0	0	0	0	0	59
11:00 PM	0	15	1	0	1	0	0	0	0	0	0	0	0	17
PM Total	30	3617	940	68	433	40	4	47	4	1	0	1	0	5185
Percent	0.58%	69.76%	18.13%	1.31%	8.35%	0.77%	0.08%	0.91%	0.08%	0.02%	0.00%	0.02%	0.00%	

AM Peak	10:00 AM	7:00 AM	7:00 AM	8:00 AM	8:00 AM	9:00 AM	6:00 AM	7:00 AM	9:00 AM	10:00 AM				7:00 AM
Volume	4	306	79	8	34	6	2	6	1	1	0	0	0	434

PM Peak	5:00 PM	5:00 PM	4:00 PM	2:00 PM	4:00 PM	12:00 PM	12:00 PM	4:00 PM	12:00 PM			5:00 PM		5:00 PM
Volume	6	322	93	13	45	6	1	7	1	0	0	1	0	459

Cycles:	30	0.6%
Cars and Light Trucks:	4557	87.9%
Heavy Vehicles:	598	11.5%

Water Street  
west of Farm Street  
City, State: Wakefield, MA  
Client: Nitsch/ D. Birru  
Site Code: 13872.2



PDI File #: 217949 ATR-A

Count Date

Wednesday, May, 26, 2021

**Classification (60-minute)**

Combined														
Start Time:	Cycles	Cars and Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
12:00 AM	0	15	9	0	5	0	0	0	0	0	0	0	0	29
1:00 AM	0	11	5	0	0	0	0	0	0	0	0	0	0	16
2:00 AM	0	5	2	0	0	0	0	0	0	0	0	0	0	7
3:00 AM	0	10	0	0	1	1	0	0	0	0	0	0	0	12
4:00 AM	0	18	6	0	5	1	0	0	0	0	0	0	0	30
5:00 AM	1	71	28	3	19	0	0	0	0	0	0	0	0	122
6:00 AM	1	223	87	4	64	3	3	3	0	0	0	0	0	388
7:00 AM	5	576	166	8	81	5	2	17	0	0	0	0	0	860
8:00 AM	4	527	172	10	72	7	5	17	1	0	1	0	0	816
9:00 AM	3	338	134	10	43	9	2	3	1	0	0	0	0	543
10:00 AM	4	401	145	6	67	7	0	5	1	1	0	0	0	637
11:00 AM	3	378	114	5	72	5	2	9	0	0	0	0	0	588
12:00 PM	5	419	117	9	66	11	7	6	1	0	0	0	0	641
1:00 PM	5	482	128	12	62	7	1	8	0	1	0	0	0	706
2:00 PM	3	561	183	23	69	3	0	7	0	1	0	0	0	850
3:00 PM	7	566	173	15	69	5	0	7	1	1	0	0	0	844
4:00 PM	4	594	204	8	81	1	0	10	0	0	0	0	0	902
5:00 PM	11	606	178	6	66	1	0	6	1	0	0	1	0	876
6:00 PM	7	481	132	4	45	0	0	2	0	0	0	0	0	671
7:00 PM	2	374	137	0	38	0	0	1	1	0	0	0	0	553
8:00 PM	1	259	54	0	27	1	0	1	1	0	0	0	0	344
9:00 PM	0	140	42	1	15	0	0	0	1	0	0	0	0	199
10:00 PM	0	83	24	1	5	0	0	0	0	0	0	0	0	113
11:00 PM	1	39	5	0	3	0	0	0	0	0	0	0	0	48
PM Total	67	7177	2245	125	975	67	22	102	9	4	1	1	0	10795
Percent	0.62%	66.48%	20.80%	1.16%	9.03%	0.62%	0.20%	0.94%	0.08%	0.04%	0.01%	0.01%	0.00%	

AM Peak	7:00 AM	7:00 AM	8:00 AM	8:00 AM	7:00 AM	9:00 AM	8:00 AM	7:00 AM	8:00 AM	10:00 AM	8:00 AM			7:00 AM
Volume	5	576	172	10	81	9	5	17	1	1	1	0	0	860

PM Peak	5:00 PM	5:00 PM	4:00 PM	2:00 PM	4:00 PM	12:00 PM	12:00 PM	4:00 PM	12:00 PM	1:00 PM		5:00 PM		4:00 PM
Volume	11	606	204	23	81	11	7	10	1	1	0	1	0	902

Cycles:	67	0.6%
Cars and Light Trucks:	9422	87.3%
Heavy Vehicles:	1306	12.1%

Water Street  
 west of Farm Street  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-A

Count Date  
 Thursday, May 27, 2021

**Classification (60-minute)**

WB														
Start Time:	Cycles	Cars and Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
12:00 AM	0	10	4	0	1	0	0	0	0	0	0	0	0	15
1:00 AM	0	7	0	0	2	0	0	0	0	0	0	0	0	9
2:00 AM	0	2	0	0	1	0	0	0	0	0	0	0	0	3
3:00 AM	0	5	0	0	1	0	0	0	0	0	0	0	0	6
4:00 AM	0	16	5	0	2	0	0	0	0	0	0	0	0	23
5:00 AM	0	37	25	2	13	1	1	0	0	0	0	0	0	79
6:00 AM	2	127	38	1	49	0	0	1	0	0	0	0	0	218
7:00 AM	1	273	102	4	62	3	0	5	0	0	0	0	0	450
8:00 AM	1	292	125	6	54	3	1	3	1	0	0	0	0	486
9:00 AM	3	200	68	2	36	5	0	3	0	0	0	0	0	317
10:00 AM	2	184	57	3	28	2	1	5	0	0	0	0	0	282
11:00 AM	3	215	88	2	32	1	1	1	0	0	0	0	0	343
12:00 PM	1	213	64	4	33	4	0	0	0	1	0	0	0	320
1:00 PM	3	237	68	6	43	3	0	3	0	0	0	0	0	363
2:00 PM	5	334	94	7	34	2	0	6	1	0	0	0	0	483
3:00 PM	5	260	77	3	42	2	0	2	0	1	0	0	0	392
4:00 PM	3	278	80	1	37	1	0	6	0	0	0	0	0	406
5:00 PM	1	288	77	4	40	1	0	3	0	0	0	0	0	414
6:00 PM	4	206	79	1	32	1	0	2	0	0	0	0	0	325
7:00 PM	4	187	64	4	27	0	0	1	0	0	0	0	0	287
8:00 PM	1	131	39	0	12	0	0	1	0	0	0	0	0	184
9:00 PM	1	115	28	0	8	0	0	0	0	0	0	0	0	152
10:00 PM	0	74	11	1	3	0	0	0	0	0	0	0	0	89
11:00 PM	1	36	11	0	2	0	0	0	0	0	0	0	0	50
<b>Total</b>	<b>41</b>	<b>3727</b>	<b>1204</b>	<b>51</b>	<b>594</b>	<b>29</b>	<b>4</b>	<b>42</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5696</b>
<b>Percent</b>	<b>0.72%</b>	<b>65.43%</b>	<b>21.14%</b>	<b>0.90%</b>	<b>10.43%</b>	<b>0.51%</b>	<b>0.07%</b>	<b>0.74%</b>	<b>0.04%</b>	<b>0.04%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	

AM Peak	9:00 AM	8:00 AM	8:00 AM	8:00 AM	7:00 AM	9:00 AM	5:00 AM	7:00 AM	8:00 AM					8:00 AM
Volume	3	292	125	6	62	5	1	5	1	0	0	0	0	486

PM Peak	2:00 PM	2:00 PM	2:00 PM	2:00 PM	1:00 PM	12:00 PM		2:00 PM	2:00 PM	12:00 PM				2:00 PM
Volume	5	334	94	7	43	4	0	6	1	1	0	0	0	483

Cycles:	41	0.7%
Cars and Light Trucks:	4931	86.6%
Heavy Vehicles:	724	12.7%

Water Street  
west of Farm Street  
City, State: Wakefield, MA  
Client: Nitsch/ D. Birru  
Site Code: 13872.2



PDI File #: 217949 ATR-A

Count Date  
Thursday, May 27, 2021

**Classification (60-minute)**

EB														
Start Time:	Cycles	Cars and Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
12:00 AM	0	14	0	0	0	0	0	0	0	0	0	0	0	14
1:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	3
2:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	2
3:00 AM	0	8	1	0	0	1	0	0	0	0	0	0	0	10
4:00 AM	0	10	5	0	3	0	1	0	0	0	0	0	0	19
5:00 AM	0	31	9	2	8	0	0	0	0	0	0	0	0	50
6:00 AM	0	111	25	1	18	4	0	2	0	0	0	0	0	161
7:00 AM	4	305	65	9	34	1	3	5	0	0	0	0	0	426
8:00 AM	0	228	63	4	27	1	5	3	0	0	0	0	0	331
9:00 AM	0	179	37	3	22	1	1	0	0	0	0	0	0	243
10:00 AM	3	163	49	1	21	0	1	2	2	0	0	0	0	242
11:00 AM	0	203	61	5	22	2	3	1	0	0	0	0	0	297
12:00 PM	1	225	56	1	30	0	2	3	0	0	0	0	0	318
1:00 PM	1	259	60	1	30	3	0	3	0	0	0	0	0	357
2:00 PM	3	295	60	3	38	0	0	1	0	0	0	0	0	400
3:00 PM	2	312	59	4	34	0	0	2	0	0	0	1	0	414
4:00 PM	3	295	91	7	37	1	0	3	0	0	0	0	0	437
5:00 PM	3	283	82	6	38	1	0	7	0	0	0	0	0	420
6:00 PM	2	304	74	5	33	0	0	5	0	0	0	0	0	423
7:00 PM	2	204	52	0	21	0	0	0	0	0	0	0	0	279
8:00 PM	2	145	28	1	12	1	0	0	0	0	0	0	0	189
9:00 PM	1	103	12	0	6	1	0	0	0	0	0	0	0	123
10:00 PM	0	60	16	1	2	0	0	0	0	0	0	0	0	79
11:00 PM	0	19	3	0	0	0	0	0	0	0	0	0	0	22
PM Total	27	3761	908	54	436	17	16	37	2	0	0	1	0	5259
Percent	0.51%	71.52%	17.27%	1.03%	8.29%	0.32%	0.30%	0.70%	0.04%	0.00%	0.00%	0.02%	0.00%	

AM Peak	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	6:00 AM	8:00 AM	7:00 AM	10:00 AM					7:00 AM
Volume	4	305	65	9	34	4	5	5	2	0	0	0	0	426

PM Peak	2:00 PM	3:00 PM	4:00 PM	4:00 PM	2:00 PM	1:00 PM	12:00 PM	5:00 PM				3:00 PM		4:00 PM
Volume	3	312	91	7	38	3	2	7	0	0	0	1	0	437

Cycles:	27	0.5%
Cars and Light Trucks:	4669	88.8%
Heavy Vehicles:	563	10.7%



Water Street  
 west of Farm Street  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-A

Count Date  
 Thursday, May 27, 2021

**Classification (60-minute)**

Combined														
Start Time:	Cycles	Cars and Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
12:00 AM	0	24	4	0	1	0	0	0	0	0	0	0	0	29
1:00 AM	0	10	0	0	2	0	0	0	0	0	0	0	0	12
2:00 AM	0	4	0	0	1	0	0	0	0	0	0	0	0	5
3:00 AM	0	13	1	0	1	1	0	0	0	0	0	0	0	16
4:00 AM	0	26	10	0	5	0	1	0	0	0	0	0	0	42
5:00 AM	0	68	34	4	21	1	1	0	0	0	0	0	0	129
6:00 AM	2	238	63	2	67	4	0	3	0	0	0	0	0	379
7:00 AM	5	578	167	13	96	4	3	10	0	0	0	0	0	876
8:00 AM	1	520	188	10	81	4	6	6	1	0	0	0	0	817
9:00 AM	3	379	105	5	58	6	1	3	0	0	0	0	0	560
10:00 AM	5	347	106	4	49	2	2	7	2	0	0	0	0	524
11:00 AM	3	418	149	7	54	3	4	2	0	0	0	0	0	640
12:00 PM	2	438	120	5	63	4	2	3	0	1	0	0	0	638
1:00 PM	4	496	128	7	73	6	0	6	0	0	0	0	0	720
2:00 PM	8	629	154	10	72	2	0	7	1	0	0	0	0	883
3:00 PM	7	572	136	7	76	2	0	4	0	1	0	1	0	806
4:00 PM	6	573	171	8	74	2	0	9	0	0	0	0	0	843
5:00 PM	4	571	159	10	78	2	0	10	0	0	0	0	0	834
6:00 PM	6	510	153	6	65	1	0	7	0	0	0	0	0	748
7:00 PM	6	391	116	4	48	0	0	1	0	0	0	0	0	566
8:00 PM	3	276	67	1	24	1	0	1	0	0	0	0	0	373
9:00 PM	2	218	40	0	14	1	0	0	0	0	0	0	0	275
10:00 PM	0	134	27	2	5	0	0	0	0	0	0	0	0	168
11:00 PM	1	55	14	0	2	0	0	0	0	0	0	0	0	72
PM Total	68	7488	2112	105	1030	46	20	79	4	2	0	1	0	10955
Percent	0.62%	68.35%	19.28%	0.96%	9.40%	0.42%	0.18%	0.72%	0.04%	0.02%	0.00%	0.01%	0.00%	

AM Peak	7:00 AM	7:00 AM	8:00 AM	7:00 AM	7:00 AM	9:00 AM	8:00 AM	7:00 AM	10:00 AM					7:00 AM
Volume	5	578	188	13	96	6	6	10	2	0	0	0	0	876

PM Peak	2:00 PM	2:00 PM	4:00 PM	2:00 PM	5:00 PM	1:00 PM	12:00 PM	5:00 PM	2:00 PM	12:00 PM		3:00 PM		2:00 PM
Volume	8	629	171	10	78	6	2	10	1	1	0	1	0	883

Cycles:	68	0.6%
Cars and Light Trucks:	9600	87.6%
Heavy Vehicles:	1287	11.7%

Water Street  
 west of Farm Street  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-A

Count Date  
 Wednesday, May, 26, 2021

**Speed (60-minute)**

WB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	1	7	5	6	1	0	0	0	0	0	20	41.2	36.9
1:00 AM	0	0	0	0	4	5	2	0	2	0	0	0	0	13	44.8	39.3
2:00 AM	0	0	0	0	0	2	1	0	0	0	0	0	0	3	40.1	38.7
3:00 AM	0	0	0	0	1	1	3	0	0	0	0	0	0	5	43.0	39.0
4:00 AM	0	1	0	1	6	8	2	0	0	0	0	0	0	18	38.5	34.5
5:00 AM	0	0	0	1	26	26	22	1	0	0	0	0	0	76	42.0	36.6
6:00 AM	0	0	0	27	65	90	36	2	1	0	0	0	0	221	40.0	35.1
7:00 AM	3	3	14	28	163	178	29	6	1	1	0	0	0	426	38.0	34.2
8:00 AM	2	13	25	56	160	161	37	4	2	0	0	0	0	460	38.0	33.2
9:00 AM	2	0	3	20	95	139	36	6	3	0	0	0	0	304	39.0	35.4
10:00 AM	1	0	9	20	101	138	39	6	2	0	0	0	0	316	39.0	35.1
11:00 AM	1	0	1	21	94	130	40	6	1	0	0	0	0	294	40.0	35.6
12:00 PM	1	0	6	18	119	136	45	8	0	0	0	0	0	333	40.0	35.2
1:00 PM	6	0	1	16	97	154	59	6	0	0	0	0	0	339	40.0	35.4
2:00 PM	12	3	5	26	173	185	48	8	0	0	0	0	0	460	39.0	34.3
3:00 PM	5	1	3	23	151	207	58	9	0	0	0	0	0	457	39.0	35.1
4:00 PM	5	0	0	21	142	196	63	12	4	1	0	0	0	444	40.0	35.7
5:00 PM	6	0	0	5	121	211	63	10	1	0	0	0	0	417	40.0	35.9
6:00 PM	0	0	3	15	95	153	63	7	1	1	0	0	0	338	40.0	36.3
7:00 PM	0	0	0	16	107	135	35	10	0	0	1	0	0	304	39.6	35.6
8:00 PM	0	0	0	6	79	69	25	3	0	0	0	0	0	182	39.9	35.4
9:00 PM	0	0	0	0	33	45	15	2	0	0	0	0	0	95	40.0	36.3
10:00 PM	0	1	0	2	17	23	10	1	0	0	0	0	0	54	41.0	35.8
11:00 PM	0	0	0	1	13	11	6	0	0	0	0	0	0	31	40.5	35.7
Total	44	22	70	324	1869	2408	743	108	18	3	1	0	0	5610	40.0	35.2
Percent	0.78%	0.39%	1.25%	5.78%	33.32%	42.92%	13.24%	1.93%	0.32%	0.05%	0.02%	0.00%	0.00%			

AM Peak	7:00 AM	8:00 AM	8:00 AM	8:00 AM	7:00 AM	7:00 AM	11:00 AM	7:00 AM	9:00 AM	7:00 AM				8:00 AM		
Volume	3	13	25	56	163	178	40	6	3	1	0	0	0	460		
PM Peak	2:00 PM	2:00 PM	12:00 PM	2:00 PM	2:00 PM	5:00 PM	4:00 PM	4:00 PM	4:00 PM	4:00 PM	7:00 PM			2:00 PM		
Volume	12	3	6	26	173	211	63	12	4	1	1	0	0	460		

15th Percentile:	31.0 MPH	Average Speed:	35.2 MPH	Posted Speed Limit:	30 MPH
50th Percentile:	35.0 MPH	10 MPH Pace:	31 to 40 MPH	Number of Vehicles > 30 MPH:	4960
85th Percentile:	40.0 MPH	Number in Pace:	4357	Percent of Vehicles > 30 MPH:	88.4%
95th Percentile:	43.0 MPH	Percent in Pace:	77.7%		

Water Street  
 west of Farm Street  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-A

Count Date  
 Wednesday, May, 26, 2021

**Speed (60-minute)**

EB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	3	5	1	0	0	0	0	0	0	9	36.8	35.6
1:00 AM	0	0	0	0	1	1	1	0	0	0	0	0	0	3	38.8	35.3
2:00 AM	0	0	0	0	1	3	0	0	0	0	0	0	0	4	37.7	35.3
3:00 AM	0	0	0	0	3	4	0	0	0	0	0	0	0	7	36.3	35.0
4:00 AM	0	0	1	0	4	2	3	2	0	0	0	0	0	12	42.8	36.8
5:00 AM	0	0	1	1	23	12	7	2	0	0	0	0	0	46	40.3	34.8
6:00 AM	1	0	1	16	71	54	21	3	0	0	0	0	0	167	39.0	34.6
7:00 AM	2	5	18	79	186	119	23	0	1	0	1	0	0	434	37.0	32.4
8:00 AM	6	6	27	68	153	83	11	1	1	0	0	0	0	356	36.8	31.2
9:00 AM	0	0	4	29	127	64	12	3	0	0	0	0	0	239	36.0	33.2
10:00 AM	0	4	15	56	147	88	9	2	0	0	0	0	0	321	36.0	32.2
11:00 AM	0	1	5	66	131	74	14	3	0	0	0	0	0	294	37.0	32.6
12:00 PM	5	3	20	52	132	75	17	4	0	0	0	0	0	308	37.0	32.1
1:00 PM	6	4	21	63	170	90	12	1	0	0	0	0	0	367	36.0	31.5
2:00 PM	31	23	53	76	128	61	17	1	0	0	0	0	0	390	36.0	28.2
3:00 PM	27	35	42	76	120	75	12	0	0	0	0	0	0	387	36.0	28.4
4:00 PM	31	36	59	113	137	72	9	1	0	0	0	0	0	458	35.0	27.9
5:00 PM	22	26	50	100	157	93	10	1	0	0	0	0	0	459	36.0	29.1
6:00 PM	4	2	4	47	159	102	15	0	0	0	0	0	0	333	37.0	32.8
7:00 PM	0	0	1	29	128	76	14	1	0	0	0	0	0	249	37.0	33.4
8:00 PM	0	0	2	16	70	58	14	1	1	0	0	0	0	162	38.0	34.2
9:00 PM	0	0	4	13	40	40	5	1	0	0	0	0	1	104	38.0	33.7
10:00 PM	0	0	3	14	19	19	4	0	0	0	0	0	0	59	37.0	32.3
11:00 PM	0	0	0	1	6	6	4	0	0	0	0	0	0	17	40.0	35.7
<b>Total</b>	<b>135</b>	<b>145</b>	<b>331</b>	<b>915</b>	<b>2116</b>	<b>1276</b>	<b>235</b>	<b>27</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>5185</b>	<b>37.0</b>	<b>31.3</b>
<b>Percent</b>	<b>2.60%</b>	<b>2.80%</b>	<b>6.38%</b>	<b>17.65%</b>	<b>40.81%</b>	<b>24.61%</b>	<b>4.53%</b>	<b>0.52%</b>	<b>0.06%</b>	<b>0.00%</b>	<b>0.02%</b>	<b>0.00%</b>	<b>0.02%</b>			
<b>AM Peak</b>	8:00 AM	8:00 AM	8:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	6:00 AM	7:00 AM				7:00 AM			7:00 AM
<b>Volume</b>	6	6	27	79	186	119	23	3	1	0	1	0	0	434		
<b>PM Peak</b>	2:00 PM	4:00 PM	4:00 PM	4:00 PM	1:00 PM	6:00 PM	12:00 PM	12:00 PM	8:00 PM				9:00 PM	5:00 PM		
<b>Volume</b>	31	36	59	113	170	102	17	4	1	0	0	0	1	459		

15th Percentile:	26.0 MPH	Average Speed:	31.3 MPH	Posted Speed Limit:	30 MPH
50th Percentile:	32.0 MPH	10 MPH Pace:	28 to 37 MPH	Number of Vehicles > 30 MPH:	3324
85th Percentile:	37.0 MPH	Number in Pace:	3612	Percent of Vehicles > 30 MPH:	64.1%
95th Percentile:	40.0 MPH	Percent in Pace:	69.7%		

Water Street  
 west of Farm Street  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-A

Count Date  
 Wednesday, May, 26, 2021

**Speed (60-minute)**

**Combined WB and EB**

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	1	10	10	7	1	0	0	0	0	0	29	41.0	36.5
1:00 AM	0	0	0	0	5	6	3	0	2	0	0	0	0	16	42.8	38.6
2:00 AM	0	0	0	0	1	5	1	0	0	0	0	0	0	7	39.2	36.7
3:00 AM	0	0	0	0	4	5	3	0	0	0	0	0	0	12	41.7	36.7
4:00 AM	0	1	1	1	10	10	5	2	0	0	0	0	0	30	40.7	35.4
5:00 AM	0	0	1	2	49	38	29	3	0	0	0	0	0	122	42.0	35.9
6:00 AM	1	0	1	43	136	144	57	5	1	0	0	0	0	388	40.0	34.9
7:00 AM	5	8	32	107	349	297	52	6	2	1	1	0	0	860	38.0	33.3
8:00 AM	8	19	52	124	313	244	48	5	3	0	0	0	0	816	38.0	32.3
9:00 AM	2	0	7	49	222	203	48	9	3	0	0	0	0	543	39.0	34.4
10:00 AM	1	4	24	76	248	226	48	8	2	0	0	0	0	637	38.0	33.6
11:00 AM	1	1	6	87	225	204	54	9	1	0	0	0	0	588	39.0	34.1
12:00 PM	6	3	26	70	251	211	62	12	0	0	0	0	0	641	39.0	33.7
1:00 PM	12	4	22	79	267	244	71	7	0	0	0	0	0	706	38.0	33.4
2:00 PM	43	26	58	102	301	246	65	9	0	0	0	0	0	850	38.0	31.5
3:00 PM	32	36	45	99	271	282	70	9	0	0	0	0	0	844	38.0	32.0
4:00 PM	36	36	59	134	279	268	72	13	4	1	0	0	0	902	38.0	31.8
5:00 PM	28	26	50	105	278	304	73	11	1	0	0	0	0	876	38.0	32.3
6:00 PM	4	2	7	62	254	255	78	7	1	1	0	0	0	671	39.0	34.6
7:00 PM	0	0	1	45	235	211	49	11	0	0	1	0	0	553	38.0	34.6
8:00 PM	0	0	2	22	149	127	39	4	1	0	0	0	0	344	39.0	34.8
9:00 PM	0	0	4	13	73	85	20	3	0	0	0	0	1	199	39.0	34.9
10:00 PM	0	1	3	16	36	42	14	1	0	0	0	0	0	113	39.0	34.0
11:00 PM	0	0	0	2	19	17	10	0	0	0	0	0	0	48	40.0	35.7
<b>Total</b>	<b>179</b>	<b>167</b>	<b>401</b>	<b>1239</b>	<b>3985</b>	<b>3684</b>	<b>978</b>	<b>135</b>	<b>21</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>10795</b>	<b>38.0</b>	<b>33.3</b>
<b>Percent</b>	<b>1.66%</b>	<b>1.55%</b>	<b>3.71%</b>	<b>11.48%</b>	<b>36.92%</b>	<b>34.13%</b>	<b>9.06%</b>	<b>1.25%</b>	<b>0.19%</b>	<b>0.03%</b>	<b>0.02%</b>	<b>0.00%</b>	<b>0.01%</b>			

AM Peak	8:00 AM	8:00 AM	8:00 AM	8:00 AM	7:00 AM	7:00 AM	6:00 AM	9:00 AM	8:00 AM	7:00 AM	7:00 AM			7:00 AM
Volume	8	19	52	124	349	297	57	9	3	1	1	0	0	860

PM Peak	2:00 PM	3:00 PM	4:00 PM	4:00 PM	2:00 PM	5:00 PM	6:00 PM	4:00 PM	4:00 PM	4:00 PM	7:00 PM		9:00 PM	4:00 PM
Volume	43	36	59	134	301	304	78	13	4	1	1	0	1	902

15th Percentile:	29.0 MPH	Average Speed:	33.3 MPH	Posted Speed Limit:	30 MPH
50th Percentile:	34.0 MPH	10 MPH Pace:	29 to 38 MPH	Number of Vehicles > 30 MPH:	8284
85th Percentile:	38.0 MPH	Number in Pace:	7699	Percent of Vehicles > 30 MPH:	76.7%
95th Percentile:	41.0 MPH	Percent in Pace:	71.3%		

Water Street  
 west of Farm Street  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-A

Count Date  
 Thursday, May 27, 2021

**Speed (60-minute)**

WB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	6	4	4	1	0	0	0	0	0	15	42.9	37.0
1:00 AM	0	0	0	2	1	3	2	1	0	0	0	0	0	9	40.8	36.9
2:00 AM	0	0	0	0	0	2	1	0	0	0	0	0	0	3	42.5	40.0
3:00 AM	0	0	0	0	2	2	2	0	0	0	0	0	0	6	40.3	36.3
4:00 AM	0	0	0	0	8	9	6	0	0	0	0	0	0	23	41.7	36.5
5:00 AM	0	0	1	2	19	38	17	1	1	0	0	0	0	79	41.3	36.8
6:00 AM	1	0	1	9	83	97	23	3	1	0	0	0	0	218	39.0	35.4
7:00 AM	5	0	6	29	188	174	45	3	0	0	0	0	0	450	38.0	34.4
8:00 AM	4	1	5	46	186	185	53	6	0	0	0	0	0	486	39.0	34.3
9:00 AM	0	1	2	15	118	132	41	8	0	0	0	0	0	317	40.0	35.5
10:00 AM	0	0	2	20	98	122	34	5	1	0	0	0	0	282	39.0	35.1
11:00 AM	0	0	4	19	118	153	41	7	1	0	0	0	0	343	39.0	35.4
12:00 PM	0	0	1	21	97	154	43	4	0	0	0	0	0	320	39.0	35.6
1:00 PM	2	1	2	18	137	159	39	5	0	0	0	0	0	363	39.0	35.0
2:00 PM	2	0	9	52	207	167	44	2	0	0	0	0	0	483	38.0	33.9
3:00 PM	1	0	2	18	133	173	58	4	3	0	0	0	0	392	40.0	35.6
4:00 PM	2	1	0	10	135	182	70	4	1	0	0	0	1	406	40.0	35.8
5:00 PM	8	1	0	28	130	179	56	11	1	0	0	0	0	414	40.0	35.1
6:00 PM	5	0	1	11	111	138	52	4	1	1	0	1	0	325	40.0	35.4
7:00 PM	2	0	0	13	94	140	30	8	0	0	0	0	0	287	39.0	35.5
8:00 PM	0	0	1	4	63	89	23	4	0	0	0	0	0	184	39.0	35.9
9:00 PM	0	0	0	5	60	60	23	3	0	1	0	0	0	152	40.0	35.8
10:00 PM	0	0	0	2	26	39	18	3	1	0	0	0	0	89	41.0	36.6
11:00 PM	0	0	0	2	16	22	10	0	0	0	0	0	0	50	40.7	36.1
<b>Total</b>	<b>32</b>	<b>5</b>	<b>37</b>	<b>326</b>	<b>2036</b>	<b>2423</b>	<b>735</b>	<b>87</b>	<b>11</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>5696</b>	<b>39.0</b>	<b>35.2</b>
<b>Percent</b>	<b>0.56%</b>	<b>0.09%</b>	<b>0.65%</b>	<b>5.72%</b>	<b>35.74%</b>	<b>42.54%</b>	<b>12.90%</b>	<b>1.53%</b>	<b>0.19%</b>	<b>0.04%</b>	<b>0.00%</b>	<b>0.02%</b>	<b>0.02%</b>			

AM Peak	7:00 AM	8:00 AM	7:00 AM	8:00 AM	7:00 AM	8:00 AM	8:00 AM	9:00 AM	5:00 AM							8:00 AM
Volume	5	1	6	46	188	185	53	8	1	0	0	0	0	0	0	486
PM Peak	5:00 PM	1:00 PM	2:00 PM	2:00 PM	2:00 PM	4:00 PM	4:00 PM	5:00 PM	3:00 PM	6:00 PM		6:00 PM	4:00 PM	2:00 PM		
Volume	8	1	9	52	207	182	70	11	3	1	0	1	1	483		

15th Percentile:	31.0 MPH	Average Speed:	35.2 MPH	Posted Speed Limit:	30 MPH
50th Percentile:	35.0 MPH	10 MPH Pace:	31 to 40 MPH	Number of Vehicles > 30 MPH:	5067
85th Percentile:	39.0 MPH	Number in Pace:	4488	Percent of Vehicles > 30 MPH:	89.0%
95th Percentile:	42.0 MPH	Percent in Pace:	78.8%		

Water Street  
 west of Farm Street  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-A

Count Date  
 Thursday, May 27, 2021

**Speed (60-minute)**

EB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	2	6	4	2	0	0	0	0	0	0	14	38.2	33.8
1:00 AM	0	0	0	0	2	1	0	0	0	0	0	0	0	3	37.5	35.0
2:00 AM	0	0	0	1	0	1	0	0	0	0	0	0	0	2	34.0	31.5
3:00 AM	0	0	0	1	6	2	1	0	0	0	0	0	0	10	38.3	34.4
4:00 AM	0	0	0	1	9	3	4	1	1	0	0	0	0	19	42.3	36.3
5:00 AM	0	0	0	1	24	18	7	0	0	0	0	0	0	50	38.0	34.9
6:00 AM	1	0	2	22	67	52	14	3	0	0	0	0	0	161	38.0	33.8
7:00 AM	7	1	13	90	222	75	18	0	0	0	0	0	0	426	36.0	31.5
8:00 AM	0	10	21	53	154	79	14	0	0	0	0	0	0	331	36.5	31.8
9:00 AM	0	2	5	39	94	87	15	0	1	0	0	0	0	243	38.0	33.4
10:00 AM	0	0	11	40	100	78	12	1	0	0	0	0	0	242	38.0	33.0
11:00 AM	1	2	7	50	154	70	12	1	0	0	0	0	0	297	37.0	32.6
12:00 PM	0	3	7	60	145	88	15	0	0	0	0	0	0	318	36.0	32.5
1:00 PM	2	0	19	94	166	62	11	2	1	0	0	0	0	357	36.0	31.5
2:00 PM	3	7	26	83	185	86	9	1	0	0	0	0	0	400	36.0	31.2
3:00 PM	5	7	24	85	192	79	21	1	0	0	0	0	0	414	36.0	31.3
4:00 PM	18	23	48	99	170	74	5	0	0	0	0	0	0	437	35.0	29.1
5:00 PM	48	36	34	92	152	51	7	0	0	0	0	0	0	420	34.0	27.1
6:00 PM	24	10	43	101	168	70	6	0	1	0	0	0	0	423	35.0	29.2
7:00 PM	0	0	8	48	140	70	12	1	0	0	0	0	0	279	37.0	32.6
8:00 PM	1	0	2	28	87	60	10	1	0	0	0	0	0	189	37.0	33.0
9:00 PM	0	0	5	15	61	39	3	0	0	0	0	0	0	123	37.0	32.8
10:00 PM	0	0	3	8	34	25	7	1	1	0	0	0	0	79	38.0	34.0
11:00 PM	0	0	1	3	6	5	7	0	0	0	0	0	0	22	41.0	35.0
<b>Total</b>	<b>110</b>	<b>101</b>	<b>279</b>	<b>1016</b>	<b>2344</b>	<b>1179</b>	<b>212</b>	<b>13</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5259</b>	<b>36.0</b>	<b>31.3</b>
<b>Percent</b>	<b>2.09%</b>	<b>1.92%</b>	<b>5.31%</b>	<b>19.32%</b>	<b>44.57%</b>	<b>22.42%</b>	<b>4.03%</b>	<b>0.25%</b>	<b>0.10%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>			

AM Peak	7:00 AM	8:00 AM	8:00 AM	7:00 AM	7:00 AM	9:00 AM	7:00 AM	6:00 AM	4:00 AM							7:00 AM
Volume	7	10	21	90	222	87	18	3	1	0	0	0	0	0	0	426
PM Peak	5:00 PM	5:00 PM	4:00 PM	6:00 PM	3:00 PM	12:00 PM	3:00 PM	1:00 PM	1:00 PM							4:00 PM
Volume	48	36	48	101	192	88	21	2	1	0	0	0	0	0	0	437

15th Percentile:	27.0 MPH	Average Speed:	31.3 MPH	Posted Speed Limit:	30 MPH
50th Percentile:	32.0 MPH	10 MPH Pace:	28 to 37 MPH	Number of Vehicles > 30 MPH:	3340
85th Percentile:	36.0 MPH	Number in Pace:	3811	Percent of Vehicles > 30 MPH:	63.5%
95th Percentile:	39.0 MPH	Percent in Pace:	72.5%		

Water Street  
 west of Farm Street  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-A

Count Date  
 Thursday, May 27, 2021

**Speed (60-minute)**

**Combined WB and EB**

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	2	12	8	6	1	0	0	0	0	0	29	42.0	35.4
1:00 AM	0	0	0	2	3	4	2	1	0	0	0	0	0	12	40.4	36.4
2:00 AM	0	0	0	1	0	3	1	0	0	0	0	0	0	5	41.0	36.6
3:00 AM	0	0	0	1	8	4	3	0	0	0	0	0	0	16	39.8	35.1
4:00 AM	0	0	0	1	17	12	10	1	1	0	0	0	0	42	42.0	36.4
5:00 AM	0	0	1	3	43	56	24	1	1	0	0	0	0	129	40.0	36.0
6:00 AM	2	0	3	31	150	149	37	6	1	0	0	0	0	379	39.0	34.7
7:00 AM	12	1	19	119	410	249	63	3	0	0	0	0	0	876	37.0	33.0
8:00 AM	4	11	26	99	340	264	67	6	0	0	0	0	0	817	38.0	33.3
9:00 AM	0	3	7	54	212	219	56	8	1	0	0	0	0	560	39.0	34.6
10:00 AM	0	0	13	60	198	200	46	6	1	0	0	0	0	524	38.0	34.2
11:00 AM	1	2	11	69	272	223	53	8	1	0	0	0	0	640	38.0	34.1
12:00 PM	0	3	8	81	242	242	58	4	0	0	0	0	0	638	38.0	34.1
1:00 PM	4	1	21	112	303	221	50	7	1	0	0	0	0	720	38.0	33.3
2:00 PM	5	7	35	135	392	253	53	3	0	0	0	0	0	883	37.0	32.7
3:00 PM	6	7	26	103	325	252	79	5	3	0	0	0	0	806	38.3	33.4
4:00 PM	20	24	48	109	305	256	75	4	1	0	0	0	1	843	38.0	32.3
5:00 PM	56	37	34	120	282	230	63	11	1	0	0	0	0	834	38.0	31.1
6:00 PM	29	10	44	112	279	208	58	4	2	1	0	1	0	748	38.0	31.9
7:00 PM	2	0	8	61	234	210	42	9	0	0	0	0	0	566	38.0	34.1
8:00 PM	1	0	3	32	150	149	33	5	0	0	0	0	0	373	39.0	34.4
9:00 PM	0	0	5	20	121	99	26	3	0	1	0	0	0	275	39.0	34.5
10:00 PM	0	0	3	10	60	64	25	4	2	0	0	0	0	168	40.0	35.4
11:00 PM	0	0	1	5	22	27	17	0	0	0	0	0	0	72	41.0	35.7
<b>Total</b>	<b>142</b>	<b>106</b>	<b>316</b>	<b>1342</b>	<b>4380</b>	<b>3602</b>	<b>947</b>	<b>100</b>	<b>16</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>10955</b>	<b>38.0</b>	<b>33.4</b>
<b>Percent</b>	<b>1.30%</b>	<b>0.97%</b>	<b>2.88%</b>	<b>12.25%</b>	<b>39.98%</b>	<b>32.88%</b>	<b>8.64%</b>	<b>0.91%</b>	<b>0.15%</b>	<b>0.02%</b>	<b>0.00%</b>	<b>0.01%</b>	<b>0.01%</b>			

AM Peak	7:00 AM	8:00 AM	8:00 AM	7:00 AM	7:00 AM	8:00 AM	8:00 AM	9:00 AM	4:00 AM						7:00 AM
Volume	12	11	26	119	410	264	67	8	1	0	0	0	0	0	876
PM Peak	5:00 PM	5:00 PM	4:00 PM	2:00 PM	2:00 PM	4:00 PM	3:00 PM	5:00 PM	3:00 PM	6:00 PM		6:00 PM	4:00 PM	2:00 PM	
Volume	56	37	48	135	392	256	79	11	3	1	0	1	1	883	

15th Percentile:	29.0 MPH	Average Speed:	33.4 MPH	Posted Speed Limit:	30 MPH
50th Percentile:	34.0 MPH	10 MPH Pace:	29 to 38 MPH	Number of Vehicles > 30 MPH:	8407
85th Percentile:	38.0 MPH	Number in Pace:	8018	Percent of Vehicles > 30 MPH:	76.7%
95th Percentile:	41.0 MPH	Percent in Pace:	73.2%		

Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-B

Count Date:  
 Tuesday, May, 25, 2021

**Volume**

SB					NB					Combined							
Start Time:	15 min	60 min	15 min	60 min	Start Time:	15 min	60 min	15 min	60 min	Start Time:	15 min	60 min	15 min	60 min			
12:00 AM	0		12:00 PM	74	12:00 AM	0		12:00 PM	73	12:00 AM	0		12:00 PM	147			
12:15 AM	0		12:15 PM	78	12:15 AM	0		12:15 PM	94	12:15 AM	0		12:15 PM	172			
12:30 AM	0		12:30 PM	77	12:30 AM	0		12:30 PM	92	12:30 AM	0		12:30 PM	169			
12:45 AM	0	0	12:45 PM	85	314	12:45 AM	0	0	12:45 PM	91	350	12:45 AM	0	0	12:45 PM	176	664
1:00 AM	0		1:00 PM	78		1:00 AM	0		1:00 PM	106		1:00 AM	0		1:00 PM	184	
1:15 AM	0		1:15 PM	155		1:15 AM	0		1:15 PM	75		1:15 AM	0		1:15 PM	230	
1:30 AM	0		1:30 PM	106		1:30 AM	0		1:30 PM	100		1:30 AM	0		1:30 PM	206	
1:45 AM	0	0	1:45 PM	84	423	1:45 AM	0	0	1:45 PM	97	378	1:45 AM	0	0	1:45 PM	181	801
2:00 AM	0		2:00 PM	83		2:00 AM	0		2:00 PM	102		2:00 AM	0		2:00 PM	185	
2:15 AM	0		2:15 PM	105		2:15 AM	0		2:15 PM	89		2:15 AM	0		2:15 PM	194	
2:30 AM	0		2:30 PM	101		2:30 AM	0		2:30 PM	87		2:30 AM	0		2:30 PM	188	
2:45 AM	0	0	2:45 PM	122	411	2:45 AM	0	0	2:45 PM	116	394	2:45 AM	0	0	2:45 PM	238	805
3:00 AM	0		3:00 PM	118		3:00 AM	0		3:00 PM	114		3:00 AM	0		3:00 PM	232	
3:15 AM	0		3:15 PM	107		3:15 AM	0		3:15 PM	159		3:15 AM	0		3:15 PM	266	
3:30 AM	0		3:30 PM	107		3:30 AM	0		3:30 PM	142		3:30 AM	0		3:30 PM	249	
3:45 AM	0	0	3:45 PM	124	456	3:45 AM	0	0	3:45 PM	149	564	3:45 AM	0	0	3:45 PM	273	1020
4:00 AM	0		4:00 PM	114		4:00 AM	0		4:00 PM	133		4:00 AM	0		4:00 PM	247	
4:15 AM	0		4:15 PM	129		4:15 AM	0		4:15 PM	130		4:15 AM	0		4:15 PM	259	
4:30 AM	0		4:30 PM	115		4:30 AM	0		4:30 PM	129		4:30 AM	0		4:30 PM	244	
4:45 AM	0	0	4:45 PM	110	468	4:45 AM	0	0	4:45 PM	141	533	4:45 AM	0	0	4:45 PM	251	1001
5:00 AM	0		5:00 PM	136		5:00 AM	0		5:00 PM	124		5:00 AM	0		5:00 PM	260	
5:15 AM	0		5:15 PM	132		5:15 AM	0		5:15 PM	138		5:15 AM	0		5:15 PM	270	
5:30 AM	0		5:30 PM	120		5:30 AM	0		5:30 PM	106		5:30 AM	0		5:30 PM	226	
5:45 AM	0	0	5:45 PM	119	507	5:45 AM	0	0	5:45 PM	104	472	5:45 AM	0	0	5:45 PM	223	979
6:00 AM	0		6:00 PM	92		6:00 AM	0		6:00 PM	85		6:00 AM	0		6:00 PM	177	
6:15 AM	0		6:15 PM	110		6:15 AM	0		6:15 PM	95		6:15 AM	0		6:15 PM	205	
6:30 AM	0		6:30 PM	97		6:30 AM	0		6:30 PM	93		6:30 AM	0		6:30 PM	190	
6:45 AM	0	0	6:45 PM	72	371	6:45 AM	0	0	6:45 PM	87	360	6:45 AM	0	0	6:45 PM	159	731
7:00 AM	0		7:00 PM	94		7:00 AM	0		7:00 PM	59		7:00 AM	0		7:00 PM	153	
7:15 AM	0		7:15 PM	89		7:15 AM	0		7:15 PM	71		7:15 AM	0		7:15 PM	160	
7:30 AM	0		7:30 PM	61		7:30 AM	0		7:30 PM	61		7:30 AM	0		7:30 PM	122	
7:45 AM	0	0	7:45 PM	87	331	7:45 AM	0	0	7:45 PM	67	258	7:45 AM	0	0	7:45 PM	154	589
8:00 AM	0		8:00 PM	59		8:00 AM	0		8:00 PM	59		8:00 AM	0		8:00 PM	118	
8:15 AM	0		8:15 PM	67		8:15 AM	0		8:15 PM	59		8:15 AM	0		8:15 PM	126	
8:30 AM	0		8:30 PM	55		8:30 AM	0		8:30 PM	47		8:30 AM	0		8:30 PM	102	
8:45 AM	0	0	8:45 PM	44	225	8:45 AM	0	0	8:45 PM	35	200	8:45 AM	0	0	8:45 PM	79	425
9:00 AM	0		9:00 PM	39		9:00 AM	0		9:00 PM	39		9:00 AM	0		9:00 PM	78	
9:15 AM	0		9:15 PM	36		9:15 AM	0		9:15 PM	38		9:15 AM	0		9:15 PM	74	
9:30 AM	0		9:30 PM	35		9:30 AM	0		9:30 PM	41		9:30 AM	0		9:30 PM	76	
9:45 AM	0	0	9:45 PM	28	138	9:45 AM	0	0	9:45 PM	35	153	9:45 AM	0	0	9:45 PM	63	291
10:00 AM	0		10:00 PM	8		10:00 AM	0		10:00 PM	5		10:00 AM	0		10:00 PM	13	
10:15 AM	0		10:15 PM	0		10:15 AM	0		10:15 PM	0		10:15 AM	0		10:15 PM	0	
10:30 AM	0		10:30 PM	0		10:30 AM	0		10:30 PM	0		10:30 AM	0		10:30 PM	0	
10:45 AM	0	0	10:45 PM	0	8	10:45 AM	0	0	10:45 PM	0	5	10:45 AM	0	0	10:45 PM	0	13
11:00 AM	0		11:00 PM	0		11:00 AM	0		11:00 PM	0		11:00 AM	0		11:00 PM	0	
11:15 AM	0		11:15 PM	0		11:15 AM	0		11:15 PM	0		11:15 AM	0		11:15 PM	0	
11:30 AM	0		11:30 PM	0		11:30 AM	0		11:30 PM	0		11:30 AM	0		11:30 PM	0	
11:45 AM	0	0	11:45 PM	0	0	11:45 AM	0	0	11:45 PM	0	0	11:45 AM	0	0	11:45 PM	0	0
Total	0		3652		Total	0		3667		Total	0		7319				
Percent	0.00%		100.00%		Percent	0.00%		100.00%		Percent	0.00%		100.00%				
Day Total			3652		Day Total			3667		Day Total			7319				
Peak Hour	11:45 AM		5:00 PM		Peak Hour	11:45 AM		3:15 PM		Peak Hour	11:45 AM		3:15 PM				
Volume	229		507		Volume	259		583		Volume	488		1035				
P.H.F.	0.734		0.932		P.H.F.	0.689		0.917		P.H.F.	0.709		0.948				



Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-B

Count Date  
 Tuesday, May, 25, 2021

**Classification (60-minute)**

SB														
Start Time:	Cycles	Cars and Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	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
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	118	157	3	35	0	0	1	0	0	0	0	0	314
1:00 PM	1	148	210	11	47	0	2	4	0	0	0	0	0	423
2:00 PM	3	148	190	5	61	2	0	2	0	0	0	0	0	411
3:00 PM	2	148	226	11	67	0	0	1	1	0	0	0	0	456
4:00 PM	4	155	237	4	63	1	0	3	1	0	0	0	0	468
5:00 PM	4	179	242	5	71	1	0	5	0	0	0	0	0	507
6:00 PM	5	134	183	3	43	0	0	3	0	0	0	0	0	371
7:00 PM	4	128	162	3	33	0	0	1	0	0	0	0	0	331
8:00 PM	2	83	115	1	24	0	0	0	0	0	0	0	0	225
9:00 PM	1	38	84	2	13	0	0	0	0	0	0	0	0	138
10:00 PM	0	2	6	0	0	0	0	0	0	0	0	0	0	8
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>26</b>	<b>1281</b>	<b>1812</b>	<b>48</b>	<b>457</b>	<b>4</b>	<b>2</b>	<b>20</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3652</b>
<b>Percent</b>	<b>0.71%</b>	<b>35.08%</b>	<b>49.62%</b>	<b>1.31%</b>	<b>12.51%</b>	<b>0.11%</b>	<b>0.05%</b>	<b>0.55%</b>	<b>0.05%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	

AM Peak															
Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak	6:00 PM	5:00 PM	5:00 PM	1:00 PM	5:00 PM	2:00 PM	1:00 PM	5:00 PM	3:00 PM						5:00 PM
Volume	5	179	242	11	71	2	2	5	1	0	0	0	0	507	

Cycles:	26	0.7%
Cars and Light Trucks:	3093	84.7%
Heavy Vehicles:	533	14.6%

Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-B

Count Date  
 Tuesday, May, 25, 2021

**Classification (60-minute)**

NB														
Start Time:	Cycles	Cars and Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	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
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	75	231	3	38	2	0	1	0	0	0	0	0	350
1:00 PM	0	87	235	5	47	0	0	4	0	0	0	0	0	378
2:00 PM	1	106	226	6	49	0	0	6	0	0	0	0	0	394
3:00 PM	2	108	365	5	73	2	0	8	0	0	0	0	1	564
4:00 PM	0	109	348	4	66	0	0	6	0	0	0	0	0	533
5:00 PM	0	121	290	4	50	0	0	7	0	0	0	0	0	472
6:00 PM	2	110	203	5	38	0	0	2	0	0	0	0	0	360
7:00 PM	1	93	142	0	22	0	0	0	0	0	0	0	0	258
8:00 PM	1	70	109	0	19	1	0	0	0	0	0	0	0	200
9:00 PM	0	57	82	0	14	0	0	0	0	0	0	0	0	153
10:00 PM	0	2	2	0	1	0	0	0	0	0	0	0	0	5
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM Total	7	938	2233	32	417	5	0	34	0	0	0	0	1	3667
Percent	0.19%	25.58%	60.89%	0.87%	11.37%	0.14%	0.00%	0.93%	0.00%	0.00%	0.00%	0.00%	0.03%	

AM Peak														
Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM Peak	3:00 PM	5:00 PM	3:00 PM	2:00 PM	3:00 PM	12:00 PM		3:00 PM					3:00 PM	3:00 PM
Volume	2	121	365	6	73	2	0	8	0	0	0	0	1	564

Cycles:	7	0.2%
Cars and Light Trucks:	3171	86.5%
Heavy Vehicles:	489	13.3%

Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-B

Count Date  
 Tuesday, May, 25, 2021

**Classification (60-minute)**

Combined														
Start Time:	Cycles	Cars and Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	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
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	193	388	6	73	2	0	2	0	0	0	0	0	664
1:00 PM	1	235	445	16	94	0	2	8	0	0	0	0	0	801
2:00 PM	4	254	416	11	110	2	0	8	0	0	0	0	0	805
3:00 PM	4	256	591	16	140	2	0	9	1	0	0	0	1	1020
4:00 PM	4	264	585	8	129	1	0	9	1	0	0	0	0	1001
5:00 PM	4	300	532	9	121	1	0	12	0	0	0	0	0	979
6:00 PM	7	244	386	8	81	0	0	5	0	0	0	0	0	731
7:00 PM	5	221	304	3	55	0	0	1	0	0	0	0	0	589
8:00 PM	3	153	224	1	43	1	0	0	0	0	0	0	0	425
9:00 PM	1	95	166	2	27	0	0	0	0	0	0	0	0	291
10:00 PM	0	4	8	0	1	0	0	0	0	0	0	0	0	13
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM Total	33	2219	4045	80	874	9	2	54	2	0	0	0	1	7319
Percent	0.45%	30.32%	55.27%	1.09%	11.94%	0.12%	0.03%	0.74%	0.03%	0.00%	0.00%	0.00%	0.01%	

AM Peak															
Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak	6:00 PM	5:00 PM	3:00 PM	1:00 PM	3:00 PM	12:00 PM	1:00 PM	5:00 PM	3:00 PM					3:00 PM	3:00 PM
Volume	7	300	591	16	140	2	2	12	1	0	0	0	1	1020	

Cycles:	33	0.5%
Cars and Light Trucks:	6264	85.6%
Heavy Vehicles:	1022	14.0%

Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-B

Count Date  
 Tuesday, May, 25, 2021

**Speed (60-minute)**

SB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
7:00 AM	0	0	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	0.0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
12:00 PM	1	1	1	11	26	88	106	60	17	3	0	0	0	314	46.0	40.5
1:00 PM	1	0	0	1	11	86	161	114	38	9	1	1	0	423	49.0	43.4
2:00 PM	3	0	0	1	12	90	152	120	28	5	0	0	0	411	48.0	42.6
3:00 PM	7	0	0	0	19	118	186	101	19	6	0	0	0	456	47.0	41.6
4:00 PM	3	0	0	1	26	89	208	112	20	6	1	0	2	468	47.0	42.4
5:00 PM	6	1	1	0	24	90	207	142	31	4	1	0	0	507	47.0	42.3
6:00 PM	5	0	2	3	9	68	174	90	15	4	1	0	0	371	47.0	42.1
7:00 PM	1	0	0	1	27	73	122	83	18	4	2	0	0	331	48.0	42.0
8:00 PM	1	0	0	2	10	45	110	42	11	2	1	0	1	225	46.0	42.0
9:00 PM	0	0	0	3	5	35	52	32	9	1	1	0	0	138	46.0	41.9
10:00 PM	0	0	0	0	2	2	3	1	0	0	0	0	0	8	42.0	38.8
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
<b>Total</b>	<b>28</b>	<b>2</b>	<b>4</b>	<b>23</b>	<b>171</b>	<b>784</b>	<b>1481</b>	<b>897</b>	<b>206</b>	<b>44</b>	<b>8</b>	<b>1</b>	<b>3</b>	<b>3652</b>	<b>47.0</b>	<b>42.1</b>
<b>Percent</b>	<b>0.77%</b>	<b>0.05%</b>	<b>0.11%</b>	<b>0.63%</b>	<b>4.68%</b>	<b>21.47%</b>	<b>40.55%</b>	<b>24.56%</b>	<b>5.64%</b>	<b>1.20%</b>	<b>0.22%</b>	<b>0.03%</b>	<b>0.08%</b>			

AM Peak

Volume 0 0 0 0 0 0 0 0 0 0 0 0 0 0

PM Peak 3:00 PM 12:00 PM 6:00 PM 12:00 PM 7:00 PM 3:00 PM 4:00 PM 5:00 PM 1:00 PM 1:00 PM 7:00 PM 1:00 PM 4:00 PM 5:00 PM

Volume 7 1 2 11 27 118 208 142 38 9 2 1 2 507

15th Percentile:	37.0 MPH	Average Speed:	42.1 MPH	Posted Speed Limit:	45 MPH
50th Percentile:	42.0 MPH	10 MPH Pace:	37 to 46 MPH	Number of Vehicles > 45 MPH:	880
85th Percentile:	47.0 MPH	Number in Pace:	2547	Percent of Vehicles > 45 MPH:	24.1%
95th Percentile:	51.0 MPH	Percent in Pace:	69.7%		

Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-B

Count Date  
 Tuesday, May, 25, 2021

**Speed (60-minute)**

NB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
7:00 AM	0	0	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	0.0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
12:00 PM	0	0	0	1	6	42	126	119	46	9	1	0	0	350	50.0	44.5
1:00 PM	1	0	0	0	7	34	108	149	69	9	0	1	0	378	51.0	45.3
2:00 PM	1	0	0	0	6	18	129	149	65	22	3	1	0	394	51.0	46.2
3:00 PM	6	0	0	0	6	25	167	237	104	15	2	1	1	564	51.0	45.8
4:00 PM	1	0	0	0	3	39	145	218	102	18	5	2	0	533	51.0	46.3
5:00 PM	6	0	0	1	11	40	141	181	76	15	1	0	0	472	50.0	44.9
6:00 PM	5	0	0	3	4	38	111	144	48	7	0	0	0	360	50.0	44.5
7:00 PM	0	0	0	1	3	23	73	109	41	7	1	0	0	258	50.0	45.6
8:00 PM	0	0	0	0	4	28	66	66	28	7	1	0	0	200	50.0	44.7
9:00 PM	0	0	0	0	3	16	54	59	19	2	0	0	0	153	49.0	44.6
10:00 PM	1	0	0	0	0	1	2	1	0	0	0	0	0	5	45.6	35.6
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
<b>Total</b>	<b>21</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>53</b>	<b>304</b>	<b>1122</b>	<b>1432</b>	<b>598</b>	<b>111</b>	<b>14</b>	<b>5</b>	<b>1</b>	<b>3667</b>	<b>50.0</b>	<b>45.4</b>
<b>Percent</b>	<b>0.57%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.16%</b>	<b>1.45%</b>	<b>8.29%</b>	<b>30.60%</b>	<b>39.05%</b>	<b>16.31%</b>	<b>3.03%</b>	<b>0.38%</b>	<b>0.14%</b>	<b>0.03%</b>			

AM Peak

Volume 0 0 0 0 0 0 0 0 0 0 0 0 0 0

PM Peak 3:00 PM 6:00 PM 5:00 PM 12:00 PM 3:00 PM 3:00 PM 3:00 PM 2:00 PM 4:00 PM 4:00 PM 3:00 PM 3:00 PM

Volume 6 0 0 3 11 42 167 237 104 22 5 2 1 564

15th Percentile:	41.0 MPH	Average Speed:	45.4 MPH	Posted Speed Limit:	45 MPH
50th Percentile:	46.0 MPH	10 MPH Pace:	41 to 50 MPH	Number of Vehicles > 45 MPH:	1863
85th Percentile:	50.0 MPH	Number in Pace:	2598	Percent of Vehicles > 45 MPH:	50.8%
95th Percentile:	53.0 MPH	Percent in Pace:	70.8%		

Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-B

Count Date  
 Tuesday, May, 25, 2021

**Speed (60-minute)**  
**Combined SB and NB**

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
7:00 AM	0	0	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	0.0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
12:00 PM	1	1	1	12	32	130	232	179	63	12	1	0	0	664	48.0	42.6
1:00 PM	2	0	0	1	18	120	269	263	107	18	1	2	0	801	50.0	44.3
2:00 PM	4	0	0	1	18	108	281	269	93	27	3	1	0	805	50.0	44.4
3:00 PM	13	0	0	0	25	143	353	338	123	21	2	1	1	1020	49.0	44.0
4:00 PM	4	0	0	1	29	128	353	330	122	24	6	2	2	1001	50.0	44.5
5:00 PM	12	1	1	1	35	130	348	323	107	19	2	0	0	979	49.0	43.5
6:00 PM	10	0	2	6	13	106	285	234	63	11	1	0	0	731	48.0	43.3
7:00 PM	1	0	0	2	30	96	195	192	59	11	3	0	0	589	49.0	43.6
8:00 PM	1	0	0	2	14	73	176	108	39	9	2	0	1	425	49.0	43.3
9:00 PM	0	0	0	3	8	51	106	91	28	3	1	0	0	291	48.0	43.3
10:00 PM	1	0	0	0	2	3	5	2	0	0	0	0	0	13	44.4	37.5
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
<b>Total</b>	<b>49</b>	<b>2</b>	<b>4</b>	<b>29</b>	<b>224</b>	<b>1088</b>	<b>2603</b>	<b>2329</b>	<b>804</b>	<b>155</b>	<b>22</b>	<b>6</b>	<b>4</b>	<b>7319</b>	<b>49.0</b>	<b>43.8</b>
<b>Percent</b>	<b>0.67%</b>	<b>0.03%</b>	<b>0.05%</b>	<b>0.40%</b>	<b>3.06%</b>	<b>14.87%</b>	<b>35.56%</b>	<b>31.82%</b>	<b>10.99%</b>	<b>2.12%</b>	<b>0.30%</b>	<b>0.08%</b>	<b>0.05%</b>			

AM Peak

Volume 0 0 0 0 0 0 0 0 0 0 0 0 0 0

PM Peak 3:00 PM 12:00 PM 6:00 PM 12:00 PM 5:00 PM 3:00 PM 3:00 PM 3:00 PM 3:00 PM 2:00 PM 4:00 PM 1:00 PM 4:00 PM 3:00 PM

Volume 13 1 2 12 35 143 353 338 123 27 6 2 2 1020

15th Percentile:	38.0 MPH	Average Speed:	43.8 MPH	Posted Speed Limit:	45 MPH
50th Percentile:	44.0 MPH	10 MPH Pace:	40 to 49 MPH	Number of Vehicles > 45 MPH:	2743
85th Percentile:	49.0 MPH	Number in Pace:	4932	Percent of Vehicles > 45 MPH:	37.5%
95th Percentile:	52.0 MPH	Percent in Pace:	67.4%		

Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-BB

Count Date:  
 Wednesday, June, 02, 2021

**Volume**

NB					SB					Combined							
Start Time:	15 min	60 min	15 min	60 min	Start Time:	15 min	60 min	15 min	60 min	Start Time:	15 min	60 min	15 min	60 min			
12:00 AM	10		12:00 PM	88	12:00 AM	6		12:00 PM	82	12:00 AM	16		12:00 PM	170			
12:15 AM	9		12:15 PM	102	12:15 AM	3		12:15 PM	87	12:15 AM	12		12:15 PM	189			
12:30 AM	5		12:30 PM	87	12:30 AM	2		12:30 PM	86	12:30 AM	7		12:30 PM	173			
12:45 AM	6	30	12:45 PM	87	364	12:45 AM	2	13	12:45 PM	87	342	12:45 AM	8	43	12:45 PM	174	706
1:00 AM	2		1:00 PM	96		1:00 AM	2		1:00 PM	82		1:00 AM	4		1:00 PM	178	
1:15 AM	2		1:15 PM	108		1:15 AM	2		1:15 PM	128		1:15 AM	4		1:15 PM	236	
1:30 AM	2		1:30 PM	109		1:30 AM	6		1:30 PM	103		1:30 AM	8		1:30 PM	212	
1:45 AM	4	10	1:45 PM	115	428	1:45 AM	2	12	1:45 PM	69	382	1:45 AM	6	22	1:45 PM	184	810
2:00 AM	0		2:00 PM	106		2:00 AM	4		2:00 PM	77		2:00 AM	4		2:00 PM	183	
2:15 AM	1		2:15 PM	87		2:15 AM	0		2:15 PM	117		2:15 AM	1		2:15 PM	204	
2:30 AM	1		2:30 PM	91		2:30 AM	2		2:30 PM	104		2:30 AM	3		2:30 PM	195	
2:45 AM	3	5	2:45 PM	125	409	2:45 AM	4	10	2:45 PM	93	391	2:45 AM	7	15	2:45 PM	218	800
3:00 AM	1		3:00 PM	139		3:00 AM	0		3:00 PM	119		3:00 AM	1		3:00 PM	258	
3:15 AM	4		3:15 PM	163		3:15 AM	1		3:15 PM	106		3:15 AM	5		3:15 PM	269	
3:30 AM	2		3:30 PM	166		3:30 AM	4		3:30 PM	104		3:30 AM	6		3:30 PM	270	
3:45 AM	3	10	3:45 PM	158	626	3:45 AM	2	7	3:45 PM	116	445	3:45 AM	5	17	3:45 PM	274	1071
4:00 AM	1		4:00 PM	144		4:00 AM	5		4:00 PM	122		4:00 AM	6		4:00 PM	266	
4:15 AM	5		4:15 PM	139		4:15 AM	6		4:15 PM	109		4:15 AM	11		4:15 PM	248	
4:30 AM	5		4:30 PM	136		4:30 AM	9		4:30 PM	127		4:30 AM	14		4:30 PM	263	
4:45 AM	9	20	4:45 PM	150	569	4:45 AM	11	31	4:45 PM	104	462	4:45 AM	20	51	4:45 PM	254	1031
5:00 AM	8		5:00 PM	141		5:00 AM	15		5:00 PM	128		5:00 AM	23		5:00 PM	269	
5:15 AM	10		5:15 PM	137		5:15 AM	15		5:15 PM	130		5:15 AM	25		5:15 PM	267	
5:30 AM	21		5:30 PM	119		5:30 AM	13		5:30 PM	117		5:30 AM	34		5:30 PM	236	
5:45 AM	33	72	5:45 PM	122	519	5:45 AM	31	74	5:45 PM	122	497	5:45 AM	64	146	5:45 PM	244	1016
6:00 AM	32		6:00 PM	103		6:00 AM	32		6:00 PM	123		6:00 AM	64		6:00 PM	226	
6:15 AM	52		6:15 PM	87		6:15 AM	44		6:15 PM	91		6:15 AM	96		6:15 PM	178	
6:30 AM	67		6:30 PM	78		6:30 AM	73		6:30 PM	85		6:30 AM	140		6:30 PM	163	
6:45 AM	89	240	6:45 PM	84	352	6:45 AM	65	214	6:45 PM	79	378	6:45 AM	154	454	6:45 PM	163	730
7:00 AM	85		7:00 PM	81		7:00 AM	67		7:00 PM	73		7:00 AM	152		7:00 PM	154	
7:15 AM	107		7:15 PM	79		7:15 AM	87		7:15 PM	69		7:15 AM	194		7:15 PM	148	
7:30 AM	127		7:30 PM	62		7:30 AM	98		7:30 PM	86		7:30 AM	225		7:30 PM	148	
7:45 AM	119	438	7:45 PM	59	281	7:45 AM	103	355	7:45 PM	65	293	7:45 AM	222	793	7:45 PM	124	574
8:00 AM	94		8:00 PM	53		8:00 AM	77		8:00 PM	75		8:00 AM	171		8:00 PM	128	
8:15 AM	122		8:15 PM	54		8:15 AM	73		8:15 PM	54		8:15 AM	195		8:15 PM	108	
8:30 AM	91		8:30 PM	52		8:30 AM	86		8:30 PM	56		8:30 AM	177		8:30 PM	108	
8:45 AM	70	377	8:45 PM	71	230	8:45 AM	75	311	8:45 PM	51	236	8:45 AM	145	688	8:45 PM	122	466
9:00 AM	72		9:00 PM	49		9:00 AM	79		9:00 PM	49		9:00 AM	151		9:00 PM	98	
9:15 AM	85		9:15 PM	62		9:15 AM	57		9:15 PM	47		9:15 AM	142		9:15 PM	109	
9:30 AM	66		9:30 PM	44		9:30 AM	77		9:30 PM	42		9:30 AM	143		9:30 PM	86	
9:45 AM	86	309	9:45 PM	47	202	9:45 AM	85	298	9:45 PM	33	171	9:45 AM	171	607	9:45 PM	80	373
10:00 AM	59		10:00 PM	35		10:00 AM	92		10:00 PM	30		10:00 AM	151		10:00 PM	65	
10:15 AM	79		10:15 PM	35		10:15 AM	66		10:15 PM	27		10:15 AM	145		10:15 PM	62	
10:30 AM	88		10:30 PM	23		10:30 AM	76		10:30 PM	18		10:30 AM	164		10:30 PM	41	
10:45 AM	91	317	10:45 PM	27	120	10:45 AM	73	307	10:45 PM	10	85	10:45 AM	164	624	10:45 PM	37	205
11:00 AM	73		11:00 PM	31		11:00 AM	74		11:00 PM	13		11:00 AM	147		11:00 PM	44	
11:15 AM	87		11:15 PM	23		11:15 AM	79		11:15 PM	10		11:15 AM	166		11:15 PM	33	
11:30 AM	87		11:30 PM	16		11:30 AM	71		11:30 PM	8		11:30 AM	158		11:30 PM	24	
11:45 AM	75	322	11:45 PM	10	80	11:45 AM	89	313	11:45 PM	5	36	11:45 AM	164	635	11:45 PM	15	116
Total	2150		4180		Total	1945		3718		Total	4095		7898				
Percent	33.97%		66.03%		Percent	34.35%		65.65%		Percent	34.14%		65.86%				
Day Total		6330			Day Total		5663			Day Total		11993					
Peak Hour	7:30 AM		3:15 PM		Peak Hour	7:15 AM		5:00 PM		Peak Hour	7:30 AM		3:15 PM				
Volume	462		631		Volume	365		497		Volume	813		1079				
P.H.F.	0.909		0.950		P.H.F.	0.886		0.956		P.H.F.	0.903		0.984				

Farm Street  
south of Old Nahant Road  
City, State: Wakefield, MA  
Client: Nitsch/ D. Birru  
Site Code: 13872.2



PDI File #: 217949 ATR-BB

Count Date:  
Thursday, June 3, 2021

**Volume**

NB					SB					Combined							
Start Time:	15 min	60 min	15 min	60 min	Start Time:	15 min	60 min	15 min	60 min	Start Time:	15 min	60 min	15 min	60 min			
12:00 AM	8		12:00 PM	105	12:00 AM	10		12:00 PM	78	12:00 AM	18		12:00 PM	183			
12:15 AM	12		12:15 PM	118	12:15 AM	2		12:15 PM	90	12:15 AM	14		12:15 PM	208			
12:30 AM	10		12:30 PM	149	12:30 AM	4		12:30 PM	86	12:30 AM	14		12:30 PM	235			
12:45 AM	5	35	12:45 PM	134	506	12:45 AM	4	20	12:45 PM	122	376	12:45 AM	9	55	12:45 PM	256	882
1:00 AM	4		1:00 PM	123		1:00 AM	0		1:00 PM	95		1:00 AM	4		1:00 PM	218	
1:15 AM	5		1:15 PM	146		1:15 AM	3		1:15 PM	89		1:15 AM	8		1:15 PM	235	
1:30 AM	3		1:30 PM	141		1:30 AM	4		1:30 PM	104		1:30 AM	7		1:30 PM	245	
1:45 AM	3	15	1:45 PM	137	547	1:45 AM	1	8	1:45 PM	91	379	1:45 AM	4	23	1:45 PM	228	926
2:00 AM	2		2:00 PM	130		2:00 AM	4		2:00 PM	83		2:00 AM	6		2:00 PM	213	
2:15 AM	3		2:15 PM	99		2:15 AM	1		2:15 PM	84		2:15 AM	4		2:15 PM	183	
2:30 AM	1		2:30 PM	91		2:30 AM	3		2:30 PM	116		2:30 AM	4		2:30 PM	207	
2:45 AM	3	9	2:45 PM	122	442	2:45 AM	4	12	2:45 PM	124	407	2:45 AM	7	21	2:45 PM	246	849
3:00 AM	3		3:00 PM	149		3:00 AM	3		3:00 PM	134		3:00 AM	6		3:00 PM	283	
3:15 AM	3		3:15 PM	169		3:15 AM	5		3:15 PM	99		3:15 AM	8		3:15 PM	268	
3:30 AM	1		3:30 PM	169		3:30 AM	1		3:30 PM	108		3:30 AM	2		3:30 PM	277	
3:45 AM	2	9	3:45 PM	162	649	3:45 AM	4	13	3:45 PM	113	454	3:45 AM	6	22	3:45 PM	275	1103
4:00 AM	1		4:00 PM	161		4:00 AM	7		4:00 PM	121		4:00 AM	8		4:00 PM	282	
4:15 AM	3		4:15 PM	129		4:15 AM	4		4:15 PM	141		4:15 AM	7		4:15 PM	270	
4:30 AM	8		4:30 PM	151		4:30 AM	5		4:30 PM	114		4:30 AM	13		4:30 PM	265	
4:45 AM	8	20	4:45 PM	120	561	4:45 AM	13	29	4:45 PM	138	514	4:45 AM	21	49	4:45 PM	258	1075
5:00 AM	13		5:00 PM	131		5:00 AM	12		5:00 PM	165		5:00 AM	25		5:00 PM	296	
5:15 AM	12		5:15 PM	143		5:15 AM	17		5:15 PM	164		5:15 AM	29		5:15 PM	307	
5:30 AM	18		5:30 PM	135		5:30 AM	18		5:30 PM	111		5:30 AM	36		5:30 PM	246	
5:45 AM	39	82	5:45 PM	136	545	5:45 AM	30	77	5:45 PM	89	529	5:45 AM	69	159	5:45 PM	225	1074
6:00 AM	35		6:00 PM	129		6:00 AM	28		6:00 PM	92		6:00 AM	63		6:00 PM	221	
6:15 AM	37		6:15 PM	85		6:15 AM	47		6:15 PM	78		6:15 AM	84		6:15 PM	163	
6:30 AM	85		6:30 PM	80		6:30 AM	54		6:30 PM	87		6:30 AM	139		6:30 PM	167	
6:45 AM	90	247	6:45 PM	54	348	6:45 AM	70	199	6:45 PM	78	335	6:45 AM	160	446	6:45 PM	132	683
7:00 AM	93		7:00 PM	85		7:00 AM	69		7:00 PM	70		7:00 AM	162		7:00 PM	155	
7:15 AM	110		7:15 PM	61		7:15 AM	93		7:15 PM	88		7:15 AM	203		7:15 PM	149	
7:30 AM	125		7:30 PM	62		7:30 AM	97		7:30 PM	63		7:30 AM	222		7:30 PM	125	
7:45 AM	111	439	7:45 PM	49	257	7:45 AM	107	366	7:45 PM	65	286	7:45 AM	218	805	7:45 PM	114	543
8:00 AM	98		8:00 PM	56		8:00 AM	55		8:00 PM	59		8:00 AM	153		8:00 PM	115	
8:15 AM	108		8:15 PM	63		8:15 AM	66		8:15 PM	59		8:15 AM	174		8:15 PM	122	
8:30 AM	110		8:30 PM	56		8:30 AM	99		8:30 PM	43		8:30 AM	209		8:30 PM	99	
8:45 AM	99	415	8:45 PM	48	223	8:45 AM	78	298	8:45 PM	39	200	8:45 AM	177	713	8:45 PM	87	423
9:00 AM	110		9:00 PM	30		9:00 AM	74		9:00 PM	45		9:00 AM	184		9:00 PM	75	
9:15 AM	78		9:15 PM	43		9:15 AM	71		9:15 PM	38		9:15 AM	149		9:15 PM	81	
9:30 AM	84		9:30 PM	43		9:30 AM	75		9:30 PM	39		9:30 AM	159		9:30 PM	82	
9:45 AM	74	346	9:45 PM	31	147	9:45 AM	74	294	9:45 PM	36	158	9:45 AM	148	640	9:45 PM	67	305
10:00 AM	70		10:00 PM	27		10:00 AM	92		10:00 PM	37		10:00 AM	162		10:00 PM	64	
10:15 AM	80		10:15 PM	24		10:15 AM	74		10:15 PM	22		10:15 AM	154		10:15 PM	46	
10:30 AM	88		10:30 PM	43		10:30 AM	74		10:30 PM	20		10:30 AM	162		10:30 PM	63	
10:45 AM	89	327	10:45 PM	28	122	10:45 AM	92	332	10:45 PM	10	89	10:45 AM	181	659	10:45 PM	38	211
11:00 AM	85		11:00 PM	25		11:00 AM	80		11:00 PM	19		11:00 AM	165		11:00 PM	44	
11:15 AM	101		11:15 PM	22		11:15 AM	68		11:15 PM	11		11:15 AM	169		11:15 PM	33	
11:30 AM	95		11:30 PM	13		11:30 AM	80		11:30 PM	10		11:30 AM	175		11:30 PM	23	
11:45 AM	115	396	11:45 PM	10	70	11:45 AM	74	302	11:45 PM	9	49	11:45 AM	189	698	11:45 PM	19	119
Total	2340		4417			Total	1950		3776			Total	4290		8193		
Percent	34.63%		65.37%			Percent	34.06%		65.94%			Percent	34.37%		65.63%		
Day Total			6757			Day Total			5726			Day Total			12483		
Peak Hour	11:45 AM		3:15 PM			Peak Hour	7:00 AM		4:30 PM			Peak Hour	11:45 AM		4:30 PM		
Volume	487		661			Volume	366		581			Volume	815		1126		
P.H.F.	0.817		0.978			P.H.F.	0.855		0.880			P.H.F.	0.867		0.917		



Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-BB

Count Date  
 Wednesday, June, 02, 2021

**Classification (60-minute)**

NB														
Start Time:	Cycles	Cars and Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
12:00 AM	0	26	3	0	1	0	0	0	0	0	0	0	0	30
1:00 AM	0	7	2	0	1	0	0	0	0	0	0	0	0	10
2:00 AM	0	5	0	0	0	0	0	0	0	0	0	0	0	5
3:00 AM	0	7	2	0	1	0	0	0	0	0	0	0	0	10
4:00 AM	0	17	1	0	0	1	0	1	0	0	0	0	0	20
5:00 AM	0	48	19	0	4	0	1	0	0	0	0	0	0	72
6:00 AM	1	156	64	1	16	0	0	1	1	0	0	0	0	240
7:00 AM	3	295	102	17	18	0	0	3	0	0	0	0	0	438
8:00 AM	1	305	48	3	15	3	0	1	1	0	0	0	0	377
9:00 AM	1	233	58	2	11	1	0	1	1	1	0	0	0	309
10:00 AM	5	228	66	2	11	3	0	1	1	0	0	0	0	317
11:00 AM	5	248	51	0	15	2	0	0	1	0	0	0	0	322
12:00 PM	1	278	69	3	11	1	0	0	1	0	0	0	0	364
1:00 PM	2	319	88	2	14	1	0	0	1	0	0	1	0	428
2:00 PM	5	300	73	4	23	3	0	1	0	0	0	0	0	409
3:00 PM	4	500	90	3	23	1	0	4	0	1	0	0	0	626
4:00 PM	5	450	87	3	20	0	0	4	0	0	0	0	0	569
5:00 PM	3	406	82	5	22	0	0	1	0	0	0	0	0	519
6:00 PM	4	289	47	3	9	0	0	0	0	0	0	0	0	352
7:00 PM	2	225	47	0	5	0	0	1	1	0	0	0	0	281
8:00 PM	1	185	35	0	8	0	0	0	0	1	0	0	0	230
9:00 PM	3	165	22	0	11	1	0	0	0	0	0	0	0	202
10:00 PM	3	100	14	0	2	0	0	1	0	0	0	0	0	120
11:00 PM	1	66	10	0	3	0	0	0	0	0	0	0	0	80
Total	50	4858	1080	48	244	17	1	20	8	3	0	1	0	6330
Percent	0.79%	76.75%	17.06%	0.76%	3.85%	0.27%	0.02%	0.32%	0.13%	0.05%	0.00%	0.02%	0.00%	

AM Peak	10:00 AM	8:00 AM	7:00 AM	7:00 AM	7:00 AM	8:00 AM	5:00 AM	7:00 AM	6:00 AM	9:00 AM				7:00 AM
Volume	5	305	102	17	18	3	1	3	1	1	0	0	0	438
PM Peak	2:00 PM	3:00 PM	3:00 PM	5:00 PM	2:00 PM	2:00 PM		3:00 PM	12:00 PM	3:00 PM		1:00 PM		3:00 PM
Volume	5	500	90	5	23	3	0	4	1	1	0	1	0	626

Cycles:	50	0.8%
Cars and Light Trucks:	5938	93.8%
Heavy Vehicles:	342	5.4%

Farm Street  
south of Old Nahant Road  
City, State: Wakefield, MA  
Client: Nitsch/ D. Birru  
Site Code: 13872.2



PDI File #: 217949 ATR-BB

Count Date  
Wednesday, June, 02, 2021

**Classification (60-minute)**

SB														
Start Time:	Cycles	Cars and Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
12:00 AM	0	9	2	0	2	0	0	0	0	0	0	0	0	13
1:00 AM	0	12	0	0	0	0	0	0	0	0	0	0	0	12
2:00 AM	0	9	1	0	0	0	0	0	0	0	0	0	0	10
3:00 AM	0	3	3	1	0	0	0	0	0	0	0	0	0	7
4:00 AM	0	20	11	0	0	0	0	0	0	0	0	0	0	31
5:00 AM	0	47	22	0	5	0	0	0	0	0	0	0	0	74
6:00 AM	1	152	55	0	6	0	0	0	0	0	0	0	0	214
7:00 AM	4	260	65	4	17	1	1	2	1	0	0	0	0	355
8:00 AM	0	223	67	3	13	3	0	1	1	0	0	0	0	311
9:00 AM	0	221	58	2	9	4	1	2	1	0	0	0	0	298
10:00 AM	1	236	61	0	8	0	0	1	0	0	0	0	0	307
11:00 AM	3	234	69	0	3	2	1	0	1	0	0	0	0	313
12:00 PM	5	259	62	1	11	0	2	1	1	0	0	0	0	342
1:00 PM	10	289	64	9	7	2	0	0	1	0	0	0	0	382
2:00 PM	3	321	51	4	11	0	0	1	0	0	0	0	0	391
3:00 PM	3	354	71	6	7	3	0	1	0	0	0	0	0	445
4:00 PM	6	354	78	4	19	0	0	0	1	0	0	0	0	462
5:00 PM	5	398	72	3	18	1	0	0	0	0	0	0	0	497
6:00 PM	3	314	47	6	7	0	0	0	1	0	0	0	0	378
7:00 PM	4	239	40	4	5	0	0	1	0	0	0	0	0	293
8:00 PM	5	200	24	1	5	0	0	0	1	0	0	0	0	236
9:00 PM	1	153	12	1	2	1	0	0	1	0	0	0	0	171
10:00 PM	1	75	7	0	2	0	0	0	0	0	0	0	0	85
11:00 PM	3	32	1	0	0	0	0	0	0	0	0	0	0	36
PM Total	58	4414	943	49	157	17	5	10	10	0	0	0	0	5663
Percent	1.02%	77.94%	16.65%	0.87%	2.77%	0.30%	0.09%	0.18%	0.18%	0.00%	0.00%	0.00%	0.00%	

AM Peak	7:00 AM	7:00 AM	11:00 AM	7:00 AM	7:00 AM	9:00 AM	7:00 AM	7:00 AM	7:00 AM					7:00 AM
Volume	4	260	69	4	17	4	1	2	1	0	0	0	0	355
PM Peak	1:00 PM	5:00 PM	4:00 PM	1:00 PM	4:00 PM	3:00 PM	12:00 PM	12:00 PM	12:00 PM					5:00 PM
Volume	10	398	78	9	19	3	2	1	1	0	0	0	0	497

Cycles:	58	1.0%
Cars and Light Trucks:	5357	94.6%
Heavy Vehicles:	248	4.4%

Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-BB

Count Date  
 Wednesday, June, 02, 2021

**Classification (60-minute)**

Combined														
Start Time:	Cycles	Cars and Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
12:00 AM	0	35	5	0	3	0	0	0	0	0	0	0	0	43
1:00 AM	0	19	2	0	1	0	0	0	0	0	0	0	0	22
2:00 AM	0	14	1	0	0	0	0	0	0	0	0	0	0	15
3:00 AM	0	10	5	1	1	0	0	0	0	0	0	0	0	17
4:00 AM	0	37	12	0	0	1	0	1	0	0	0	0	0	51
5:00 AM	0	95	41	0	9	0	1	0	0	0	0	0	0	146
6:00 AM	2	308	119	1	22	0	0	1	1	0	0	0	0	454
7:00 AM	7	555	167	21	35	1	1	5	1	0	0	0	0	793
8:00 AM	1	528	115	6	28	6	0	2	2	0	0	0	0	688
9:00 AM	1	454	116	4	20	5	1	3	2	1	0	0	0	607
10:00 AM	6	464	127	2	19	3	0	2	1	0	0	0	0	624
11:00 AM	8	482	120	0	18	4	1	0	2	0	0	0	0	635
12:00 PM	6	537	131	4	22	1	2	1	2	0	0	0	0	706
1:00 PM	12	608	152	11	21	3	0	0	2	0	0	1	0	810
2:00 PM	8	621	124	8	34	3	0	2	0	0	0	0	0	800
3:00 PM	7	854	161	9	30	4	0	5	0	1	0	0	0	1071
4:00 PM	11	804	165	7	39	0	0	4	1	0	0	0	0	1031
5:00 PM	8	804	154	8	40	1	0	1	0	0	0	0	0	1016
6:00 PM	7	603	94	9	16	0	0	0	1	0	0	0	0	730
7:00 PM	6	464	87	4	10	0	0	2	1	0	0	0	0	574
8:00 PM	6	385	59	1	13	0	0	0	1	1	0	0	0	466
9:00 PM	4	318	34	1	13	2	0	0	1	0	0	0	0	373
10:00 PM	4	175	21	0	4	0	0	1	0	0	0	0	0	205
11:00 PM	4	98	11	0	3	0	0	0	0	0	0	0	0	116
PM Total	108	9272	2023	97	401	34	6	30	18	3	0	1	0	11993
Percent	0.90%	77.31%	16.87%	0.81%	3.34%	0.28%	0.05%	0.25%	0.15%	0.03%	0.00%	0.01%	0.00%	

AM Peak	11:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	8:00 AM	5:00 AM	7:00 AM	8:00 AM	9:00 AM				7:00 AM
Volume	8	555	167	21	35	6	1	5	2	1	0	0	0	793

PM Peak	1:00 PM	3:00 PM	4:00 PM	1:00 PM	5:00 PM	3:00 PM	12:00 PM	3:00 PM	12:00 PM	3:00 PM		1:00 PM		3:00 PM
Volume	12	854	165	11	40	4	2	5	2	1	0	1	0	1071

Cycles:	108	0.9%
Cars and Light Trucks:	11295	94.2%
Heavy Vehicles:	590	4.9%

Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-BB

Count Date  
 Thursday, June 3, 2021

**Classification (60-minute)**

NB														
Start Time:	Cycles	Cars and Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
12:00 AM	0	26	8	0	1	0	0	0	0	0	0	0	0	35
1:00 AM	0	14	1	0	0	0	0	0	0	0	0	0	0	15
2:00 AM	0	9	0	0	0	0	0	0	0	0	0	0	0	9
3:00 AM	0	9	0	0	0	0	0	0	0	0	0	0	0	9
4:00 AM	0	14	3	0	2	1	0	0	0	0	0	0	0	20
5:00 AM	0	60	17	1	4	0	0	0	0	0	0	0	0	82
6:00 AM	2	174	43	1	22	1	0	2	2	0	0	0	0	247
7:00 AM	2	319	77	18	19	1	0	3	0	0	0	0	0	439
8:00 AM	0	328	66	2	12	4	0	1	1	1	0	0	0	415
9:00 AM	0	256	70	1	13	4	0	0	2	0	0	0	0	346
10:00 AM	1	259	42	0	14	5	1	3	2	0	0	0	0	327
11:00 AM	3	311	52	6	16	5	1	0	1	1	0	0	0	396
12:00 PM	3	396	83	3	15	1	1	2	2	0	0	0	0	506
1:00 PM	2	429	98	7	8	1	0	1	1	0	0	0	0	547
2:00 PM	3	333	84	1	15	4	0	2	0	0	0	0	0	442
3:00 PM	1	527	85	3	25	2	0	4	1	1	0	0	0	649
4:00 PM	5	422	106	4	20	2	0	2	0	0	0	0	0	561
5:00 PM	1	430	88	7	16	0	0	2	0	1	0	0	0	545
6:00 PM	2	291	43	0	9	0	0	3	0	0	0	0	0	348
7:00 PM	0	198	52	0	7	0	0	0	0	0	0	0	0	257
8:00 PM	1	193	25	0	4	0	0	0	0	0	0	0	0	223
9:00 PM	2	116	22	1	5	0	0	1	0	0	0	0	0	147
10:00 PM	0	109	11	0	2	0	0	0	0	0	0	0	0	122
11:00 PM	0	60	9	0	1	0	0	0	0	0	0	0	0	70
<b>Total</b>	<b>28</b>	<b>5283</b>	<b>1085</b>	<b>55</b>	<b>230</b>	<b>31</b>	<b>3</b>	<b>26</b>	<b>12</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6757</b>
<b>Percent</b>	<b>0.41%</b>	<b>78.19%</b>	<b>16.06%</b>	<b>0.81%</b>	<b>3.40%</b>	<b>0.46%</b>	<b>0.04%</b>	<b>0.38%</b>	<b>0.18%</b>	<b>0.06%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	

AM Peak	11:00 AM	8:00 AM	7:00 AM	7:00 AM	6:00 AM	10:00 AM	10:00 AM	7:00 AM	6:00 AM	8:00 AM				7:00 AM
Volume	3	328	77	18	22	5	1	3	2	1	0	0	0	439
PM Peak	4:00 PM	3:00 PM	4:00 PM	1:00 PM	3:00 PM	2:00 PM	12:00 PM	3:00 PM	12:00 PM	3:00 PM				3:00 PM
Volume	5	527	106	7	25	4	1	4	2	1	0	0	0	649

Cycles:	28	0.4%
Cars and Light Trucks:	6368	94.2%
Heavy Vehicles:	361	5.3%

Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-BB

Count Date  
 Thursday, June 3, 2021

**Classification (60-minute)**

SB														
Start Time:	Cycles	Cars and Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
12:00 AM	0	17	3	0	0	0	0	0	0	0	0	0	0	20
1:00 AM	0	7	1	0	0	0	0	0	0	0	0	0	0	8
2:00 AM	0	8	3	0	0	1	0	0	0	0	0	0	0	12
3:00 AM	0	11	1	1	0	0	0	0	0	0	0	0	0	13
4:00 AM	0	22	7	0	0	0	0	0	0	0	0	0	0	29
5:00 AM	0	52	18	0	7	0	0	0	0	0	0	0	0	77
6:00 AM	1	133	54	0	10	0	1	0	0	0	0	0	0	199
7:00 AM	0	270	67	4	17	1	1	5	1	0	0	0	0	366
8:00 AM	1	228	56	2	8	2	0	0	1	0	0	0	0	298
9:00 AM	2	228	48	5	5	3	2	0	1	0	0	0	0	294
10:00 AM	0	261	53	2	13	1	1	0	1	0	0	0	0	332
11:00 AM	0	235	52	4	7	3	0	0	1	0	0	0	0	302
12:00 PM	2	301	57	6	7	1	1	0	1	0	0	0	0	376
1:00 PM	5	295	57	3	13	4	0	2	0	0	0	0	0	379
2:00 PM	3	327	64	3	7	2	0	1	0	0	0	0	0	407
3:00 PM	4	362	61	7	15	4	0	1	0	0	0	0	0	454
4:00 PM	5	403	81	7	16	0	0	2	0	0	0	0	0	514
5:00 PM	2	435	75	2	12	1	0	1	0	1	0	0	0	529
6:00 PM	0	283	48	0	3	0	0	1	0	0	0	0	0	335
7:00 PM	1	249	31	0	5	0	0	0	0	0	0	0	0	286
8:00 PM	1	175	21	0	3	0	0	0	0	0	0	0	0	200
9:00 PM	0	137	16	2	2	0	0	0	1	0	0	0	0	158
10:00 PM	0	77	12	0	0	0	0	0	0	0	0	0	0	89
11:00 PM	0	39	10	0	0	0	0	0	0	0	0	0	0	49
PM Total	27	4555	896	48	150	23	6	13	7	1	0	0	0	5726
Percent	0.47%	79.55%	15.65%	0.84%	2.62%	0.40%	0.10%	0.23%	0.12%	0.02%	0.00%	0.00%	0.00%	

AM Peak	9:00 AM	7:00 AM	7:00 AM	9:00 AM	7:00 AM	9:00 AM	9:00 AM	7:00 AM	7:00 AM					7:00 AM
Volume	2	270	67	5	17	3	2	5	1	0	0	0	0	366
PM Peak	1:00 PM	5:00 PM	4:00 PM	3:00 PM	4:00 PM	1:00 PM	12:00 PM	1:00 PM	12:00 PM	5:00 PM				5:00 PM
Volume	5	435	81	7	16	4	1	2	1	1	0	0	0	529

Cycles:	27	0.5%
Cars and Light Trucks:	5451	95.2%
Heavy Vehicles:	248	4.3%

Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-BB

Count Date  
 Thursday, June 3, 2021

**Classification (60-minute)**

Combined														
Start Time:	Cycles	Cars and Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
12:00 AM	0	43	11	0	1	0	0	0	0	0	0	0	0	55
1:00 AM	0	21	2	0	0	0	0	0	0	0	0	0	0	23
2:00 AM	0	17	3	0	0	1	0	0	0	0	0	0	0	21
3:00 AM	0	20	1	1	0	0	0	0	0	0	0	0	0	22
4:00 AM	0	36	10	0	2	1	0	0	0	0	0	0	0	49
5:00 AM	0	112	35	1	11	0	0	0	0	0	0	0	0	159
6:00 AM	3	307	97	1	32	1	1	2	2	0	0	0	0	446
7:00 AM	2	589	144	22	36	2	1	8	1	0	0	0	0	805
8:00 AM	1	556	122	4	20	6	0	1	2	1	0	0	0	713
9:00 AM	2	484	118	6	18	7	2	0	3	0	0	0	0	640
10:00 AM	1	520	95	2	27	6	2	3	3	0	0	0	0	659
11:00 AM	3	546	104	10	23	8	1	0	2	1	0	0	0	698
12:00 PM	5	697	140	9	22	2	2	2	3	0	0	0	0	882
1:00 PM	7	724	155	10	21	5	0	3	1	0	0	0	0	926
2:00 PM	6	660	148	4	22	6	0	3	0	0	0	0	0	849
3:00 PM	5	889	146	10	40	6	0	5	1	1	0	0	0	1103
4:00 PM	10	825	187	11	36	2	0	4	0	0	0	0	0	1075
5:00 PM	3	865	163	9	28	1	0	3	0	2	0	0	0	1074
6:00 PM	2	574	91	0	12	0	0	4	0	0	0	0	0	683
7:00 PM	1	447	83	0	12	0	0	0	0	0	0	0	0	543
8:00 PM	2	368	46	0	7	0	0	0	0	0	0	0	0	423
9:00 PM	2	253	38	3	7	0	0	1	1	0	0	0	0	305
10:00 PM	0	186	23	0	2	0	0	0	0	0	0	0	0	211
11:00 PM	0	99	19	0	1	0	0	0	0	0	0	0	0	119
PM Total	55	9838	1981	103	380	54	9	39	19	5	0	0	0	12483
Percent	0.44%	78.81%	15.87%	0.83%	3.04%	0.43%	0.07%	0.31%	0.15%	0.04%	0.00%	0.00%	0.00%	

AM Peak	6:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	11:00 AM	9:00 AM	7:00 AM	9:00 AM	8:00 AM				7:00 AM
Volume	3	589	144	22	36	8	2	8	3	1	0	0	0	805
PM Peak	4:00 PM	3:00 PM	4:00 PM	4:00 PM	3:00 PM	2:00 PM	12:00 PM	3:00 PM	12:00 PM	5:00 PM				3:00 PM
Volume	10	889	187	11	40	6	2	5	3	2	0	0	0	1103

Cycles:	55	0.4%
Cars and Light Trucks:	11819	94.7%
Heavy Vehicles:	609	4.9%

Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-BB

Count Date  
 Wednesday, June, 02, 2021

**Speed (60-minute)**

NB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	1	2	11	11	3	2	0	0	0	0	30	44.7	39.9
1:00 AM	0	0	0	1	0	3	4	2	0	0	0	0	0	10	46.6	40.4
2:00 AM	0	0	0	0	0	3	1	1	0	0	0	0	0	5	44.6	40.4
3:00 AM	0	0	0	0	2	1	3	3	0	1	0	0	0	10	48.0	42.4
4:00 AM	0	0	0	0	3	6	6	2	1	2	0	0	0	20	48.6	41.6
5:00 AM	0	0	0	1	2	17	31	17	3	1	0	0	0	72	47.0	42.1
6:00 AM	0	0	0	0	15	67	117	37	4	0	0	0	0	240	45.0	41.0
7:00 AM	2	1	1	7	40	123	191	63	10	0	0	0	0	438	45.0	40.1
8:00 AM	1	0	4	15	25	120	155	49	8	0	0	0	0	377	44.6	39.8
9:00 AM	1	0	0	0	19	90	133	61	5	0	0	0	0	309	45.0	41.0
10:00 AM	2	0	2	8	42	80	130	41	10	0	2	0	0	317	45.0	39.8
11:00 AM	1	0	0	1	25	92	126	63	12	2	0	0	0	322	46.0	41.1
12:00 PM	0	1	1	2	30	104	151	64	9	1	1	0	0	364	45.0	40.8
1:00 PM	1	0	0	5	36	135	175	67	7	2	0	0	0	428	45.0	40.4
2:00 PM	1	1	0	9	31	105	187	66	7	2	0	0	0	409	45.0	40.6
3:00 PM	1	0	1	5	44	191	278	96	9	1	0	0	0	626	45.0	40.6
4:00 PM	2	1	0	5	38	179	247	93	4	0	0	0	0	569	45.0	40.4
5:00 PM	2	1	1	10	55	159	215	71	5	0	0	0	0	519	44.0	39.7
6:00 PM	3	0	0	4	37	91	155	52	10	0	0	0	0	352	45.0	40.3
7:00 PM	1	0	0	0	14	97	131	34	3	1	0	0	0	281	44.0	40.5
8:00 PM	0	2	2	11	17	83	91	22	2	0	0	0	0	230	43.7	38.9
9:00 PM	0	0	3	2	9	67	84	27	9	1	0	0	0	202	45.9	40.5
10:00 PM	0	0	0	4	10	38	55	8	4	1	0	0	0	120	44.0	39.9
11:00 PM	0	0	0	0	16	18	28	14	4	0	0	0	0	80	46.0	40.3
<b>Total</b>	<b>18</b>	<b>7</b>	<b>15</b>	<b>91</b>	<b>512</b>	<b>1880</b>	<b>2705</b>	<b>956</b>	<b>128</b>	<b>15</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>6330</b>	<b>45.0</b>	<b>40.4</b>
<b>Percent</b>	<b>0.28%</b>	<b>0.11%</b>	<b>0.24%</b>	<b>1.44%</b>	<b>8.09%</b>	<b>29.70%</b>	<b>42.73%</b>	<b>15.10%</b>	<b>2.02%</b>	<b>0.24%</b>	<b>0.05%</b>	<b>0.00%</b>	<b>0.00%</b>			

AM Peak	7:00 AM	7:00 AM	8:00 AM	8:00 AM	10:00 AM	7:00 AM	7:00 AM	7:00 AM	11:00 AM	4:00 AM	10:00 AM					7:00 AM
Volume	2	1	4	15	42	123	191	63	12	2	2	0	0			438
PM Peak	6:00 PM	8:00 PM	9:00 PM	8:00 PM	5:00 PM	3:00 PM	3:00 PM	3:00 PM	6:00 PM	1:00 PM	12:00 PM					3:00 PM
Volume	3	2	3	11	55	191	278	96	10	2	1	0	0			626

15th Percentile:	36.0 MPH	Average Speed:	40.4 MPH	Posted Speed Limit:	40 MPH
50th Percentile:	41.0 MPH	10 MPH Pace:	36 to 45 MPH	Number of Vehicles > 40 MPH:	3218
85th Percentile:	45.0 MPH	Number in Pace:	4661	Percent of Vehicles > 40 MPH:	50.8%
95th Percentile:	48.0 MPH	Percent in Pace:	73.6%		

Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-BB

Count Date  
 Wednesday, June, 02, 2021

**Speed (60-minute)**

SB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	2	4	4	1	1	1	0	0	0	0	13	42.0	36.1
1:00 AM	0	0	0	0	3	2	4	2	1	0	0	0	0	12	47.1	40.1
2:00 AM	0	0	0	0	2	1	4	1	2	0	0	0	0	10	48.3	41.0
3:00 AM	0	0	0	0	0	1	4	1	1	0	0	0	0	7	46.8	44.3
4:00 AM	0	0	1	0	4	7	12	4	3	0	0	0	0	31	46.0	40.6
5:00 AM	0	0	2	2	10	17	37	4	1	1	0	0	0	74	43.0	39.1
6:00 AM	0	0	0	11	33	73	68	27	2	0	0	0	0	214	44.0	38.7
7:00 AM	2	2	3	11	52	109	140	33	3	0	0	0	0	355	44.0	38.6
8:00 AM	0	0	1	10	43	107	116	29	4	1	0	0	0	311	44.0	39.1
9:00 AM	1	1	0	14	38	132	94	16	2	0	0	0	0	298	42.0	37.9
10:00 AM	0	0	0	15	49	123	89	29	2	0	0	0	0	307	43.0	38.3
11:00 AM	0	0	1	6	45	143	89	23	6	0	0	0	0	313	43.0	38.6
12:00 PM	0	0	4	15	47	149	92	34	1	0	0	0	0	342	43.0	38.2
1:00 PM	2	2	3	13	63	145	121	28	5	0	0	0	0	382	43.0	37.9
2:00 PM	1	0	0	23	68	139	136	20	4	0	0	0	0	391	42.0	37.8
3:00 PM	1	0	1	17	70	195	136	19	5	1	0	0	0	445	42.4	37.9
4:00 PM	3	2	1	14	76	203	149	11	0	3	0	0	0	462	42.0	37.5
5:00 PM	2	2	2	11	87	236	141	14	2	0	0	0	0	497	42.0	37.4
6:00 PM	3	1	2	20	91	155	85	20	1	0	0	0	0	378	41.0	36.6
7:00 PM	1	0	1	8	69	123	76	13	1	1	0	0	0	293	42.0	37.3
8:00 PM	1	0	0	10	48	106	59	9	1	1	0	0	1	236	42.0	37.6
9:00 PM	0	0	0	9	31	81	36	10	2	1	0	1	0	171	42.0	37.8
10:00 PM	0	1	0	2	18	36	22	4	2	0	0	0	0	85	42.0	37.4
11:00 PM	0	0	0	2	8	17	6	2	1	0	0	0	0	36	41.0	36.8
<b>Total</b>	<b>17</b>	<b>11</b>	<b>22</b>	<b>215</b>	<b>959</b>	<b>2304</b>	<b>1717</b>	<b>354</b>	<b>53</b>	<b>9</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>5663</b>	<b>43.0</b>	<b>37.9</b>
<b>Percent</b>	<b>0.30%</b>	<b>0.19%</b>	<b>0.39%</b>	<b>3.80%</b>	<b>16.93%</b>	<b>40.69%</b>	<b>30.32%</b>	<b>6.25%</b>	<b>0.94%</b>	<b>0.16%</b>	<b>0.00%</b>	<b>0.02%</b>	<b>0.02%</b>			

AM Peak	7:00 AM	7:00 AM	7:00 AM	10:00 AM	7:00 AM	11:00 AM	7:00 AM	7:00 AM	11:00 AM	5:00 AM				7:00 AM
Volume	2	2	3	15	52	143	140	33	6	1	0	0	0	355
PM Peak	4:00 PM	1:00 PM	12:00 PM	2:00 PM	6:00 PM	5:00 PM	4:00 PM	12:00 PM	1:00 PM	4:00 PM		9:00 PM	8:00 PM	5:00 PM
Volume	3	2	4	23	91	236	149	34	5	3	0	1	1	497

15th Percentile:	33.0 MPH	Average Speed:	37.9 MPH	Posted Speed Limit:	40 MPH
50th Percentile:	38.0 MPH	10 MPH Pace:	34 to 43 MPH	Number of Vehicles > 40 MPH:	1636
85th Percentile:	43.0 MPH	Number in Pace:	4109	Percent of Vehicles > 40 MPH:	28.9%
95th Percentile:	46.0 MPH	Percent in Pace:	72.6%		



Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-BB

Count Date  
 Wednesday, June, 02, 2021

**Speed (60-minute)**

**Combined NB and SB**

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	3	6	15	12	4	3	0	0	0	0	43	44.7	38.7
1:00 AM	0	0	0	1	3	5	8	4	1	0	0	0	0	22	48.6	40.2
2:00 AM	0	0	0	0	2	4	5	2	2	0	0	0	0	15	46.8	40.8
3:00 AM	0	0	0	0	2	2	7	4	1	1	0	0	0	17	48.0	43.2
4:00 AM	0	0	1	0	7	13	18	6	4	2	0	0	0	51	47.0	41.0
5:00 AM	0	0	2	3	12	34	68	21	4	2	0	0	0	146	45.3	40.6
6:00 AM	0	0	0	11	48	140	185	64	6	0	0	0	0	454	45.0	39.9
7:00 AM	4	3	4	18	92	232	331	96	13	0	0	0	0	793	44.0	39.4
8:00 AM	1	0	5	25	68	227	271	78	12	1	0	0	0	688	44.0	39.5
9:00 AM	2	1	0	14	57	222	227	77	7	0	0	0	0	607	44.0	39.5
10:00 AM	2	0	2	23	91	203	219	70	12	0	2	0	0	624	44.0	39.1
11:00 AM	1	0	1	7	70	235	215	86	18	2	0	0	0	635	45.0	39.9
12:00 PM	0	1	5	17	77	253	243	98	10	1	1	0	0	706	45.0	39.5
1:00 PM	3	2	3	18	99	280	296	95	12	2	0	0	0	810	44.0	39.2
2:00 PM	2	1	0	32	99	244	323	86	11	2	0	0	0	800	44.0	39.2
3:00 PM	2	0	2	22	114	386	414	115	14	2	0	0	0	1071	44.0	39.4
4:00 PM	5	3	1	19	114	382	396	104	4	3	0	0	0	1031	44.0	39.1
5:00 PM	4	3	3	21	142	395	356	85	7	0	0	0	0	1016	43.0	38.6
6:00 PM	6	1	2	24	128	246	240	72	11	0	0	0	0	730	44.0	38.4
7:00 PM	2	0	1	8	83	220	207	47	4	2	0	0	0	574	43.0	38.9
8:00 PM	1	2	2	21	65	189	150	31	3	1	0	0	1	466	43.0	38.2
9:00 PM	0	0	3	11	40	148	120	37	11	2	0	1	0	373	44.0	39.3
10:00 PM	0	1	0	6	28	74	77	12	6	1	0	0	0	205	43.0	38.9
11:00 PM	0	0	0	2	24	35	34	16	5	0	0	0	0	116	45.0	39.2
<b>Total</b>	<b>35</b>	<b>18</b>	<b>37</b>	<b>306</b>	<b>1471</b>	<b>4184</b>	<b>4422</b>	<b>1310</b>	<b>181</b>	<b>24</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>11993</b>	<b>44.0</b>	<b>39.2</b>
<b>Percent</b>	<b>0.29%</b>	<b>0.15%</b>	<b>0.31%</b>	<b>2.55%</b>	<b>12.27%</b>	<b>34.89%</b>	<b>36.87%</b>	<b>10.92%</b>	<b>1.51%</b>	<b>0.20%</b>	<b>0.03%</b>	<b>0.01%</b>	<b>0.01%</b>			

AM Peak	7:00 AM	7:00 AM	8:00 AM	8:00 AM	7:00 AM	11:00 AM	7:00 AM	7:00 AM	11:00 AM	4:00 AM	10:00 AM			7:00 AM
Volume	4	3	5	25	92	235	331	96	18	2	2	0	0	793

PM Peak	6:00 PM	4:00 PM	12:00 PM	2:00 PM	5:00 PM	5:00 PM	3:00 PM	3:00 PM	3:00 PM	4:00 PM	12:00 PM	9:00 PM	8:00 PM	3:00 PM
Volume	6	3	5	32	142	395	414	115	14	3	1	1	1	1071

15th Percentile:	34.0 MPH	Average Speed:	39.2 MPH	Posted Speed Limit:	40 MPH
50th Percentile:	39.0 MPH	10 MPH Pace:	35 to 44 MPH	Number of Vehicles > 40 MPH:	4854
85th Percentile:	44.0 MPH	Number in Pace:	8606	Percent of Vehicles > 40 MPH:	40.5%
95th Percentile:	47.0 MPH	Percent in Pace:	71.8%		

Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-BB

Count Date  
 Thursday, June 3, 2021

**Speed (60-minute)**

NB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	1	1	12	11	10	0	0	0	0	0	35	46.0	40.9
1:00 AM	0	0	0	0	2	1	8	3	1	0	0	0	0	15	45.0	42.5
2:00 AM	0	0	0	1	1	0	3	1	1	1	0	0	1	9	54.2	45.3
3:00 AM	0	0	0	0	0	3	2	2	2	0	0	0	0	9	51.0	43.3
4:00 AM	0	0	0	0	1	7	7	4	1	0	0	0	0	20	46.3	41.6
5:00 AM	0	0	0	1	1	17	38	20	2	3	0	0	0	82	47.0	42.4
6:00 AM	0	0	0	0	9	80	112	39	5	1	1	0	0	247	45.0	41.1
7:00 AM	1	0	0	1	29	136	196	68	6	2	0	0	0	439	45.0	40.7
8:00 AM	1	0	0	7	56	154	135	59	3	0	0	0	0	415	44.0	39.2
9:00 AM	0	0	0	4	34	110	148	45	3	2	0	0	0	346	44.0	40.2
10:00 AM	0	0	1	1	24	107	145	41	7	1	0	0	0	327	44.1	40.5
11:00 AM	1	0	0	4	44	113	166	61	7	0	0	0	0	396	45.0	40.1
12:00 PM	0	1	1	3	48	192	180	75	6	0	0	0	0	506	45.0	39.8
1:00 PM	2	2	0	11	69	186	203	66	8	0	0	0	0	547	44.0	39.3
2:00 PM	0	0	1	3	72	114	183	61	8	0	0	0	0	442	45.0	39.9
3:00 PM	3	0	1	13	39	175	299	95	19	3	1	0	1	649	45.0	40.7
4:00 PM	3	1	3	4	69	180	229	62	9	1	0	0	0	561	44.0	39.6
5:00 PM	4	4	0	9	52	152	226	86	12	0	0	0	0	545	45.0	40.0
6:00 PM	1	0	0	11	36	125	105	60	10	0	0	0	0	348	45.0	39.6
7:00 PM	0	0	0	0	39	76	110	26	6	0	0	0	0	257	44.0	39.8
8:00 PM	0	0	1	4	35	77	79	22	3	2	0	0	0	223	44.0	39.1
9:00 PM	0	0	1	0	8	50	67	16	5	0	0	0	0	147	44.0	40.6
10:00 PM	0	0	1	3	8	46	44	15	4	1	0	0	0	122	45.0	39.8
11:00 PM	0	0	0	1	10	22	25	8	3	1	0	0	0	70	45.7	40.0
<b>Total</b>	<b>16</b>	<b>8</b>	<b>10</b>	<b>82</b>	<b>687</b>	<b>2135</b>	<b>2721</b>	<b>945</b>	<b>131</b>	<b>18</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>6757</b>	<b>45.0</b>	<b>40.0</b>
<b>Percent</b>	<b>0.24%</b>	<b>0.12%</b>	<b>0.15%</b>	<b>1.21%</b>	<b>10.17%</b>	<b>31.60%</b>	<b>40.27%</b>	<b>13.99%</b>	<b>1.94%</b>	<b>0.27%</b>	<b>0.03%</b>	<b>0.00%</b>	<b>0.03%</b>			

AM Peak	7:00 AM		10:00 AM	8:00 AM	8:00 AM	8:00 AM	7:00 AM	7:00 AM	10:00 AM	5:00 AM	6:00 AM		2:00 AM	7:00 AM
Volume	1	0	1	7	56	154	196	68	7	3	1	0	1	439
PM Peak	5:00 PM	5:00 PM	4:00 PM	3:00 PM	2:00 PM	12:00 PM	3:00 PM	3:00 PM	3:00 PM	3:00 PM	3:00 PM		3:00 PM	3:00 PM
Volume	4	4	3	13	72	192	299	95	19	3	1	0	1	649

15th Percentile: 35.0 MPH      Average Speed: 40.0 MPH      Posted Speed Limit: 40 MPH  
 50th Percentile: 40.0 MPH      10 MPH Pace: 36 to 45 MPH      Number of Vehicles > 40 MPH: 3198  
 85th Percentile: 45.0 MPH      Number in Pace: 4880      Percent of Vehicles > 40 MPH: 47.3%  
 95th Percentile: 48.0 MPH      Percent in Pace: 72.2%

Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-BB

Count Date  
 Thursday, June 3, 2021

**Speed (60-minute)**

SB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	1	2	9	6	1	1	0	0	0	0	20	44.0	38.9
1:00 AM	0	0	0	1	0	3	2	0	2	0	0	0	0	8	49.7	40.9
2:00 AM	0	0	0	0	2	2	7	0	1	0	0	0	0	12	44.0	40.0
3:00 AM	0	0	0	0	1	3	4	4	1	0	0	0	0	13	46.2	42.3
4:00 AM	0	0	0	1	4	9	8	5	2	0	0	0	0	29	45.0	39.8
5:00 AM	0	0	0	4	11	19	25	15	3	0	0	0	0	77	46.0	39.5
6:00 AM	0	0	0	4	22	58	93	20	2	0	0	0	0	199	44.0	39.6
7:00 AM	1	1	2	23	68	140	103	24	4	0	0	0	0	366	43.0	37.5
8:00 AM	0	0	2	21	48	116	92	17	1	0	0	1	0	298	42.0	37.6
9:00 AM	2	2	1	17	74	113	66	17	1	0	1	0	0	294	42.0	36.5
10:00 AM	2	0	1	21	95	135	64	10	4	0	0	0	0	332	41.0	36.2
11:00 AM	1	0	5	30	41	140	73	9	2	1	0	0	0	302	42.0	36.6
12:00 PM	1	0	1	17	76	149	104	24	4	0	0	0	0	376	42.8	37.6
1:00 PM	1	4	1	17	72	153	103	26	2	0	0	0	0	379	42.0	37.3
2:00 PM	1	1	0	21	86	177	99	19	2	1	0	0	0	407	42.0	37.0
3:00 PM	2	2	1	21	85	188	131	21	3	0	0	0	0	454	42.0	37.3
4:00 PM	3	1	4	26	88	227	139	17	9	0	0	0	0	514	42.0	37.3
5:00 PM	2	1	4	23	135	207	142	11	3	1	0	0	0	529	41.0	36.8
6:00 PM	1	0	0	9	62	130	91	35	4	1	2	0	0	335	43.0	38.4
7:00 PM	0	0	0	14	56	125	76	14	1	0	0	0	0	286	42.0	37.4
8:00 PM	0	0	1	7	50	88	43	8	1	1	0	1	0	200	42.0	37.2
9:00 PM	0	0	0	1	42	81	27	7	0	0	0	0	0	158	41.0	37.1
10:00 PM	0	0	0	2	21	44	19	2	1	0	0	0	0	89	41.0	36.8
11:00 PM	0	1	3	3	6	16	13	6	1	0	0	0	0	49	44.0	37.4
<b>Total</b>	<b>17</b>	<b>13</b>	<b>26</b>	<b>284</b>	<b>1147</b>	<b>2332</b>	<b>1530</b>	<b>312</b>	<b>55</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>5726</b>	<b>42.0</b>	<b>37.3</b>
<b>Percent</b>	<b>0.30%</b>	<b>0.23%</b>	<b>0.45%</b>	<b>4.96%</b>	<b>20.03%</b>	<b>40.73%</b>	<b>26.72%</b>	<b>5.45%</b>	<b>0.96%</b>	<b>0.09%</b>	<b>0.05%</b>	<b>0.03%</b>	<b>0.00%</b>			

AM Peak	9:00 AM	9:00 AM	11:00 AM	11:00 AM	10:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	11:00 AM	9:00 AM	8:00 AM		7:00 AM
Volume	2	2	5	30	95	140	103	24	4	1	1	1	0	366
PM Peak	4:00 PM	1:00 PM	4:00 PM	4:00 PM	5:00 PM	4:00 PM	5:00 PM	6:00 PM	4:00 PM	2:00 PM	6:00 PM	8:00 PM		5:00 PM
Volume	3	4	4	26	135	227	142	35	9	1	2	1	0	529

15th Percentile:	33.0 MPH	Average Speed:	37.3 MPH	Posted Speed Limit:	40 MPH
50th Percentile:	38.0 MPH	10 MPH Pace:	33 to 42 MPH	Number of Vehicles > 40 MPH:	1441
85th Percentile:	42.0 MPH	Number in Pace:	4112	Percent of Vehicles > 40 MPH:	25.2%
95th Percentile:	45.0 MPH	Percent in Pace:	71.8%		

Farm Street  
 south of Old Nahant Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2



PDI File #: 217949 ATR-BB

Count Date  
 Thursday, June 3, 2021

**Speed (60-minute)**

**Combined NB and SB**

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	2	3	21	17	11	1	0	0	0	0	55	45.0	40.1
1:00 AM	0	0	0	1	2	4	10	3	3	0	0	0	0	23	46.4	41.9
2:00 AM	0	0	0	1	3	2	10	1	2	1	0	0	1	21	51.0	42.3
3:00 AM	0	0	0	0	1	6	6	6	3	0	0	0	0	22	47.0	42.7
4:00 AM	0	0	0	1	5	16	15	9	3	0	0	0	0	49	46.0	40.5
5:00 AM	0	0	0	5	12	36	63	35	5	3	0	0	0	159	46.0	41.0
6:00 AM	0	0	0	4	31	138	205	59	7	1	1	0	0	446	45.0	40.4
7:00 AM	2	1	2	24	97	276	299	92	10	2	0	0	0	805	44.0	39.2
8:00 AM	1	0	2	28	104	270	227	76	4	0	0	1	0	713	43.0	38.5
9:00 AM	2	2	1	21	108	223	214	62	4	2	1	0	0	640	44.0	38.5
10:00 AM	2	0	2	22	119	242	209	51	11	1	0	0	0	659	43.0	38.3
11:00 AM	2	0	5	34	85	253	239	70	9	1	0	0	0	698	44.0	38.6
12:00 PM	1	1	2	20	124	341	284	99	10	0	0	0	0	882	44.0	38.9
1:00 PM	3	6	1	28	141	339	306	92	10	0	0	0	0	926	44.0	38.5
2:00 PM	1	1	1	24	158	291	282	80	10	1	0	0	0	849	44.0	38.5
3:00 PM	5	2	2	34	124	363	430	116	22	3	1	0	1	1103	44.0	39.3
4:00 PM	6	2	7	30	157	407	368	79	18	1	0	0	0	1075	43.0	38.5
5:00 PM	6	5	4	32	187	359	368	97	15	1	0	0	0	1074	43.0	38.4
6:00 PM	2	0	0	20	98	255	196	95	14	1	2	0	0	683	45.0	39.0
7:00 PM	0	0	0	14	95	201	186	40	7	0	0	0	0	543	43.0	38.5
8:00 PM	0	0	2	11	85	165	122	30	4	3	0	1	0	423	43.0	38.2
9:00 PM	0	0	1	1	50	131	94	23	5	0	0	0	0	305	43.0	38.8
10:00 PM	0	0	1	5	29	90	63	17	5	1	0	0	0	211	43.0	38.5
11:00 PM	0	1	3	4	16	38	38	14	4	1	0	0	0	119	45.0	39.0
<b>Total</b>	<b>33</b>	<b>21</b>	<b>36</b>	<b>366</b>	<b>1834</b>	<b>4467</b>	<b>4251</b>	<b>1257</b>	<b>186</b>	<b>23</b>	<b>5</b>	<b>2</b>	<b>2</b>	<b>12483</b>	<b>44.0</b>	<b>38.8</b>
<b>Percent</b>	<b>0.26%</b>	<b>0.17%</b>	<b>0.29%</b>	<b>2.93%</b>	<b>14.69%</b>	<b>35.78%</b>	<b>34.05%</b>	<b>10.07%</b>	<b>1.49%</b>	<b>0.18%</b>	<b>0.04%</b>	<b>0.02%</b>	<b>0.02%</b>			

AM Peak	7:00 AM	9:00 AM	11:00 AM	11:00 AM	10:00 AM	7:00 AM	7:00 AM	7:00 AM	10:00 AM	5:00 AM	6:00 AM	8:00 AM	2:00 AM	7:00 AM
Volume	2	2	5	34	119	276	299	92	11	3	1	1	1	805

PM Peak	4:00 PM	1:00 PM	4:00 PM	3:00 PM	5:00 PM	4:00 PM	3:00 PM	3:00 PM	3:00 PM	3:00 PM	6:00 PM	8:00 PM	3:00 PM	3:00 PM
Volume	6	6	7	34	187	407	430	116	22	3	2	1	1	1103

15th Percentile:	34.0 MPH	Average Speed:	38.8 MPH	Posted Speed Limit:	40 MPH
50th Percentile:	39.0 MPH	10 MPH Pace:	34 to 43 MPH	Number of Vehicles > 40 MPH:	4639
85th Percentile:	44.0 MPH	Number in Pace:	8718	Percent of Vehicles > 40 MPH:	37.2%
95th Percentile:	47.0 MPH	Percent in Pace:	69.8%		

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
11:00 AM	54	51	0	105	93	86	0	179	53	43	0	96	380
11:15 AM	57	60	0	117	111	64	0	175	45	54	0	99	391
11:30 AM	67	63	0	130	94	66	0	160	47	52	0	99	389
11:45 AM	52	80	0	132	117	72	0	189	47	58	0	105	426
<b>Total</b>	<b>230</b>	<b>254</b>	<b>0</b>	<b>484</b>	<b>415</b>	<b>288</b>	<b>0</b>	<b>703</b>	<b>192</b>	<b>207</b>	<b>0</b>	<b>399</b>	<b>1586</b>
12:00 PM	40	54	0	94	98	65	0	163	51	53	0	104	361
12:15 PM	39	64	0	103	94	45	0	139	70	65	0	135	377
12:30 PM	54	66	0	120	93	46	0	139	58	47	0	105	364
12:45 PM	51	76	0	127	103	55	0	158	51	44	0	95	380
<b>Total</b>	<b>184</b>	<b>260</b>	<b>0</b>	<b>444</b>	<b>388</b>	<b>211</b>	<b>0</b>	<b>599</b>	<b>230</b>	<b>209</b>	<b>0</b>	<b>439</b>	<b>1482</b>
Grand Total	414	514	0	928	803	499	0	1302	422	416	0	838	3068
Approach %	44.6	55.4	0.0		61.7	38.3	0.0		50.4	49.6	0.0		
Total %	13.5	16.8	0.0	30.2	26.2	16.3	0.0	42.4	13.8	13.6	0.0	27.3	
Exiting Leg Total				1219				936				913	3068
Cars	410	508	0	918	799	492	0	1291	417	409	0	826	3035
% Cars	99.0	98.8	0.0	98.9	99.5	98.6	0.0	99.2	98.8	98.3	0.0	98.6	98.9
Exiting Leg Total				1208				925				902	3035
Heavy Vehicles	4	6	0	10	4	7	0	11	5	7	0	12	33
% Heavy Vehicles	1.0	1.2	0.0	1.1	0.5	1.4	0.0	0.8	1.2	1.7	0.0	1.4	1.1
Exiting Leg Total				11				11				11	33

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:00 AM	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
11:00 AM	54	51	0	105	93	86	0	179	53	43	0	96	380
11:15 AM	57	60	0	117	111	64	0	175	45	54	0	99	391
11:30 AM	67	63	0	130	94	66	0	160	47	52	0	99	389
11:45 AM	52	80	0	132	117	72	0	189	47	58	0	105	426
Total Volume	230	254	0	484	415	288	0	703	192	207	0	399	1586
% Approach Total	47.5	52.5	0.0		59.0	41.0	0.0		48.1	51.9	0.0		
PHF	0.858	0.794	0.000	0.917	0.887	0.837	0.000	0.930	0.906	0.892	0.000	0.950	0.931
Cars	228	251	0	479	412	281	0	693	188	204	0	392	1564
Cars %	99.1	98.8	0.0	99.0	99.3	97.6	0.0	98.6	97.9	98.6	0.0	98.2	98.6
Heavy Vehicles	2	3	0	5	3	7	0	10	4	3	0	7	22
Heavy Vehicles %	0.9	1.2	0.0	1.0	0.7	2.4	0.0	1.4	2.1	1.4	0.0	1.8	1.4
Cars Enter Leg	228	251	0	479	412	281	0	693	188	204	0	392	1564
Heavy Enter Leg	2	3	0	5	3	7	0	10	4	3	0	7	22
Total Entering Leg	230	254	0	484	415	288	0	703	192	207	0	399	1586
Cars Exiting Leg				616				439				509	1564
Heavy Exiting Leg				6				7				9	22
Total Exiting Leg				622				446				518	1586

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Cars**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
11:00 AM	54	51	0	105	92	84	0	176	52	42	0	94	375
11:15 AM	56	60	0	116	111	61	0	172	45	53	0	98	386
11:30 AM	66	63	0	129	94	66	0	160	45	52	0	97	386
11:45 AM	52	77	0	129	115	70	0	185	46	57	0	103	417
<b>Total</b>	<b>228</b>	<b>251</b>	<b>0</b>	<b>479</b>	<b>412</b>	<b>281</b>	<b>0</b>	<b>693</b>	<b>188</b>	<b>204</b>	<b>0</b>	<b>392</b>	<b>1564</b>
12:00 PM	39	52	0	91	98	65	0	163	51	51	0	102	356
12:15 PM	38	64	0	102	94	45	0	139	69	64	0	133	374
12:30 PM	54	65	0	119	93	46	0	139	58	46	0	104	362
12:45 PM	51	76	0	127	102	55	0	157	51	44	0	95	379
<b>Total</b>	<b>182</b>	<b>257</b>	<b>0</b>	<b>439</b>	<b>387</b>	<b>211</b>	<b>0</b>	<b>598</b>	<b>229</b>	<b>205</b>	<b>0</b>	<b>434</b>	<b>1471</b>
<b>Grand Total</b>	<b>410</b>	<b>508</b>	<b>0</b>	<b>918</b>	<b>799</b>	<b>492</b>	<b>0</b>	<b>1291</b>	<b>417</b>	<b>409</b>	<b>0</b>	<b>826</b>	<b>3035</b>
Approach %	44.7	55.3	0.0		61.9	38.1	0.0		50.5	49.5	0.0		
Total %	13.5	16.7	0.0	30.2	26.3	16.2	0.0	42.5	13.7	13.5	0.0	27.2	
Exiting Leg Total				1208				925				902	3035

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:00 AM	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
11:00 AM	54	51	0	105	92	84	0	176	52	42	0	94	375
11:15 AM	56	60	0	116	111	61	0	172	45	53	0	98	386
11:30 AM	66	63	0	129	94	66	0	160	45	52	0	97	386
11:45 AM	52	77	0	129	115	70	0	185	46	57	0	103	417
<b>Total Volume</b>	<b>228</b>	<b>251</b>	<b>0</b>	<b>479</b>	<b>412</b>	<b>281</b>	<b>0</b>	<b>693</b>	<b>188</b>	<b>204</b>	<b>0</b>	<b>392</b>	<b>1564</b>
<b>% Approach Total</b>	<b>47.6</b>	<b>52.4</b>	<b>0.0</b>		<b>59.5</b>	<b>40.5</b>	<b>0.0</b>		<b>48.0</b>	<b>52.0</b>	<b>0.0</b>		
PHF	0.864	0.815	0.000	0.928	0.896	0.836	0.000	0.936	0.904	0.895	0.000	0.951	0.938
Entering Leg	228	251	0	479	412	281	0	693	188	204	0	392	1564
Exiting Leg				616				439				509	1564
<b>Total</b>				<b>1095</b>				<b>1132</b>				<b>901</b>	<b>3128</b>

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**



**Class: Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
11:00 AM	0	0	0	0	1	2	0	3	1	1	0	2	5
11:15 AM	1	0	0	1	0	3	0	3	0	1	0	1	5
11:30 AM	1	0	0	1	0	0	0	0	2	0	0	2	3
11:45 AM	0	3	0	3	2	2	0	4	1	1	0	2	9
<b>Total</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>3</b>	<b>7</b>	<b>0</b>	<b>10</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>7</b>	<b>22</b>
12:00 PM	1	2	0	3	0	0	0	0	0	2	0	2	5
12:15 PM	1	0	0	1	0	0	0	0	1	1	0	2	3
12:30 PM	0	1	0	1	0	0	0	0	0	1	0	1	2
12:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
<b>Total</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>5</b>	<b>11</b>
Grand Total	4	6	0	10	4	7	0	11	5	7	0	12	33
Approach %	40.0	60.0	0.0		36.4	63.6	0.0		41.7	58.3	0.0		
Total %	12.1	18.2	0.0	30.3	12.1	21.2	0.0	33.3	15.2	21.2	0.0	36.4	
Exiting Leg Total				11				11				11	33
Buses	0	1	0	1	1	0	0	1	0	0	0	0	2
% Buses	0.0	16.7	0.0	10.0	25.0	0.0	0.0	9.1	0.0	0.0	0.0	0.0	6.1
Exiting Leg Total				1				1				0	2
Single-Unit Trucks	4	4	0	8	3	7	0	10	5	6	0	11	29
% Single-Unit	100.0	66.7	0.0	80.0	75.0	100.0	0.0	90.9	100.0	85.7	0.0	91.7	87.9
Exiting Leg Total				9				9				11	29
Articulated Trucks	0	1	0	1	0	0	0	0	0	1	0	1	2
% Articulated	0.0	16.7	0.0	10.0	0.0	0.0	0.0	0.0	0.0	14.3	0.0	8.3	6.1
Exiting Leg Total				1				1				0	2

**Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:**

11:00 AM	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
11:00 AM	0	0	0	0	1	2	0	3	1	1	0	2	5
11:15 AM	1	0	0	1	0	3	0	3	0	1	0	1	5
11:30 AM	1	0	0	1	0	0	0	0	2	0	0	2	3
11:45 AM	0	3	0	3	2	2	0	4	1	1	0	2	9
<b>Total Volume</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>3</b>	<b>7</b>	<b>0</b>	<b>10</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>7</b>	<b>22</b>
% Approach Total	40.0	60.0	0.0		30.0	70.0	0.0		57.1	42.9	0.0		
PHF	0.500	0.250	0.000	0.417	0.375	0.583	0.000	0.625	0.500	0.750	0.000	0.875	0.611
Buses	0	0	0	0	1	0	0	1	0	0	0	0	1
Buses %	0.0	0.0	0.0	0.0	33.3	0.0	0.0	10.0	0.0	0.0	0.0	0.0	4.5
Single-Unit Trucks	2	3	0	5	2	7	0	9	4	2	0	6	20
Single-Unit %	100.0	100.0	0.0	100.0	66.7	100.0	0.0	90.0	100.0	66.7	0.0	85.7	90.9
Articulated Trucks	0	0	0	0	0	0	0	0	0	1	0	1	1
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	14.3	4.5
Buses	0	0	0	0	1	0	0	1	0	0	0	0	1
Single-Unit Trucks	2	3	0	5	2	7	0	9	4	2	0	6	20
Articulated Trucks	0	0	0	0	0	0	0	0	0	1	0	1	1
<b>Total Entering Leg</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>3</b>	<b>7</b>	<b>0</b>	<b>10</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>7</b>	<b>22</b>
Buses				1				0				0	1
Single-Unit Trucks				4				7				9	20
Articulated Trucks				1				0				0	1
<b>Total Exiting Leg</b>				<b>6</b>				<b>7</b>				<b>9</b>	<b>22</b>

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



PRECISION  
 D A T A  
 INDUSTRIES, LLC

157 Washington Street, Suite 2  
 Hudson, MA 01749  
 508-875-0100 datarequests@pdillc.com

**Buses**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
Total	0	0	0	0	1	0	0	1	0	0	0	0	1
12:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	0	0	0	1
Grand Total	0	1	0	1	1	0	0	1	0	0	0	0	2
Approach %	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	50.0	0.0	50.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				1				1					2

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:15 AM	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
12:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Volume	0	1	0	1	1	0	0	1	0	0	0	0	2
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.250	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	1	0	1	1	0	0	1	0	0	0	0	2
Exiting Leg				1				1					2
Total				2				2					4



PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Single-Unit Trucks**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
11:00 AM	0	0	0	0	1	2	0	3	1	0	0	1	4
11:15 AM	1	0	0	1	0	3	0	3	0	1	0	1	5
11:30 AM	1	0	0	1	0	0	0	0	2	0	0	2	3
11:45 AM	0	3	0	3	1	2	0	3	1	1	0	2	8
<b>Total</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>2</b>	<b>7</b>	<b>0</b>	<b>9</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>6</b>	<b>20</b>
12:00 PM	1	1	0	2	0	0	0	0	0	2	0	2	4
12:15 PM	1	0	0	1	0	0	0	0	1	1	0	2	3
12:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
12:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
<b>Total</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>5</b>	<b>9</b>
<b>Grand Total</b>	<b>4</b>	<b>4</b>	<b>0</b>	<b>8</b>	<b>3</b>	<b>7</b>	<b>0</b>	<b>10</b>	<b>5</b>	<b>6</b>	<b>0</b>	<b>11</b>	<b>29</b>
Approach %	50.0	50.0	0.0		30.0	70.0	0.0		45.5	54.5	0.0		
Total %	13.8	13.8	0.0	27.6	10.3	24.1	0.0	34.5	17.2	20.7	0.0	37.9	
Exiting Leg Total				9				9				11	29

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:00 AM	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
11:00 AM	0	0	0	0	1	2	0	3	1	0	0	1	4
11:15 AM	1	0	0	1	0	3	0	3	0	1	0	1	5
11:30 AM	1	0	0	1	0	0	0	0	2	0	0	2	3
11:45 AM	0	3	0	3	1	2	0	3	1	1	0	2	8
Total Volume	2	3	0	5	2	7	0	9	4	2	0	6	20
% Approach Total	40.0	60.0	0.0		22.2	77.8	0.0		66.7	33.3	0.0		
PHF	0.500	0.250	0.000	0.417	0.500	0.583	0.000	0.750	0.500	0.500	0.000	0.750	0.625
Entering Leg	2	3	0	5	2	7	0	9	4	2	0	6	20
Exiting Leg				4				7				9	20
Total				9				16				15	40

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



PRECISION  
 D A T A  
 INDUSTRIES, LLC

157 Washington Street, Suite 2  
 Hudson, MA 01749  
 508-875-0100 datarequests@pdillc.com

**Articulated Trucks**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total	
	from East				from South				from West					
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total		
11:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	1	0	1	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	0	0	0	0	1
Grand Total	0	1	0	1	0	0	0	0	0	0	1	0	1	2
Approach %	0.0	100.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0			
Total %	0.0	50.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	50.0		
Exiting Leg Total					1								0	2

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:00 AM	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total	
	from East				from South				from West					
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total		
11:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	1	0	1	1
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0			
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250		0.250
Entering Leg	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Exiting Leg					1								0	1
Total					1								0	2

PDI File #: 217949 A  
 Location: S: Farm Street  
 Location: E: Water Street (Route 129) W: Water Street (Route 129)  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2  
 Count Date: Saturday, May 22, 2021  
 Start Time: 11:00 AM  
 End Time: 1:00 PM  
 Class:



**Bicycles (on Roadway and Crosswalks)**

	Water Street (Route 129)						Farm Street						Water Street (Route 129)						Total			
	from East						from South						from West									
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total				
11:00 AM	0	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	2			
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
11:30 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1			
11:45 AM	0	1	0	2	0	3	1	0	0	0	0	1	0	0	0	0	0	0	4			
<b>Total</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>			
12:00 PM	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	2			
12:15 PM	1	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	2			
12:30 PM	0	0	0	0	0	0	0	3	0	0	0	3	3	0	0	0	0	3	6			
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>6</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>10</b>			
<b>Grand Total</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>5</b>	<b>3</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>9</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>17</b>			
Approach %	20.0	40.0	0.0	40.0	0.0		33.3	55.6	0.0	11.1	0.0		100.0	0.0	0.0	0.0	0.0					
Total %	5.9	11.8	0.0	11.8	0.0	29.4	17.6	29.4	0.0	5.9	0.0	52.9	17.6	0.0	0.0	0.0	0.0	17.6				
Exiting Leg Total							5							6							6	17

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:45 AM	Water Street (Route 129)						Farm Street						Water Street (Route 129)						Total			
	from East						from South						from West									
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total				
11:45 AM	0	1	0	2	0	3	1	0	0	0	0	1	0	0	0	0	0	0	4			
12:00 PM	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	2			
12:15 PM	1	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	2			
12:30 PM	0	0	0	0	0	0	0	3	0	0	0	3	3	0	0	0	0	3	6			
<b>Total Volume</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>7</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>14</b>			
% Approach Total	25.0	25.0	0.0	50.0	0.0		42.9	42.9	0.0	14.3	0.0		100.0	0.0	0.0	0.0	0.0					
PHF	0.250	0.250	0.000	0.250	0.000	0.333	0.375	0.250	0.000	0.250	0.000	0.583	0.250	0.000	0.000	0.000	0.000	0.250	0.583			
Entering Leg	1	1	0	2	0	4	3	3	0	1	0	7	3	0	0	0	0	3	14			
Exiting Leg							5							5							4	14
<b>Total</b>							<b>9</b>							<b>12</b>							<b>7</b>	<b>28</b>

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Pedestrians**

	Water Street (Route 129)						Farm Street						Water Street (Route 129)						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	2
12:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	1	1	2	0	0	0	1	0	1	0	0	0	0	1	1	4
Grand Total	0	0	0	1	1	2	0	0	0	1	0	1	0	0	0	0	1	1	4
Approach %	0	0	0	50	50		0	0	0	100	0		0	0	0	0	100		
Total %	0	0	0	25	25	50	0	0	0	25	0	25	0	0	0	0	25	25	
Exiting Leg Total	2						1						1						4

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

12:00 PM	Water Street (Route 129)						Farm Street						Water Street (Route 129)						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
12:00 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	2
12:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	1	1	2	0	0	0	1	0	1	0	0	0	0	1	1	4
% Approach Total	0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	100.0		
PHF	0.000	0.000	0.000	0.250	0.250	0.500	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.250	0.500
Entering Leg	0	0	0	1	1	2	0	0	0	1	0	1	0	0	0	0	1	1	4
Exiting Leg	2						1						1						4
Total	4						2						2						8

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:00 AM	53	86	0	139	36	29	0	65	87	25	0	112	316
7:15 AM	62	104	0	166	53	85	0	138	131	32	0	163	467
7:30 AM	67	105	0	172	54	65	0	119	71	40	0	111	402
7:45 AM	102	95	0	197	58	39	0	97	41	37	0	78	372
<b>Total</b>	<b>284</b>	<b>390</b>	<b>0</b>	<b>674</b>	<b>201</b>	<b>218</b>	<b>0</b>	<b>419</b>	<b>330</b>	<b>134</b>	<b>0</b>	<b>464</b>	<b>1557</b>
8:00 AM	101	103	0	204	42	29	0	71	49	49	0	98	373
8:15 AM	79	72	0	151	96	69	0	165	62	57	0	119	435
8:30 AM	68	55	0	123	64	52	0	116	35	35	0	70	309
8:45 AM	75	57	0	132	39	41	0	80	33	45	0	78	290
<b>Total</b>	<b>323</b>	<b>287</b>	<b>0</b>	<b>610</b>	<b>241</b>	<b>191</b>	<b>0</b>	<b>432</b>	<b>179</b>	<b>186</b>	<b>0</b>	<b>365</b>	<b>1407</b>
Grand Total	607	677	0	1284	442	409	0	851	509	320	0	829	2964
Approach %	47.3	52.7	0.0		51.9	48.1	0.0		61.4	38.6	0.0		
Total %	20.5	22.8	0.0	43.3	14.9	13.8	0.0	28.7	17.2	10.8	0.0	28.0	
Exiting Leg Total				762				1186				1016	2964
Cars	577	660	0	1237	425	391	0	816	483	300	0	783	2836
% Cars	95.1	97.5	0.0	96.3	96.2	95.6	0.0	95.9	94.9	93.8	0.0	94.5	95.7
Exiting Leg Total				725				1143				968	2836
Heavy Vehicles	30	17	0	47	17	18	0	35	26	20	0	46	128
% Heavy Vehicles	4.9	2.5	0.0	3.7	3.8	4.4	0.0	4.1	5.1	6.3	0.0	5.5	4.3
Exiting Leg Total				37				43				48	128

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:15 AM	62	104	0	166	53	85	0	138	131	32	0	163	467
7:30 AM	67	105	0	172	54	65	0	119	71	40	0	111	402
7:45 AM	102	95	0	197	58	39	0	97	41	37	0	78	372
8:00 AM	101	103	0	204	42	29	0	71	49	49	0	98	373
Total Volume	332	407	0	739	207	218	0	425	292	158	0	450	1614
% Approach Total	44.9	55.1	0.0		48.7	51.3	0.0		64.9	35.1	0.0		
PHF	0.814	0.969	0.000	0.906	0.892	0.641	0.000	0.770	0.557	0.806	0.000	0.690	0.864
Cars	319	399	0	718	203	211	0	414	278	144	0	422	1554
Cars %	96.1	98.0	0.0	97.2	98.1	96.8	0.0	97.4	95.2	91.1	0.0	93.8	96.3
Heavy Vehicles	13	8	0	21	4	7	0	11	14	14	0	28	60
Heavy Vehicles %	3.9	2.0	0.0	2.8	1.9	3.2	0.0	2.6	4.8	8.9	0.0	6.2	3.7
Cars Enter Leg	319	399	0	718	203	211	0	414	278	144	0	422	1554
Heavy Enter Leg	13	8	0	21	4	7	0	11	14	14	0	28	60
Total Entering Leg	332	407	0	739	207	218	0	425	292	158	0	450	1614
Cars Exiting Leg				347				677				530	1554
Heavy Exiting Leg				18				22				20	60
Total Exiting Leg				365				699				550	1614

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Cars**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:00 AM	45	85	0	130	31	27	0	58	84	23	0	107	295
7:15 AM	54	102	0	156	52	84	0	136	128	28	0	156	448
7:30 AM	65	104	0	169	53	64	0	117	67	35	0	102	388
7:45 AM	100	92	0	192	57	36	0	93	37	33	0	70	355
<b>Total</b>	<b>264</b>	<b>383</b>	<b>0</b>	<b>647</b>	<b>193</b>	<b>211</b>	<b>0</b>	<b>404</b>	<b>316</b>	<b>119</b>	<b>0</b>	<b>435</b>	<b>1486</b>
8:00 AM	100	101	0	201	41	27	0	68	46	48	0	94	363
8:15 AM	76	69	0	145	93	68	0	161	57	56	0	113	419
8:30 AM	65	53	0	118	63	50	0	113	35	35	0	70	301
8:45 AM	72	54	0	126	35	35	0	70	29	42	0	71	267
<b>Total</b>	<b>313</b>	<b>277</b>	<b>0</b>	<b>590</b>	<b>232</b>	<b>180</b>	<b>0</b>	<b>412</b>	<b>167</b>	<b>181</b>	<b>0</b>	<b>348</b>	<b>1350</b>
Grand Total	577	660	0	1237	425	391	0	816	483	300	0	783	2836
Approach %	46.6	53.4	0.0		52.1	47.9	0.0		61.7	38.3	0.0		
Total %	20.3	23.3	0.0	43.6	15.0	13.8	0.0	28.8	17.0	10.6	0.0	27.6	
Exiting Leg Total				725				1143				968	2836

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:15 AM	54	102	0	156	52	84	0	136	128	28	0	156	448
7:30 AM	65	104	0	169	53	64	0	117	67	35	0	102	388
7:45 AM	100	92	0	192	57	36	0	93	37	33	0	70	355
8:00 AM	100	101	0	201	41	27	0	68	46	48	0	94	363
Total Volume	319	399	0	718	203	211	0	414	278	144	0	422	1554
% Approach Total	44.4	55.6	0.0		49.0	51.0	0.0		65.9	34.1	0.0		
PHF	0.798	0.959	0.000	0.893	0.890	0.628	0.000	0.761	0.543	0.750	0.000	0.676	0.867
Entering Leg	319	399	0	718	203	211	0	414	278	144	0	422	1554
Exiting Leg				347				677				530	1554
<b>Total</b>				<b>1065</b>				<b>1091</b>				<b>952</b>	<b>3108</b>

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:00 AM	8	1	0	9	5	2	0	7	3	2	0	5	21
7:15 AM	8	2	0	10	1	1	0	2	3	4	0	7	19
7:30 AM	2	1	0	3	1	1	0	2	4	5	0	9	14
7:45 AM	2	3	0	5	1	3	0	4	4	4	0	8	17
<b>Total</b>	<b>20</b>	<b>7</b>	<b>0</b>	<b>27</b>	<b>8</b>	<b>7</b>	<b>0</b>	<b>15</b>	<b>14</b>	<b>15</b>	<b>0</b>	<b>29</b>	<b>71</b>
8:00 AM	1	2	0	3	1	2	0	3	3	1	0	4	10
8:15 AM	3	3	0	6	3	1	0	4	5	1	0	6	16
8:30 AM	3	2	0	5	1	2	0	3	0	0	0	0	8
8:45 AM	3	3	0	6	4	6	0	10	4	3	0	7	23
<b>Total</b>	<b>10</b>	<b>10</b>	<b>0</b>	<b>20</b>	<b>9</b>	<b>11</b>	<b>0</b>	<b>20</b>	<b>12</b>	<b>5</b>	<b>0</b>	<b>17</b>	<b>57</b>
Grand Total	30	17	0	47	17	18	0	35	26	20	0	46	128
Approach %	63.8	36.2	0.0		48.6	51.4	0.0		56.5	43.5	0.0		
Total %	23.4	13.3	0.0	36.7	13.3	14.1	0.0	27.3	20.3	15.6	0.0	35.9	
Exiting Leg Total				37				43				48	128
Buses	1	5	0	6	5	3	0	8	6	2	0	8	22
% Buses	3.3	29.4	0.0	12.8	29.4	16.7	0.0	22.9	23.1	10.0	0.0	17.4	17.2
Exiting Leg Total				7				11				4	22
Single-Unit Trucks	25	10	0	35	11	12	0	23	17	14	0	31	89
% Single-Unit	83.3	58.8	0.0	74.5	64.7	66.7	0.0	65.7	65.4	70.0	0.0	67.4	69.5
Exiting Leg Total				25				27				37	89
Articulated Trucks	4	2	0	6	1	3	0	4	3	4	0	7	17
% Articulated	13.3	11.8	0.0	12.8	5.9	16.7	0.0	11.4	11.5	20.0	0.0	15.2	13.3
Exiting Leg Total				5				5				7	17

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:00 AM	8	1	0	9	5	2	0	7	3	2	0	5	21
7:15 AM	8	2	0	10	1	1	0	2	3	4	0	7	19
7:30 AM	2	1	0	3	1	1	0	2	4	5	0	9	14
7:45 AM	2	3	0	5	1	3	0	4	4	4	0	8	17
Total Volume	20	7	0	27	8	7	0	15	14	15	0	29	71
% Approach Total	74.1	25.9	0.0		53.3	46.7	0.0		48.3	51.7	0.0		
PHF	0.625	0.583	0.000	0.675	0.400	0.583	0.000	0.536	0.875	0.750	0.000	0.806	0.845
Buses	1	2	0	3	1	1	0	2	3	0	0	3	8
Buses %	5.0	28.6	0.0	11.1	12.5	14.3	0.0	13.3	21.4	0.0	0.0	10.3	11.3
Single-Unit Trucks	16	4	0	20	7	4	0	11	8	11	0	19	50
Single-Unit %	80.0	57.1	0.0	74.1	87.5	57.1	0.0	73.3	57.1	73.3	0.0	65.5	70.4
Articulated Trucks	3	1	0	4	0	2	0	2	3	4	0	7	13
Articulated %	15.0	14.3	0.0	14.8	0.0	28.6	0.0	13.3	21.4	26.7	0.0	24.1	18.3
Buses	1	2	0	3	1	1	0	2	3	0	0	3	8
Single-Unit Trucks	16	4	0	20	7	4	0	11	8	11	0	19	50
Articulated Trucks	3	1	0	4	0	2	0	2	3	4	0	7	13
Total Entering Leg	20	7	0	27	8	7	0	15	14	15	0	29	71
Buses				1				5				2	8
Single-Unit Trucks				18				12				20	50
Articulated Trucks				4				4				5	13
Total Exiting Leg				23				21				27	71

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Buses**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:00 AM	1	0	0	1	1	1	0	2	0	0	0	0	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	1	0	0	0	0	2	0	0	2	3
7:45 AM	0	1	0	1	0	0	0	0	1	0	0	1	2
<b>Total</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>8</b>
8:00 AM	0	1	0	1	0	0	0	0	2	0	0	2	3
8:15 AM	0	2	0	2	3	0	0	3	1	0	0	1	6
8:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
8:45 AM	0	0	0	0	1	1	0	2	0	2	0	2	4
<b>Total</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>6</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>5</b>	<b>14</b>
<b>Grand Total</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>6</b>	<b>5</b>	<b>3</b>	<b>0</b>	<b>8</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>8</b>	<b>22</b>
Approach %	16.7	83.3	0.0		62.5	37.5	0.0		75.0	25.0	0.0		
Total %	4.5	22.7	0.0	27.3	22.7	13.6	0.0	36.4	27.3	9.1	0.0	36.4	
Exiting Leg Total				7				11				4	22

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:30 AM	0	1	0	1	0	0	0	0	2	0	0	2	3
7:45 AM	0	1	0	1	0	0	0	0	1	0	0	1	2
8:00 AM	0	1	0	1	0	0	0	0	2	0	0	2	3
8:15 AM	0	2	0	2	3	0	0	3	1	0	0	1	6
Total Volume	0	5	0	5	3	0	0	3	6	0	0	6	14
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.625	0.000	0.625	0.250	0.000	0.000	0.250	0.750	0.000	0.000	0.750	0.583
Entering Leg	0	5	0	5	3	0	0	3	6	0	0	6	14
Exiting Leg				3				11				0	14
<b>Total</b>				<b>8</b>				<b>14</b>				<b>6</b>	<b>28</b>



PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



PRECISION  
 DATA  
 INDUSTRIES, LLC

157 Washington Street, Suite 2  
 Hudson, MA 01749  
 508-875-0100 datarequests@pdillc.com

**Single-Unit Trucks**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:00 AM	6	1	0	7	4	1	0	5	2	1	0	3	15
7:15 AM	6	1	0	7	1	0	0	1	3	3	0	6	14
7:30 AM	2	0	0	2	1	0	0	1	1	4	0	5	8
7:45 AM	2	2	0	4	1	3	0	4	2	3	0	5	13
<b>Total</b>	<b>16</b>	<b>4</b>	<b>0</b>	<b>20</b>	<b>7</b>	<b>4</b>	<b>0</b>	<b>11</b>	<b>8</b>	<b>11</b>	<b>0</b>	<b>19</b>	<b>50</b>
8:00 AM	1	0	0	1	0	2	0	2	1	1	0	2	5
8:15 AM	2	1	0	3	0	1	0	1	4	1	0	5	9
8:30 AM	3	2	0	5	1	1	0	2	0	0	0	0	7
8:45 AM	3	3	0	6	3	4	0	7	4	1	0	5	18
<b>Total</b>	<b>9</b>	<b>6</b>	<b>0</b>	<b>15</b>	<b>4</b>	<b>8</b>	<b>0</b>	<b>12</b>	<b>9</b>	<b>3</b>	<b>0</b>	<b>12</b>	<b>39</b>
<b>Grand Total</b>	<b>25</b>	<b>10</b>	<b>0</b>	<b>35</b>	<b>11</b>	<b>12</b>	<b>0</b>	<b>23</b>	<b>17</b>	<b>14</b>	<b>0</b>	<b>31</b>	<b>89</b>
Approach %	71.4	28.6	0.0		47.8	52.2	0.0		54.8	45.2	0.0		
Total %	28.1	11.2	0.0	39.3	12.4	13.5	0.0	25.8	19.1	15.7	0.0	34.8	
Exiting Leg Total				25				27				37	89

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:00 AM	6	1	0	7	4	1	0	5	2	1	0	3	15
7:15 AM	6	1	0	7	1	0	0	1	3	3	0	6	14
7:30 AM	2	0	0	2	1	0	0	1	1	4	0	5	8
7:45 AM	2	2	0	4	1	3	0	4	2	3	0	5	13
Total Volume	16	4	0	20	7	4	0	11	8	11	0	19	50
% Approach Total	80.0	20.0	0.0		63.6	36.4	0.0		42.1	57.9	0.0		
PHF	0.667	0.500	0.000	0.714	0.438	0.333	0.000	0.550	0.667	0.688	0.000	0.792	0.833
Entering Leg	16	4	0	20	7	4	0	11	8	11	0	19	50
Exiting Leg				18				12				20	50
<b>Total</b>				<b>38</b>				<b>23</b>				<b>39</b>	<b>100</b>

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**



PRECISION  
 D A T A  
 INDUSTRIES, LLC

157 Washington Street, Suite 2  
 Hudson, MA 01749  
 508-875-0100 datarequests@pdillc.com

Class:

**Articulated Trucks**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total	
	from East				from South				from West					
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total		
7:00 AM	1	0	0	1	0	0	0	0	0	1	1	0	2	3
7:15 AM	2	1	0	3	0	1	0	1	0	0	1	0	1	5
7:30 AM	0	0	0	0	0	1	0	1	1	1	0	0	2	3
7:45 AM	0	0	0	0	0	0	0	0	0	1	1	0	2	2
<b>Total</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>13</b>
8:00 AM	0	1	0	1	1	0	0	1	0	0	0	0	0	2
8:15 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1
<b>Total</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>
<b>Grand Total</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>6</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>17</b>
Approach %	66.7	33.3	0.0		25.0	75.0	0.0		42.9	57.1	0.0			
Total %	23.5	11.8	0.0	35.3	5.9	17.6	0.0	23.5	17.6	23.5	0.0		41.2	
Exiting Leg Total				5				5					7	17

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total	
	from East				from South				from West					
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total		
7:00 AM	1	0	0	1	0	0	0	0	0	1	1	0	2	3
7:15 AM	2	1	0	3	0	1	0	1	0	0	1	0	1	5
7:30 AM	0	0	0	0	0	1	0	1	1	1	0	0	2	3
7:45 AM	0	0	0	0	0	0	0	0	0	1	1	0	2	2
<b>Total Volume</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>13</b>
<b>% Approach Total</b>	<b>75.0</b>	<b>25.0</b>	<b>0.0</b>		<b>0.0</b>	<b>100.0</b>	<b>0.0</b>		<b>42.9</b>	<b>57.1</b>	<b>0.0</b>			
PHF	0.375	0.250	0.000	0.333	0.000	0.500	0.000	0.500	0.750	1.000	0.000	0.875		0.650
Entering Leg	3	1	0	4	0	2	0	2	3	4	0	0	7	13
Exiting Leg				4				4					5	13
<b>Total</b>				<b>8</b>				<b>6</b>					<b>12</b>	<b>26</b>

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**



**Bicycles (on Roadway and Crosswalks)**

	Water Street (Route 129)						Farm Street						Water Street (Route 129)						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	0	0	0	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	0	0	0
7:30 AM	0	0	0	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	0	0	0
Total	0	0	0	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	1	0	1	0	0	0	0	0	0	1
8:15 AM	0	0	0	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	1	0	0	0	0	1	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	1	0	2	0	0	0	0	0	0	2
Grand Total	0	0	0	0	0	0	1	0	0	1	0	2	0	0	0	0	0	0	2
Approach %	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	50.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Total %	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	50.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Exiting Leg Total	1						1						0						2

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Water Street (Route 129)						Farm Street						Water Street (Route 129)						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
7:45 AM	0	0	0	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	1	0	1	0	0	0	0	0	0	1
8:15 AM	0	0	0	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	1	0	0	0	0	1	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	1	0	0	1	0	2	0	0	0	0	0	0	2
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	50.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.500
Entering Leg	0						1						0						2
Exiting Leg	1						1						0						2
Total	1						3						0						4

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Pedestrians**

	Water Street (Route 129)						Farm Street						Water Street (Route 129)						Total	
	from East						from South						from West							
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total		
7:00 AM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	
7:15 AM	0	0	0	1	0	1	0	0	0	0	2	2	0	0	0	0	0	0	3	
7:30 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	2	
7:45 AM	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	
Total	0	0	0	4	0	4	0	0	0	2	2	4	0	0	0	0	0	0	8	
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:15 AM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	
8:30 AM	0	0	0	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	0	0	0	
Total	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	
Grand Total	0	0	0	4	1	5	0	0	0	2	2	4	0	0	0	0	0	0	9	
Approach %	0	0	0	80	20		0	0	0	50	50		0	0	0	0	0	0		
Total %	0	0	0	44.444	11.111	55.556	0	0	0	22.222	22.222	44.444	0	0	0	0	0	0		
Exiting Leg Total							5						4						0	9

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Water Street (Route 129)						Farm Street						Water Street (Route 129)						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	1	0	1	0	0	0	0	2	2	0	0	0	0	0	0	3
7:30 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	2
7:45 AM	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	0	0	4	0	4	0	0	0	2	2	4	0	0	0	0	0	0	8
% Approach Total	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	0.0	0.0	0.0	
PHF	0.000	0.000	0.000	0.500	0.000	0.500	0.000	0.000	0.000	0.250	0.250	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.667
Entering Leg	0						0						0						8
Exiting Leg	4						4						0						8
Total	8						8						0						16

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:00 PM	56	64	0	120	55	55	0	110	88	67	0	155	385
2:15 PM	50	62	0	112	83	103	0	186	46	50	0	96	394
2:30 PM	40	51	0	91	135	88	0	223	39	42	0	81	395
2:45 PM	78	68	0	146	109	61	0	170	56	47	0	103	419
<b>Total</b>	<b>224</b>	<b>245</b>	<b>0</b>	<b>469</b>	<b>382</b>	<b>307</b>	<b>0</b>	<b>689</b>	<b>229</b>	<b>206</b>	<b>0</b>	<b>435</b>	<b>1593</b>
3:00 PM	55	68	0	123	112	54	0	166	44	51	0	95	384
3:15 PM	48	82	0	130	136	63	0	199	50	61	0	111	440
3:30 PM	52	73	0	125	106	30	0	136	47	54	0	101	362
3:45 PM	55	65	0	120	123	61	0	184	54	62	0	116	420
<b>Total</b>	<b>210</b>	<b>288</b>	<b>0</b>	<b>498</b>	<b>477</b>	<b>208</b>	<b>0</b>	<b>685</b>	<b>195</b>	<b>228</b>	<b>0</b>	<b>423</b>	<b>1606</b>
Grand Total	434	533	0	967	859	515	0	1374	424	434	0	858	3199
Approach %	44.9	55.1	0.0		62.5	37.5	0.0		49.4	50.6	0.0		
Total %	13.6	16.7	0.0	30.2	26.9	16.1	0.0	43.0	13.3	13.6	0.0	26.8	
Exiting Leg Total				1293				957				949	3199
Cars	415	525	0	940	842	502	0	1344	417	423	0	840	3124
% Cars	95.6	98.5	0.0	97.2	98.0	97.5	0.0	97.8	98.3	97.5	0.0	97.9	97.7
Exiting Leg Total				1265				942				917	3124
Heavy Vehicles	19	8	0	27	17	13	0	30	7	11	0	18	75
% Heavy Vehicles	4.4	1.5	0.0	2.8	2.0	2.5	0.0	2.2	1.7	2.5	0.0	2.1	2.3
Exiting Leg Total				28				15				32	75

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:30 PM	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:30 PM	40	51	0	91	135	88	0	223	39	42	0	81	395
2:45 PM	78	68	0	146	109	61	0	170	56	47	0	103	419
3:00 PM	55	68	0	123	112	54	0	166	44	51	0	95	384
3:15 PM	48	82	0	130	136	63	0	199	50	61	0	111	440
Total Volume	221	269	0	490	492	266	0	758	189	201	0	390	1638
% Approach Total	45.1	54.9	0.0		64.9	35.1	0.0		48.5	51.5	0.0		
PHF	0.708	0.820	0.000	0.839	0.904	0.756	0.000	0.850	0.844	0.824	0.000	0.878	0.931
Cars	210	264	0	474	479	255	0	734	187	195	0	382	1590
Cars %	95.0	98.1	0.0	96.7	97.4	95.9	0.0	96.8	98.9	97.0	0.0	97.9	97.1
Heavy Vehicles	11	5	0	16	13	11	0	24	2	6	0	8	48
Heavy Vehicles %	5.0	1.9	0.0	3.3	2.6	4.1	0.0	3.2	1.1	3.0	0.0	2.1	2.9
Cars Enter Leg	210	264	0	474	479	255	0	734	187	195	0	382	1590
Heavy Enter Leg	11	5	0	16	13	11	0	24	2	6	0	8	48
Total Entering Leg	221	269	0	490	492	266	0	758	189	201	0	390	1638
Cars Exiting Leg				674				451				465	1590
Heavy Exiting Leg				19				7				22	48
Total Exiting Leg				693				458				487	1638

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**



Class: **Cars**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:00 PM	54	63	0	117	53	55	0	108	87	64	0	151	376
2:15 PM	48	61	0	109	81	103	0	184	44	50	0	94	387
2:30 PM	39	51	0	90	131	83	0	214	38	41	0	79	383
2:45 PM	72	66	0	138	105	58	0	163	56	44	0	100	401
Total	213	241	0	454	370	299	0	669	225	199	0	424	1547
3:00 PM	55	65	0	120	109	54	0	163	43	51	0	94	377
3:15 PM	44	82	0	126	134	60	0	194	50	59	0	109	429
3:30 PM	49	72	0	121	106	30	0	136	45	53	0	98	355
3:45 PM	54	65	0	119	123	59	0	182	54	61	0	115	416
Total	202	284	0	486	472	203	0	675	192	224	0	416	1577
Grand Total	415	525	0	940	842	502	0	1344	417	423	0	840	3124
Approach %	44.1	55.9	0.0		62.6	37.4	0.0		49.6	50.4	0.0		
Total %	13.3	16.8	0.0	30.1	27.0	16.1	0.0	43.0	13.3	13.5	0.0	26.9	
Exiting Leg Total				1265				942				917	3124

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:30 PM	39	51	0	90	131	83	0	214	38	41	0	79	383
2:45 PM	72	66	0	138	105	58	0	163	56	44	0	100	401
3:00 PM	55	65	0	120	109	54	0	163	43	51	0	94	377
3:15 PM	44	82	0	126	134	60	0	194	50	59	0	109	429
Total Volume	210	264	0	474	479	255	0	734	187	195	0	382	1590
% Approach Total	44.3	55.7	0.0		65.3	34.7	0.0		49.0	51.0	0.0		
PHF	0.729	0.805	0.000	0.859	0.894	0.768	0.000	0.857	0.835	0.826	0.000	0.876	0.927
Entering Leg	210	264	0	474	479	255	0	734	187	195	0	382	1590
Exiting Leg				674				451				465	1590
Total				1148				1185				847	3180

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**



**Class: Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:00 PM	2	1	0	3	2	0	0	2	1	3	0	4	9
2:15 PM	2	1	0	3	2	0	0	2	2	0	0	2	7
2:30 PM	1	0	0	1	4	5	0	9	1	1	0	2	12
2:45 PM	6	2	0	8	4	3	0	7	0	3	0	3	18
<b>Total</b>	<b>11</b>	<b>4</b>	<b>0</b>	<b>15</b>	<b>12</b>	<b>8</b>	<b>0</b>	<b>20</b>	<b>4</b>	<b>7</b>	<b>0</b>	<b>11</b>	<b>46</b>
3:00 PM	0	3	0	3	3	0	0	3	1	0	0	1	7
3:15 PM	4	0	0	4	2	3	0	5	0	2	0	2	11
3:30 PM	3	1	0	4	0	0	0	0	2	1	0	3	7
3:45 PM	1	0	0	1	0	2	0	2	0	1	0	1	4
<b>Total</b>	<b>8</b>	<b>4</b>	<b>0</b>	<b>12</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>10</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>7</b>	<b>29</b>
Grand Total	19	8	0	27	17	13	0	30	7	11	0	18	75
Approach %	70.4	29.6	0.0		56.7	43.3	0.0		38.9	61.1	0.0		
Total %	25.3	10.7	0.0	36.0	22.7	17.3	0.0	40.0	9.3	14.7	0.0	24.0	
Exiting Leg Total				28				15				32	75
Buses	0	1	0	1	7	3	0	10	3	0	0	3	14
% Buses	0.0	12.5	0.0	3.7	41.2	23.1	0.0	33.3	42.9	0.0	0.0	16.7	18.7
Exiting Leg Total				7				4				3	14
Single-Unit Trucks	17	5	0	22	9	8	0	17	4	11	0	15	54
% Single-Unit	89.5	62.5	0.0	81.5	52.9	61.5	0.0	56.7	57.1	100.0	0.0	83.3	72.0
Exiting Leg Total				20				9				25	54
Articulated Trucks	2	2	0	4	1	2	0	3	0	0	0	0	7
% Articulated	10.5	25.0	0.0	14.8	5.9	15.4	0.0	10.0	0.0	0.0	0.0	0.0	9.3
Exiting Leg Total				1				2				4	7

**Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:30 PM	1	0	0	1	4	5	0	9	1	1	0	2	12
2:45 PM	6	2	0	8	4	3	0	7	0	3	0	3	18
3:00 PM	0	3	0	3	3	0	0	3	1	0	0	1	7
3:15 PM	4	0	0	4	2	3	0	5	0	2	0	2	11
Total Volume	11	5	0	16	13	11	0	24	2	6	0	8	48
% Approach Total	68.8	31.3	0.0		54.2	45.8	0.0		25.0	75.0	0.0		
PHF	0.458	0.417	0.000	0.500	0.813	0.550	0.000	0.667	0.500	0.500	0.000	0.667	0.667
Buses	0	0	0	0	5	2	0	7	1	0	0	1	8
Buses %	0.0	0.0	0.0	0.0	38.5	18.2	0.0	29.2	50.0	0.0	0.0	12.5	16.7
Single-Unit Trucks	10	3	0	13	7	7	0	14	1	6	0	7	34
Single-Unit %	90.9	60.0	0.0	81.3	53.8	63.6	0.0	58.3	50.0	100.0	0.0	87.5	70.8
Articulated Trucks	1	2	0	3	1	2	0	3	0	0	0	0	6
Articulated %	9.1	40.0	0.0	18.8	7.7	18.2	0.0	12.5	0.0	0.0	0.0	0.0	12.5
Buses	0	0	0	0	5	2	0	7	1	0	0	1	8
Single-Unit Trucks	10	3	0	13	7	7	0	14	1	6	0	7	34
Articulated Trucks	1	2	0	3	1	2	0	3	0	0	0	0	6
Total Entering Leg	11	5	0	16	13	11	0	24	2	6	0	8	48
Buses				5				1				2	8
Single-Unit Trucks				13				4				17	34
Articulated Trucks				1				2				3	6
Total Exiting Leg				19				7				22	48

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class:



PRECISION  
 D A T A  
 INDUSTRIES, LLC

157 Washington Street, Suite 2  
 Hudson, MA 01749  
 508-875-0100 datarequests@pdillc.com

**Buses**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
2:15 PM	0	0	0	0	2	0	0	2	2	0	0	2	4
2:30 PM	0	0	0	0	0	2	0	2	1	0	0	1	3
2:45 PM	0	0	0	0	3	0	0	3	0	0	0	0	3
<b>Total</b>	0	1	0	1	5	2	0	7	3	0	0	3	11
3:00 PM	0	0	0	0	2	0	0	2	0	0	0	0	2
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
<b>Total</b>	0	0	0	0	2	1	0	3	0	0	0	0	3
<b>Grand Total</b>	0	1	0	1	7	3	0	10	3	0	0	3	14
Approach %	0.0	100.0	0.0		70.0	30.0	0.0		100.0	0.0	0.0		
Total %	0.0	7.1	0.0	7.1	50.0	21.4	0.0	71.4	21.4	0.0	0.0	21.4	
Exiting Leg Total				7				4				3	14

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:15 PM	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:15 PM	0	0	0	0	2	0	0	2	2	0	0	2	4
2:30 PM	0	0	0	0	0	2	0	2	1	0	0	1	3
2:45 PM	0	0	0	0	3	0	0	3	0	0	0	0	3
3:00 PM	0	0	0	0	2	0	0	2	0	0	0	0	2
<b>Total Volume</b>	0	0	0	0	7	2	0	9	3	0	0	3	12
<b>% Approach Total</b>	0.0	0.0	0.0		77.8	22.2	0.0		100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.583	0.250	0.000	0.750	0.375	0.000	0.000	0.375	0.750
Entering Leg	0	0	0	0	7	2	0	9	3	0	0	3	12
Exiting Leg				7				3				2	12
<b>Total</b>				7				12				5	24



PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class:



PRECISION  
 DATA  
 INDUSTRIES, LLC

157 Washington Street, Suite 2  
 Hudson, MA 01749  
 508-875-0100 datarequests@pdillc.com

**Single-Unit Trucks**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:00 PM	2	0	0	2	2	0	0	2	1	3	0	4	8
2:15 PM	2	1	0	3	0	0	0	0	0	0	0	0	3
2:30 PM	1	0	0	1	3	2	0	5	0	1	0	1	7
2:45 PM	5	1	0	6	1	2	0	3	0	3	0	3	12
Total	10	2	0	12	6	4	0	10	1	7	0	8	30
3:00 PM	0	2	0	2	1	0	0	1	1	0	0	1	4
3:15 PM	4	0	0	4	2	3	0	5	0	2	0	2	11
3:30 PM	2	1	0	3	0	0	0	0	2	1	0	3	6
3:45 PM	1	0	0	1	0	1	0	1	0	1	0	1	3
Total	7	3	0	10	3	4	0	7	3	4	0	7	24
Grand Total	17	5	0	22	9	8	0	17	4	11	0	15	54
Approach %	77.3	22.7	0.0		52.9	47.1	0.0		26.7	73.3	0.0		
Total %	31.5	9.3	0.0	40.7	16.7	14.8	0.0	31.5	7.4	20.4	0.0	27.8	
Exiting Leg Total				20				9				25	54

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:30 PM	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:30 PM	1	0	0	1	3	2	0	5	0	1	0	1	7
2:45 PM	5	1	0	6	1	2	0	3	0	3	0	3	12
3:00 PM	0	2	0	2	1	0	0	1	1	0	0	1	4
3:15 PM	4	0	0	4	2	3	0	5	0	2	0	2	11
Total Volume	10	3	0	13	7	7	0	14	1	6	0	7	34
% Approach Total	76.9	23.1	0.0		50.0	50.0	0.0		14.3	85.7	0.0		
PHF	0.500	0.375	0.000	0.542	0.583	0.583	0.000	0.700	0.250	0.500	0.000	0.583	0.708
Entering Leg	10	3	0	13	7	7	0	14	1	6	0	7	34
Exiting Leg				13				4				17	34
Total				26				18				24	68

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**



**Articulated Trucks**

	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	1	1	0	2	0	0	0	0	2
2:45 PM	1	1	0	2	0	1	0	1	0	0	0	0	3
<b>Total</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>
3:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>
<b>Grand Total</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>
Approach %	50.0	50.0	0.0		33.3	66.7	0.0		0.0	0.0	0.0		
Total %	28.6	28.6	0.0	57.1	14.3	28.6	0.0	42.9	0.0	0.0	0.0	0.0	
Exiting Leg Total				1				2					4

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:15 PM	Water Street (Route 129)				Farm Street				Water Street (Route 129)				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	1	1	0	2	0	0	0	0	2
2:45 PM	1	1	0	2	0	1	0	1	0	0	0	0	3
3:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
<b>Total Volume</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>
% Approach Total	33.3	66.7	0.0		33.3	66.7	0.0		0.0	0.0	0.0		
PHF	0.250	0.500	0.000	0.375	0.250	0.500	0.000	0.375	0.000	0.000	0.000	0.000	0.500
Entering Leg	1	2	0	3	1	2	0	3	0	0	0	0	6
Exiting Leg				1				2				3	6
<b>Total</b>				<b>4</b>				<b>5</b>				<b>3</b>	<b>12</b>

PDI File #: 217949 A  
 Location: S: Farm Street  
 Location: E: Water Street (Route 129) W: Water Street (Route 129)  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2  
 Count Date: Thursday, May 27, 2021  
 Start Time: 2:00 PM  
 End Time: 4:00 PM



**Bicycles (on Roadway and Crosswalks)**

	Water Street (Route 129)						Farm Street						Water Street (Route 129)						Total	
	from East						from South						from West							
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
2:15 PM	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2	
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
<b>Total</b>	0	0	0	0	2	2	0	0	0	0	0	0	2	0	0	0	0	0	4	
3:00 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Total</b>	0	0	0	0	0	0	0	1	0	0	0	1	2	0	0	0	0	0	3	
<b>Grand Total</b>	0	0	0	0	2	2	0	1	0	0	0	1	4	0	0	0	0	0	7	
Approach %	0.0	0.0	0.0	0.0	100.0		0.0	100.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0			
Total %	0.0	0.0	0.0	0.0	28.6	28.6	0.0	14.3	0.0	0.0	0.0	14.3	57.1	0.0	0.0	0.0	0.0	57.1		
Exiting Leg Total																			1	7

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:00 PM	Water Street (Route 129)						Farm Street						Water Street (Route 129)						Total	
	from East						from South						from West							
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
2:15 PM	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2	
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
<b>Total Volume</b>	0	0	0	0	2	2	0	0	0	0	0	0	2	0	0	0	0	0	4	
<b>% Approach Total</b>	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0			
PHF	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.500	0.500	
Entering Leg																			2	4
Exiting Leg																			2	4
<b>Total</b>																			4	8

PDI File #: **217949 A**  
 Location: **S: Farm Street**  
 Location: **E: Water Street (Route 129) W: Water Street (Route 129)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class:



**Pedestrians**

	Water Street (Route 129)							Farm Street						Water Street (Route 129)						Total	
	from East							from South						from West							
	Thru	Left	U-Turn	CW-SB	CW-NB	Total		Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total		
2:00 PM	0	0	0	3	9	12		0	0	0	2	0	2	0	0	0	0	0	0	14	
2:15 PM	0	0	0	2	3	5		0	0	0	3	0	3	0	0	0	1	0	1	9	
2:30 PM	0	0	0	1	6	7		0	0	0	3	1	4	0	0	0	0	0	0	11	
2:45 PM	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>18</b>	<b>24</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>1</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>34</b>	
3:00 PM	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	
3:15 PM	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	
3:30 PM	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	
3:45 PM	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
Grand Total	0	0	0	6	18	24		0	0	0	8	1	9	0	0	0	1	0	1	34	
Approach %	0	0	0	25	75			0	0	0	88.889	11.111		0	0	0	100	0			
Total %	0	0	0	17.647	52.941	70.588		0	0	0	23.529	2.9412	26.471	0	0	0	2.9412	0	2.9412		
Exiting Leg Total								24						9						1	34

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:00 PM	Water Street (Route 129)							Farm Street						Water Street (Route 129)						Total			
	from East							from South						from West									
	Thru	Left	U-Turn	CW-SB	CW-NB	Total		Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total				
2:00 PM	0	0	0	3	9	12		0	0	0	2	0	2	0	0	0	0	0	0	14			
2:15 PM	0	0	0	2	3	5		0	0	0	3	0	3	0	0	0	1	0	1	9			
2:30 PM	0	0	0	1	6	7		0	0	0	3	1	4	0	0	0	0	0	0	11			
2:45 PM	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0			
<b>Total Volume</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>18</b>	<b>24</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>1</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>34</b>			
<b>% Approach Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>25.0</b>	<b>75.0</b>			<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>88.9</b>	<b>11.1</b>		<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>100.0</b>	<b>0.0</b>					
PHF	0.000	0.000	0.000	0.500	0.500	0.500		0.000	0.000	0.000	0.667	0.250	0.563	0.000	0.000	0.000	0.250	0.000	0.250	0.607			
Entering Leg	0	0	0	6	18	24		0	0	0	8	1	9	0	0	0	1	0	1	34			
Exiting Leg								24						9						1	34		
<b>Total</b>								<b>48</b>							<b>18</b>							<b>2</b>	<b>68</b>

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
11:00 AM	25	0	0	25	0	62	0	62	24	7	0	31	118
11:15 AM	14	2	0	16	1	22	0	23	34	1	0	35	74
11:30 AM	5	0	0	5	1	48	0	49	27	4	0	31	85
11:45 AM	8	0	0	8	0	57	0	57	24	5	0	29	94
<b>Total</b>	<b>52</b>	<b>2</b>	<b>0</b>	<b>54</b>	<b>2</b>	<b>189</b>	<b>0</b>	<b>191</b>	<b>109</b>	<b>17</b>	<b>0</b>	<b>126</b>	<b>371</b>
12:00 PM	3	1	0	4	1	43	0	44	17	2	0	19	67
12:15 PM	5	0	0	5	0	31	0	31	26	1	1	28	64
12:30 PM	7	0	0	7	0	18	0	18	20	1	0	21	46
12:45 PM	1	0	0	1	0	17	0	17	17	1	0	18	36
<b>Total</b>	<b>16</b>	<b>1</b>	<b>0</b>	<b>17</b>	<b>1</b>	<b>109</b>	<b>0</b>	<b>110</b>	<b>80</b>	<b>5</b>	<b>1</b>	<b>86</b>	<b>213</b>
Grand Total	68	3	0	71	3	298	0	301	189	22	1	212	584
Approach %	95.8	4.2	0.0		1.0	99.0	0.0		89.2	10.4	0.5		
Total %	11.6	0.5	0.0	12.2	0.5	51.0	0.0	51.5	32.4	3.8	0.2	36.3	
Exiting Leg Total				25				192				367	584
Cars	68	3	0	71	3	292	0	295	186	22	1	209	575
% Cars	100.0	100.0	0.0	100.0	100.0	98.0	0.0	98.0	98.4	100.0	100.0	98.6	98.5
Exiting Leg Total				25				189				361	575
Heavy Vehicles	0	0	0	0	0	6	0	6	3	0	0	3	9
% Heavy Vehicles	0.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	1.6	0.0	0.0	1.4	1.5
Exiting Leg Total				0				3				6	9

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:00 AM	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
11:00 AM	25	0	0	25	0	62	0	62	24	7	0	31	118
11:15 AM	14	2	0	16	1	22	0	23	34	1	0	35	74
11:30 AM	5	0	0	5	1	48	0	49	27	4	0	31	85
11:45 AM	8	0	0	8	0	57	0	57	24	5	0	29	94
Total Volume	52	2	0	54	2	189	0	191	109	17	0	126	371
% Approach Total	96.3	3.7	0.0		1.0	99.0	0.0		86.5	13.5	0.0		
PHF	0.520	0.250	0.000	0.540	0.500	0.762	0.000	0.770	0.801	0.607	0.000	0.900	0.786
Cars	52	2	0	54	2	185	0	187	106	17	0	123	364
Cars %	100.0	100.0	0.0	100.0	100.0	97.9	0.0	97.9	97.2	100.0	0.0	97.6	98.1
Heavy Vehicles	0	0	0	0	0	4	0	4	3	0	0	3	7
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	2.1	0.0	2.1	2.8	0.0	0.0	2.4	1.9
Cars Enter Leg	52	2	0	54	2	185	0	187	106	17	0	123	364
Heavy Enter Leg	0	0	0	0	0	4	0	4	3	0	0	3	7
Total Entering Leg	52	2	0	54	2	189	0	191	109	17	0	126	371
Cars Exiting Leg				19				108				237	364
Heavy Exiting Leg				0				3				4	7
Total Exiting Leg				19				111				241	371

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Cars**

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
11:00 AM	25	0	0	25	0	62	0	62	24	7	0	31	118
11:15 AM	14	2	0	16	1	22	0	23	34	1	0	35	74
11:30 AM	5	0	0	5	1	48	0	49	24	4	0	28	82
11:45 AM	8	0	0	8	0	53	0	53	24	5	0	29	90
Total	52	2	0	54	2	185	0	187	106	17	0	123	364
12:00 PM	3	1	0	4	1	41	0	42	17	2	0	19	65
12:15 PM	5	0	0	5	0	31	0	31	26	1	1	28	64
12:30 PM	7	0	0	7	0	18	0	18	20	1	0	21	46
12:45 PM	1	0	0	1	0	17	0	17	17	1	0	18	36
Total	16	1	0	17	1	107	0	108	80	5	1	86	211
Grand Total	68	3	0	71	3	292	0	295	186	22	1	209	575
Approach %	95.8	4.2	0.0		1.0	99.0	0.0		89.0	10.5	0.5		
Total %	11.8	0.5	0.0	12.3	0.5	50.8	0.0	51.3	32.3	3.8	0.2	36.3	
Exiting Leg Total				25				189				361	575

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:00 AM	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
11:00 AM	25	0	0	25	0	62	0	62	24	7	0	31	118
11:15 AM	14	2	0	16	1	22	0	23	34	1	0	35	74
11:30 AM	5	0	0	5	1	48	0	49	24	4	0	28	82
11:45 AM	8	0	0	8	0	53	0	53	24	5	0	29	90
Total Volume	52	2	0	54	2	185	0	187	106	17	0	123	364
% Approach Total	96.3	3.7	0.0		1.1	98.9	0.0		86.2	13.8	0.0		
PHF	0.520	0.250	0.000	0.540	0.500	0.746	0.000	0.754	0.779	0.607	0.000	0.879	0.771
Entering Leg	52	2	0	54	2	185	0	187	106	17	0	123	364
Exiting Leg				19				108				237	364
Total				73				295				360	728

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**



**Class: Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	3	0	0	3	3
11:45 AM	0	0	0	0	0	4	0	4	0	0	0	0	4
<b>Total</b>	0	0	0	0	0	4	0	4	3	0	0	3	7
12:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	2
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	2	0	2	0	0	0	0	2
<b>Grand Total</b>	0	0	0	0	0	6	0	6	3	0	0	3	9
Approach %	0.0	0.0	0.0	0.0	0.0	100.0	0.0	66.7	100.0	0.0	0.0	33.3	77.8
Total %	0.0	0.0	0.0	0.0	0.0	66.7	0.0	66.7	33.3	0.0	0.0	33.3	77.8
Exiting Leg Total	0				3				6				9
Buses	0	0	0	0	0	1	0	1	1	0	0	1	2
% Buses	0.0	0.0	0.0	0.0	0.0	16.7	0.0	16.7	33.3	0.0	0.0	33.3	22.2
Exiting Leg Total	0				1				1				2
Single-Unit Trucks	0	0	0	0	0	5	0	5	2	0	0	2	7
% Single-Unit	0.0	0.0	0.0	0.0	0.0	83.3	0.0	83.3	66.7	0.0	0.0	66.7	77.8
Exiting Leg Total	0				2				5				7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total	0				0				0				0

**Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:**

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	3	0	0	3	3
11:30 AM	0	0	0	0	0	4	0	4	0	0	0	0	4
11:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	2
12:00 PM	0	0	0	0	0	6	0	6	3	0	0	3	9
<b>Total Volume</b>	0	0	0	0	0	6	0	6	3	0	0	3	9
% Approach Total	0.0	0.0	0.0	0.0	0.0	100.0	0.0	66.7	100.0	0.0	0.0	33.3	77.8
PHF	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.375	0.250	0.000	0.000	0.250	0.563
Buses	0	0	0	0	0	1	0	1	1	0	0	1	2
Buses %	0.0	0.0	0.0	0.0	0.0	16.7	0.0	16.7	33.3	0.0	0.0	33.3	22.2
Single-Unit Trucks	0	0	0	0	0	5	0	5	2	0	0	2	7
Single-Unit %	0.0	0.0	0.0	0.0	0.0	83.3	0.0	83.3	66.7	0.0	0.0	66.7	77.8
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buses	0	0	0	0	0	1	0	1	1	0	0	1	2
Single-Unit Trucks	0	0	0	0	0	5	0	5	2	0	0	2	7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Entering Leg</b>	0	0	0	0	0	6	0	6	3	0	0	3	9
Buses	0				1				1				2
Single-Unit Trucks	0				2				5				7
Articulated Trucks	0				0				0				0
<b>Total Exiting Leg</b>	0				3				6				9

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Buses**

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
11:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	0	0	0	0	0	1	0	1	1	0	0	1	2
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	1	0	1	1	0	0	1	2
Approach %	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	50.0	0.0	50.0	50.0	0.0	0.0	50.0	
Exiting Leg Total	0				1				1				2

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:00 AM	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
11:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
Total Volume	0	0	0	0	0	1	0	1	1	0	0	1	2
% Approach Total	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.250	0.000	0.000	0.250	0.500
Entering Leg	0	0	0	0	0	1	0	1	1	0	0	1	2
Exiting Leg	0				1				1				2
Total	0				2				2				4



PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Single-Unit Trucks**

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	2	0	0	2	2
11:45 AM	0	0	0	0	0	3	0	3	0	0	0	0	3
<b>Total</b>	0	0	0	0	0	3	0	3	2	0	0	2	5
12:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	2
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	2	0	2	0	0	0	0	2
<b>Grand Total</b>	0	0	0	0	0	5	0	5	2	0	0	2	7
Approach %	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	71.4	0.0	71.4	28.6	0.0	0.0	28.6	
Exiting Leg Total	0				2				5				7

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:15 AM	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	2	0	0	2	2
11:45 AM	0	0	0	0	0	3	0	3	0	0	0	0	3
12:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	2
<b>Total Volume</b>	0	0	0	0	0	5	0	5	2	0	0	2	7
<b>% Approach Total</b>	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.417	0.000	0.417	0.250	0.000	0.000	0.250	0.583
Entering Leg	0	0	0	0	0	5	0	5	2	0	0	2	7
Exiting Leg	0				2				5				7
<b>Total</b>	0				7				7				14

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Articulated Trucks**

	School Driveway				Hemlock Road				Hemlock Road				Total	
	from North				from East				from West					
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total		
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0			
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Exiting Leg Total	0				0				0				0	

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:00 AM	School Driveway				Hemlock Road				Hemlock Road				Total	
	from North				from East				from West					
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total		
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0			
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg	0				0				0				0	
Total	0				0				0				0	

PDI File #: 217949 B  
 Location: N: School Driveway  
 Location: E: Hemlock Road W: Hemlock Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2  
 Count Date: Saturday, May 22, 2021  
 Start Time: 11:00 AM  
 End Time: 1:00 PM



**Bicycles (on Roadway and Crosswalks)**

	School Driveway							Hemlock Road						Hemlock Road						Total	
	from North							from East						from West							
	Right	Left	U-Turn	CW-EB	CW-WB	Total		Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total		
11:00 AM	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>
12:00 PM	0	0	0	0	0	1	1	0	2	0	0	0	0	1	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>
<b>Grand Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>
Approach %	50.0	0.0	0.0	0.0	0.0	50.0		0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total %	9.1	0.0	0.0	0.0	0.0	9.1	18.2	0.0	54.5	0.0	0.0	0.0	0.0	27.3	0.0	0.0	0.0	0.0	0.0	0.0	27.3
Exiting Leg Total	1							3						7						11	

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:45 AM	School Driveway							Hemlock Road						Hemlock Road						Total	
	from North							from East						from West							
	Right	Left	U-Turn	CW-EB	CW-WB	Total		Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total		
11:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	1	1	0	2	0	0	0	0	1	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3
<b>Total Volume</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
% Approach Total	0.0	0.0	0.0	0.0	0.0	100.0		0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	
PHF	0.000	0.000	0.000	0.000	0.250	0.250		0.000	0.500	0.000	0.000	0.000	0.500	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.500
Entering Leg	0							6						1						8	
Exiting Leg	1							1						6						8	
<b>Total</b>	<b>2</b>							<b>7</b>						<b>7</b>						<b>16</b>	

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Pedestrians**

	School Driveway						Hemlock Road						Hemlock Road						Total	
	from North						from East						from West							
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total		
11:00 AM	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	6	6	9	
11:15 AM	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	1	1	2	5	
11:30 AM	0	0	0	0	0	0	0	0	0	1	4	5	0	0	0	0	0	0	5	
11:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	
Total	0	0	0	0	3	3	0	0	0	4	5	9	0	0	0	1	7	8	20	
12:00 PM	0	0	0	0	3	3	0	0	0	1	9	10	0	0	0	12	0	12	25	
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	
Total	0	0	0	0	3	3	0	0	0	2	9	11	0	0	0	12	0	12	26	
Grand Total	0	0	0	0	6	6	0	0	0	6	14	20	0	0	0	13	7	20	46	
Approach %	0	0	0	0	100		0	0	0	30	70		0	0	0	65	35			
Total %	0	0	0	0	13.043	13.043	0	0	0	13.043	30.435	43.478	0	0	0	28.261	15.217	43.478		
Exiting Leg Total																			20	46

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:15 AM	School Driveway						Hemlock Road						Hemlock Road						Total	
	from North						from East						from West							
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total		
11:15 AM	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	1	1	2	5	
11:30 AM	0	0	0	0	0	0	0	0	0	1	4	5	0	0	0	0	0	0	5	
11:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	
12:00 PM	0	0	0	0	3	3	0	0	0	1	9	10	0	0	0	12	0	12	25	
Total Volume	0	0	0	0	3	3	0	0	0	5	14	19	0	0	0	13	1	14	36	
% Approach Total	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	26.3	73.7		0.0	0.0	0.0	92.9	7.1			
PHF	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.625	0.389	0.475	0.000	0.000	0.000	0.271	0.250	0.292	0.360	
Entering Leg	0	0	0	0	3	3	0	0	0	5	14	19	0	0	0	13	1	14	36	
Exiting Leg																			14	36
Total																			28	72

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**



**Cars and Heavy Vehicles (Combined)**

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
7:00 AM	4	0	0	4	0	7	0	7	120	46	0	166	177
7:15 AM	3	0	0	3	1	10	0	11	125	17	0	142	156
7:30 AM	8	2	0	10	0	72	0	72	182	15	0	197	279
7:45 AM	1	1	0	2	1	106	0	107	131	4	0	135	244
<b>Total</b>	16	3	0	19	2	195	0	197	558	82	0	640	856
8:00 AM	2	3	0	5	2	31	1	34	41	4	0	45	84
8:15 AM	1	1	0	2	0	11	0	11	24	7	0	31	44
8:30 AM	2	2	0	4	2	13	1	16	21	2	0	23	43
8:45 AM	2	0	0	2	0	9	0	9	15	0	0	15	26
<b>Total</b>	7	6	0	13	4	64	2	70	101	13	0	114	197
Grand Total	23	9	0	32	6	259	2	267	659	95	0	754	1053
Approach %	71.9	28.1	0.0		2.2	97.0	0.7		87.4	12.6	0.0		
Total %	2.2	0.9	0.0	3.0	0.6	24.6	0.2	25.4	62.6	9.0	0.0	71.6	
Exiting Leg Total				101				670				282	1053
Cars	22	9	0	31	6	236	2	244	638	93	0	731	1006
% Cars	95.7	100.0	0.0	96.9	100.0	91.1	100.0	91.4	96.8	97.9	0.0	96.9	95.5
Exiting Leg Total				99				649				258	1006
Heavy Vehicles	1	0	0	1	0	23	0	23	21	2	0	23	47
% Heavy Vehicles	4.3	0.0	0.0	3.1	0.0	8.9	0.0	8.6	3.2	2.1	0.0	3.1	4.5
Exiting Leg Total				2				21				24	47

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
7:00 AM	4	0	0	4	0	7	0	7	120	46	0	166	177
7:15 AM	3	0	0	3	1	10	0	11	125	17	0	142	156
7:30 AM	8	2	0	10	0	72	0	72	182	15	0	197	279
7:45 AM	1	1	0	2	1	106	0	107	131	4	0	135	244
Total Volume	16	3	0	19	2	195	0	197	558	82	0	640	856
% Approach Total	84.2	15.8	0.0		1.0	99.0	0.0		87.2	12.8	0.0		
PHF	0.500	0.375	0.000	0.475	0.500	0.460	0.000	0.460	0.766	0.446	0.000	0.812	0.767
Cars	16	3	0	19	2	174	0	176	537	81	0	618	813
Cars %	100.0	100.0	0.0	100.0	100.0	89.2	0.0	89.3	96.2	98.8	0.0	96.6	95.0
Heavy Vehicles	0	0	0	0	0	21	0	21	21	1	0	22	43
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	10.8	0.0	10.7	3.8	1.2	0.0	3.4	5.0
Cars Enter Leg	16	3	0	19	2	174	0	176	537	81	0	618	813
Heavy Enter Leg	0	0	0	0	0	21	0	21	21	1	0	22	43
Total Entering Leg	16	3	0	19	2	195	0	197	558	82	0	640	856
Cars Exiting Leg				83				540				190	813
Heavy Exiting Leg				1				21				21	43
Total Exiting Leg				84				561				211	856

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**



**Cars**

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
7:00 AM	4	0	0	4	0	7	0	7	120	46	0	166	177
7:15 AM	3	0	0	3	1	10	0	11	123	17	0	140	154
7:30 AM	8	2	0	10	0	65	0	65	170	15	0	185	260
7:45 AM	1	1	0	2	1	92	0	93	124	3	0	127	222
<b>Total</b>	<b>16</b>	<b>3</b>	<b>0</b>	<b>19</b>	<b>2</b>	<b>174</b>	<b>0</b>	<b>176</b>	<b>537</b>	<b>81</b>	<b>0</b>	<b>618</b>	<b>813</b>
8:00 AM	2	3	0	5	2	30	1	33	41	4	0	45	83
8:15 AM	1	1	0	2	0	11	0	11	24	6	0	30	43
8:30 AM	1	2	0	3	2	12	1	15	21	2	0	23	41
8:45 AM	2	0	0	2	0	9	0	9	15	0	0	15	26
<b>Total</b>	<b>6</b>	<b>6</b>	<b>0</b>	<b>12</b>	<b>4</b>	<b>62</b>	<b>2</b>	<b>68</b>	<b>101</b>	<b>12</b>	<b>0</b>	<b>113</b>	<b>193</b>
<b>Grand Total</b>	<b>22</b>	<b>9</b>	<b>0</b>	<b>31</b>	<b>6</b>	<b>236</b>	<b>2</b>	<b>244</b>	<b>638</b>	<b>93</b>	<b>0</b>	<b>731</b>	<b>1006</b>
Approach %	71.0	29.0	0.0		2.5	96.7	0.8		87.3	12.7	0.0		
Total %	2.2	0.9	0.0	3.1	0.6	23.5	0.2	24.3	63.4	9.2	0.0	72.7	
Exiting Leg Total				99				649				258	1006

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
7:00 AM	4	0	0	4	0	7	0	7	120	46	0	166	177
7:15 AM	3	0	0	3	1	10	0	11	123	17	0	140	154
7:30 AM	8	2	0	10	0	65	0	65	170	15	0	185	260
7:45 AM	1	1	0	2	1	92	0	93	124	3	0	127	222
<b>Total Volume</b>	<b>16</b>	<b>3</b>	<b>0</b>	<b>19</b>	<b>2</b>	<b>174</b>	<b>0</b>	<b>176</b>	<b>537</b>	<b>81</b>	<b>0</b>	<b>618</b>	<b>813</b>
<b>% Approach Total</b>	<b>84.2</b>	<b>15.8</b>	<b>0.0</b>		<b>1.1</b>	<b>98.9</b>	<b>0.0</b>		<b>86.9</b>	<b>13.1</b>	<b>0.0</b>		
PHF	0.500	0.375	0.000	0.475	0.500	0.473	0.000	0.473	0.790	0.440	0.000	0.835	0.782
Entering Leg	16	3	0	19	2	174	0	176	537	81	0	618	813
Exiting Leg				83				540				190	813
<b>Total</b>				<b>102</b>				<b>716</b>				<b>808</b>	<b>1626</b>

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**



Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	2	0	0	2	2
7:30 AM	0	0	0	0	0	7	0	7	12	0	0	12	19
7:45 AM	0	0	0	0	0	14	0	14	7	1	0	8	22
Total	0	0	0	0	0	21	0	21	21	1	0	22	43
8:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
8:30 AM	1	0	0	1	0	1	0	1	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	1	0	2	0	2	0	1	0	1	4
Grand Total	1	0	0	1	0	23	0	23	21	2	0	23	47
Approach %	100.0	0.0	0.0		0.0	100.0	0.0		91.3	8.7	0.0		
Total %	2.1	0.0	0.0	2.1	0.0	48.9	0.0	48.9	44.7	4.3	0.0	48.9	
Exiting Leg Total				2				21				24	47
Buses	0	0	0	0	0	22	0	22	20	0	0	20	42
% Buses	0.0	0.0	0.0	0.0	0.0	95.7	0.0	95.7	95.2	0.0	0.0	87.0	89.4
Exiting Leg Total				0				20				22	42
Single-Unit Trucks	1	0	0	1	0	1	0	1	1	1	0	2	4
% Single-Unit	100.0	0.0	0.0	100.0	0.0	4.3	0.0	4.3	4.8	50.0	0.0	8.7	8.5
Exiting Leg Total				1				1				2	4
Articulated Trucks	0	0	0	0	0	0	0	0	0	1	0	1	1
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	4.3	2.1
Exiting Leg Total				1				0				0	1

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
7:15 AM	0	0	0	0	0	0	0	0	2	0	0	2	2
7:30 AM	0	0	0	0	0	7	0	7	12	0	0	12	19
7:45 AM	0	0	0	0	0	14	0	14	7	1	0	8	22
8:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
Total Volume	0	0	0	0	0	22	0	22	21	1	0	22	44
% Approach Total	0.0	0.0	0.0		0.0	100.0	0.0		95.5	4.5	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.393	0.000	0.393	0.438	0.250	0.000	0.458	0.500
Buses	0	0	0	0	0	21	0	21	20	0	0	20	41
Buses %	0.0	0.0	0.0	0.0	0.0	95.5	0.0	95.5	95.2	0.0	0.0	90.9	93.2
Single-Unit Trucks	0	0	0	0	0	1	0	1	1	0	0	1	2
Single-Unit %	0.0	0.0	0.0	0.0	0.0	4.5	0.0	4.5	4.8	0.0	0.0	4.5	4.5
Articulated Trucks	0	0	0	0	0	0	0	0	0	1	0	1	1
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	4.5	2.3
Buses	0	0	0	0	0	21	0	21	20	0	0	20	41
Single-Unit Trucks	0	0	0	0	0	1	0	1	1	0	0	1	2
Articulated Trucks	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Entering Leg	0	0	0	0	0	22	0	22	21	1	0	22	44
Buses				0				20				21	41
Single-Unit Trucks				0				1				1	2
Articulated Trucks				1				0				0	1
Total Exiting Leg				1				21				22	44

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Buses**

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
7:30 AM	0	0	0	0	0	6	0	6	12	0	0	12	18
7:45 AM	0	0	0	0	0	14	0	14	7	0	0	7	21
<b>Total</b>	0	0	0	0	0	20	0	20	20	0	0	20	40
8:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	2	0	2	0	0	0	0	2
<b>Grand Total</b>	0	0	0	0	0	22	0	22	20	0	0	20	42
Approach %	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	52.4	0.0	52.4	47.6	0.0	0.0	47.6	
Exiting Leg Total	0				20				22				42

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
7:30 AM	0	0	0	0	0	6	0	6	12	0	0	12	18
7:45 AM	0	0	0	0	0	14	0	14	7	0	0	7	21
8:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
<b>Total Volume</b>	0	0	0	0	0	21	0	21	20	0	0	20	41
<b>% Approach Total</b>	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.375	0.417	0.000	0.000	0.417	0.488
Entering Leg	0				21				20				41
Exiting Leg	0				20				21				41
<b>Total</b>	0				41				41				82



PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Single-Unit Trucks**

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
7:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	1	0	1	1	0	0	1	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
8:30 AM	1	0	0	1	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	1	0	0	1	0	0	0	0	0	1	0	1	2
<b>Grand Total</b>	1	0	0	1	0	1	0	1	1	1	0	2	4
Approach %	100.0	0.0	0.0		0.0	100.0	0.0		50.0	50.0	0.0		
Total %	25.0	0.0	0.0	25.0	0.0	25.0	0.0	25.0	25.0	25.0	0.0	50.0	
Exiting Leg Total				1				1				2	4

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
7:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Volume</b>	0	0	0	0	0	1	0	1	1	0	0	1	2
<b>% Approach Total</b>	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.250	0.000	0.000	0.250	0.500
Entering Leg	0	0	0	0	0	1	0	1	1	0	0	1	2
Exiting Leg				0				1				1	2
<b>Total</b>				0				2				2	4

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Articulated Trucks**

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
7:00 AM	0	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
7:30 AM	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	1	0	1	1
<b>Total</b>	0	0	0	0	0	0	0	0	0	1	0	1	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	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
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Grand Total</b>	0	0	0	0	0	0	0	0	0	1	0	1	1
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	
Exiting Leg Total				1				0				0	1

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
7:00 AM	0	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
7:30 AM	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	1	0	1	1
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	1
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	1	0	1	1
Exiting Leg				1				0				0	1
<b>Total</b>				1				0				1	2

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**



**Bicycles (on Roadway and Crosswalks)**

	School Driveway						Hemlock Road						Hemlock Road						Total
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	0	0	0	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	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0
8:30 AM	0	0	0	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	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
Approach %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0			
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0		
Exiting Leg Total	0						1						0						1

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	School Driveway						Hemlock Road						Hemlock Road						Total
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	0	0	0	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	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0			
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.250	
Entering Leg	0						0						1						1
Exiting Leg	0						1						0						1
Total	0						1						1						2

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Pedestrians**

	School Driveway						Hemlock Road						Hemlock Road						Total
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	3
7:30 AM	0	0	0	3	2	5	0	0	0	0	2	2	0	0	0	0	0	0	7
7:45 AM	0	0	0	1	2	3	0	0	0	1	0	1	0	0	0	0	0	0	4
Total	0	0	0	4	4	8	0	0	0	2	4	6	0	0	0	0	0	0	14
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
8:15 AM	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	3
8:30 AM	0	0	0	0	1	1	0	0	0	6	0	6	0	0	0	0	0	0	7
8:45 AM	0	0	0	0	0	0	0	0	0	0	6	6	0	0	0	0	0	0	6
Total	0	0	0	1	3	4	0	0	0	7	6	13	0	0	0	0	0	0	17
Grand Total	0	0	0	5	7	12	0	0	0	9	10	19	0	0	0	0	0	0	31
Approach %	0	0	0	41.667	58.333		0	0	0	47.368	52.632		0	0	0	0	0	0	
Total %	0	0	0	16.129	22.581	38.71	0	0	0	29.032	32.258	61.29	0	0	0	0	0	0	
Exiting Leg Total	12						19						0						31

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	School Driveway						Hemlock Road						Hemlock Road						Total
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
8:15 AM	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	3
8:30 AM	0	0	0	0	1	1	0	0	0	6	0	6	0	0	0	0	0	0	7
8:45 AM	0	0	0	0	0	0	0	0	0	0	6	6	0	0	0	0	0	0	6
Total Volume	0	0	0	1	3	4	0	0	0	7	6	13	0	0	0	0	0	0	17
% Approach Total	0.0	0.0	0.0	25.0	75.0		0.0	0.0	0.0	53.8	46.2		0.0	0.0	0.0	0.0	0.0	0.0	
PHF	0.000	0.000	0.000	0.250	0.375	0.333	0.000	0.000	0.000	0.292	0.250	0.542	0.000	0.000	0.000	0.000	0.000	0.000	0.607
Entering Leg	0	0	0	1	3	4	0	0	0	7	6	13	0	0	0	0	0	0	17
Exiting Leg	4						13						0						17
Total	8						26						0						34

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**



**Cars and Heavy Vehicles (Combined)**

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
2:00 PM	38	0	0	38	3	49	0	52	20	6	0	26	116
2:15 PM	28	0	0	28	16	48	0	64	27	9	0	36	128
2:30 PM	10	1	0	11	1	49	0	50	29	13	0	42	103
2:45 PM	7	0	0	7	1	85	0	86	21	12	0	33	126
<b>Total</b>	<b>83</b>	<b>1</b>	<b>0</b>	<b>84</b>	<b>21</b>	<b>231</b>	<b>0</b>	<b>252</b>	<b>97</b>	<b>40</b>	<b>0</b>	<b>137</b>	<b>473</b>
3:00 PM	6	0	0	6	0	48	0	48	19	4	0	23	77
3:15 PM	10	0	0	10	0	35	0	35	25	6	0	31	76
3:30 PM	4	0	0	4	0	20	0	20	19	10	0	29	53
3:45 PM	13	0	0	13	1	17	0	18	17	9	0	26	57
<b>Total</b>	<b>33</b>	<b>0</b>	<b>0</b>	<b>33</b>	<b>1</b>	<b>120</b>	<b>0</b>	<b>121</b>	<b>80</b>	<b>29</b>	<b>0</b>	<b>109</b>	<b>263</b>
Grand Total	116	1	0	117	22	351	0	373	177	69	0	246	736
Approach %	99.1	0.9	0.0		5.9	94.1	0.0		72.0	28.0	0.0		
Total %	15.8	0.1	0.0	15.9	3.0	47.7	0.0	50.7	24.0	9.4	0.0	33.4	
Exiting Leg Total				91				178				467	736
Cars	115	1	0	116	22	340	0	362	169	69	0	238	716
% Cars	99.1	100.0	0.0	99.1	100.0	96.9	0.0	97.1	95.5	100.0	0.0	96.7	97.3
Exiting Leg Total				91				170				455	716
Heavy Vehicles	1	0	0	1	0	11	0	11	8	0	0	8	20
% Heavy Vehicles	0.9	0.0	0.0	0.9	0.0	3.1	0.0	2.9	4.5	0.0	0.0	3.3	2.7
Exiting Leg Total				0				8				12	20

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:00 PM	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
2:00 PM	38	0	0	38	3	49	0	52	20	6	0	26	116
2:15 PM	28	0	0	28	16	48	0	64	27	9	0	36	128
2:30 PM	10	1	0	11	1	49	0	50	29	13	0	42	103
2:45 PM	7	0	0	7	1	85	0	86	21	12	0	33	126
Total Volume	83	1	0	84	21	231	0	252	97	40	0	137	473
% Approach Total	98.8	1.2	0.0		8.3	91.7	0.0		70.8	29.2	0.0		
PHF	0.546	0.250	0.000	0.553	0.328	0.679	0.000	0.733	0.836	0.769	0.000	0.815	0.924
Cars	83	1	0	84	21	223	0	244	90	40	0	130	458
Cars %	100.0	100.0	0.0	100.0	100.0	96.5	0.0	96.8	92.8	100.0	0.0	94.9	96.8
Heavy Vehicles	0	0	0	0	0	8	0	8	7	0	0	7	15
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	3.5	0.0	3.2	7.2	0.0	0.0	5.1	3.2
Cars Enter Leg	83	1	0	84	21	223	0	244	90	40	0	130	458
Heavy Enter Leg	0	0	0	0	0	8	0	8	7	0	0	7	15
Total Entering Leg	83	1	0	84	21	231	0	252	97	40	0	137	473
Cars Exiting Leg				61				91				306	458
Heavy Exiting Leg				0				7				8	15
Total Exiting Leg				61				98				314	473

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**



**Cars**

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
2:00 PM	38	0	0	38	3	49	0	52	19	6	0	25	115
2:15 PM	28	0	0	28	16	47	0	63	25	9	0	34	125
2:30 PM	10	1	0	11	1	49	0	50	26	13	0	39	100
2:45 PM	7	0	0	7	1	78	0	79	20	12	0	32	118
<b>Total</b>	<b>83</b>	<b>1</b>	<b>0</b>	<b>84</b>	<b>21</b>	<b>223</b>	<b>0</b>	<b>244</b>	<b>90</b>	<b>40</b>	<b>0</b>	<b>130</b>	<b>458</b>
3:00 PM	5	0	0	5	0	47	0	47	18	4	0	22	74
3:15 PM	10	0	0	10	0	33	0	33	25	6	0	31	74
3:30 PM	4	0	0	4	0	20	0	20	19	10	0	29	53
3:45 PM	13	0	0	13	1	17	0	18	17	9	0	26	57
<b>Total</b>	<b>32</b>	<b>0</b>	<b>0</b>	<b>32</b>	<b>1</b>	<b>117</b>	<b>0</b>	<b>118</b>	<b>79</b>	<b>29</b>	<b>0</b>	<b>108</b>	<b>258</b>
<b>Grand Total</b>	<b>115</b>	<b>1</b>	<b>0</b>	<b>116</b>	<b>22</b>	<b>340</b>	<b>0</b>	<b>362</b>	<b>169</b>	<b>69</b>	<b>0</b>	<b>238</b>	<b>716</b>
Approach %	99.1	0.9	0.0		6.1	93.9	0.0		71.0	29.0	0.0		
Total %	16.1	0.1	0.0	16.2	3.1	47.5	0.0	50.6	23.6	9.6	0.0	33.2	
Exiting Leg Total				91				170				455	716

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
2:00 PM	38	0	0	38	3	49	0	52	19	6	0	25	115
2:15 PM	28	0	0	28	16	47	0	63	25	9	0	34	125
2:30 PM	10	1	0	11	1	49	0	50	26	13	0	39	100
2:45 PM	7	0	0	7	1	78	0	79	20	12	0	32	118
Total Volume	83	1	0	84	21	223	0	244	90	40	0	130	458
% Approach Total	98.8	1.2	0.0		8.6	91.4	0.0		69.2	30.8	0.0		
PHF	0.546	0.250	0.000	0.553	0.328	0.715	0.000	0.772	0.865	0.769	0.000	0.833	0.916
Entering Leg	83	1	0	84	21	223	0	244	90	40	0	130	458
Exiting Leg				61				91				306	458
<b>Total</b>				<b>145</b>				<b>335</b>				<b>436</b>	<b>916</b>

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**



Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
2:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
2:15 PM	0	0	0	0	0	1	0	1	2	0	0	2	3
2:30 PM	0	0	0	0	0	0	0	0	3	0	0	3	3
2:45 PM	0	0	0	0	0	7	0	7	1	0	0	1	8
Total	0	0	0	0	0	8	0	8	7	0	0	7	15
3:00 PM	1	0	0	1	0	1	0	1	1	0	0	1	3
3:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	2
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	1	0	3	0	3	1	0	0	1	5
Grand Total	1	0	0	1	0	11	0	11	8	0	0	8	20
Approach %	100.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
Total %	5.0	0.0	0.0	5.0	0.0	55.0	0.0	55.0	40.0	0.0	0.0	40.0	
Exiting Leg Total	0				8				12				20
Buses	1	0	0	1	0	6	0	6	5	0	0	5	12
% Buses	100.0	0.0	0.0	100.0	0.0	54.5	0.0	54.5	62.5	0.0	0.0	62.5	60.0
Exiting Leg Total	0				5				7				12
Single-Unit Trucks	0	0	0	0	0	5	0	5	3	0	0	3	8
% Single-Unit	0.0	0.0	0.0	0.0	0.0	45.5	0.0	45.5	37.5	0.0	0.0	37.5	40.0
Exiting Leg Total	0				3				5				8
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total	0				0				0				0

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
2:15 PM	0	0	0	0	0	1	0	1	2	0	0	2	3
2:30 PM	0	0	0	0	0	0	0	0	3	0	0	3	3
2:45 PM	0	0	0	0	0	7	0	7	1	0	0	1	8
3:00 PM	1	0	0	1	0	1	0	1	1	0	0	1	3
Total Volume	1	0	0	1	0	9	0	9	7	0	0	7	17
% Approach Total	100.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
PHF	0.250	0.000	0.000	0.250	0.000	0.321	0.000	0.321	0.583	0.000	0.000	0.583	0.531
Buses	1	0	0	1	0	6	0	6	5	0	0	5	12
Buses %	100.0	0.0	0.0	100.0	0.0	66.7	0.0	66.7	71.4	0.0	0.0	71.4	70.6
Single-Unit Trucks	0	0	0	0	0	3	0	3	2	0	0	2	5
Single-Unit %	0.0	0.0	0.0	0.0	0.0	33.3	0.0	33.3	28.6	0.0	0.0	28.6	29.4
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buses	1	0	0	1	0	6	0	6	5	0	0	5	12
Single-Unit Trucks	0	0	0	0	0	3	0	3	2	0	0	2	5
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	1	0	0	1	0	9	0	9	7	0	0	7	17
Buses	0				5				7				12
Single-Unit Trucks	0				2				3				5
Articulated Trucks	0				0				0				0
Total Exiting Leg	0				7				10				17

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class:



**Buses**

	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	2	0	0	2	2
2:30 PM	0	0	0	0	0	0	0	0	3	0	0	3	3
2:45 PM	0	0	0	0	0	5	0	5	0	0	0	0	5
<b>Total</b>	0	0	0	0	0	5	0	5	5	0	0	5	10
3:00 PM	1	0	0	1	0	1	0	1	0	0	0	0	2
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	1	0	0	1	0	1	0	1	0	0	0	0	2
<b>Grand Total</b>	1	0	0	1	0	6	0	6	5	0	0	5	12
Approach %	100.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
Total %	8.3	0.0	0.0	8.3	0.0	50.0	0.0	50.0	41.7	0.0	0.0	41.7	
Exiting Leg Total				0				5				7	12

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:15 PM	School Driveway				Hemlock Road				Hemlock Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
2:15 PM	0	0	0	0	0	0	0	0	2	0	0	2	2
2:30 PM	0	0	0	0	0	0	0	0	3	0	0	3	3
2:45 PM	0	0	0	0	0	5	0	5	0	0	0	0	5
3:00 PM	1	0	0	1	0	1	0	1	0	0	0	0	2
<b>Total Volume</b>	1	0	0	1	0	6	0	6	5	0	0	5	12
<b>% Approach Total</b>	100.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
PHF	0.250	0.000	0.000	0.250	0.000	0.300	0.000	0.300	0.417	0.000	0.000	0.417	0.600
Entering Leg	1	0	0	1	0	6	0	6	5	0	0	5	12
Exiting Leg				0				5				7	12
<b>Total</b>				1				11				12	24



PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**



**Single-Unit Trucks**

	School Driveway				Hemlock Road				Hemlock Road				Total	
	from North				from East				from West					
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total		
2:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	1
2:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	2	0	2	0	1	0	0	1	3
<b>Total</b>	0	0	0	0	0	3	0	3	0	2	0	0	2	5
3:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	1
3:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	2
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	2	0	2	0	1	0	0	1	3
<b>Grand Total</b>	0	0	0	0	0	5	0	5	0	3	0	0	3	8
Approach %	0.0	0.0	0.0		0.0	100.0	0.0			100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	62.5	0.0	62.5		37.5	0.0	0.0		37.5
Exiting Leg Total	0				3				5				8	

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:30 PM	School Driveway				Hemlock Road				Hemlock Road				Total	
	from North				from East				from West					
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	2	0	2	0	1	0	0	1	3
3:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	1
3:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	2
<b>Total Volume</b>	0	0	0	0	0	4	0	4	0	2	0	0	2	6
<b>% Approach Total</b>	0.0	0.0	0.0		0.0	100.0	0.0			100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500		0.500	0.000	0.000	0.500	0.500
Entering Leg	0				4				2				6	
Exiting Leg	0				2				4				6	
<b>Total</b>	0				6				6				12	

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**



**PRECISION  
 D A T A  
 INDUSTRIES, LLC**

157 Washington Street, Suite 2  
 Hudson, MA 01749  
 508-875-0100 datarequests@pdillc.com

Class:

**Articulated Trucks**

	School Driveway				Hemlock Road				Hemlock Road				Total	
	from North				from East				from West					
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0			
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Exiting Leg Total				0				0					0	0

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:00 PM	School Driveway				Hemlock Road				Hemlock Road				Total	
	from North				from East				from West					
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0			
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg				0				0					0	0
Total				0				0					0	0

PDI File #: 217949 B  
 Location: N: School Driveway  
 Location: E: Hemlock Road W: Hemlock Road  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2  
 Count Date: Thursday, May 27, 2021  
 Start Time: 2:00 PM  
 End Time: 4:00 PM



**Bicycles (on Roadway and Crosswalks)**

	School Driveway							Hemlock Road						Hemlock Road						Total									
	from North							from East						from West															
	Right	Left	U-Turn	CW-EB	CW-WB	Total		Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total										
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	1	0	1	0	0	2	1	0	0	0	0	0	1	3							
<b>Total</b>	0	0	0	0	0	0	0	0	1	0	1	0	2	1	0	0	0	0	0	1	3								
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Grand Total</b>	0	0	0	0	0	0	0	0	1	0	1	0	2	1	0	0	0	0	0	1	3								
Approach %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	50.0	0.0	66.7	100.0	0.0	0.0	0.0	0.0	0.0	33.3									
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	33.3	0.0	66.7	33.3	0.0	0.0	0.0	0.0	0.0	33.3									
Exiting Leg Total	0							2						1						3									

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:00 PM	School Driveway							Hemlock Road						Hemlock Road						Total								
	from North							from East						from West														
	Right	Left	U-Turn	CW-EB	CW-WB	Total		Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total									
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	1	0	1	0	2	1	0	0	0	0	0	1	3							
<b>Total Volume</b>	0	0	0	0	0	0	0	0	1	0	1	0	2	1	0	0	0	0	0	1	3							
<b>% Approach Total</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	50.0	0.0	66.7	100.0	0.0	0.0	0.0	0.0	0.0	33.3								
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.250	0.250								
Entering Leg	0							2						1						3								
Exiting Leg	0							2						1						3								
<b>Total</b>	0							4						2						6								

PDI File #: **217949 B**  
 Location: **N: School Driveway**  
 Location: **E: Hemlock Road W: Hemlock Road**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class:



**Pedestrians**

	School Driveway						Hemlock Road						Hemlock Road						Total
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
2:00 PM	0	0	0	2	0	2	0	0	0	3	0	3	0	0	0	0	4	4	9
2:15 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0	2
2:45 PM	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	2
Total	0	0	0	4	0	4	0	0	0	5	1	6	0	0	0	0	4	4	14
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	2
3:30 PM	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0	0	0	2
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total	0	0	0	0	1	1	0	0	0	2	1	3	0	0	0	0	1	1	5
Grand Total	0	0	0	4	1	5	0	0	0	7	2	9	0	0	0	0	5	5	19
Approach %	0	0	0	80	20		0	0	0	77.778	22.222		0	0	0	0	100		
Total %	0	0	0	21.053	5.2632	26.316	0	0	0	36.842	10.526	47.368	0	0	0	0	26.316	26.316	
Exiting Leg Total	5						9						5						19

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:00 PM	School Driveway						Hemlock Road						Hemlock Road						Total
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
2:00 PM	0	0	0	2	0	2	0	0	0	3	0	3	0	0	0	0	4	4	9
2:15 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0	2
2:45 PM	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	2
Total Volume	0	0	0	4	0	4	0	0	0	5	1	6	0	0	0	0	4	4	14
% Approach Total	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	83.3	16.7		0.0	0.0	0.0	0.0	100.0		
PHF	0.000	0.000	0.000	0.500	0.000	0.500	0.000	0.000	0.000	0.417	0.250	0.500	0.000	0.000	0.000	0.000	0.250	0.250	0.389
Entering Leg	0	0	0	4	0	4	0	0	0	5	1	6	0	0	0	0	4	4	14
Exiting Leg	4						6						4						14
Total	8						12						8						28

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:00 AM	27	83	10	0	120	42	21	26	0	89	12	106	40	0	158	46	7	16	0	69	436
11:15 AM	22	74	11	0	107	19	10	8	0	37	11	126	37	0	174	52	13	29	0	94	412
11:30 AM	22	73	9	0	104	25	6	18	0	49	11	114	31	0	156	48	12	21	0	81	390
11:45 AM	17	95	8	0	120	37	11	20	0	68	8	137	47	0	192	56	8	17	1	82	462
<b>Total</b>	<b>88</b>	<b>325</b>	<b>38</b>	<b>0</b>	<b>451</b>	<b>123</b>	<b>48</b>	<b>72</b>	<b>0</b>	<b>243</b>	<b>42</b>	<b>483</b>	<b>155</b>	<b>0</b>	<b>680</b>	<b>202</b>	<b>40</b>	<b>83</b>	<b>1</b>	<b>326</b>	<b>1700</b>
12:00 PM	20	79	10	0	109	22	9	19	1	51	3	126	51	0	180	43	6	14	0	63	403
12:15 PM	20	93	15	0	128	18	17	22	0	57	11	113	55	0	179	45	5	14	0	64	428
12:30 PM	20	97	8	0	125	10	7	10	0	27	13	109	65	0	187	45	2	17	0	64	403
12:45 PM	33	83	9	0	125	6	6	6	0	18	5	126	61	0	192	43	4	18	0	65	400
<b>Total</b>	<b>93</b>	<b>352</b>	<b>42</b>	<b>0</b>	<b>487</b>	<b>56</b>	<b>39</b>	<b>57</b>	<b>1</b>	<b>153</b>	<b>32</b>	<b>474</b>	<b>232</b>	<b>0</b>	<b>738</b>	<b>176</b>	<b>17</b>	<b>63</b>	<b>0</b>	<b>256</b>	<b>1634</b>
Grand Total	181	677	80	0	938	179	87	129	1	396	74	957	387	0	1418	378	57	146	1	582	3334
Approach %	19.3	72.2	8.5	0.0		45.2	22.0	32.6	0.3		5.2	67.5	27.3	0.0		64.9	9.8	25.1	0.2		
Total %	5.4	20.3	2.4	0.0	28.1	5.4	2.6	3.9	0.0	11.9	2.2	28.7	11.6	0.0	42.5	11.3	1.7	4.4	0.0	17.5	
Exiting Leg Total	1282					212					1184					656					3334
Cars	180	669	79	0	928	177	87	126	1	391	74	947	385	0	1406	374	55	145	1	575	3300
% Cars	99.4	98.8	98.8	0.0	98.9	98.9	100.0	97.7	100.0	98.7	100.0	99.0	99.5	0.0	99.2	98.9	96.5	99.3	100.0	98.8	99.0
Exiting Leg Total	1269					209					1169					653					3300
Heavy Vehicles	1	8	1	0	10	2	0	3	0	5	0	10	2	0	12	4	2	1	0	7	34
% Heavy Vehicles	0.6	1.2	1.3	0.0	1.1	1.1	0.0	2.3	0.0	1.3	0.0	1.0	0.5	0.0	0.8	1.1	3.5	0.7	0.0	1.2	1.0
Exiting Leg Total	13					3					15					3					34

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:00 AM	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:00 AM	27	83	10	0	120	42	21	26	0	89	12	106	40	0	158	46	7	16	0	69	436
11:15 AM	22	74	11	0	107	19	10	8	0	37	11	126	37	0	174	52	13	29	0	94	412
11:30 AM	22	73	9	0	104	25	6	18	0	49	11	114	31	0	156	48	12	21	0	81	390
11:45 AM	17	95	8	0	120	37	11	20	0	68	8	137	47	0	192	56	8	17	1	82	462
Total Volume	88	325	38	0	451	123	48	72	0	243	42	483	155	0	680	202	40	83	1	326	1700
% Approach Total	19.5	72.1	8.4	0.0		50.6	19.8	29.6	0.0		6.2	71.0	22.8	0.0		62.0	12.3	25.5	0.3		
PHF	0.815	0.855	0.864	0.000	0.940	0.732	0.571	0.692	0.000	0.683	0.875	0.881	0.824	0.000	0.885	0.902	0.769	0.716	0.250	0.867	0.920
Cars	87	322	37	0	446	121	48	70	0	239	42	474	155	0	671	198	38	83	1	320	1676
Cars %	98.9	99.1	97.4	0.0	98.9	98.4	100.0	97.2	0.0	98.4	100.0	98.1	100.0	0.0	98.7	98.0	95.0	100.0	100.0	98.2	98.6
Heavy Vehicles	1	3	1	0	5	2	0	2	0	4	0	9	0	0	9	4	2	0	0	6	24
Heavy Vehicles %	1.1	0.9	2.6	0.0	1.1	1.6	0.0	2.8	0.0	1.6	0.0	1.9	0.0	0.0	1.3	2.0	5.0	0.0	0.0	1.8	1.4
Cars Enter Leg	87	322	37	0	446	121	48	70	0	239	42	474	155	0	671	198	38	83	1	320	1676
Heavy Enter Leg	1	3	1	0	5	2	0	2	0	4	0	9	0	0	9	4	2	0	0	6	24
Total Entering Leg	88	325	38	0	451	123	48	72	0	243	42	483	155	0	680	202	40	83	1	326	1700
Cars Exiting Leg	678					117					590					291					1676
Heavy Exiting Leg	11					3					9					1					24
Total Exiting Leg	689					120					599					292					1700

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Cars**

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:00 AM	27	82	10	0	119	42	21	26	0	89	12	103	40	0	155	46	7	16	0	69	432
11:15 AM	22	74	11	0	107	19	10	8	0	37	11	123	37	0	171	51	13	29	0	93	408
11:30 AM	22	72	8	0	102	25	6	18	0	49	11	113	31	0	155	47	10	21	0	78	384
11:45 AM	16	94	8	0	118	35	11	18	0	64	8	135	47	0	190	54	8	17	1	80	452
<b>Total</b>	<b>87</b>	<b>322</b>	<b>37</b>	<b>0</b>	<b>446</b>	<b>121</b>	<b>48</b>	<b>70</b>	<b>0</b>	<b>239</b>	<b>42</b>	<b>474</b>	<b>155</b>	<b>0</b>	<b>671</b>	<b>198</b>	<b>38</b>	<b>83</b>	<b>1</b>	<b>320</b>	<b>1676</b>
12:00 PM	20	76	10	0	106	22	9	18	1	50	3	126	49	0	178	43	6	14	0	63	397
12:15 PM	20	92	15	0	127	18	17	22	0	57	11	112	55	0	178	45	5	14	0	64	426
12:30 PM	20	96	8	0	124	10	7	10	0	27	13	109	65	0	187	45	2	17	0	64	402
12:45 PM	33	83	9	0	125	6	6	6	0	18	5	126	61	0	192	43	4	17	0	64	399
<b>Total</b>	<b>93</b>	<b>347</b>	<b>42</b>	<b>0</b>	<b>482</b>	<b>56</b>	<b>39</b>	<b>56</b>	<b>1</b>	<b>152</b>	<b>32</b>	<b>473</b>	<b>230</b>	<b>0</b>	<b>735</b>	<b>176</b>	<b>17</b>	<b>62</b>	<b>0</b>	<b>255</b>	<b>1624</b>
<b>Grand Total</b>	<b>180</b>	<b>669</b>	<b>79</b>	<b>0</b>	<b>928</b>	<b>177</b>	<b>87</b>	<b>126</b>	<b>1</b>	<b>391</b>	<b>74</b>	<b>947</b>	<b>385</b>	<b>0</b>	<b>1406</b>	<b>374</b>	<b>55</b>	<b>145</b>	<b>1</b>	<b>575</b>	<b>3300</b>
Approach %	19.4	72.1	8.5	0.0		45.3	22.3	32.2	0.3		5.3	67.4	27.4	0.0		65.0	9.6	25.2	0.2		
Total %	5.5	20.3	2.4	0.0	28.1	5.4	2.6	3.8	0.0	11.8	2.2	28.7	11.7	0.0	42.6	11.3	1.7	4.4	0.0	17.4	
Exiting Leg Total	1269					209					1169					653					3300

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:45 AM	16	94	8	0	118	35	11	18	0	64	8	135	47	0	190	54	8	17	1	80	452
12:00 PM	20	76	10	0	106	22	9	18	1	50	3	126	49	0	178	43	6	14	0	63	397
12:15 PM	20	92	15	0	127	18	17	22	0	57	11	112	55	0	178	45	5	14	0	64	426
12:30 PM	20	96	8	0	124	10	7	10	0	27	13	109	65	0	187	45	2	17	0	64	402
Total Volume	76	358	41	0	475	85	44	68	1	198	35	482	216	0	733	187	21	62	1	271	1677
% Approach Total	16.0	75.4	8.6	0.0		42.9	22.2	34.3	0.5		4.8	65.8	29.5	0.0		69.0	7.7	22.9	0.4		
PHF	0.950	0.932	0.683	0.000	0.935	0.607	0.647	0.773	0.250	0.773	0.673	0.893	0.831	0.000	0.964	0.866	0.656	0.912	0.250	0.847	0.928
Entering Leg	76	358	41	0	475	85	44	68	1	198	35	482	216	0	733	187	21	62	1	271	1677
Exiting Leg	629					98					613					337					1677
<b>Total</b>	<b>1104</b>					<b>296</b>					<b>1346</b>					<b>608</b>					<b>3354</b>

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**



	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:00 AM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	4
11:30 AM	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	1	2	0	0	3	6
11:45 AM	1	1	0	0	2	2	0	2	0	4	0	2	0	0	2	2	0	0	0	2	10
<b>Total</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>24</b>
12:00 PM	0	3	0	0	3	0	0	1	0	1	0	0	2	0	2	0	0	0	0	0	6
12:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
12:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
<b>Total</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>10</b>
Grand Total	1	8	1	0	10	2	0	3	0	5	0	10	2	0	12	4	2	1	0	7	34
Approach %	10.0	80.0	10.0	0.0		40.0	0.0	60.0	0.0		0.0	83.3	16.7	0.0		57.1	28.6	14.3	0.0		
Total %	2.9	23.5	2.9	0.0	29.4	5.9	0.0	8.8	0.0	14.7	0.0	29.4	5.9	0.0	35.3	11.8	5.9	2.9	0.0	20.6	
Exiting Leg Total	13					3					15					3					34
Buses	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	1	1	0	0	2	4
% Buses	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	20.0	0.0	0.0	50.0	0.0	8.3	25.0	50.0	0.0	0.0	28.6	11.8
Exiting Leg Total	1					1					1					1					4
Single-Unit Trucks	1	8	1	0	10	1	0	3	0	4	0	9	1	0	10	2	1	1	0	4	28
% Single-Unit	100.0	100.0	100.0	0.0	100.0	50.0	0.0	100.0	0.0	80.0	0.0	90.0	50.0	0.0	83.3	50.0	50.0	100.0	0.0	57.1	82.4
Exiting Leg Total	11					2					13					2					28
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	2
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	8.3	25.0	0.0	0.0	0.0	14.3	5.9
Exiting Leg Total	1					0					1					0					2

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	4
11:30 AM	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	1	2	0	0	3	6
11:45 AM	1	1	0	0	2	2	0	2	0	4	0	2	0	0	2	2	0	0	0	2	10
12:00 PM	0	3	0	0	3	0	0	1	0	1	0	0	2	0	2	0	0	0	0	0	6
<b>Total Volume</b>	<b>1</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>7</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>8</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>26</b>
% Approach Total	14.3	71.4	14.3	0.0		40.0	0.0	60.0	0.0		0.0	75.0	25.0	0.0		66.7	33.3	0.0	0.0		
PHF	0.250	0.417	0.250	0.000	0.583	0.250	0.000	0.375	0.000	0.313	0.000	0.500	0.250	0.000	0.667	0.500	0.250	0.000	0.000	0.500	0.650
Buses	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	1	1	0	0	2	4
Buses %	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	20.0	0.0	0.0	50.0	0.0	12.5	25.0	50.0	0.0	0.0	33.3	15.4
Single-Unit Trucks	1	5	1	0	7	1	0	3	0	4	0	6	1	0	7	2	1	0	0	3	21
Single-Unit %	100.0	100.0	100.0	0.0	100.0	50.0	0.0	100.0	0.0	80.0	0.0	100.0	50.0	0.0	87.5	50.0	50.0	0.0	0.0	50.0	80.8
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0	16.7	3.8
Buses	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	1	1	0	0	2	4
Single-Unit Trucks	1	5	1	0	7	1	0	3	0	4	0	6	1	0	7	2	1	0	0	3	21
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total Entering Leg	1	5	1	0	7	2	0	3	0	5	0	6	2	0	8	4	2	0	0	6	26
Buses	1					1					1					1					4
Single-Unit Trucks	7					2					10					2					21
Articulated Trucks	0					0					1					0					1
Total Exiting Leg	8					3					12					3					26

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Buses**

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
11:45 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	2
<b>Total</b>	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	1	0	0	2	3
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
<b>Grand Total</b>	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	1	1	0	0	2	4
Approach %	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0	
Total %	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0	25.0	0.0	0.0	25.0	0.0	25.0	25.0	25.0	0.0	0.0	50.0	
Exiting Leg Total	1					1					1					1					4

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
11:45 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	2
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
<b>Total Volume</b>	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	1	1	0	0	2	4
<b>% Approach Total</b>	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0	
PHF	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.250	0.250	0.250	0.000	0.000	0.500	0.500
Entering Leg	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	1	1	0	0	2	4
Exiting Leg	1					1					1					1					4
<b>Total</b>	1					2					2					3					8



PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Single-Unit Trucks**

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:00 AM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	4
11:30 AM	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	1	1	0	0	2	5
11:45 AM	1	1	0	0	2	1	0	2	0	3	0	2	0	0	2	0	0	0	0	0	7
<b>Total</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>20</b>
12:00 PM	0	3	0	0	3	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	5
12:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
<b>Total</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>8</b>
Grand Total	1	8	1	0	10	1	0	3	0	4	0	9	1	0	10	2	1	1	0	4	28
Approach %	10.0	80.0	10.0	0.0		25.0	0.0	75.0	0.0		0.0	90.0	10.0	0.0		50.0	25.0	25.0	0.0		
Total %	3.6	28.6	3.6	0.0	35.7	3.6	0.0	10.7	0.0	14.3	0.0	32.1	3.6	0.0	35.7	7.1	3.6	3.6	0.0	14.3	
Exiting Leg Total	11					2					13					2					28

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	4
11:30 AM	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	1	1	0	0	2	5
11:45 AM	1	1	0	0	2	1	0	2	0	3	0	2	0	0	2	0	0	0	0	0	7
12:00 PM	0	3	0	0	3	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	5
Total Volume	1	5	1	0	7	1	0	3	0	4	0	6	1	0	7	2	1	0	0	3	21
% Approach Total	14.3	71.4	14.3	0.0		25.0	0.0	75.0	0.0		0.0	85.7	14.3	0.0		66.7	33.3	0.0	0.0		
PHF	0.250	0.417	0.250	0.000	0.583	0.250	0.000	0.375	0.000	0.333	0.000	0.500	0.250	0.000	0.583	0.500	0.250	0.000	0.000	0.375	0.750
Entering Leg	1	5	1	0	7	1	0	3	0	4	0	6	1	0	7	2	1	0	0	3	21
Exiting Leg	7					2					10					2					21
Total	14					6					17					5					42

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Articulated Trucks**

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Grand Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	2
Approach %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0	50.0	
Exiting Leg Total	1					0					1					0					2

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	2
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.250	0.500
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	2
Exiting Leg	1					0					1					0					2
Total	1					0					2					1					4

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Bicycles (on Roadway and Crosswalks)**

	Farm Street								Hemlock Roads								Farm Street								Nahant Street								Total											
	from North								from East								from South								from West																			
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total		Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total		Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total		Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total													
11:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1		0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2			
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	1	2			
11:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1		0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	1	2	2			
Total	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2		0	2	0	0	0	0	0	2	0	0	1	0	0	1	0	2	0	0	1	0	1	0	2	6	6			
12:00 PM	0	0	0	0	0	2	2	0	0	1	0	0	0	0	1		0	2	0	0	0	0	0	2	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	6			
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
12:30 PM	0	4	0	0	0	0	4	3	0	0	0	0	0	0	3		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7			
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
Total	0	4	0	0	0	2	6	3	0	1	0	0	0	0	4		1	2	0	0	0	0	0	3	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	14			
Grand Total	0	4	0	0	0	2	6	3	1	2	0	0	0	0	6		1	4	0	0	0	0	0	5	0	1	1	0	1	0	3	3	0	0	0	0	0	0	0	3	20			
Approach %	0.0	66.7	0.0	0.0	0.0	33.3		50.0	16.7	33.3	0.0	0.0	0.0		20.0	80.0	0.0	0.0	0.0	0.0		0.0	33.3	33.3	0.0	33.3	0.0		0.0	50.0	50.0	0.0	50.0	0.0										
Total %	0.0	20.0	0.0	0.0	0.0	10.0	30.0	15.0	5.0	10.0	0.0	0.0	0.0	30.0		5.0	20.0	0.0	0.0	0.0	0.0	25.0	0.0	5.0	5.0	0.0	5.0	0.0	15.0															
Exiting Leg Total	10							2							6							2							20															

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

	Farm Street								Hemlock Roads								Farm Street								Nahant Street								Total											
	from North								from East								from South								from West																			
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total		Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total		Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total		Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total													
11:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1		0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	2			
12:00 PM	0	0	0	0	0	2	2	0	0	1	0	0	0	0	1		0	2	0	0	0	0	0	2	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	6			
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
12:30 PM	0	4	0	0	0	0	4	3	0	0	0	0	0	0	3		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7			
Total Volume	0	4	0	0	0	2	6	3	1	1	0	0	0	0	5		0	2	0	0	0	0	0	2	0	1	0	0	1	0	2	2	0	0	0	0	0	0	0	2	15			
% Approach Total	0.0	66.7	0.0	0.0	0.0	33.3		60.0	20.0	20.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	50.0	0.0	0.0	50.0	0.0		0.0	50.0	50.0	0.0	50.0	0.0										
PHF	0.000	0.250	0.000	0.000	0.000	0.250	0.375	0.250	0.250	0.250	0.000	0.000	0.000	0.417		0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.250	0.000	0.500	0.536	0.536													
Entering Leg	0	4	0	0	0	2	6	3	1	1	0	0	0	5		0	2	0	0	0	0	0	2	0	1	0	0	1	0	2	2	0	0	0	0	0	0	0	2	15				
Exiting Leg	7							1							5							2							15															
Total	13							6							7							4							30															

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Pedestrians**

	Farm Street							Hemlock Roads							Farm Street							Nahant Street							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
11:00 AM	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
11:15 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Total	0	0	0	0	0	3	3	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	1	1	2	7
12:00 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	1	1	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	2	2	6
Grand Total	0	0	0	0	0	4	4	0	0	0	0	1	4	5	0	0	0	0	0	0	0	0	0	0	0	1	3	4	13
Approach %	0	0	0	0	0	100		0	0	0	0	20	80		0	0	0	0	0	0		0	0	0	0	25	75		
Total %	0	0	0	0	0	30.8	30.8	0	0	0	0	7.69	30.8	38.5	0	0	0	0	0	0		0	0	0	0	7.69	23.1	30.8	
Exiting Leg Total	4							5							0							4							13

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

	Farm Street							Hemlock Roads							Farm Street							Nahant Street							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
11:00 AM	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
11:15 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Total Volume	0	0	0	0	0	3	3	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	1	1	2	7
% Approach Total	0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	50.0	50.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.375	0.375	0.000	0.000	0.000	0.000	0.500	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.500	0.875	
Entering Leg	0	0	0	0	0	3	3	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	1	1	2	7
Exiting Leg	3							2							0							2							7
Total	6							4							0							4							14

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	14	61	85	0	160	4	2	0	0	6	56	53	30	0	139	38	37	15	0	90	395
7:15 AM	24	69	83	0	176	5	0	2	0	7	62	78	22	0	162	49	27	34	1	111	456
7:30 AM	30	81	65	0	176	22	14	23	0	59	95	67	32	0	194	35	38	22	1	96	525
7:45 AM	23	66	46	0	135	31	28	54	0	113	64	59	34	0	157	25	22	20	0	67	472
<b>Total</b>	<b>91</b>	<b>277</b>	<b>279</b>	<b>0</b>	<b>647</b>	<b>62</b>	<b>44</b>	<b>79</b>	<b>0</b>	<b>185</b>	<b>277</b>	<b>257</b>	<b>118</b>	<b>0</b>	<b>652</b>	<b>147</b>	<b>124</b>	<b>91</b>	<b>2</b>	<b>364</b>	<b>1848</b>
8:00 AM	18	52	28	0	98	14	8	21	0	43	20	97	40	0	157	31	7	24	0	62	360
8:15 AM	62	101	16	0	179	7	2	4	0	13	9	89	65	0	163	29	13	55	0	97	452
8:30 AM	27	79	11	0	117	6	3	8	0	17	7	69	56	0	132	34	6	19	0	59	325
8:45 AM	20	60	10	0	90	5	4	1	0	10	3	64	41	1	109	35	3	12	0	50	259
<b>Total</b>	<b>127</b>	<b>292</b>	<b>65</b>	<b>0</b>	<b>484</b>	<b>32</b>	<b>17</b>	<b>34</b>	<b>0</b>	<b>83</b>	<b>39</b>	<b>319</b>	<b>202</b>	<b>1</b>	<b>561</b>	<b>129</b>	<b>29</b>	<b>110</b>	<b>0</b>	<b>268</b>	<b>1396</b>
Grand Total	218	569	344	0	1131	94	61	113	0	268	316	576	320	1	1213	276	153	201	2	632	3244
Approach %	19.3	50.3	30.4	0.0		35.1	22.8	42.2	0.0		26.1	47.5	26.4	0.1		43.7	24.2	31.8	0.3		
Total %	6.7	17.5	10.6	0.0	34.9	2.9	1.9	3.5	0.0	8.3	9.7	17.8	9.9	0.0	37.4	8.5	4.7	6.2	0.1	19.5	
Exiting Leg Total	871					813					959					601					3244
Cars	208	536	339	0	1083	93	52	99	0	244	303	547	309	1	1160	266	148	196	2	612	3099
% Cars	95.4	94.2	98.5	0.0	95.8	98.9	85.2	87.6	0.0	91.0	95.9	95.0	96.6	100.0	95.6	96.4	96.7	97.5	100.0	96.8	95.5
Exiting Leg Total	836					790					902					571					3099
Heavy Vehicles	10	33	5	0	48	1	9	14	0	24	13	29	11	0	53	10	5	5	0	20	145
% Heavy Vehicles	4.6	5.8	1.5	0.0	4.2	1.1	14.8	12.4	0.0	9.0	4.1	5.0	3.4	0.0	4.4	3.6	3.3	2.5	0.0	3.2	4.5
Exiting Leg Total	35					23					57					30					145

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	14	61	85	0	160	4	2	0	0	6	56	53	30	0	139	38	37	15	0	90	395
7:15 AM	24	69	83	0	176	5	0	2	0	7	62	78	22	0	162	49	27	34	1	111	456
7:30 AM	30	81	65	0	176	22	14	23	0	59	95	67	32	0	194	35	38	22	1	96	525
7:45 AM	23	66	46	0	135	31	28	54	0	113	64	59	34	0	157	25	22	20	0	67	472
Total Volume	91	277	279	0	647	62	44	79	0	185	277	257	118	0	652	147	124	91	2	364	1848
% Approach Total	14.1	42.8	43.1	0.0		33.5	23.8	42.7	0.0		42.5	39.4	18.1	0.0		40.4	34.1	25.0	0.5		
PHF	0.758	0.855	0.821	0.000	0.919	0.500	0.393	0.366	0.000	0.409	0.729	0.824	0.868	0.000	0.840	0.750	0.816	0.669	0.500	0.820	0.880
Cars	86	259	275	0	620	62	38	66	0	166	264	243	111	0	618	145	119	90	2	356	1760
Cars %	94.5	93.5	98.6	0.0	95.8	100.0	86.4	83.5	0.0	89.7	95.3	94.6	94.1	0.0	94.8	98.6	96.0	98.9	100.0	97.8	95.2
Heavy Vehicles	5	18	4	0	27	0	6	13	0	19	13	14	7	0	34	2	5	1	0	8	88
Heavy Vehicles %	5.5	6.5	1.4	0.0	4.2	0.0	13.6	16.5	0.0	10.3	4.7	5.4	5.9	0.0	5.2	1.4	4.0	1.1	0.0	2.2	4.8
Cars Enter Leg	86	259	275	0	620	62	38	66	0	166	264	243	111	0	618	145	119	90	2	356	1760
Heavy Enter Leg	5	18	4	0	27	0	6	13	0	19	13	14	7	0	34	2	5	1	0	8	88
Total Entering Leg	91	277	279	0	647	62	44	79	0	185	277	257	118	0	652	147	124	91	2	364	1848
Cars Exiting Leg	395					658					470					237					1760
Heavy Exiting Leg	15					22					33					18					88
Total Exiting Leg	410					680					503					255					1848

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Cars**

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	13	57	85	0	155	4	2	0	0	6	56	48	30	0	134	38	37	14	0	89	384
7:15 AM	24	64	83	0	171	5	0	2	0	7	60	75	22	0	157	48	27	34	1	110	445
7:30 AM	28	77	64	0	169	22	13	19	0	54	87	64	29	0	180	35	35	22	1	93	496
7:45 AM	21	61	43	0	125	31	23	45	0	99	61	56	30	0	147	24	20	20	0	64	435
<b>Total</b>	<b>86</b>	<b>259</b>	<b>275</b>	<b>0</b>	<b>620</b>	<b>62</b>	<b>38</b>	<b>66</b>	<b>0</b>	<b>166</b>	<b>264</b>	<b>243</b>	<b>111</b>	<b>0</b>	<b>618</b>	<b>145</b>	<b>119</b>	<b>90</b>	<b>2</b>	<b>356</b>	<b>1760</b>
8:00 AM	17	50	28	0	95	14	8	20	0	42	20	94	39	0	153	30	7	24	0	61	351
8:15 AM	61	94	15	0	170	7	2	4	0	13	9	87	64	0	160	27	13	55	0	95	438
8:30 AM	26	78	11	0	115	5	1	8	0	14	7	67	54	0	128	32	6	17	0	55	312
8:45 AM	18	55	10	0	83	5	3	1	0	9	3	56	41	1	101	32	3	10	0	45	238
<b>Total</b>	<b>122</b>	<b>277</b>	<b>64</b>	<b>0</b>	<b>463</b>	<b>31</b>	<b>14</b>	<b>33</b>	<b>0</b>	<b>78</b>	<b>39</b>	<b>304</b>	<b>198</b>	<b>1</b>	<b>542</b>	<b>121</b>	<b>29</b>	<b>106</b>	<b>0</b>	<b>256</b>	<b>1339</b>
<b>Grand Total</b>	<b>208</b>	<b>536</b>	<b>339</b>	<b>0</b>	<b>1083</b>	<b>93</b>	<b>52</b>	<b>99</b>	<b>0</b>	<b>244</b>	<b>303</b>	<b>547</b>	<b>309</b>	<b>1</b>	<b>1160</b>	<b>266</b>	<b>148</b>	<b>196</b>	<b>2</b>	<b>612</b>	<b>3099</b>
Approach %	19.2	49.5	31.3	0.0		38.1	21.3	40.6	0.0		26.1	47.2	26.6	0.1		43.5	24.2	32.0	0.3		
Total %	6.7	17.3	10.9	0.0	34.9	3.0	1.7	3.2	0.0	7.9	9.8	17.7	10.0	0.0	37.4	8.6	4.8	6.3	0.1	19.7	
Exiting Leg Total	836					790					902					571					3099

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	13	57	85	0	155	4	2	0	0	6	56	48	30	0	134	38	37	14	0	89	384
7:15 AM	24	64	83	0	171	5	0	2	0	7	60	75	22	0	157	48	27	34	1	110	445
7:30 AM	28	77	64	0	169	22	13	19	0	54	87	64	29	0	180	35	35	22	1	93	496
7:45 AM	21	61	43	0	125	31	23	45	0	99	61	56	30	0	147	24	20	20	0	64	435
<b>Total Volume</b>	<b>86</b>	<b>259</b>	<b>275</b>	<b>0</b>	<b>620</b>	<b>62</b>	<b>38</b>	<b>66</b>	<b>0</b>	<b>166</b>	<b>264</b>	<b>243</b>	<b>111</b>	<b>0</b>	<b>618</b>	<b>145</b>	<b>119</b>	<b>90</b>	<b>2</b>	<b>356</b>	<b>1760</b>
% Approach Total	13.9	41.8	44.4	0.0		37.3	22.9	39.8	0.0		42.7	39.3	18.0	0.0		40.7	33.4	25.3	0.6		
PHF	0.768	0.841	0.809	0.000	0.906	0.500	0.413	0.367	0.000	0.419	0.759	0.810	0.925	0.000	0.858	0.755	0.804	0.662	0.500	0.809	0.887
Entering Leg	86	259	275	0	620	62	38	66	0	166	264	243	111	0	618	145	119	90	2	356	1760
Exiting Leg	395					658					470					237					1760
<b>Total</b>	<b>1015</b>					<b>824</b>					<b>1088</b>					<b>593</b>					<b>3520</b>

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	1	4	0	0	5	0	0	0	0	0	0	5	0	0	5	0	0	1	0	1	11
7:15 AM	0	5	0	0	5	0	0	0	0	0	2	3	0	0	5	1	0	0	0	1	11
7:30 AM	2	4	1	0	7	0	1	4	0	5	8	3	3	0	14	0	3	0	0	3	29
7:45 AM	2	5	3	0	10	0	5	9	0	14	3	3	4	0	10	1	2	0	0	3	37
<b>Total</b>	<b>5</b>	<b>18</b>	<b>4</b>	<b>0</b>	<b>27</b>	<b>0</b>	<b>6</b>	<b>13</b>	<b>0</b>	<b>19</b>	<b>13</b>	<b>14</b>	<b>7</b>	<b>0</b>	<b>34</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>8</b>	<b>88</b>
8:00 AM	1	2	0	0	3	0	0	1	0	1	0	3	1	0	4	1	0	0	0	1	9
8:15 AM	1	7	1	0	9	0	0	0	0	0	0	2	1	0	3	2	0	0	0	2	14
8:30 AM	1	1	0	0	2	1	2	0	0	3	0	2	2	0	4	2	0	2	0	4	13
8:45 AM	2	5	0	0	7	0	1	0	0	1	0	8	0	0	8	3	0	2	0	5	21
<b>Total</b>	<b>5</b>	<b>15</b>	<b>1</b>	<b>0</b>	<b>21</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>15</b>	<b>4</b>	<b>0</b>	<b>19</b>	<b>8</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>12</b>	<b>57</b>
Grand Total	10	33	5	0	48	1	9	14	0	24	13	29	11	0	53	10	5	5	0	20	145
Approach %	20.8	68.8	10.4	0.0		4.2	37.5	58.3	0.0		24.5	54.7	20.8	0.0		50.0	25.0	25.0	0.0		
Total %	6.9	22.8	3.4	0.0	33.1	0.7	6.2	9.7	0.0	16.6	9.0	20.0	7.6	0.0	36.6	6.9	3.4	3.4	0.0	13.8	
Exiting Leg Total	35					23					57					30					145
Buses	4	4	4	0	12	0	7	14	0	21	12	4	4	0	20	2	4	3	0	9	62
% Buses	40.0	12.1	80.0	0.0	25.0	0.0	77.8	100.0	0.0	87.5	92.3	13.8	36.4	0.0	37.7	20.0	80.0	60.0	0.0	45.0	42.8
Exiting Leg Total	7					20					20					15					62
Single-Unit Trucks	4	23	1	0	28	0	1	0	0	1	1	21	6	0	28	7	1	2	0	10	67
% Single-Unit	40.0	69.7	20.0	0.0	58.3	0.0	11.1	0.0	0.0	4.2	7.7	72.4	54.5	0.0	52.8	70.0	20.0	40.0	0.0	50.0	46.2
Exiting Leg Total	23					3					30					11					67
Articulated Trucks	2	6	0	0	8	1	1	0	0	2	0	4	1	0	5	1	0	0	0	1	16
% Articulated	20.0	18.2	0.0	0.0	16.7	100.0	11.1	0.0	0.0	8.3	0.0	13.8	9.1	0.0	9.4	10.0	0.0	0.0	0.0	5.0	11.0
Exiting Leg Total	5					0					7					4					16

**Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:**

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	2	4	1	0	7	0	1	4	0	5	8	3	3	0	14	0	3	0	0	3	29
7:45 AM	2	5	3	0	10	0	5	9	0	14	3	3	4	0	10	1	2	0	0	3	37
8:00 AM	1	2	0	0	3	0	0	1	0	1	0	3	1	0	4	1	0	0	0	1	9
8:15 AM	1	7	1	0	9	0	0	0	0	0	0	2	1	0	3	2	0	0	0	2	14
<b>Total Volume</b>	<b>6</b>	<b>18</b>	<b>5</b>	<b>0</b>	<b>29</b>	<b>0</b>	<b>6</b>	<b>14</b>	<b>0</b>	<b>20</b>	<b>11</b>	<b>11</b>	<b>9</b>	<b>0</b>	<b>31</b>	<b>4</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>89</b>
% Approach Total	20.7	62.1	17.2	0.0		0.0	30.0	70.0	0.0		35.5	35.5	29.0	0.0		44.4	55.6	0.0	0.0		
PHF	0.750	0.643	0.417	0.000	0.725	0.000	0.300	0.389	0.000	0.357	0.344	0.917	0.563	0.000	0.554	0.500	0.417	0.000	0.000	0.750	0.601
Buses	2	3	4	0	9	0	5	14	0	19	11	1	2	0	14	0	4	0	0	4	46
Buses %	33.3	16.7	80.0	0.0	31.0	0.0	83.3	100.0	0.0	95.0	100.0	9.1	22.2	0.0	45.2	0.0	80.0	0.0	0.0	44.4	51.7
Single-Unit Trucks	2	12	1	0	15	0	1	0	0	1	0	8	6	0	14	4	1	0	0	5	35
Single-Unit %	33.3	66.7	20.0	0.0	51.7	0.0	16.7	0.0	0.0	5.0	0.0	72.7	66.7	0.0	45.2	100.0	20.0	0.0	0.0	55.6	39.3
Articulated Trucks	2	3	0	0	5	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	8
Articulated %	33.3	16.7	0.0	0.0	17.2	0.0	0.0	0.0	0.0	0.0	0.0	18.2	11.1	0.0	9.7	0.0	0.0	0.0	0.0	0.0	9.0
Buses	2	3	4	0	9	0	5	14	0	19	11	1	2	0	14	0	4	0	0	4	46
Single-Unit Trucks	2	12	1	0	15	0	1	0	0	1	0	8	6	0	14	4	1	0	0	5	35
Articulated Trucks	2	3	0	0	5	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	8
<b>Total Entering Leg</b>	<b>6</b>	<b>18</b>	<b>5</b>	<b>0</b>	<b>29</b>	<b>0</b>	<b>6</b>	<b>14</b>	<b>0</b>	<b>20</b>	<b>11</b>	<b>11</b>	<b>9</b>	<b>0</b>	<b>31</b>	<b>4</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>89</b>
Buses	1					19					17					9					46
Single-Unit Trucks	8					2					16					9					35
Articulated Trucks	2					0					3					3					8
<b>Total Exiting Leg</b>	<b>11</b>					<b>21</b>					<b>36</b>					<b>21</b>					<b>89</b>

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Buses**

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total					
	from North					from East					from South					from West										
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total						
7:00 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	3
7:30 AM	1	0	1	0	2	0	0	4	0	4	8	0	0	0	8	0	3	0	0	3	0	0	0	0	0	17
7:45 AM	0	1	3	0	4	0	5	9	0	14	3	0	2	0	5	0	1	0	0	1	0	0	0	0	0	24
<b>Total</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>18</b>	<b>12</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>45</b>
8:00 AM	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
8:30 AM	1	0	0	0	1	0	2	0	0	2	0	0	2	0	2	1	0	2	0	3	0	0	0	0	0	8
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	1	0	1	0	2	0	0	0	0	0	4
<b>Total</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>17</b>
Grand Total	4	4	4	0	12	0	7	14	0	21	12	4	4	0	20	2	4	3	0	9	0	0	0	0	0	62
Approach %	33.3	33.3	33.3	0.0		0.0	33.3	66.7	0.0		60.0	20.0	20.0	0.0		22.2	44.4	33.3	0.0		0.0	0.0	0.0	0.0	0.0	
Total %	6.5	6.5	6.5	0.0	19.4	0.0	11.3	22.6	0.0	33.9	19.4	6.5	6.5	0.0	32.3	3.2	6.5	4.8	0.0	14.5	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						7						20						20						15	62	

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total					
	from North					from East					from South					from West										
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total						
7:15 AM	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	3
7:30 AM	1	0	1	0	2	0	0	4	0	4	8	0	0	0	8	0	3	0	0	3	0	0	0	0	0	17
7:45 AM	0	1	3	0	4	0	5	9	0	14	3	0	2	0	5	0	1	0	0	1	0	0	0	0	0	24
8:00 AM	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<b>Total Volume</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>5</b>	<b>14</b>	<b>0</b>	<b>19</b>	<b>12</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>46</b>
% Approach Total	12.5	37.5	50.0	0.0		0.0	26.3	73.7	0.0		80.0	6.7	13.3	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
PHF	0.250	0.750	0.333	0.000	0.500	0.000	0.250	0.389	0.000	0.339	0.375	0.250	0.250	0.000	0.469	0.000	0.333	0.000	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.479
Entering Leg	1	3	4	0	8	0	5	14	0	19	12	1	2	0	15	0	4	0	0	4	0	0	0	0	0	46
Exiting Leg						1						20						17						8	46	
<b>Total</b>						<b>9</b>						<b>39</b>						<b>32</b>						<b>12</b>	<b>92</b>	



PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Single-Unit Trucks**

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	0	0	1	0	1	8
7:15 AM	0	2	0	0	2	0	0	0	0	0	1	1	0	0	2	1	0	0	0	1	5
7:30 AM	0	3	0	0	3	0	1	0	0	1	0	2	2	0	4	0	0	0	0	0	8
7:45 AM	2	2	0	0	4	0	0	0	0	0	0	3	2	0	5	1	1	0	0	2	11
<b>Total</b>	<b>2</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>10</b>	<b>4</b>	<b>0</b>	<b>15</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>32</b>
8:00 AM	0	1	0	0	1	0	0	0	0	0	0	2	1	0	3	1	0	0	0	1	5
8:15 AM	0	6	1	0	7	0	0	0	0	0	0	1	1	0	2	2	0	0	0	2	11
8:30 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	4
8:45 AM	2	5	0	0	7	0	0	0	0	0	0	6	0	0	6	1	0	1	0	2	15
<b>Total</b>	<b>2</b>	<b>13</b>	<b>1</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>2</b>	<b>0</b>	<b>13</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>6</b>	<b>35</b>
Grand Total	4	23	1	0	28	0	1	0	0	1	1	21	6	0	28	7	1	2	0	10	67
Approach %	14.3	82.1	3.6	0.0		0.0	100.0	0.0	0.0		3.6	75.0	21.4	0.0		70.0	10.0	20.0	0.0		
Total %	6.0	34.3	1.5	0.0	41.8	0.0	1.5	0.0	0.0	1.5	1.5	31.3	9.0	0.0	41.8	10.4	1.5	3.0	0.0	14.9	
Exiting Leg Total						3					30					11					67

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	0	3	0	0	3	0	1	0	0	1	0	2	2	0	4	0	0	0	0	0	8
7:45 AM	2	2	0	0	4	0	0	0	0	0	0	3	2	0	5	1	1	0	0	2	11
8:00 AM	0	1	0	0	1	0	0	0	0	0	0	2	1	0	3	1	0	0	0	1	5
8:15 AM	0	6	1	0	7	0	0	0	0	0	0	1	1	0	2	2	0	0	0	2	11
Total Volume	2	12	1	0	15	0	1	0	0	1	0	8	6	0	14	4	1	0	0	5	35
% Approach Total	13.3	80.0	6.7	0.0		0.0	100.0	0.0	0.0		0.0	57.1	42.9	0.0		80.0	20.0	0.0	0.0		
PHF	0.250	0.500	0.250	0.000	0.536	0.000	0.250	0.000	0.000	0.250	0.000	0.667	0.750	0.000	0.700	0.500	0.250	0.000	0.000	0.625	0.795
Entering Leg	2	12	1	0	15	0	1	0	0	1	0	8	6	0	14	4	1	0	0	5	35
Exiting Leg						8					2					16					9
Total						3					30					14					70

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Articulated Trucks**

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
7:00 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	
7:15 AM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3	
7:30 AM	1	1	0	0	2	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	4	
7:45 AM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
<b>Total</b>	<b>1</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>	
8:00 AM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:30 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	
8:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	2	
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>	
Grand Total	2	6	0	0	8	1	1	0	0	2	0	4	1	0	5	1	0	0	0	1	16	
Approach %	25.0	75.0	0.0	0.0		50.0	50.0	0.0	0.0		0.0	80.0	20.0	0.0		100.0	0.0	0.0	0.0			
Total %	12.5	37.5	0.0	0.0	50.0	6.3	6.3	0.0	0.0	12.5	0.0	25.0	6.3	0.0	31.3	6.3	0.0	0.0	0.0	6.3		
Exiting Leg Total						5					0					7					4	16

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
7:00 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	
7:15 AM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3	
7:30 AM	1	1	0	0	2	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	4	
7:45 AM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
<b>Total Volume</b>	<b>1</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>	
% Approach Total	14.3	85.7	0.0	0.0		0.0	0.0	0.0	0.0		0.0	75.0	25.0	0.0		0.0	0.0	0.0	0.0			
PHF	0.250	0.750	0.000	0.000	0.875	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.250	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.688	
Entering Leg	1	6	0	0	7	0	0	0	0	0	0	3	1	0	4	0	0	0	0	0	11	
Exiting Leg						3					0					6					2	11
<b>Total</b>						10					0					10					2	22

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Bicycles (on Roadway and Crosswalks)**

	Farm Street							Hemlock Roads							Farm Street							Nahant Street							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
7:30 AM	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	5	0	5	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	6	
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	0	0	0	0	0	1	0	0	0	0	0	1	
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	
Grand Total	0	0	0	0	5	0	5	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	0	0	0	0	0	7	
Approach %	0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total %	0.0	0.0	0.0	0.0	71.4	0.0	71.4	0.0	0.0	0.0	0.0	0.0	0.0	14.3	14.3	0.0	0.0	0.0	0.0	0.0	0.0	28.6	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	6							1							0							0							7

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Farm Street							Hemlock Roads							Farm Street							Nahant Street							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	2	
7:15 AM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
7:30 AM	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	0	0	0	0	5	0	5	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	6	
% Approach Total	0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
PHF	0.000	0.000	0.000	0.000	0.417	0.000	0.417	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.500		
Entering Leg	0	0	0	0	5	0	5	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	6		
Exiting Leg	5							1							0							0							6
Total	10							1							1							0							12

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Pedestrians**

	Farm Street							Hemlock Roads							Farm Street							Nahant Street							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	1	0	1	0	0	0	0	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
7:15 AM	0	0	0	0	12	0	12	0	0	0	0	0	31	31	0	0	0	0	0	0	0	0	0	0	0	2	1	3	46
7:30 AM	0	0	0	0	6	0	6	0	0	0	0	0	21	21	0	0	0	0	0	0	0	0	0	0	0	1	0	1	28
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Total	0	0	0	0	19	0	19	0	0	0	0	0	63	63	0	0	0	0	0	0	0	0	0	0	0	3	1	4	86
8:00 AM	0	0	0	0	4	0	4	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	3	0	3	12
8:15 AM	0	0	0	0	0	3	3	0	0	0	0	1	4	5	0	0	0	0	0	0	0	0	0	0	0	2	1	3	11
8:30 AM	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
8:45 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	4	5	9	0	0	0	0	1	10	11	0	0	0	0	0	0	0	0	0	0	0	5	2	7	27
Grand Total	0	0	0	0	23	5	28	0	0	0	0	1	73	74	0	0	0	0	0	0	0	0	0	0	0	8	3	11	113
Approach %	0	0	0	0	82.1	17.9		0	0	0	0	1.35	98.6		0	0	0	0	0	0	0	0	0	0	0	72.7	27.3		
Total %	0	0	0	0	20.4	4.42	24.8	0	0	0	0	0.88	64.6	65.5	0	0	0	0	0	0	0	0	0	0	0	7.08	2.65	9.73	
Exiting Leg Total	28							74							0							11							113

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Farm Street							Hemlock Roads							Farm Street							Nahant Street							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
7:15 AM	0	0	0	0	12	0	12	0	0	0	0	0	31	31	0	0	0	0	0	0	0	0	0	0	0	2	1	3	46
7:30 AM	0	0	0	0	6	0	6	0	0	0	0	0	21	21	0	0	0	0	0	0	0	0	0	0	0	1	0	1	28
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	0	0	0	4	0	4	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	3	0	3	12
Total Volume	0	0	0	0	22	0	22	0	0	0	0	0	60	60	0	0	0	0	0	0	0	0	0	0	0	6	1	7	89
% Approach Total	0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	85.7	14.3		
PHF	0.000	0.000	0.000	0.000	0.458	0.000	0.458	0.000	0.000	0.000	0.000	0.000	0.484	0.484	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.250	0.583	0.484
Entering Leg	0	0	0	0	22	0	22	0	0	0	0	0	60	60	0	0	0	0	0	0	0	0	0	0	0	6	1	7	89
Exiting Leg	22							60							0							7							89
Total	44							120							0							14							178

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
2:00 PM	35	67	17	0	119	13	15	27	0	55	11	73	41	0	125	32	10	35	2	79	378
2:15 PM	53	117	19	0	189	23	27	45	0	95	15	62	85	0	162	50	3	11	0	64	510
2:30 PM	25	83	14	0	122	33	16	24	0	73	19	113	50	0	182	39	8	11	0	58	435
2:45 PM	14	96	15	0	125	41	25	35	0	101	16	117	47	0	180	38	6	19	0	63	469
<b>Total</b>	<b>127</b>	<b>363</b>	<b>65</b>	<b>0</b>	<b>555</b>	<b>110</b>	<b>83</b>	<b>131</b>	<b>0</b>	<b>324</b>	<b>61</b>	<b>365</b>	<b>223</b>	<b>0</b>	<b>649</b>	<b>159</b>	<b>27</b>	<b>76</b>	<b>2</b>	<b>264</b>	<b>1792</b>
3:00 PM	23	86	12	0	121	29	10	18	0	57	6	130	49	0	185	43	9	14	0	66	429
3:15 PM	24	102	10	0	136	30	8	14	0	52	15	129	48	0	192	39	8	20	0	67	447
3:30 PM	21	100	8	0	129	6	9	9	0	24	12	120	54	0	186	50	11	17	0	78	417
3:45 PM	31	87	9	0	127	9	11	12	0	32	11	140	56	0	207	39	6	27	0	72	438
<b>Total</b>	<b>99</b>	<b>375</b>	<b>39</b>	<b>0</b>	<b>513</b>	<b>74</b>	<b>38</b>	<b>53</b>	<b>0</b>	<b>165</b>	<b>44</b>	<b>519</b>	<b>207</b>	<b>0</b>	<b>770</b>	<b>171</b>	<b>34</b>	<b>78</b>	<b>0</b>	<b>283</b>	<b>1731</b>
Grand Total	226	738	104	0	1068	184	121	184	0	489	105	884	430	0	1419	330	61	154	2	547	3523
Approach %	21.2	69.1	9.7	0.0		37.6	24.7	37.6	0.0		7.4	62.3	30.3	0.0		60.3	11.2	28.2	0.4		
Total %	6.4	20.9	3.0	0.0	30.3	5.2	3.4	5.2	0.0	13.9	3.0	25.1	12.2	0.0	40.3	9.4	1.7	4.4	0.1	15.5	
Exiting Leg Total	1222					270					1252					779					3523
Cars	224	730	102	0	1056	181	118	181	0	480	101	863	426	0	1390	325	60	147	2	534	3460
% Cars	99.1	98.9	98.1	0.0	98.9	98.4	97.5	98.4	0.0	98.2	96.2	97.6	99.1	0.0	98.0	98.5	98.4	95.5	100.0	97.6	98.2
Exiting Leg Total	1191					263					1236					770					3460
Heavy Vehicles	2	8	2	0	12	3	3	3	0	9	4	21	4	0	29	5	1	7	0	13	63
% Heavy Vehicles	0.9	1.1	1.9	0.0	1.1	1.6	2.5	1.6	0.0	1.8	3.8	2.4	0.9	0.0	2.0	1.5	1.6	4.5	0.0	2.4	1.8
Exiting Leg Total	31					7					16					9					63

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:15 PM	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
2:15 PM	53	117	19	0	189	23	27	45	0	95	15	62	85	0	162	50	3	11	0	64	510
2:30 PM	25	83	14	0	122	33	16	24	0	73	19	113	50	0	182	39	8	11	0	58	435
2:45 PM	14	96	15	0	125	41	25	35	0	101	16	117	47	0	180	38	6	19	0	63	469
3:00 PM	23	86	12	0	121	29	10	18	0	57	6	130	49	0	185	43	9	14	0	66	429
Total Volume	115	382	60	0	557	126	78	122	0	326	56	422	231	0	709	170	26	55	0	251	1843
% Approach Total	20.6	68.6	10.8	0.0		38.7	23.9	37.4	0.0		7.9	59.5	32.6	0.0		67.7	10.4	21.9	0.0		
PHF	0.542	0.816	0.789	0.000	0.737	0.768	0.722	0.678	0.000	0.807	0.737	0.812	0.679	0.000	0.958	0.850	0.722	0.724	0.000	0.951	0.903
Cars	114	377	59	0	550	123	75	119	0	317	52	411	229	0	692	167	25	50	0	242	1801
Cars %	99.1	98.7	98.3	0.0	98.7	97.6	96.2	97.5	0.0	97.2	92.9	97.4	99.1	0.0	97.6	98.2	96.2	90.9	0.0	96.4	97.7
Heavy Vehicles	1	5	1	0	7	3	3	3	0	9	4	11	2	0	17	3	1	5	0	9	42
Heavy Vehicles %	0.9	1.3	1.7	0.0	1.3	2.4	3.8	2.5	0.0	2.8	7.1	2.6	0.9	0.0	2.4	1.8	3.8	9.1	0.0	3.6	2.3
Cars Enter Leg	114	377	59	0	550	123	75	119	0	317	52	411	229	0	692	167	25	50	0	242	1801
Heavy Enter Leg	1	5	1	0	7	3	3	3	0	9	4	11	2	0	17	3	1	5	0	9	42
Total Entering Leg	115	382	60	0	557	126	78	122	0	326	56	422	231	0	709	170	26	55	0	251	1843
Cars Exiting Leg	584					136					663					418					1801
Heavy Exiting Leg	19					6					11					6					42
Total Exiting Leg	603					142					674					424					1843

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class:



**Cars**

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
2:00 PM	35	67	16	0	118	13	15	27	0	55	11	72	41	0	124	32	10	34	2	78	375
2:15 PM	52	117	19	0	188	23	27	44	0	94	14	60	84	0	158	49	2	9	0	60	500
2:30 PM	25	82	13	0	120	33	16	24	0	73	17	108	50	0	175	38	8	11	0	57	425
2:45 PM	14	95	15	0	124	39	23	33	0	95	15	114	47	0	176	37	6	18	0	61	456
<b>Total</b>	<b>126</b>	<b>361</b>	<b>63</b>	<b>0</b>	<b>550</b>	<b>108</b>	<b>81</b>	<b>128</b>	<b>0</b>	<b>317</b>	<b>57</b>	<b>354</b>	<b>222</b>	<b>0</b>	<b>633</b>	<b>156</b>	<b>26</b>	<b>72</b>	<b>2</b>	<b>256</b>	<b>1756</b>
3:00 PM	23	83	12	0	118	28	9	18	0	55	6	129	48	0	183	43	9	12	0	64	420
3:15 PM	24	101	10	0	135	30	8	14	0	52	15	125	47	0	187	38	8	19	0	65	439
3:30 PM	20	99	8	0	127	6	9	9	0	24	12	119	54	0	185	49	11	17	0	77	413
3:45 PM	31	86	9	0	126	9	11	12	0	32	11	136	55	0	202	39	6	27	0	72	432
<b>Total</b>	<b>98</b>	<b>369</b>	<b>39</b>	<b>0</b>	<b>506</b>	<b>73</b>	<b>37</b>	<b>53</b>	<b>0</b>	<b>163</b>	<b>44</b>	<b>509</b>	<b>204</b>	<b>0</b>	<b>757</b>	<b>169</b>	<b>34</b>	<b>75</b>	<b>0</b>	<b>278</b>	<b>1704</b>
<b>Grand Total</b>	<b>224</b>	<b>730</b>	<b>102</b>	<b>0</b>	<b>1056</b>	<b>181</b>	<b>118</b>	<b>181</b>	<b>0</b>	<b>480</b>	<b>101</b>	<b>863</b>	<b>426</b>	<b>0</b>	<b>1390</b>	<b>325</b>	<b>60</b>	<b>147</b>	<b>2</b>	<b>534</b>	<b>3460</b>
Approach %	21.2	69.1	9.7	0.0		37.7	24.6	37.7	0.0		7.3	62.1	30.6	0.0		60.9	11.2	27.5	0.4		
Total %	6.5	21.1	2.9	0.0	30.5	5.2	3.4	5.2	0.0	13.9	2.9	24.9	12.3	0.0	40.2	9.4	1.7	4.2	0.1	15.4	
Exiting Leg Total	1191					263					1236					770					3460

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
2:15 PM	52	117	19	0	188	23	27	44	0	94	14	60	84	0	158	49	2	9	0	60	500
2:30 PM	25	82	13	0	120	33	16	24	0	73	17	108	50	0	175	38	8	11	0	57	425
2:45 PM	14	95	15	0	124	39	23	33	0	95	15	114	47	0	176	37	6	18	0	61	456
3:00 PM	23	83	12	0	118	28	9	18	0	55	6	129	48	0	183	43	9	12	0	64	420
Total Volume	114	377	59	0	550	123	75	119	0	317	52	411	229	0	692	167	25	50	0	242	1801
% Approach Total	20.7	68.5	10.7	0.0		38.8	23.7	37.5	0.0		7.5	59.4	33.1	0.0		69.0	10.3	20.7	0.0		
PHF	0.548	0.806	0.776	0.000	0.731	0.788	0.694	0.676	0.000	0.834	0.765	0.797	0.682	0.000	0.945	0.852	0.694	0.694	0.000	0.945	0.901
Entering Leg	114	377	59	0	550	123	75	119	0	317	52	411	229	0	692	167	25	50	0	242	1801
Exiting Leg	584					136					663					418					1801
Total	1134					453					1355					660					3602

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**



	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
2:00 PM	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	3
2:15 PM	1	0	0	0	1	0	0	1	0	1	1	2	1	0	4	1	1	2	0	4	10
2:30 PM	0	1	1	0	2	0	0	0	0	0	2	5	0	0	7	1	0	0	0	1	10
2:45 PM	0	1	0	0	1	2	2	2	0	6	1	3	0	0	4	1	0	1	0	2	13
<b>Total</b>	1	2	2	0	5	2	2	3	0	7	4	11	1	0	16	3	1	4	0	8	36
3:00 PM	0	3	0	0	3	1	1	0	0	2	0	1	1	0	2	0	0	2	0	2	9
3:15 PM	0	1	0	0	1	0	0	0	0	0	0	4	1	0	5	1	0	1	0	2	8
3:30 PM	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	4
3:45 PM	0	1	0	0	1	0	0	0	0	0	0	4	1	0	5	0	0	0	0	0	6
<b>Total</b>	1	6	0	0	7	1	1	0	0	2	0	10	3	0	13	2	0	3	0	5	27
<b>Grand Total</b>	2	8	2	0	12	3	3	3	0	9	4	21	4	0	29	5	1	7	0	13	63
Approach %	16.7	66.7	16.7	0.0		33.3	33.3	33.3	0.0		13.8	72.4	13.8	0.0		38.5	7.7	53.8	0.0		
Total %	3.2	12.7	3.2	0.0	19.0	4.8	4.8	4.8	0.0	14.3	6.3	33.3	6.3	0.0	46.0	7.9	1.6	11.1	0.0	20.6	
Exiting Leg Total	31					7					16					9					63
Buses	1	1	1	0	3	3	2	1	0	6	3	3	0	0	6	1	1	3	0	5	20
% Buses	50.0	12.5	50.0	0.0	25.0	100.0	66.7	33.3	0.0	66.7	75.0	14.3	0.0	0.0	20.7	20.0	100.0	42.9	0.0	38.5	31.7
Exiting Leg Total	9					5					3					3					20
Single-Unit Trucks	1	6	1	0	8	0	1	2	0	3	1	14	4	0	19	4	0	4	0	8	38
% Single-Unit	50.0	75.0	50.0	0.0	66.7	0.0	33.3	66.7	0.0	33.3	25.0	66.7	100.0	0.0	65.5	80.0	0.0	57.1	0.0	61.5	60.3
Exiting Leg Total	18					2					12					6					38
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	5
% Articulated	0.0	12.5	0.0	0.0	8.3	0.0	0.0	0.0	0.0	0.0	0.0	19.0	0.0	0.0	13.8	0.0	0.0	0.0	0.0	0.0	7.9
Exiting Leg Total	4					0					1					0					5

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
2:15 PM	1	0	0	0	1	0	0	1	0	1	1	2	1	0	4	1	1	2	0	4	10
2:30 PM	0	1	1	0	2	0	0	0	0	0	2	5	0	0	7	1	0	0	0	1	10
2:45 PM	0	1	0	0	1	2	2	2	0	6	1	3	0	0	4	1	0	1	0	2	13
3:00 PM	0	3	0	0	3	1	1	0	0	2	0	1	1	0	2	0	0	2	0	2	9
<b>Total Volume</b>	1	5	1	0	7	3	3	3	0	9	4	11	2	0	17	3	1	5	0	9	42
<b>% Approach Total</b>	14.3	71.4	14.3	0.0		33.3	33.3	33.3	0.0		23.5	64.7	11.8	0.0		33.3	11.1	55.6	0.0		
PHF	0.250	0.417	0.250	0.000	0.583	0.375	0.375	0.375	0.000	0.375	0.500	0.550	0.500	0.000	0.607	0.750	0.250	0.625	0.000	0.563	0.808
Buses	1	1	1	0	3	3	2	1	0	6	3	2	0	0	5	1	1	3	0	5	19
Buses %	100.0	20.0	100.0	0.0	42.9	100.0	66.7	33.3	0.0	66.7	75.0	18.2	0.0	0.0	29.4	33.3	100.0	60.0	0.0	55.6	45.2
Single-Unit Trucks	0	3	0	0	3	0	1	2	0	3	1	6	2	0	9	2	0	2	0	4	19
Single-Unit %	0.0	60.0	0.0	0.0	42.9	0.0	33.3	66.7	0.0	33.3	25.0	54.5	100.0	0.0	52.9	66.7	0.0	40.0	0.0	44.4	45.2
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
Articulated %	0.0	20.0	0.0	0.0	14.3	0.0	0.0	0.0	0.0	0.0	0.0	27.3	0.0	0.0	17.6	0.0	0.0	0.0	0.0	0.0	9.5
Buses	1	1	1	0	3	3	2	1	0	6	3	2	0	0	5	1	1	3	0	5	19
Single-Unit Trucks	0	3	0	0	3	0	1	2	0	3	1	6	2	0	9	2	0	2	0	4	19
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
<b>Total Entering Leg</b>	1	5	1	0	7	3	3	3	0	9	4	11	2	0	17	3	1	5	0	9	42
Buses	8					5					3					3					19
Single-Unit Trucks	8					7					1					3					19
Articulated Trucks	3					0					1					0					4
<b>Total Exiting Leg</b>	19					6					11					6					42

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class:



**Buses**

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	1	0	0	0	1	0	0	0	0	0	1	1	0	0	2	0	1	0	0	1	4
2:30 PM	0	1	1	0	2	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	5
2:45 PM	0	0	0	0	0	2	1	1	0	4	0	0	0	0	0	1	0	1	0	2	6
<b>Total</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>15</b>
3:00 PM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	2	0	2	4
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>5</b>
Grand Total	1	1	1	0	3	3	2	1	0	6	3	3	0	0	6	1	1	3	0	5	20
Approach %	33.3	33.3	33.3	0.0		50.0	33.3	16.7	0.0		50.0	50.0	0.0	0.0		20.0	20.0	60.0	0.0		
Total %	5.0	5.0	5.0	0.0	15.0	15.0	10.0	5.0	0.0	30.0	15.0	15.0	0.0	0.0	30.0	5.0	5.0	15.0	0.0	25.0	
Exiting Leg Total						9					5					3					20

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
2:15 PM	1	0	0	0	1	0	0	0	0	0	1	1	0	0	2	0	1	0	0	1	4
2:30 PM	0	1	1	0	2	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	5
2:45 PM	0	0	0	0	0	2	1	1	0	4	0	0	0	0	0	1	0	1	0	2	6
3:00 PM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	2	0	2	4
Total Volume	1	1	1	0	3	3	2	1	0	6	3	2	0	0	5	1	1	3	0	5	19
% Approach Total	33.3	33.3	33.3	0.0		50.0	33.3	16.7	0.0		60.0	40.0	0.0	0.0		20.0	20.0	60.0	0.0		
PHF	0.250	0.250	0.250	0.000	0.375	0.375	0.500	0.250	0.000	0.375	0.375	0.500	0.000	0.000	0.417	0.250	0.250	0.375	0.000	0.625	0.792
Entering Leg	1	1	1	0	3	3	2	1	0	6	3	2	0	0	5	1	1	3	0	5	19
Exiting Leg						8					5					3					19
Total						11					11					8					38



PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class:



**Single-Unit Trucks**

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
2:00 PM	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	3
2:15 PM	0	0	0	0	0	0	0	1	0	1	0	1	1	0	2	1	0	2	0	3	6
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	3
2:45 PM	0	1	0	0	1	0	1	1	0	2	1	2	0	0	3	0	0	0	0	0	6
<b>Total</b>	0	1	1	0	2	0	1	2	0	3	1	6	1	0	8	2	0	3	0	5	18
3:00 PM	0	2	0	0	2	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	4
3:15 PM	0	1	0	0	1	0	0	0	0	0	0	4	1	0	5	1	0	1	0	2	8
3:30 PM	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	4
3:45 PM	0	1	0	0	1	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	4
<b>Total</b>	1	5	0	0	6	0	0	0	0	0	0	8	3	0	11	2	0	1	0	3	20
<b>Grand Total</b>	1	6	1	0	8	0	1	2	0	3	1	14	4	0	19	4	0	4	0	8	38
Approach %	12.5	75.0	12.5	0.0		0.0	33.3	66.7	0.0		5.3	73.7	21.1	0.0		50.0	0.0	50.0	0.0		
Total %	2.6	15.8	2.6	0.0	21.1	0.0	2.6	5.3	0.0	7.9	2.6	36.8	10.5	0.0	50.0	10.5	0.0	10.5	0.0	21.1	
Exiting Leg Total	18					2					12					6					38

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
2:45 PM	0	1	0	0	1	0	1	1	0	2	1	2	0	0	3	0	0	0	0	0	6
3:00 PM	0	2	0	0	2	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	4
3:15 PM	0	1	0	0	1	0	0	0	0	0	0	4	1	0	5	1	0	1	0	2	8
3:30 PM	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	4
<b>Total Volume</b>	1	5	0	0	6	0	1	1	0	2	1	8	2	0	11	2	0	1	0	3	22
% Approach Total	16.7	83.3	0.0	0.0		0.0	50.0	50.0	0.0		9.1	72.7	18.2	0.0		66.7	0.0	33.3	0.0		
PHF	0.250	0.625	0.000	0.000	0.750	0.000	0.250	0.250	0.000	0.250	0.250	0.500	0.500	0.000	0.550	0.500	0.000	0.250	0.000	0.375	0.688
Entering Leg	1	5	0	0	6	0	1	1	0	2	1	8	2	0	11	2	0	1	0	3	22
Exiting Leg	9					1					8					4					22
<b>Total</b>	15					3					19					7					44

PDI File #: **217949 C**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **E: Hemlock Roads W: Nahant Street**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class:



**Articulated Trucks**

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
3:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
<b>Total</b>	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
<b>Grand Total</b>	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	5
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	80.0	0.0	0.0	80.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						4						0						1	0	5	

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

	Farm Street					Hemlock Roads					Farm Street					Nahant Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
3:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<b>Total Volume</b>	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
Exiting Leg						3						0						1	0	4	
<b>Total</b>						4						0						4	0	8	

PDI File #: 217949 C  
 Location: N: Farm Street S: Farm Street  
 Location: E: Hemlock Roads W: Nahant Street  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2  
 Count Date: Thursday, May 27, 2021  
 Start Time: 2:00 PM  
 End Time: 4:00 PM  
 Class:



**Bicycles (on Roadway and Crosswalks)**

	Farm Street								Hemlock Roads								Farm Street								Nahant Street								Total
	from North								from East								from South								from West								
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total		Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total		Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total		Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total		
2:00 PM	0	0	0	0	0	5	5	0	0	0	0	2	0	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:30 PM	0	0	0	0	2	0	2	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
2:45 PM	0	0	1	0	0	2	3	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4	
<b>Total</b>	0	0	1	0	2	7	10	0	0	0	0	2	0	2		0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	13	
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	
3:15 PM	1	0	0	0	0	0	1	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	3		
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	2		
<b>Total</b>	1	0	0	0	0	0	1	0	0	0	0	0	0	0		0	1	0	0	0	0	0	1	1	0	0	0	0	3	4	6		
<b>Grand Total</b>	1	0	1	0	2	7	11	0	0	0	0	2	0	2		0	1	0	0	0	0	0	1	1	0	0	0	0	1	3	5	19	
Approach %	9.1	0.0	9.1	0.0	18.2	63.6		0.0	0.0	0.0	0.0	100.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		20.0	0.0	0.0	0.0	20.0	60.0						
Total %	5.3	0.0	5.3	0.0	10.5	36.8	57.9	0.0	0.0	0.0	0.0	10.5	0.0	10.5		0.0	5.3	0.0	0.0	0.0	0.0	5.3		5.3	0.0	0.0	0.0	5.3	15.8	26.3			
Exiting Leg Total	10							3							1							5							19				

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

	Farm Street								Hemlock Roads								Farm Street								Nahant Street								Total
	from North								from East								from South								from West								
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total		Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total		Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total		Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total		
2:00 PM	0	0	0	0	0	5	5	0	0	0	0	2	0	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:30 PM	0	0	0	0	2	0	2	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
2:45 PM	0	0	1	0	0	2	3	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4	
<b>Total Volume</b>	0	0	1	0	2	7	10	0	0	0	0	2	0	2		0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	13	
% Approach Total	0.0	0.0	10.0	0.0	20.0	70.0		0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0	0.0						
PHF	0.000	0.000	0.250	0.000	0.250	0.350	0.500	0.000	0.000	0.000	0.000	0.250	0.000	0.250		0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.464		
Entering Leg	0	0	1	0	2	7	10	0	0	0	0	2	0	2		0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	13		
Exiting Leg	9							3							0							1							13				
<b>Total</b>	19							5							0							2							26				

PDI File #: 217949 C  
 Location: N: Farm Street S: Farm Street  
 Location: E: Hemlock Roads W: Nahant Street  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2  
 Count Date: Thursday, May 27, 2021  
 Start Time: 2:00 PM  
 End Time: 4:00 PM  
 Class:



**Pedestrians**

	Farm Street								Hemlock Roads								Farm Street								Nahant Street								Total
	from North								from East								from South								from West								
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total		Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total		Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total		Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total		
2:00 PM	0	0	0	0	3	42	45	0	0	0	0	66	9	75	0	0	0	0	0	0	0	0	0	0	0	0	3	4	7	127			
2:15 PM	0	0	0	0	3	2	5	0	0	0	0	13	0	13	0	0	0	0	0	0	0	0	0	0	0	0	1	5	6	24			
2:30 PM	0	0	0	0	1	2	3	0	0	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	11			
2:45 PM	0	0	0	0	0	1	1	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4			
Total	0	0	0	0	7	47	54	0	0	0	0	88	9	97	0	0	0	0	0	0	0	0	0	0	0	0	4	11	15	166			
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
3:15 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Total	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
Grand Total	0	0	0	0	7	48	55	0	0	0	0	88	9	97	0	0	0	0	0	0	0	0	0	0	0	0	4	11	15	167			
Approach %	0	0	0	0	12.7	87.3		0	0	0	0	90.7	9.28		0	0	0	0	0	0	0	0	0	0	0	0	26.7	73.3					
Total %	0	0	0	0	4.19	28.7	32.9	0	0	0	0	52.7	5.39	58.1	0	0	0	0	0	0	0	0	0	0	0	0	2.4	6.59	8.98				
Exiting Leg Total	55							97							0							15							167				

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:00 PM	Farm Street								Hemlock Roads								Farm Street								Nahant Street								Total
	from North								from East								from South								from West								
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total		Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total		Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total		Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total		
2:00 PM	0	0	0	0	3	42	45	0	0	0	0	66	9	75	0	0	0	0	0	0	0	0	0	0	0	0	3	4	7	127			
2:15 PM	0	0	0	0	3	2	5	0	0	0	0	13	0	13	0	0	0	0	0	0	0	0	0	0	0	0	1	5	6	24			
2:30 PM	0	0	0	0	1	2	3	0	0	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	11			
2:45 PM	0	0	0	0	0	1	1	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4			
Total Volume	0	0	0	0	7	47	54	0	0	0	0	88	9	97	0	0	0	0	0	0	0	0	0	0	0	0	4	11	15	166			
% Approach Total	0.0	0.0	0.0	0.0	13.0	87.0		0.0	0.0	0.0	0.0	90.7	9.3		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.7	73.3					
PHF	0.000	0.000	0.000	0.000	0.583	0.280	0.300	0.000	0.000	0.000	0.000	0.333	0.250	0.323	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.550	0.536	0.327			
Entering Leg	0	0	0	0	7	47	54	0	0	0	0	88	9	97	0	0	0	0	0	0	0	0	0	0	0	0	4	11	15	166			
Exiting Leg	54							97							0							15							166				
Total	108							194							0							30							332				

PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
11:00 AM	46	110	0	156	113	2	0	115	0	44	0	44	315
11:15 AM	31	102	0	133	134	0	0	134	2	40	0	42	309
11:30 AM	41	103	0	144	118	2	0	120	1	42	0	43	307
11:45 AM	49	133	0	182	148	4	0	152	0	40	0	40	374
<b>Total</b>	<b>167</b>	<b>448</b>	<b>0</b>	<b>615</b>	<b>513</b>	<b>8</b>	<b>0</b>	<b>521</b>	<b>3</b>	<b>166</b>	<b>0</b>	<b>169</b>	<b>1305</b>
12:00 PM	36	102	0	138	141	1	0	142	1	43	0	44	324
12:15 PM	38	130	0	168	145	1	0	146	4	31	0	35	349
12:30 PM	32	116	0	148	156	3	0	159	0	32	0	32	339
12:45 PM	32	102	0	134	149	2	0	151	1	45	0	46	331
<b>Total</b>	<b>138</b>	<b>450</b>	<b>0</b>	<b>588</b>	<b>591</b>	<b>7</b>	<b>0</b>	<b>598</b>	<b>6</b>	<b>151</b>	<b>0</b>	<b>157</b>	<b>1343</b>
Grand Total	305	898	0	1203	1104	15	0	1119	9	317	0	326	2648
Approach %	25.4	74.6	0.0		98.7	1.3	0.0		2.8	97.2	0.0		
Total %	11.5	33.9	0.0	45.4	41.7	0.6	0.0	42.3	0.3	12.0	0.0	12.3	
Exiting Leg Total				1421				907				320	2648
Cars	301	887	0	1188	1096	15	0	1111	9	314	0	323	2622
% Cars	98.7	98.8	0.0	98.8	99.3	100.0	0.0	99.3	100.0	99.1	0.0	99.1	99.0
Exiting Leg Total				1410				896				316	2622
Heavy Vehicles	4	11	0	15	8	0	0	8	0	3	0	3	26
% Heavy Vehicles	1.3	1.2	0.0	1.2	0.7	0.0	0.0	0.7	0.0	0.9	0.0	0.9	1.0
Exiting Leg Total				11				11				4	26

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:45 AM	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
11:45 AM	49	133	0	182	148	4	0	152	0	40	0	40	374
12:00 PM	36	102	0	138	141	1	0	142	1	43	0	44	324
12:15 PM	38	130	0	168	145	1	0	146	4	31	0	35	349
12:30 PM	32	116	0	148	156	3	0	159	0	32	0	32	339
Total Volume	155	481	0	636	590	9	0	599	5	146	0	151	1386
% Approach Total	24.4	75.6	0.0		98.5	1.5	0.0		3.3	96.7	0.0		
PHF	0.791	0.904	0.000	0.874	0.946	0.563	0.000	0.942	0.313	0.849	0.000	0.858	0.926
Cars	152	473	0	625	588	9	0	597	5	144	0	149	1371
Cars %	98.1	98.3	0.0	98.3	99.7	100.0	0.0	99.7	100.0	98.6	0.0	98.7	98.9
Heavy Vehicles	3	8	0	11	2	0	0	2	0	2	0	2	15
Heavy Vehicles %	1.9	1.7	0.0	1.7	0.3	0.0	0.0	0.3	0.0	1.4	0.0	1.3	1.1
Cars Enter Leg	152	473	0	625	588	9	0	597	5	144	0	149	1371
Heavy Enter Leg	3	8	0	11	2	0	0	2	0	2	0	2	15
Total Entering Leg	155	481	0	636	590	9	0	599	5	146	0	151	1386
Cars Exiting Leg				732				478				161	1371
Heavy Exiting Leg				4				8				3	15
Total Exiting Leg				736				486				164	1386

PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Cars**

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
11:00 AM	46	110	0	156	111	2	0	113	0	44	0	44	313
11:15 AM	31	100	0	131	131	0	0	131	2	40	0	42	304
11:30 AM	40	102	0	142	117	2	0	119	1	41	0	42	303
11:45 AM	48	129	0	177	148	4	0	152	0	39	0	39	368
<b>Total</b>	165	441	0	606	507	8	0	515	3	164	0	167	1288
12:00 PM	34	100	0	134	139	1	0	140	1	43	0	44	318
12:15 PM	38	129	0	167	145	1	0	146	4	30	0	34	347
12:30 PM	32	115	0	147	156	3	0	159	0	32	0	32	338
12:45 PM	32	102	0	134	149	2	0	151	1	45	0	46	331
<b>Total</b>	136	446	0	582	589	7	0	596	6	150	0	156	1334
<b>Grand Total</b>	301	887	0	1188	1096	15	0	1111	9	314	0	323	2622
Approach %	25.3	74.7	0.0		98.6	1.4	0.0		2.8	97.2	0.0		
Total %	11.5	33.8	0.0	45.3	41.8	0.6	0.0	42.4	0.3	12.0	0.0	12.3	
Exiting Leg Total				1410				896				316	2622

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
11:45 AM	48	129	0	177	148	4	0	152	0	39	0	39	368
12:00 PM	34	100	0	134	139	1	0	140	1	43	0	44	318
12:15 PM	38	129	0	167	145	1	0	146	4	30	0	34	347
12:30 PM	32	115	0	147	156	3	0	159	0	32	0	32	338
Total Volume	152	473	0	625	588	9	0	597	5	144	0	149	1371
% Approach Total	24.3	75.7	0.0		98.5	1.5	0.0		3.4	96.6	0.0		
PHF	0.792	0.917	0.000	0.883	0.942	0.563	0.000	0.939	0.313	0.837	0.000	0.847	0.931
Entering Leg	152	473	0	625	588	9	0	597	5	144	0	149	1371
Exiting Leg				732				478				161	1371
<b>Total</b>				1357				1075				310	2742

PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**



Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
11:00 AM	0	0	0	0	2	0	0	2	0	0	0	0	2
11:15 AM	0	2	0	2	3	0	0	3	0	0	0	0	5
11:30 AM	1	1	0	2	1	0	0	1	0	1	0	1	4
11:45 AM	1	4	0	5	0	0	0	0	0	1	0	1	6
<b>Total</b>	<b>2</b>	<b>7</b>	<b>0</b>	<b>9</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>17</b>
12:00 PM	2	2	0	4	2	0	0	2	0	0	0	0	6
12:15 PM	0	1	0	1	0	0	0	0	0	1	0	1	2
12:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>9</b>
Grand Total	4	11	0	15	8	0	0	8	0	3	0	3	26
Approach %	26.7	73.3	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
Total %	15.4	42.3	0.0	57.7	30.8	0.0	0.0	30.8	0.0	11.5	0.0	11.5	
Exiting Leg Total				11				11				4	26
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0
Single-Unit Trucks	3	11	0	14	8	0	0	8	0	2	0	2	24
% Single-Unit	75.0	100.0	0.0	93.3	100.0	0.0	0.0	100.0	0.0	66.7	0.0	66.7	92.3
Exiting Leg Total				10				11				3	24
Articulated Trucks	1	0	0	1	0	0	0	0	0	1	0	1	2
% Articulated	25.0	0.0	0.0	6.7	0.0	0.0	0.0	0.0	0.0	33.3	0.0	33.3	7.7
Exiting Leg Total				1				0				1	2

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:15 AM	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
11:15 AM	0	2	0	2	3	0	0	3	0	0	0	0	5
11:30 AM	1	1	0	2	1	0	0	1	0	1	0	1	4
11:45 AM	1	4	0	5	0	0	0	0	0	1	0	1	6
12:00 PM	2	2	0	4	2	0	0	2	0	0	0	0	6
Total Volume	4	9	0	13	6	0	0	6	0	2	0	2	21
% Approach Total	30.8	69.2	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.500	0.563	0.000	0.650	0.500	0.000	0.000	0.500	0.000	0.500	0.000	0.500	0.875
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	3	9	0	12	6	0	0	6	0	2	0	2	20
Single-Unit %	75.0	100.0	0.0	92.3	100.0	0.0	0.0	100.0	0.0	100.0	0.0	100.0	95.2
Articulated Trucks	1	0	0	1	0	0	0	0	0	0	0	0	1
Articulated %	25.0	0.0	0.0	7.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	3	9	0	12	6	0	0	6	0	2	0	2	20
Articulated Trucks	1	0	0	1	0	0	0	0	0	0	0	0	1
Total Entering Leg	4	9	0	13	6	0	0	6	0	2	0	2	21
Buses				0				0				0	0
Single-Unit Trucks				8				9				3	20
Articulated Trucks				0				0				1	1
Total Exiting Leg				8				9				4	21

PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Buses**

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	0				0				0				0

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

12:45 PM	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
Total Volume	0	0	0	0	1	0	0	1	0	0	0	0	1
% Approach Total	0.0	0.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	1	0	0	1	0	0	0	0	1
Exiting Leg	1				0				0				1
Total	1				1				0				2



PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Single-Unit Trucks**

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
11:00 AM	0	0	0	0	2	0	0	2	0	0	0	0	2
11:15 AM	0	2	0	2	3	0	0	3	0	0	0	0	5
11:30 AM	1	1	0	2	1	0	0	1	0	1	0	1	4
11:45 AM	0	4	0	4	0	0	0	0	0	1	0	1	5
<b>Total</b>	<b>1</b>	<b>7</b>	<b>0</b>	<b>8</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>16</b>
12:00 PM	2	2	0	4	2	0	0	2	0	0	0	0	6
12:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
12:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>
<b>Grand Total</b>	<b>3</b>	<b>11</b>	<b>0</b>	<b>14</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>24</b>
Approach %	21.4	78.6	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
Total %	12.5	45.8	0.0	58.3	33.3	0.0	0.0	33.3	0.0	8.3	0.0	8.3	
Exiting Leg Total				10				11				3	24

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:15 AM	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
11:15 AM	0	2	0	2	3	0	0	3	0	0	0	0	5
11:30 AM	1	1	0	2	1	0	0	1	0	1	0	1	4
11:45 AM	0	4	0	4	0	0	0	0	0	1	0	1	5
12:00 PM	2	2	0	4	2	0	0	2	0	0	0	0	6
Total Volume	3	9	0	12	6	0	0	6	0	2	0	2	20
% Approach Total	25.0	75.0	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.375	0.563	0.000	0.750	0.500	0.000	0.000	0.500	0.000	0.500	0.000	0.500	0.833
Entering Leg	3	9	0	12	6	0	0	6	0	2	0	2	20
Exiting Leg				8				9				3	20
<b>Total</b>				<b>20</b>				<b>15</b>				<b>5</b>	<b>40</b>

PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Articulated Trucks**

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	1	0	0	1	0	0	0	0	0	0	0	0	1
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>
<b>Grand Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	50.0	
Exiting Leg Total				1				0				1	2

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	1	0	0	1	0	0	0	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
<b>Total Volume</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>
<b>% Approach Total</b>	<b>100.0</b>	<b>0.0</b>	<b>0.0</b>		<b>0.0</b>	<b>0.0</b>	<b>0.0</b>		<b>0.0</b>	<b>100.0</b>	<b>0.0</b>		
PHF	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.500
Entering Leg	1	0	0	1	0	0	0	0	0	1	0	1	2
Exiting Leg				1				0				1	2
<b>Total</b>				<b>2</b>				<b>0</b>				<b>2</b>	<b>4</b>

PDI File #: 217949 D  
 Location: N: Farm Street S: Farm Street  
 Location: W: Old Nahant Road (North)  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2  
 Count Date: Saturday, May 22, 2021  
 Start Time: 11:00 AM  
 End Time: 1:00 PM



**Bicycles (on Roadway and Crosswalks)**

	Farm Street						Farm Street						Old Nahant Road (North)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
11:00 AM	2	1	0	0	0	3	1	0	0	0	0	1	0	0	0	0	0	0	4
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
11:45 AM	1	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	2
Total	3	1	0	0	0	4	3	0	0	0	0	3	0	0	0	0	0	0	7
12:00 PM	0	3	0	0	0	3	1	0	0	0	0	1	1	1	0	0	0	2	6
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
12:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	2	3
Total	0	7	0	0	0	7	1	0	0	0	1	2	2	2	0	0	0	4	13
Grand Total	3	8	0	0	0	11	4	0	0	0	1	5	2	2	0	0	0	4	20
Approach %	27.3	72.7	0.0	0.0	0.0		80.0	0.0	0.0	0.0	20.0		50.0	50.0	0.0	0.0	0.0		
Total %	15.0	40.0	0.0	0.0	0.0	55.0	20.0	0.0	0.0	0.0	5.0	25.0	10.0	10.0	0.0	0.0	0.0	20.0	
Exiting Leg Total	6						11						3						20

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

12:00 PM	Farm Street						Farm Street						Old Nahant Road (North)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
12:00 PM	0	3	0	0	0	3	1	0	0	0	0	1	1	1	0	0	0	2	6
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
12:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	2	3
Total Volume	0	7	0	0	0	7	1	0	0	0	1	2	2	2	0	0	0	4	13
% Approach Total	0.0	100.0	0.0	0.0	0.0		50.0	0.0	0.0	0.0	50.0		50.0	50.0	0.0	0.0	0.0		
PHF	0.000	0.438	0.000	0.000	0.000	0.438	0.250	0.000	0.000	0.000	0.250	0.500	0.500	0.500	0.000	0.000	0.000	0.500	0.542
Entering Leg	0	7	0	0	0	7	1	0	0	0	1	2	2	2	0	0	0	4	13
Exiting Leg	3						10						0						13
Total	10						12						4						26

PDI File #: 217949 D  
 Location: N: Farm Street S: Farm Street  
 Location: W: Old Nahant Road (North)  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2  
 Count Date: Saturday, May 22, 2021  
 Start Time: 11:00 AM  
 End Time: 1:00 PM  
 Class:



**Pedestrians**

	Farm Street						Farm Street						Old Nahant Road (North)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	2
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	2
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	2
<b>Grand Total</b>	0	0	0	0	1	1	0	0	0	1	1	2	0	0	0	1	0	1	4
Approach %	0	0	0	0	100		0	0	0	50	50		0	0	0	100	0		
Total %	0	0	0	0	25	25	0	0	0	25	25	50	0	0	0	25	0	25	
Exiting Leg Total	1						2						1						4

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:00 AM	Farm Street						Farm Street						Old Nahant Road (North)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Volume</b>	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	2
<b>% Approach Total</b>	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	2
Exiting Leg	0						2						0						2
<b>Total</b>	0						4						0						4

PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	28	73	0	101	106	0	0	106	0	63	0	63	270
7:15 AM	36	87	0	123	136	0	0	136	1	62	0	63	322
7:30 AM	58	91	0	149	146	1	0	147	4	58	0	62	358
7:45 AM	57	94	0	151	134	3	0	137	0	43	0	43	331
<b>Total</b>	<b>179</b>	<b>345</b>	<b>0</b>	<b>524</b>	<b>522</b>	<b>4</b>	<b>0</b>	<b>526</b>	<b>5</b>	<b>226</b>	<b>0</b>	<b>231</b>	<b>1281</b>
8:00 AM	30	74	0	104	88	1	0	89	0	55	0	55	248
8:15 AM	48	84	0	132	106	2	0	108	0	55	0	55	295
8:30 AM	49	73	0	122	102	1	0	103	0	34	0	34	259
8:45 AM	29	64	0	93	78	0	0	78	0	23	0	23	194
<b>Total</b>	<b>156</b>	<b>295</b>	<b>0</b>	<b>451</b>	<b>374</b>	<b>4</b>	<b>0</b>	<b>378</b>	<b>0</b>	<b>167</b>	<b>0</b>	<b>167</b>	<b>996</b>
Grand Total	335	640	0	975	896	8	0	904	5	393	0	398	2277
Approach %	34.4	65.6	0.0		99.1	0.9	0.0		1.3	98.7	0.0		
Total %	14.7	28.1	0.0	42.8	39.4	0.4	0.0	39.7	0.2	17.3	0.0	17.5	
Exiting Leg Total				1289				645				343	2277
Cars	313	605	0	918	849	8	0	857	5	389	0	394	2169
% Cars	93.4	94.5	0.0	94.2	94.8	100.0	0.0	94.8	100.0	99.0	0.0	99.0	95.3
Exiting Leg Total				1238				610				321	2169
Heavy Vehicles	22	35	0	57	47	0	0	47	0	4	0	4	108
% Heavy Vehicles	6.6	5.5	0.0	5.8	5.2	0.0	0.0	5.2	0.0	1.0	0.0	1.0	4.7
Exiting Leg Total				51				35				22	108

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	28	73	0	101	106	0	0	106	0	63	0	63	270
7:15 AM	36	87	0	123	136	0	0	136	1	62	0	63	322
7:30 AM	58	91	0	149	146	1	0	147	4	58	0	62	358
7:45 AM	57	94	0	151	134	3	0	137	0	43	0	43	331
Total Volume	179	345	0	524	522	4	0	526	5	226	0	231	1281
% Approach Total	34.2	65.8	0.0		99.2	0.8	0.0		2.2	97.8	0.0		
PHF	0.772	0.918	0.000	0.868	0.894	0.333	0.000	0.895	0.313	0.897	0.000	0.917	0.895
Cars	163	331	0	494	488	4	0	492	5	225	0	230	1216
Cars %	91.1	95.9	0.0	94.3	93.5	100.0	0.0	93.5	100.0	99.6	0.0	99.6	94.9
Heavy Vehicles	16	14	0	30	34	0	0	34	0	1	0	1	65
Heavy Vehicles %	8.9	4.1	0.0	5.7	6.5	0.0	0.0	6.5	0.0	0.4	0.0	0.4	5.1
Cars Enter Leg	163	331	0	494	488	4	0	492	5	225	0	230	1216
Heavy Enter Leg	16	14	0	30	34	0	0	34	0	1	0	1	65
Total Entering Leg	179	345	0	524	522	4	0	526	5	226	0	231	1281
Cars Exiting Leg				713				336				167	1216
Heavy Exiting Leg				35				14				16	65
Total Exiting Leg				748				350				183	1281

PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Cars**

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	28	70	0	98	101	0	0	101	0	62	0	62	261
7:15 AM	32	85	0	117	130	0	0	130	1	62	0	63	310
7:30 AM	55	86	0	141	132	1	0	133	4	58	0	62	336
7:45 AM	48	90	0	138	125	3	0	128	0	43	0	43	309
<b>Total</b>	<b>163</b>	<b>331</b>	<b>0</b>	<b>494</b>	<b>488</b>	<b>4</b>	<b>0</b>	<b>492</b>	<b>5</b>	<b>225</b>	<b>0</b>	<b>230</b>	<b>1216</b>
8:00 AM	29	70	0	99	85	1	0	86	0	54	0	54	239
8:15 AM	46	76	0	122	105	2	0	107	0	55	0	55	284
8:30 AM	47	71	0	118	100	1	0	101	0	33	0	33	252
8:45 AM	28	57	0	85	71	0	0	71	0	22	0	22	178
<b>Total</b>	<b>150</b>	<b>274</b>	<b>0</b>	<b>424</b>	<b>361</b>	<b>4</b>	<b>0</b>	<b>365</b>	<b>0</b>	<b>164</b>	<b>0</b>	<b>164</b>	<b>953</b>
Grand Total	313	605	0	918	849	8	0	857	5	389	0	394	2169
Approach %	34.1	65.9	0.0		99.1	0.9	0.0		1.3	98.7	0.0		
Total %	14.4	27.9	0.0	42.3	39.1	0.4	0.0	39.5	0.2	17.9	0.0	18.2	
Exiting Leg Total				1238				610				321	2169

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	28	70	0	98	101	0	0	101	0	62	0	62	261
7:15 AM	32	85	0	117	130	0	0	130	1	62	0	63	310
7:30 AM	55	86	0	141	132	1	0	133	4	58	0	62	336
7:45 AM	48	90	0	138	125	3	0	128	0	43	0	43	309
Total Volume	163	331	0	494	488	4	0	492	5	225	0	230	1216
% Approach Total	33.0	67.0	0.0		99.2	0.8	0.0		2.2	97.8	0.0		
PHF	0.741	0.919	0.000	0.876	0.924	0.333	0.000	0.925	0.313	0.907	0.000	0.913	0.905
Entering Leg	163	331	0	494	488	4	0	492	5	225	0	230	1216
Exiting Leg				713				336				167	1216
<b>Total</b>				<b>1207</b>				<b>828</b>				<b>397</b>	<b>2432</b>

PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**



Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	3	0	3	5	0	0	5	0	1	0	1	9
7:15 AM	4	2	0	6	6	0	0	6	0	0	0	0	12
7:30 AM	3	5	0	8	14	0	0	14	0	0	0	0	22
7:45 AM	9	4	0	13	9	0	0	9	0	0	0	0	22
Total	16	14	0	30	34	0	0	34	0	1	0	1	65
8:00 AM	1	4	0	5	3	0	0	3	0	1	0	1	9
8:15 AM	2	8	0	10	1	0	0	1	0	0	0	0	11
8:30 AM	2	2	0	4	2	0	0	2	0	1	0	1	7
8:45 AM	1	7	0	8	7	0	0	7	0	1	0	1	16
Total	6	21	0	27	13	0	0	13	0	3	0	3	43
Grand Total	22	35	0	57	47	0	0	47	0	4	0	4	108
Approach %	38.6	61.4	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
Total %	20.4	32.4	0.0	52.8	43.5	0.0	0.0	43.5	0.0	3.7	0.0	3.7	
Exiting Leg Total				51				35				22	108
Buses	13	7	0	20	16	0	0	16	0	2	0	2	38
% Buses	59.1	20.0	0.0	35.1	34.0	0.0	0.0	34.0	0.0	50.0	0.0	50.0	35.2
Exiting Leg Total				18				7				13	38
Single-Unit Trucks	9	23	0	32	29	0	0	29	0	1	0	1	62
% Single-Unit	40.9	65.7	0.0	56.1	61.7	0.0	0.0	61.7	0.0	25.0	0.0	25.0	57.4
Exiting Leg Total				30				23				9	62
Articulated Trucks	0	5	0	5	2	0	0	2	0	1	0	1	8
% Articulated	0.0	14.3	0.0	8.8	4.3	0.0	0.0	4.3	0.0	25.0	0.0	25.0	7.4
Exiting Leg Total				3				5				0	8

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	3	0	3	5	0	0	5	0	1	0	1	9
7:15 AM	4	2	0	6	6	0	0	6	0	0	0	0	12
7:30 AM	3	5	0	8	14	0	0	14	0	0	0	0	22
7:45 AM	9	4	0	13	9	0	0	9	0	0	0	0	22
Total Volume	16	14	0	30	34	0	0	34	0	1	0	1	65
% Approach Total	53.3	46.7	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.444	0.700	0.000	0.577	0.607	0.000	0.000	0.607	0.000	0.250	0.000	0.250	0.739
Buses	11	4	0	15	15	0	0	15	0	0	0	0	30
Buses %	68.8	28.6	0.0	50.0	44.1	0.0	0.0	44.1	0.0	0.0	0.0	0.0	46.2
Single-Unit Trucks	5	7	0	12	17	0	0	17	0	0	0	0	29
Single-Unit %	31.3	50.0	0.0	40.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	44.6
Articulated Trucks	0	3	0	3	2	0	0	2	0	1	0	1	6
Articulated %	0.0	21.4	0.0	10.0	5.9	0.0	0.0	5.9	0.0	100.0	0.0	100.0	9.2
Buses	11	4	0	15	15	0	0	15	0	0	0	0	30
Single-Unit Trucks	5	7	0	12	17	0	0	17	0	0	0	0	29
Articulated Trucks	0	3	0	3	2	0	0	2	0	1	0	1	6
Total Entering Leg	16	14	0	30	34	0	0	34	0	1	0	1	65
Buses				15				4				11	30
Single-Unit Trucks				17				7				5	29
Articulated Trucks				3				3				0	6
Total Exiting Leg				35				14				16	65

PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Buses**

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
7:15 AM	1	0	0	1	3	0	0	3	0	0	0	0	4
7:30 AM	3	1	0	4	8	0	0	8	0	0	0	0	12
7:45 AM	7	3	0	10	3	0	0	3	0	0	0	0	13
<b>Total</b>	<b>11</b>	<b>4</b>	<b>0</b>	<b>15</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>30</b>
8:00 AM	1	1	0	2	0	0	0	0	0	1	0	1	3
8:15 AM	1	0	0	1	0	0	0	0	0	0	0	0	1
8:30 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
8:45 AM	0	1	0	1	1	0	0	1	0	1	0	1	3
<b>Total</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>8</b>
<b>Grand Total</b>	<b>13</b>	<b>7</b>	<b>0</b>	<b>20</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>38</b>
Approach %	65.0	35.0	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
Total %	34.2	18.4	0.0	52.6	42.1	0.0	0.0	42.1	0.0	5.3	0.0	5.3	
Exiting Leg Total				18				7				13	38

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:15 AM	1	0	0	1	3	0	0	3	0	0	0	0	4
7:30 AM	3	1	0	4	8	0	0	8	0	0	0	0	12
7:45 AM	7	3	0	10	3	0	0	3	0	0	0	0	13
8:00 AM	1	1	0	2	0	0	0	0	0	1	0	1	3
Total Volume	12	5	0	17	14	0	0	14	0	1	0	1	32
% Approach Total	70.6	29.4	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.429	0.417	0.000	0.425	0.438	0.000	0.000	0.438	0.000	0.250	0.000	0.250	0.615
Entering Leg	12	5	0	17	14	0	0	14	0	1	0	1	32
Exiting Leg				15				5				12	32
Total				32				19				13	64



PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Single-Unit Trucks**

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	2	0	2	4	0	0	4	0	0	0	0	6
7:15 AM	3	2	0	5	2	0	0	2	0	0	0	0	7
7:30 AM	0	2	0	2	5	0	0	5	0	0	0	0	7
7:45 AM	2	1	0	3	6	0	0	6	0	0	0	0	9
<b>Total</b>	<b>5</b>	<b>7</b>	<b>0</b>	<b>12</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>29</b>
8:00 AM	0	2	0	2	3	0	0	3	0	0	0	0	5
8:15 AM	1	8	0	9	1	0	0	1	0	0	0	0	10
8:30 AM	2	1	0	3	2	0	0	2	0	1	0	1	6
8:45 AM	1	5	0	6	6	0	0	6	0	0	0	0	12
<b>Total</b>	<b>4</b>	<b>16</b>	<b>0</b>	<b>20</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>33</b>
<b>Grand Total</b>	<b>9</b>	<b>23</b>	<b>0</b>	<b>32</b>	<b>29</b>	<b>0</b>	<b>0</b>	<b>29</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>62</b>
Approach %	28.1	71.9	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
Total %	14.5	37.1	0.0	51.6	46.8	0.0	0.0	46.8	0.0	1.6	0.0	1.6	
Exiting Leg Total				30				23				9	62

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
8:00 AM	0	2	0	2	3	0	0	3	0	0	0	0	5
8:15 AM	1	8	0	9	1	0	0	1	0	0	0	0	10
8:30 AM	2	1	0	3	2	0	0	2	0	1	0	1	6
8:45 AM	1	5	0	6	6	0	0	6	0	0	0	0	12
<b>Total Volume</b>	<b>4</b>	<b>16</b>	<b>0</b>	<b>20</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>33</b>
<b>% Approach Total</b>	<b>20.0</b>	<b>80.0</b>	<b>0.0</b>		<b>100.0</b>	<b>0.0</b>	<b>0.0</b>		<b>0.0</b>	<b>100.0</b>	<b>0.0</b>		
PHF	0.500	0.500	0.000	0.556	0.500	0.000	0.000	0.500	0.000	0.250	0.000	0.250	0.688
Entering Leg	4	16	0	20	12	0	0	12	0	1	0	1	33
Exiting Leg				13				16				4	33
<b>Total</b>				<b>33</b>				<b>28</b>				<b>5</b>	<b>66</b>

PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Articulated Trucks**

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	1	0	1	0	0	0	0	0	1	0	1	2
7:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
7:30 AM	0	2	0	2	1	0	0	1	0	0	0	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	3	0	3	2	0	0	2	0	1	0	1	6
8:00 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
8:15 AM	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
8:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
<b>Total</b>	0	2	0	2	0	0	0	0	0	0	0	0	2
<b>Grand Total</b>	0	5	0	5	2	0	0	2	0	1	0	1	8
Approach %	0.0	100.0	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
Total %	0.0	62.5	0.0	62.5	25.0	0.0	0.0	25.0	0.0	12.5	0.0	12.5	
Exiting Leg Total				3				5				0	8

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	1	0	1	0	0	0	0	0	1	0	1	2
7:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
7:30 AM	0	2	0	2	1	0	0	1	0	0	0	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	3	0	3	2	0	0	2	0	1	0	1	6
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.000	0.375	0.000	0.375	0.500	0.000	0.000	0.500	0.000	0.250	0.000	0.250	0.500
Entering Leg	0	3	0	3	2	0	0	2	0	1	0	1	6
Exiting Leg				3				3				0	6
<b>Total</b>				6				5				1	12

PDI File #: 217949 D  
 Location: N: Farm Street S: Farm Street  
 Location: W: Old Nahant Road (North)  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2  
 Count Date: Thursday, May 27, 2021  
 Start Time: 7:00 AM  
 End Time: 9:00 AM



**Bicycles (on Roadway and Crosswalks)**

	Farm Street						Farm Street						Old Nahant Road (North)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	0	0	0	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	0	0	0
7:30 AM	0	0	0	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	0	0	0
Total	0	0	0	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	0	0	0
8:15 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	1	2
8:30 AM	0	0	0	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	0	0	0
Total	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	1	2
Grand Total	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	1	2
Approach %	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	50.0	50.0
Total %	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	50.0	50.0
Exiting Leg Total	2						0						0						2

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Farm Street						Farm Street						Old Nahant Road (North)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
7:30 AM	0	0	0	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	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	1	2
Total Volume	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	1	2
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	50.0	50.0
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.250	0.250
Entering Leg	0						1						0						1
Exiting Leg	2						0						0						2
Total	2						1						1						4

PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Pedestrians**

	Farm Street						Farm Street						Old Nahant Road (North)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1
7:30 AM	0	0	0	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	0	0	0
Total	0	0	0	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	4
8:30 AM	0	0	0	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	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	4
Grand Total	0	0	0	1	0	1	0	0	0	0	5	5	0	0	0	0	0	0	6
Approach %	0	0	0	100	0		0	0	0	0	100		0	0	0	0	0		
Total %	0	0	0	16.667	0	16.667	0	0	0	0	83.333	83.333	0	0	0	0	0	0	
Exiting Leg Total	1						5						0						6

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Farm Street						Farm Street						Old Nahant Road (North)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
7:30 AM	0	0	0	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	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	4
Total Volume	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	4
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	4
Exiting Leg	0						4						0						4
Total	0						8						0						8

PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**



**Cars and Heavy Vehicles (Combined)**

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	52	76	0	128	85	7	0	92	2	41	1	44	264
2:15 PM	82	131	0	213	95	7	0	102	6	32	0	38	353
2:30 PM	45	105	0	150	117	2	0	119	1	46	0	47	316
2:45 PM	46	120	0	166	144	1	0	145	5	32	0	37	348
<b>Total</b>	<b>225</b>	<b>432</b>	<b>0</b>	<b>657</b>	<b>441</b>	<b>17</b>	<b>0</b>	<b>458</b>	<b>14</b>	<b>151</b>	<b>1</b>	<b>166</b>	<b>1281</b>
3:00 PM	41	103	0	144	147	1	0	148	2	36	0	38	330
3:15 PM	46	106	0	152	146	0	0	146	0	52	0	52	350
3:30 PM	48	109	0	157	141	3	0	144	2	47	0	49	350
3:45 PM	32	107	0	139	162	2	0	164	2	42	0	44	347
<b>Total</b>	<b>167</b>	<b>425</b>	<b>0</b>	<b>592</b>	<b>596</b>	<b>6</b>	<b>0</b>	<b>602</b>	<b>6</b>	<b>177</b>	<b>0</b>	<b>183</b>	<b>1377</b>
Grand Total	392	857	0	1249	1037	23	0	1060	20	328	1	349	2658
Approach %	31.4	68.6	0.0		97.8	2.2	0.0		5.7	94.0	0.3		
Total %	14.7	32.2	0.0	47.0	39.0	0.9	0.0	39.9	0.8	12.3	0.0	13.1	
Exiting Leg Total				1365				877				416	2658
Cars	387	840	0	1227	1019	21	0	1040	19	317	1	337	2604
% Cars	98.7	98.0	0.0	98.2	98.3	91.3	0.0	98.1	95.0	96.6	100.0	96.6	98.0
Exiting Leg Total				1336				859				409	2604
Heavy Vehicles	5	17	0	22	18	2	0	20	1	11	0	12	54
% Heavy Vehicles	1.3	2.0	0.0	1.8	1.7	8.7	0.0	1.9	5.0	3.4	0.0	3.4	2.0
Exiting Leg Total				29				18				7	54

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:45 PM	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:45 PM	46	120	0	166	144	1	0	145	5	32	0	37	348
3:00 PM	41	103	0	144	147	1	0	148	2	36	0	38	330
3:15 PM	46	106	0	152	146	0	0	146	0	52	0	52	350
3:30 PM	48	109	0	157	141	3	0	144	2	47	0	49	350
Total Volume	181	438	0	619	578	5	0	583	9	167	0	176	1378
% Approach Total	29.2	70.8	0.0		99.1	0.9	0.0		5.1	94.9	0.0		
PHF	0.943	0.913	0.000	0.932	0.983	0.417	0.000	0.985	0.450	0.803	0.000	0.846	0.984
Cars	179	428	0	607	569	4	0	573	9	166	0	175	1355
Cars %	98.9	97.7	0.0	98.1	98.4	80.0	0.0	98.3	100.0	99.4	0.0	99.4	98.3
Heavy Vehicles	2	10	0	12	9	1	0	10	0	1	0	1	23
Heavy Vehicles %	1.1	2.3	0.0	1.9	1.6	20.0	0.0	1.7	0.0	0.6	0.0	0.6	1.7
Cars Enter Leg	179	428	0	607	569	4	0	573	9	166	0	175	1355
Heavy Enter Leg	2	10	0	12	9	1	0	10	0	1	0	1	23
Total Entering Leg	181	438	0	619	578	5	0	583	9	167	0	176	1378
Cars Exiting Leg				735				437				183	1355
Heavy Exiting Leg				10				10				3	23
Total Exiting Leg				745				447				186	1378

PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class:



**Cars**

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	52	75	0	127	84	7	0	91	2	41	1	44	262
2:15 PM	80	128	0	208	92	7	0	99	6	27	0	33	340
2:30 PM	44	104	0	148	114	2	0	116	1	43	0	44	308
2:45 PM	46	115	0	161	139	1	0	140	5	32	0	37	338
<b>Total</b>	<b>222</b>	<b>422</b>	<b>0</b>	<b>644</b>	<b>429</b>	<b>17</b>	<b>0</b>	<b>446</b>	<b>14</b>	<b>143</b>	<b>1</b>	<b>158</b>	<b>1248</b>
3:00 PM	41	100	0	141	147	1	0	148	2	35	0	37	326
3:15 PM	44	106	0	150	142	0	0	142	0	52	0	52	344
3:30 PM	48	107	0	155	141	2	0	143	2	47	0	49	347
3:45 PM	32	105	0	137	160	1	0	161	1	40	0	41	339
<b>Total</b>	<b>165</b>	<b>418</b>	<b>0</b>	<b>583</b>	<b>590</b>	<b>4</b>	<b>0</b>	<b>594</b>	<b>5</b>	<b>174</b>	<b>0</b>	<b>179</b>	<b>1356</b>
Grand Total	387	840	0	1227	1019	21	0	1040	19	317	1	337	2604
Approach %	31.5	68.5	0.0		98.0	2.0	0.0		5.6	94.1	0.3		
Total %	14.9	32.3	0.0	47.1	39.1	0.8	0.0	39.9	0.7	12.2	0.0	12.9	
Exiting Leg Total				1336				859				409	2604

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
3:00 PM	41	100	0	141	147	1	0	148	2	35	0	37	326
3:15 PM	44	106	0	150	142	0	0	142	0	52	0	52	344
3:30 PM	48	107	0	155	141	2	0	143	2	47	0	49	347
3:45 PM	32	105	0	137	160	1	0	161	1	40	0	41	339
Total Volume	165	418	0	583	590	4	0	594	5	174	0	179	1356
% Approach Total	28.3	71.7	0.0		99.3	0.7	0.0		2.8	97.2	0.0		
PHF	0.859	0.977	0.000	0.940	0.922	0.500	0.000	0.922	0.625	0.837	0.000	0.861	0.977
Entering Leg	165	418	0	583	590	4	0	594	5	174	0	179	1356
Exiting Leg				764				423				169	1356
<b>Total</b>				<b>1347</b>				<b>1017</b>				<b>348</b>	<b>2712</b>

PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**



Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
2:15 PM	2	3	0	5	3	0	0	3	0	5	0	5	13
2:30 PM	1	1	0	2	3	0	0	3	0	3	0	3	8
2:45 PM	0	5	0	5	5	0	0	5	0	0	0	0	10
<b>Total</b>	<b>3</b>	<b>10</b>	<b>0</b>	<b>13</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>8</b>	<b>33</b>
3:00 PM	0	3	0	3	0	0	0	0	0	1	0	1	4
3:15 PM	2	0	0	2	4	0	0	4	0	0	0	0	6
3:30 PM	0	2	0	2	0	1	0	1	0	0	0	0	3
3:45 PM	0	2	0	2	2	1	0	3	1	2	0	3	8
<b>Total</b>	<b>2</b>	<b>7</b>	<b>0</b>	<b>9</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>8</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>4</b>	<b>21</b>
Grand Total	5	17	0	22	18	2	0	20	1	11	0	12	54
Approach %	22.7	77.3	0.0		90.0	10.0	0.0		8.3	91.7	0.0		
Total %	9.3	31.5	0.0	40.7	33.3	3.7	0.0	37.0	1.9	20.4	0.0	22.2	
Exiting Leg Total				29				18				7	54
Buses	1	3	0	4	4	0	0	4	0	2	0	2	10
% Buses	20.0	17.6	0.0	18.2	22.2	0.0	0.0	20.0	0.0	18.2	0.0	16.7	18.5
Exiting Leg Total				6				3				1	10
Single-Unit Trucks	4	12	0	16	12	1	0	13	1	6	0	7	36
% Single-Unit	80.0	70.6	0.0	72.7	66.7	50.0	0.0	65.0	100.0	54.5	0.0	58.3	66.7
Exiting Leg Total				18				13				5	36
Articulated Trucks	0	2	0	2	2	1	0	3	0	3	0	3	8
% Articulated	0.0	11.8	0.0	9.1	11.1	50.0	0.0	15.0	0.0	27.3	0.0	25.0	14.8
Exiting Leg Total				5				2				1	8

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:15 PM	2	3	0	5	3	0	0	3	0	5	0	5	13
2:30 PM	1	1	0	2	3	0	0	3	0	3	0	3	8
2:45 PM	0	5	0	5	5	0	0	5	0	0	0	0	10
3:00 PM	0	3	0	3	0	0	0	0	0	1	0	1	4
Total Volume	3	12	0	15	11	0	0	11	0	9	0	9	35
% Approach Total	20.0	80.0	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.375	0.600	0.000	0.750	0.550	0.000	0.000	0.550	0.000	0.450	0.000	0.450	0.673
Buses	1	3	0	4	3	0	0	3	0	2	0	2	9
Buses %	33.3	25.0	0.0	26.7	27.3	0.0	0.0	27.3	0.0	22.2	0.0	22.2	25.7
Single-Unit Trucks	2	7	0	9	6	0	0	6	0	5	0	5	20
Single-Unit %	66.7	58.3	0.0	60.0	54.5	0.0	0.0	54.5	0.0	55.6	0.0	55.6	57.1
Articulated Trucks	0	2	0	2	2	0	0	2	0	2	0	2	6
Articulated %	0.0	16.7	0.0	13.3	18.2	0.0	0.0	18.2	0.0	22.2	0.0	22.2	17.1
Buses	1	3	0	4	3	0	0	3	0	2	0	2	9
Single-Unit Trucks	2	7	0	9	6	0	0	6	0	5	0	5	20
Articulated Trucks	0	2	0	2	2	0	0	2	0	2	0	2	6
Total Entering Leg	3	12	0	15	11	0	0	11	0	9	0	9	35
Buses				5				3				1	9
Single-Unit Trucks				11				7				2	20
Articulated Trucks				4				2				0	6
Total Exiting Leg				20				12				3	35

PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class:



**Buses**

	Farm Street				Farm Street				Old Nahant Road (North)				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	1	0	1	2	0	0	2	0	1	0	1	1	4
2:30 PM	1	0	0	1	1	0	0	1	0	1	0	1	1	3
2:45 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	2
<b>Total</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>9</b>
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	1
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>Grand Total</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>4</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>10</b>
Approach %	25.0	75.0	0.0		100.0	0.0	0.0		0.0	100.0	0.0			
Total %	10.0	30.0	0.0	40.0	40.0	0.0	0.0	40.0	0.0	20.0	0.0	20.0		
Exiting Leg Total				6				3					1	10

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:00 PM	Farm Street				Farm Street				Old Nahant Road (North)				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	1	0	1	2	0	0	2	0	1	0	1	1	4
2:30 PM	1	0	0	1	1	0	0	1	0	1	0	1	1	3
2:45 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	2
Total Volume	1	3	0	4	3	0	0	3	0	2	0	2	2	9
% Approach Total	25.0	75.0	0.0		100.0	0.0	0.0		0.0	100.0	0.0			
PHF	0.250	0.375	0.000	0.500	0.375	0.000	0.000	0.375	0.000	0.500	0.000	0.500		0.563
Entering Leg	1	3	0	4	3	0	0	3	0	2	0	2	2	9
Exiting Leg				5				3				1	1	9
Total				9				6				3	3	18



PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**



**Single-Unit Trucks**

	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
2:15 PM	2	1	0	3	1	0	0	1	0	3	0	3	7
2:30 PM	0	1	0	1	1	0	0	1	0	1	0	1	3
2:45 PM	0	3	0	3	4	0	0	4	0	0	0	0	7
<b>Total</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>8</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>19</b>
3:00 PM	0	2	0	2	0	0	0	0	0	1	0	1	3
3:15 PM	2	0	0	2	4	0	0	4	0	0	0	0	6
3:30 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
3:45 PM	0	2	0	2	1	1	0	2	1	1	0	2	6
<b>Total</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>8</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>6</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>17</b>
<b>Grand Total</b>	<b>4</b>	<b>12</b>	<b>0</b>	<b>16</b>	<b>12</b>	<b>1</b>	<b>0</b>	<b>13</b>	<b>1</b>	<b>6</b>	<b>0</b>	<b>7</b>	<b>36</b>
Approach %	25.0	75.0	0.0		92.3	7.7	0.0		14.3	85.7	0.0		
Total %	11.1	33.3	0.0	44.4	33.3	2.8	0.0	36.1	2.8	16.7	0.0	19.4	
Exiting Leg Total				18				13				5	36

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:15 PM	Farm Street				Farm Street				Old Nahant Road (North)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:15 PM	2	1	0	3	1	0	0	1	0	3	0	3	7
2:30 PM	0	1	0	1	1	0	0	1	0	1	0	1	3
2:45 PM	0	3	0	3	4	0	0	4	0	0	0	0	7
3:00 PM	0	2	0	2	0	0	0	0	0	1	0	1	3
Total Volume	2	7	0	9	6	0	0	6	0	5	0	5	20
% Approach Total	22.2	77.8	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.250	0.583	0.000	0.750	0.375	0.000	0.000	0.375	0.000	0.417	0.000	0.417	0.714
Entering Leg	2	7	0	9	6	0	0	6	0	5	0	5	20
Exiting Leg				11				7				2	20
Total				20				13				7	40

PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class:



**Articulated Trucks**

	Farm Street				Farm Street				Old Nahant Road (North)				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	1	0	1	0	0	0	0	0	1	0	1	1	2
2:30 PM	0	0	0	0	1	0	0	1	0	1	0	1	1	2
2:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	1
<b>Total</b>	0	1	0	1	2	0	0	2	0	2	0	2	2	5
3:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	1	1
<b>Total</b>	0	1	0	1	0	1	0	1	0	1	0	1	1	3
<b>Grand Total</b>	0	2	0	2	2	1	0	3	0	3	0	3	3	8
Approach %	0.0	100.0	0.0		66.7	33.3	0.0		0.0	100.0	0.0			
Total %	0.0	25.0	0.0	25.0	25.0	12.5	0.0	37.5	0.0	37.5	0.0	37.5	37.5	
Exiting Leg Total				5				2				1		8

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:15 PM	Farm Street				Farm Street				Old Nahant Road (North)				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
2:15 PM	0	1	0	1	0	0	0	0	0	1	0	1	1	2
2:30 PM	0	0	0	0	1	0	0	1	0	1	0	1	1	2
2:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	1
3:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	1
<b>Total Volume</b>	0	2	0	2	2	0	0	2	0	2	0	2	2	6
<b>% Approach Total</b>	0.0	100.0	0.0		100.0	0.0	0.0		0.0	100.0	0.0			
PHF	0.000	0.500	0.000	0.500	0.500	0.000	0.000	0.500	0.000	0.500	0.000	0.500	0.750	
Entering Leg	0	2	0	2	2	0	0	2	0	2	0	2	2	6
Exiting Leg				4				2				0		6
<b>Total</b>				6				4				2		12

PDI File #: **217949 D**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (North)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**



**Bicycles (on Roadway and Crosswalks)**

	Farm Street						Farm Street						Old Nahant Road (North)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
2:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	1	1	0	0	0	2	0	0	0	0	0	0	1	0	0	0	1	2	4
<b>Total</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>5</b>
Grand Total	1	2	0	0	0	3	0	0	0	0	0	0	1	1	0	0	1	3	6
Approach %	33.3	66.7	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		33.3	33.3	0.0	0.0	33.3		
Total %	16.7	33.3	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	16.7	16.7	0.0	0.0	16.7	50.0	
Exiting Leg Total	1						3						2						6

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

	Farm Street						Farm Street						Old Nahant Road (North)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	1	1	0	0	0	2	0	0	0	0	0	0	1	0	0	0	1	2	4
<b>Total Volume</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>5</b>
% Approach Total	50.0	50.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		33.3	33.3	0.0	0.0	33.3		
PHF	0.250	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.250	0.375	0.313
Entering Leg	1	1	0	0	0	2	0	0	0	0	0	0	1	1	0	0	1	3	5
Exiting Leg	1						2						2						5
<b>Total</b>	<b>3</b>						<b>2</b>						<b>5</b>						<b>10</b>

PDI File #: 217949 D  
 Location: N: Farm Street S: Farm Street  
 Location: W: Old Nahant Road (North)  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2  
 Count Date: Thursday, May 27, 2021  
 Start Time: 2:00 PM  
 End Time: 4:00 PM  
 Class:



**Pedestrians**

	Farm Street						Farm Street						Old Nahant Road (North)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	3	3	4
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	3	3	4
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	3	3	4
Approach %	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	100	0	0
Total %	0	0	0	0	0	0	0	0	0	25	0	25	0	0	0	0	75	75	0
Exiting Leg Total	0						1						3						4

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:00 PM	Farm Street						Farm Street						Old Nahant Road (North)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	3	3	4
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	3	3	4
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.250	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	3	3	4
Exiting Leg	0						1						3						4
Total	0						2						6						8

PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
11:00 AM	1	103	0	104	115	10	0	125	11	3	0	14	243
11:15 AM	3	100	0	103	129	8	0	137	7	0	0	7	247
11:30 AM	1	105	0	106	122	7	0	129	6	0	0	6	241
11:45 AM	0	123	0	123	154	11	0	165	6	6	0	12	300
<b>Total</b>	<b>5</b>	<b>431</b>	<b>0</b>	<b>436</b>	<b>520</b>	<b>36</b>	<b>0</b>	<b>556</b>	<b>30</b>	<b>9</b>	<b>0</b>	<b>39</b>	<b>1031</b>
12:00 PM	1	100	0	101	129	8	0	137	12	1	0	13	251
12:15 PM	3	123	0	126	148	6	0	154	9	2	0	11	291
12:30 PM	0	113	0	113	155	4	0	159	10	1	0	11	283
12:45 PM	1	101	0	102	150	13	0	163	3	3	0	6	271
<b>Total</b>	<b>5</b>	<b>437</b>	<b>0</b>	<b>442</b>	<b>582</b>	<b>31</b>	<b>0</b>	<b>613</b>	<b>34</b>	<b>7</b>	<b>0</b>	<b>41</b>	<b>1096</b>
Grand Total	10	868	0	878	1102	67	0	1169	64	16	0	80	2127
Approach %	1.1	98.9	0.0		94.3	5.7	0.0		80.0	20.0	0.0		
Total %	0.5	40.8	0.0	41.3	51.8	3.1	0.0	55.0	3.0	0.8	0.0	3.8	
Exiting Leg Total				1118				932				77	2127
Cars	10	857	0	867	1094	66	0	1160	64	16	0	80	2107
% Cars	100.0	98.7	0.0	98.7	99.3	98.5	0.0	99.2	100.0	100.0	0.0	100.0	99.1
Exiting Leg Total				1110				921				76	2107
Heavy Vehicles	0	11	0	11	8	1	0	9	0	0	0	0	20
% Heavy Vehicles	0.0	1.3	0.0	1.3	0.7	1.5	0.0	0.8	0.0	0.0	0.0	0.0	0.9
Exiting Leg Total				8				11				1	20

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:45 AM	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
11:45 AM	0	123	0	123	154	11	0	165	6	6	0	12	300
12:00 PM	1	100	0	101	129	8	0	137	12	1	0	13	251
12:15 PM	3	123	0	126	148	6	0	154	9	2	0	11	291
12:30 PM	0	113	0	113	155	4	0	159	10	1	0	11	283
Total Volume	4	459	0	463	586	29	0	615	37	10	0	47	1125
% Approach Total	0.9	99.1	0.0		95.3	4.7	0.0		78.7	21.3	0.0		
PHF	0.333	0.933	0.000	0.919	0.945	0.659	0.000	0.932	0.771	0.417	0.000	0.904	0.938
Cars	4	452	0	456	585	28	0	613	37	10	0	47	1116
Cars %	100.0	98.5	0.0	98.5	99.8	96.6	0.0	99.7	100.0	100.0	0.0	100.0	99.2
Heavy Vehicles	0	7	0	7	1	1	0	2	0	0	0	0	9
Heavy Vehicles %	0.0	1.5	0.0	1.5	0.2	3.4	0.0	0.3	0.0	0.0	0.0	0.0	0.8
Cars Enter Leg	4	452	0	456	585	28	0	613	37	10	0	47	1116
Heavy Enter Leg	0	7	0	7	1	1	0	2	0	0	0	0	9
Total Entering Leg	4	459	0	463	586	29	0	615	37	10	0	47	1125
Cars Exiting Leg				595				489				32	1116
Heavy Exiting Leg				1				7				1	9
Total Exiting Leg				596				496				33	1125

PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Cars**

	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
11:00 AM	1	102	0	103	113	10	0	123	11	3	0	14	240
11:15 AM	3	98	0	101	125	8	0	133	7	0	0	7	241
11:30 AM	1	104	0	105	121	7	0	128	6	0	0	6	239
11:45 AM	0	119	0	119	153	11	0	164	6	6	0	12	295
<b>Total</b>	<b>5</b>	<b>423</b>	<b>0</b>	<b>428</b>	<b>512</b>	<b>36</b>	<b>0</b>	<b>548</b>	<b>30</b>	<b>9</b>	<b>0</b>	<b>39</b>	<b>1015</b>
12:00 PM	1	99	0	100	129	8	0	137	12	1	0	13	250
12:15 PM	3	122	0	125	148	6	0	154	9	2	0	11	290
12:30 PM	0	112	0	112	155	3	0	158	10	1	0	11	281
12:45 PM	1	101	0	102	150	13	0	163	3	3	0	6	271
<b>Total</b>	<b>5</b>	<b>434</b>	<b>0</b>	<b>439</b>	<b>582</b>	<b>30</b>	<b>0</b>	<b>612</b>	<b>34</b>	<b>7</b>	<b>0</b>	<b>41</b>	<b>1092</b>
<b>Grand Total</b>	<b>10</b>	<b>857</b>	<b>0</b>	<b>867</b>	<b>1094</b>	<b>66</b>	<b>0</b>	<b>1160</b>	<b>64</b>	<b>16</b>	<b>0</b>	<b>80</b>	<b>2107</b>
Approach %	1.2	98.8	0.0		94.3	5.7	0.0		80.0	20.0	0.0		
Total %	0.5	40.7	0.0	41.1	51.9	3.1	0.0	55.1	3.0	0.8	0.0	3.8	
Exiting Leg Total				1110				921				76	2107

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
11:45 AM	0	119	0	119	153	11	0	164	6	6	0	12	295
12:00 PM	1	99	0	100	129	8	0	137	12	1	0	13	250
12:15 PM	3	122	0	125	148	6	0	154	9	2	0	11	290
12:30 PM	0	112	0	112	155	3	0	158	10	1	0	11	281
<b>Total Volume</b>	<b>4</b>	<b>452</b>	<b>0</b>	<b>456</b>	<b>585</b>	<b>28</b>	<b>0</b>	<b>613</b>	<b>37</b>	<b>10</b>	<b>0</b>	<b>47</b>	<b>1116</b>
<b>% Approach Total</b>	<b>0.9</b>	<b>99.1</b>	<b>0.0</b>		<b>95.4</b>	<b>4.6</b>	<b>0.0</b>		<b>78.7</b>	<b>21.3</b>	<b>0.0</b>		
PHF	0.333	0.926	0.000	0.912	0.944	0.636	0.000	0.934	0.771	0.417	0.000	0.904	0.946
Entering Leg	4	452	0	456	585	28	0	613	37	10	0	47	1116
Exiting Leg				595				489				32	1116
<b>Total</b>				<b>1051</b>				<b>1102</b>				<b>79</b>	<b>2232</b>

PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**



Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Farm Street				Farm Street				Old Nahant Road (South)				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
11:00 AM	0	1	0	1	2	0	0	2	0	0	0	0	3	
11:15 AM	0	2	0	2	4	0	0	4	0	0	0	0	6	
11:30 AM	0	1	0	1	1	0	0	1	0	0	0	0	2	
11:45 AM	0	4	0	4	1	0	0	1	0	0	0	0	5	
<b>Total</b>	0	8	0	8	8	0	0	8	0	0	0	0	16	
12:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	1	
12:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	1	
12:30 PM	0	1	0	1	0	1	0	1	0	0	0	0	2	
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Total</b>	0	3	0	3	0	1	0	1	0	0	0	0	4	
Grand Total	0	11	0	11	8	1	0	9	0	0	0	0	20	
Approach %	0.0	100.0	0.0		88.9	11.1	0.0		0.0	0.0	0.0			
Total %	0.0	55.0	0.0	55.0	40.0	5.0	0.0	45.0	0.0	0.0	0.0	0.0		
Exiting Leg Total				8				11					1	20
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0					0	0
Single-Unit Trucks	0	11	0	11	7	1	0	8	0	0	0	0	19	
% Single-Unit	0.0	100.0	0.0	100.0	87.5	100.0	0.0	88.9	0.0	0.0	0.0	0.0	95.0	
Exiting Leg Total				7				11					1	19
Articulated Trucks	0	0	0	0	1	0	0	1	0	0	0	0	1	
% Articulated	0.0	0.0	0.0	0.0	12.5	0.0	0.0	11.1	0.0	0.0	0.0	0.0	5.0	
Exiting Leg Total				1				0					0	1

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:00 AM	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
11:00 AM	0	1	0	1	2	0	0	2	0	0	0	0	3
11:15 AM	0	2	0	2	4	0	0	4	0	0	0	0	6
11:30 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
11:45 AM	0	4	0	4	1	0	0	1	0	0	0	0	5
Total Volume	0	8	0	8	8	0	0	8	0	0	0	0	16
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.500	0.000	0.500	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.667
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	0	8	0	8	7	0	0	7	0	0	0	0	15
Single-Unit %	0.0	100.0	0.0	100.0	87.5	0.0	0.0	87.5	0.0	0.0	0.0	0.0	93.8
Articulated Trucks	0	0	0	0	1	0	0	1	0	0	0	0	1
Articulated %	0.0	0.0	0.0	0.0	12.5	0.0	0.0	12.5	0.0	0.0	0.0	0.0	6.3
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	0	8	0	8	7	0	0	7	0	0	0	0	15
Articulated Trucks	0	0	0	0	1	0	0	1	0	0	0	0	1
Total Entering Leg	0	8	0	8	8	0	0	8	0	0	0	0	16
Buses				0				0					0
Single-Unit Trucks				7				8					15
Articulated Trucks				1				0					1
Total Exiting Leg				8				8					16

PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Buses**

	Farm Street				Farm Street				Old Nahant Road (South)				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0			
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Exiting Leg Total	0				0				0				0	

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:00 AM	Farm Street				Farm Street				Old Nahant Road (South)				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0			
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg	0				0				0				0	
Total	0				0				0				0	



PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Single-Unit Trucks**

	Farm Street				Farm Street				Old Nahant Road (South)				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
11:00 AM	0	1	0	1	2	0	0	2	0	0	0	0	3	
11:15 AM	0	2	0	2	3	0	0	3	0	0	0	0	5	
11:30 AM	0	1	0	1	1	0	0	1	0	0	0	0	2	
11:45 AM	0	4	0	4	1	0	0	1	0	0	0	0	5	
<b>Total</b>	0	8	0	8	7	0	0	7	0	0	0	0	15	
12:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	1	
12:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	1	
12:30 PM	0	1	0	1	0	1	0	1	0	0	0	0	2	
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Total</b>	0	3	0	3	0	1	0	1	0	0	0	0	4	
<b>Grand Total</b>	0	11	0	11	7	1	0	8	0	0	0	0	19	
Approach %	0.0	100.0	0.0		87.5	12.5	0.0		0.0	0.0	0.0			
Total %	0.0	57.9	0.0	57.9	36.8	5.3	0.0	42.1	0.0	0.0	0.0	0.0		
Exiting Leg Total				7				11					1	19

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:00 AM	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
11:00 AM	0	1	0	1	2	0	0	2	0	0	0	0	3
11:15 AM	0	2	0	2	3	0	0	3	0	0	0	0	5
11:30 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
11:45 AM	0	4	0	4	1	0	0	1	0	0	0	0	5
Total Volume	0	8	0	8	7	0	0	7	0	0	0	0	15
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.500	0.000	0.500	0.583	0.000	0.000	0.583	0.000	0.000	0.000	0.000	0.750
Entering Leg	0	8	0	8	7	0	0	7	0	0	0	0	15
Exiting Leg				7				8					15
<b>Total</b>				15				15				0	30

PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Saturday, May 22, 2021**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**



**Articulated Trucks**

	Farm Street				Farm Street				Old Nahant Road (South)				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	1	0	0	1	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Grand Total</b>	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Approach %	0.0	0.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0			
Total %	0.0	0.0	0.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0		
Exiting Leg Total				1				0						1

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:00 AM	Farm Street				Farm Street				Old Nahant Road (South)				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0			
PHF	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000		0.250
Entering Leg	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Exiting Leg				1				0					0	1
<b>Total</b>				1				1					0	2

PDI File #: 217949 E  
 Location: N: Farm Street S: Farm Street  
 Location: W: Old Nahant Road (South)  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2  
 Count Date: Saturday, May 22, 2021  
 Start Time: 11:00 AM  
 End Time: 1:00 PM



**Bicycles (on Roadway and Crosswalks)**

	Farm Street						Farm Street						Old Nahant Road (South)						Total	
	from North						from South						from West							
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total		
11:00 AM	0	1	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	2	
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:30 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	
11:45 AM	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	2	
Total	0	1	0	0	0	1	4	0	0	0	0	4	0	0	0	0	0	0	5	
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:45 PM	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4	
Total	0	4	0	0	0	4	0	0	0	0	0	0	2	0	0	0	0	2	6	
Grand Total	0	5	0	0	0	5	4	0	0	0	0	4	2	0	0	0	0	2	11	
Approach %	0.0	100.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0			
Total %	0.0	45.5	0.0	0.0	0.0	45.5	36.4	0.0	0.0	0.0	0.0	36.4	18.2	0.0	0.0	0.0	0.0	18.2		
Exiting Leg Total																			0	11

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

12:00 PM	Farm Street						Farm Street						Old Nahant Road (South)						Total	
	from North						from South						from West							
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total		
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:45 PM	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4	
Total Volume	0	4	0	0	0	4	0	0	0	0	0	0	2	0	0	0	0	2	6	
% Approach Total	0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0			
PHF	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.375	
Entering Leg	0	4	0	0	0	4	0	0	0	0	0	0	2	0	0	0	0	2	6	
Exiting Leg																			0	6
Total																			2	12

PDI File #: 217949 E  
 Location: N: Farm Street S: Farm Street  
 Location: W: Old Nahant Road (South)  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2  
 Count Date: Saturday, May 22, 2021  
 Start Time: 11:00 AM  
 End Time: 1:00 PM  
 Class:



**Pedestrians**

	Farm Street						Farm Street						Old Nahant Road (South)						Total	
	from North						from South						from West							
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total		
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
Approach %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	100	0	
Exiting Leg Total	0						0						0						1	1

Peak Hour Analysis from 11:00 AM to 01:00 PM begins at:

11:30 AM	Farm Street						Farm Street						Old Nahant Road (South)						Total	
	from North						from South						from West							
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total		
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.250	
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
Exiting Leg	0						0						0						1	1
Total	0						0						0						2	2

PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	66	0	66	96	6	0	102	8	3	0	11	179
7:15 AM	0	77	0	77	129	8	0	137	11	10	0	21	235
7:30 AM	1	82	0	83	140	3	0	143	11	4	0	15	241
7:45 AM	1	97	0	98	124	6	0	130	7	0	0	7	235
<b>Total</b>	<b>2</b>	<b>322</b>	<b>0</b>	<b>324</b>	<b>489</b>	<b>23</b>	<b>0</b>	<b>512</b>	<b>37</b>	<b>17</b>	<b>0</b>	<b>54</b>	<b>890</b>
8:00 AM	1	72	0	73	86	11	0	97	8	4	0	12	182
8:15 AM	2	84	0	86	101	6	0	107	3	4	0	7	200
8:30 AM	0	70	0	70	95	6	0	101	15	0	0	15	186
8:45 AM	0	63	0	63	78	6	0	84	4	0	0	4	151
<b>Total</b>	<b>3</b>	<b>289</b>	<b>0</b>	<b>292</b>	<b>360</b>	<b>29</b>	<b>0</b>	<b>389</b>	<b>30</b>	<b>8</b>	<b>0</b>	<b>38</b>	<b>719</b>
Grand Total	5	611	0	616	849	52	0	901	67	25	0	92	1609
Approach %	0.8	99.2	0.0		94.2	5.8	0.0		72.8	27.2	0.0		
Total %	0.3	38.0	0.0	38.3	52.8	3.2	0.0	56.0	4.2	1.6	0.0	5.7	
Exiting Leg Total				874				678				57	1609
Cars	3	578	0	581	805	47	0	852	67	25	0	92	1525
% Cars	60.0	94.6	0.0	94.3	94.8	90.4	0.0	94.6	100.0	100.0	0.0	100.0	94.8
Exiting Leg Total				830				645				50	1525
Heavy Vehicles	2	33	0	35	44	5	0	49	0	0	0	0	84
% Heavy Vehicles	40.0	5.4	0.0	5.7	5.2	9.6	0.0	5.4	0.0	0.0	0.0	0.0	5.2
Exiting Leg Total				44				33				7	84

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:15 AM	0	77	0	77	129	8	0	137	11	10	0	21	235
7:30 AM	1	82	0	83	140	3	0	143	11	4	0	15	241
7:45 AM	1	97	0	98	124	6	0	130	7	0	0	7	235
8:00 AM	1	72	0	73	86	11	0	97	8	4	0	12	182
Total Volume	3	328	0	331	479	28	0	507	37	18	0	55	893
% Approach Total	0.9	99.1	0.0		94.5	5.5	0.0		67.3	32.7	0.0		
PHF	0.750	0.845	0.000	0.844	0.855	0.636	0.000	0.886	0.841	0.450	0.000	0.655	0.926
Cars	1	313	0	314	452	25	0	477	37	18	0	55	846
Cars %	33.3	95.4	0.0	94.9	94.4	89.3	0.0	94.1	100.0	100.0	0.0	100.0	94.7
Heavy Vehicles	2	15	0	17	27	3	0	30	0	0	0	0	47
Heavy Vehicles %	66.7	4.6	0.0	5.1	5.6	10.7	0.0	5.9	0.0	0.0	0.0	0.0	5.3
Cars Enter Leg	1	313	0	314	452	25	0	477	37	18	0	55	846
Heavy Enter Leg	2	15	0	17	27	3	0	30	0	0	0	0	47
Total Entering Leg	3	328	0	331	479	28	0	507	37	18	0	55	893
Cars Exiting Leg				470				350				26	846
Heavy Exiting Leg				27				15				5	47
Total Exiting Leg				497				365				31	893

PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Cars**

	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	63	0	63	90	5	0	95	8	3	0	11	169
7:15 AM	0	74	0	74	124	7	0	131	11	10	0	21	226
7:30 AM	1	76	0	77	128	3	0	131	11	4	0	15	223
7:45 AM	0	93	0	93	117	5	0	122	7	0	0	7	222
<b>Total</b>	<b>1</b>	<b>306</b>	<b>0</b>	<b>307</b>	<b>459</b>	<b>20</b>	<b>0</b>	<b>479</b>	<b>37</b>	<b>17</b>	<b>0</b>	<b>54</b>	<b>840</b>
8:00 AM	0	70	0	70	83	10	0	93	8	4	0	12	175
8:15 AM	2	77	0	79	99	6	0	105	3	4	0	7	191
8:30 AM	0	67	0	67	93	5	0	98	15	0	0	15	180
8:45 AM	0	58	0	58	71	6	0	77	4	0	0	4	139
<b>Total</b>	<b>2</b>	<b>272</b>	<b>0</b>	<b>274</b>	<b>346</b>	<b>27</b>	<b>0</b>	<b>373</b>	<b>30</b>	<b>8</b>	<b>0</b>	<b>38</b>	<b>685</b>
<b>Grand Total</b>	<b>3</b>	<b>578</b>	<b>0</b>	<b>581</b>	<b>805</b>	<b>47</b>	<b>0</b>	<b>852</b>	<b>67</b>	<b>25</b>	<b>0</b>	<b>92</b>	<b>1525</b>
Approach %	0.5	99.5	0.0		94.5	5.5	0.0		72.8	27.2	0.0		
Total %	0.2	37.9	0.0	38.1	52.8	3.1	0.0	55.9	4.4	1.6	0.0	6.0	
Exiting Leg Total				830				645				50	1525

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:15 AM	0	74	0	74	124	7	0	131	11	10	0	21	226
7:30 AM	1	76	0	77	128	3	0	131	11	4	0	15	223
7:45 AM	0	93	0	93	117	5	0	122	7	0	0	7	222
8:00 AM	0	70	0	70	83	10	0	93	8	4	0	12	175
<b>Total Volume</b>	<b>1</b>	<b>313</b>	<b>0</b>	<b>314</b>	<b>452</b>	<b>25</b>	<b>0</b>	<b>477</b>	<b>37</b>	<b>18</b>	<b>0</b>	<b>55</b>	<b>846</b>
% Approach Total	0.3	99.7	0.0		94.8	5.2	0.0		67.3	32.7	0.0		
PHF	0.250	0.841	0.000	0.844	0.883	0.625	0.000	0.910	0.841	0.450	0.000	0.655	0.936
Entering Leg	1	313	0	314	452	25	0	477	37	18	0	55	846
Exiting Leg				470				350				26	846
<b>Total</b>				<b>784</b>				<b>827</b>				<b>81</b>	<b>1692</b>

PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**



**Class: Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	3	0	3	6	1	0	7	0	0	0	0	10
7:15 AM	0	3	0	3	5	1	0	6	0	0	0	0	9
7:30 AM	0	6	0	6	12	0	0	12	0	0	0	0	18
7:45 AM	1	4	0	5	7	1	0	8	0	0	0	0	13
<b>Total</b>	<b>1</b>	<b>16</b>	<b>0</b>	<b>17</b>	<b>30</b>	<b>3</b>	<b>0</b>	<b>33</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>50</b>
8:00 AM	1	2	0	3	3	1	0	4	0	0	0	0	7
8:15 AM	0	7	0	7	2	0	0	2	0	0	0	0	9
8:30 AM	0	3	0	3	2	1	0	3	0	0	0	0	6
8:45 AM	0	5	0	5	7	0	0	7	0	0	0	0	12
<b>Total</b>	<b>1</b>	<b>17</b>	<b>0</b>	<b>18</b>	<b>14</b>	<b>2</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>34</b>
Grand Total	2	33	0	35	44	5	0	49	0	0	0	0	84
Approach %	5.7	94.3	0.0		89.8	10.2	0.0		0.0	0.0	0.0		
Total %	2.4	39.3	0.0	41.7	52.4	6.0	0.0	58.3	0.0	0.0	0.0	0.0	
Exiting Leg Total				44				33				7	84
Buses	1	6	0	7	15	2	0	17	0	0	0	0	24
% Buses	50.0	18.2	0.0	20.0	34.1	40.0	0.0	34.7	0.0	0.0	0.0	0.0	28.6
Exiting Leg Total				15				6				3	24
Single-Unit Trucks	1	23	0	24	26	3	0	29	0	0	0	0	53
% Single-Unit	50.0	69.7	0.0	68.6	59.1	60.0	0.0	59.2	0.0	0.0	0.0	0.0	63.1
Exiting Leg Total				26				23				4	53
Articulated Trucks	0	4	0	4	3	0	0	3	0	0	0	0	7
% Articulated	0.0	12.1	0.0	11.4	6.8	0.0	0.0	6.1	0.0	0.0	0.0	0.0	8.3
Exiting Leg Total				3				4				0	7

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	3	0	3	6	1	0	7	0	0	0	0	10
7:15 AM	0	3	0	3	5	1	0	6	0	0	0	0	9
7:30 AM	0	6	0	6	12	0	0	12	0	0	0	0	18
7:45 AM	1	4	0	5	7	1	0	8	0	0	0	0	13
Total Volume	1	16	0	17	30	3	0	33	0	0	0	0	50
% Approach Total	5.9	94.1	0.0		90.9	9.1	0.0		0.0	0.0	0.0		
PHF	0.250	0.667	0.000	0.708	0.625	0.750	0.000	0.688	0.000	0.000	0.000	0.000	0.694
Buses	1	3	0	4	14	1	0	15	0	0	0	0	19
Buses %	100.0	18.8	0.0	23.5	46.7	33.3	0.0	45.5	0.0	0.0	0.0	0.0	38.0
Single-Unit Trucks	0	9	0	9	14	2	0	16	0	0	0	0	25
Single-Unit %	0.0	56.3	0.0	52.9	46.7	66.7	0.0	48.5	0.0	0.0	0.0	0.0	50.0
Articulated Trucks	0	4	0	4	2	0	0	2	0	0	0	0	6
Articulated %	0.0	25.0	0.0	23.5	6.7	0.0	0.0	6.1	0.0	0.0	0.0	0.0	12.0
Buses	1	3	0	4	14	1	0	15	0	0	0	0	19
Single-Unit Trucks	0	9	0	9	14	2	0	16	0	0	0	0	25
Articulated Trucks	0	4	0	4	2	0	0	2	0	0	0	0	6
Total Entering Leg	1	16	0	17	30	3	0	33	0	0	0	0	50
Buses				14				3				2	19
Single-Unit Trucks				14				9				2	25
Articulated Trucks				2				4				0	6
Total Exiting Leg				30				16				4	50

PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Buses**

	Farm Street				Farm Street				Old Nahant Road (South)				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
7:00 AM	0	0	0	0	1	0	0	1	0	0	0	0	1	
7:15 AM	0	0	0	0	3	0	0	3	0	0	0	0	3	
7:30 AM	0	1	0	1	7	0	0	7	0	0	0	0	8	
7:45 AM	1	2	0	3	3	1	0	4	0	0	0	0	7	
<b>Total</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>4</b>	<b>14</b>	<b>1</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>19</b>	
8:00 AM	0	1	0	1	0	0	0	0	0	0	0	0	1	
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:30 AM	0	1	0	1	0	1	0	1	0	0	0	0	2	
8:45 AM	0	1	0	1	1	0	0	1	0	0	0	0	2	
<b>Total</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	
<b>Grand Total</b>	<b>1</b>	<b>6</b>	<b>0</b>	<b>7</b>	<b>15</b>	<b>2</b>	<b>0</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>24</b>	
Approach %	14.3	85.7	0.0		88.2	11.8	0.0		0.0	0.0	0.0			
Total %	4.2	25.0	0.0	29.2	62.5	8.3	0.0	70.8	0.0	0.0	0.0	0.0		
Exiting Leg Total				15				6					3	24

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Farm Street				Farm Street				Old Nahant Road (South)				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
7:00 AM	0	0	0	0	1	0	0	1	0	0	0	0	1	
7:15 AM	0	0	0	0	3	0	0	3	0	0	0	0	3	
7:30 AM	0	1	0	1	7	0	0	7	0	0	0	0	8	
7:45 AM	1	2	0	3	3	1	0	4	0	0	0	0	7	
Total Volume	1	3	0	4	14	1	0	15	0	0	0	0	19	
% Approach Total	25.0	75.0	0.0		93.3	6.7	0.0		0.0	0.0	0.0			
PHF	0.250	0.375	0.000	0.333	0.500	0.250	0.000	0.536	0.000	0.000	0.000	0.000	0.594	
Entering Leg	1	3	0	4	14	1	0	15	0	0	0	0	19	
Exiting Leg				14				3					2	19
<b>Total</b>				<b>18</b>				<b>18</b>					<b>2</b>	<b>38</b>



PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Single-Unit Trucks**

	Farm Street				Farm Street				Old Nahant Road (South)				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
7:00 AM	0	2	0	2	4	1	0	5	0	0	0	0	7	
7:15 AM	0	2	0	2	2	1	0	3	0	0	0	0	5	
7:30 AM	0	4	0	4	4	0	0	4	0	0	0	0	8	
7:45 AM	0	1	0	1	4	0	0	4	0	0	0	0	5	
<b>Total</b>	0	9	0	9	14	2	0	16	0	0	0	0	25	
8:00 AM	1	1	0	2	2	1	0	3	0	0	0	0	5	
8:15 AM	0	7	0	7	2	0	0	2	0	0	0	0	9	
8:30 AM	0	2	0	2	2	0	0	2	0	0	0	0	4	
8:45 AM	0	4	0	4	6	0	0	6	0	0	0	0	10	
<b>Total</b>	1	14	0	15	12	1	0	13	0	0	0	0	28	
<b>Grand Total</b>	1	23	0	24	26	3	0	29	0	0	0	0	53	
Approach %	4.2	95.8	0.0		89.7	10.3	0.0		0.0	0.0	0.0			
Total %	1.9	43.4	0.0	45.3	49.1	5.7	0.0	54.7	0.0	0.0	0.0	0.0		
Exiting Leg Total				26				23					4	53

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
8:00 AM	1	1	0	2	2	1	0	3	0	0	0	0	5
8:15 AM	0	7	0	7	2	0	0	2	0	0	0	0	9
8:30 AM	0	2	0	2	2	0	0	2	0	0	0	0	4
8:45 AM	0	4	0	4	6	0	0	6	0	0	0	0	10
<b>Total Volume</b>	1	14	0	15	12	1	0	13	0	0	0	0	28
<b>% Approach Total</b>	6.7	93.3	0.0		92.3	7.7	0.0		0.0	0.0	0.0		
PHF	0.250	0.500	0.000	0.536	0.500	0.250	0.000	0.542	0.000	0.000	0.000	0.000	0.700
Entering Leg	1	14	0	15	12	1	0	13	0	0	0	0	28
Exiting Leg				12				14				2	28
<b>Total</b>				27				27				2	56

PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**



**Articulated Trucks**

	Farm Street				Farm Street				Old Nahant Road (South)				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
7:00 AM	0	1	0	1	1	0	0	1	0	0	0	0	2	
7:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	1	
7:30 AM	0	1	0	1	1	0	0	1	0	0	0	0	2	
7:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	1	
<b>Total</b>	0	4	0	4	2	0	0	2	0	0	0	0	6	
8:00 AM	0	0	0	0	1	0	0	1	0	0	0	0	1	
8:15 AM	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	
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Total</b>	0	0	0	0	1	0	0	1	0	0	0	0	1	
<b>Grand Total</b>	0	4	0	4	3	0	0	3	0	0	0	0	7	
Approach %	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0			
Total %	0.0	57.1	0.0	57.1	42.9	0.0	0.0	42.9	0.0	0.0	0.0	0.0		
Exiting Leg Total				3				4					0	7

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
7:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
7:30 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
7:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Volume	0	4	0	4	2	0	0	2	0	0	0	0	6
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	1.000	0.000	1.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.750
Entering Leg	0	4	0	4	2	0	0	2	0	0	0	0	6
Exiting Leg				2				4					6
<b>Total</b>				6				6				0	12

PDI File #: 217949 E  
 Location: N: Farm Street S: Farm Street  
 Location: W: Old Nahant Road (South)  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2  
 Count Date: Thursday, May 27, 2021  
 Start Time: 7:00 AM  
 End Time: 9:00 AM



**Bicycles (on Roadway and Crosswalks)**

	Farm Street						Farm Street						Old Nahant Road (South)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	0	0	0	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	0	0	0
7:30 AM	0	0	0	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	0	0	0
Total	0	0	0	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	0	0	0
8:15 AM	0	0	0	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	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total	0						0						0						0

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Farm Street						Farm Street						Old Nahant Road (South)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	0	0	0	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	0	0	0
7:30 AM	0	0	0	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	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg	0						0						0						0
Total	0						0						0						0

PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Pedestrians**

	Farm Street						Farm Street						Old Nahant Road (South)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	0	0	0	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	0	0	0
7:30 AM	0	0	0	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	0	0	0
Total	0	0	0	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	0	0	0
8:15 AM	0	0	0	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	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg Total	0						0						0						0

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Farm Street						Farm Street						Old Nahant Road (South)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	0	0	0	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	0	0	0
7:30 AM	0	0	0	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	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg	0						0						0						0
Total	0						0						0						0

PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	3	77	0	80	102	10	0	112	15	1	0	16	208
2:15 PM	13	130	0	143	88	12	0	100	9	3	0	12	255
2:30 PM	4	102	0	106	110	5	0	115	11	4	1	16	237
2:45 PM	2	119	0	121	130	17	0	147	4	6	0	10	278
<b>Total</b>	<b>22</b>	<b>428</b>	<b>0</b>	<b>450</b>	<b>430</b>	<b>44</b>	<b>0</b>	<b>474</b>	<b>39</b>	<b>14</b>	<b>1</b>	<b>54</b>	<b>978</b>
3:00 PM	4	95	0	99	153	10	0	163	11	1	0	12	274
3:15 PM	4	104	0	108	138	6	0	144	7	1	0	8	260
3:30 PM	0	110	0	110	143	13	0	156	10	0	0	10	276
3:45 PM	0	103	0	103	169	5	0	174	8	1	0	9	286
<b>Total</b>	<b>8</b>	<b>412</b>	<b>0</b>	<b>420</b>	<b>603</b>	<b>34</b>	<b>0</b>	<b>637</b>	<b>36</b>	<b>3</b>	<b>0</b>	<b>39</b>	<b>1096</b>
Grand Total	30	840	0	870	1033	78	0	1111	75	17	1	93	2074
Approach %	3.4	96.6	0.0		93.0	7.0	0.0		80.6	18.3	1.1		
Total %	1.4	40.5	0.0	41.9	49.8	3.8	0.0	53.6	3.6	0.8	0.0	4.5	
Exiting Leg Total				1050				915				109	2074
Cars	30	825	0	855	1009	74	0	1083	70	17	0	87	2025
% Cars	100.0	98.2	0.0	98.3	97.7	94.9	0.0	97.5	93.3	100.0	0.0	93.5	97.6
Exiting Leg Total				1026				895				104	2025
Heavy Vehicles	0	15	0	15	24	4	0	28	5	0	1	6	49
% Heavy Vehicles	0.0	1.8	0.0	1.7	2.3	5.1	0.0	2.5	6.7	0.0	100.0	6.5	2.4
Exiting Leg Total				24				20				5	49

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

3:00 PM	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
3:00 PM	4	95	0	99	153	10	0	163	11	1	0	12	274
3:15 PM	4	104	0	108	138	6	0	144	7	1	0	8	260
3:30 PM	0	110	0	110	143	13	0	156	10	0	0	10	276
3:45 PM	0	103	0	103	169	5	0	174	8	1	0	9	286
Total Volume	8	412	0	420	603	34	0	637	36	3	0	39	1096
% Approach Total	1.9	98.1	0.0		94.7	5.3	0.0		92.3	7.7	0.0		
PHF	0.500	0.936	0.000	0.955	0.892	0.654	0.000	0.915	0.818	0.750	0.000	0.813	0.958
Cars	8	405	0	413	592	30	0	622	32	3	0	35	1070
Cars %	100.0	98.3	0.0	98.3	98.2	88.2	0.0	97.6	88.9	100.0	0.0	89.7	97.6
Heavy Vehicles	0	7	0	7	11	4	0	15	4	0	0	4	26
Heavy Vehicles %	0.0	1.7	0.0	1.7	1.8	11.8	0.0	2.4	11.1	0.0	0.0	10.3	2.4
Cars Enter Leg	8	405	0	413	592	30	0	622	32	3	0	35	1070
Heavy Enter Leg	0	7	0	7	11	4	0	15	4	0	0	4	26
Total Entering Leg	8	412	0	420	603	34	0	637	36	3	0	39	1096
Cars Exiting Leg				595				437				38	1070
Heavy Exiting Leg				11				11				4	26
Total Exiting Leg				606				448				42	1096

PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**



Class: **Cars**

	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	3	76	0	79	99	10	0	109	15	1	0	16	204
2:15 PM	13	128	0	141	86	12	0	98	9	3	0	12	251
2:30 PM	4	101	0	105	107	5	0	112	10	4	0	14	231
2:45 PM	2	115	0	117	125	17	0	142	4	6	0	10	269
<b>Total</b>	<b>22</b>	<b>420</b>	<b>0</b>	<b>442</b>	<b>417</b>	<b>44</b>	<b>0</b>	<b>461</b>	<b>38</b>	<b>14</b>	<b>0</b>	<b>52</b>	<b>955</b>
3:00 PM	4	93	0	97	153	9	0	162	9	1	0	10	269
3:15 PM	4	103	0	107	133	5	0	138	6	1	0	7	252
3:30 PM	0	108	0	108	140	11	0	151	9	0	0	9	268
3:45 PM	0	101	0	101	166	5	0	171	8	1	0	9	281
<b>Total</b>	<b>8</b>	<b>405</b>	<b>0</b>	<b>413</b>	<b>592</b>	<b>30</b>	<b>0</b>	<b>622</b>	<b>32</b>	<b>3</b>	<b>0</b>	<b>35</b>	<b>1070</b>
Grand Total	30	825	0	855	1009	74	0	1083	70	17	0	87	2025
Approach %	3.5	96.5	0.0		93.2	6.8	0.0		80.5	19.5	0.0		
Total %	1.5	40.7	0.0	42.2	49.8	3.7	0.0	53.5	3.5	0.8	0.0	4.3	
Exiting Leg Total				1026				895				104	2025

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
3:00 PM	4	93	0	97	153	9	0	162	9	1	0	10	269
3:15 PM	4	103	0	107	133	5	0	138	6	1	0	7	252
3:30 PM	0	108	0	108	140	11	0	151	9	0	0	9	268
3:45 PM	0	101	0	101	166	5	0	171	8	1	0	9	281
Total Volume	8	405	0	413	592	30	0	622	32	3	0	35	1070
% Approach Total	1.9	98.1	0.0		95.2	4.8	0.0		91.4	8.6	0.0		
PHF	0.500	0.938	0.000	0.956	0.892	0.682	0.000	0.909	0.889	0.750	0.000	0.875	0.952
Entering Leg	8	405	0	413	592	30	0	622	32	3	0	35	1070
Exiting Leg				595				437				38	1070
<b>Total</b>				<b>1008</b>				<b>1059</b>				<b>73</b>	<b>2140</b>

PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**



Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	0	1	0	1	3	0	0	3	0	0	0	0	4
2:15 PM	0	2	0	2	2	0	0	2	0	0	0	0	4
2:30 PM	0	1	0	1	3	0	0	3	1	0	1	2	6
2:45 PM	0	4	0	4	5	0	0	5	0	0	0	0	9
<b>Total</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>8</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>23</b>
3:00 PM	0	2	0	2	0	1	0	1	2	0	0	2	5
3:15 PM	0	1	0	1	5	1	0	6	1	0	0	1	8
3:30 PM	0	2	0	2	3	2	0	5	1	0	0	1	8
3:45 PM	0	2	0	2	3	0	0	3	0	0	0	0	5
<b>Total</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>11</b>	<b>4</b>	<b>0</b>	<b>15</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>26</b>
Grand Total	0	15	0	15	24	4	0	28	5	0	1	6	49
Approach %	0.0	100.0	0.0		85.7	14.3	0.0		83.3	0.0	16.7		
Total %	0.0	30.6	0.0	30.6	49.0	8.2	0.0	57.1	10.2	0.0	2.0	12.2	
Exiting Leg Total				24				20				5	49
Buses	0	3	0	3	3	2	0	5	2	0	0	2	10
% Buses	0.0	20.0	0.0	20.0	12.5	50.0	0.0	17.9	40.0	0.0	0.0	33.3	20.4
Exiting Leg Total				3				5				2	10
Single-Unit Trucks	0	11	0	11	17	2	0	19	3	0	1	4	34
% Single-Unit	0.0	73.3	0.0	73.3	70.8	50.0	0.0	67.9	60.0	0.0	100.0	66.7	69.4
Exiting Leg Total				17				14				3	34
Articulated Trucks	0	1	0	1	4	0	0	4	0	0	0	0	5
% Articulated	0.0	6.7	0.0	6.7	16.7	0.0	0.0	14.3	0.0	0.0	0.0	0.0	10.2
Exiting Leg Total				4				1				0	5

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:45 PM	0	4	0	4	5	0	0	5	0	0	0	0	9
3:00 PM	0	2	0	2	0	1	0	1	2	0	0	2	5
3:15 PM	0	1	0	1	5	1	0	6	1	0	0	1	8
3:30 PM	0	2	0	2	3	2	0	5	1	0	0	1	8
Total Volume	0	9	0	9	13	4	0	17	4	0	0	4	30
% Approach Total	0.0	100.0	0.0		76.5	23.5	0.0		100.0	0.0	0.0		
PHF	0.000	0.563	0.000	0.563	0.650	0.500	0.000	0.708	0.500	0.000	0.000	0.500	0.833
Buses	0	2	0	2	0	2	0	2	2	0	0	2	6
Buses %	0.0	22.2	0.0	22.2	0.0	50.0	0.0	11.8	50.0	0.0	0.0	50.0	20.0
Single-Unit Trucks	0	6	0	6	10	2	0	12	2	0	0	2	20
Single-Unit %	0.0	66.7	0.0	66.7	76.9	50.0	0.0	70.6	50.0	0.0	0.0	50.0	66.7
Articulated Trucks	0	1	0	1	3	0	0	3	0	0	0	0	4
Articulated %	0.0	11.1	0.0	11.1	23.1	0.0	0.0	17.6	0.0	0.0	0.0	0.0	13.3
Buses	0	2	0	2	0	2	0	2	2	0	0	2	6
Single-Unit Trucks	0	6	0	6	10	2	0	12	2	0	0	2	20
Articulated Trucks	0	1	0	1	3	0	0	3	0	0	0	0	4
Total Entering Leg	0	9	0	9	13	4	0	17	4	0	0	4	30
Buses				0				4				2	6
Single-Unit Trucks				10				8				2	20
Articulated Trucks				3				1				0	4
Total Exiting Leg				13				13				4	30

PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class:



**Buses**

	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
2:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
2:45 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
<b>Total</b>	0	3	0	3	2	0	0	2	0	0	0	0	5
3:00 PM	0	0	0	0	0	0	0	0	2	0	0	0	2
3:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
3:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
3:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
<b>Total</b>	0	0	0	0	1	2	0	3	2	0	0	2	5
<b>Grand Total</b>	0	3	0	3	3	2	0	5	2	0	0	2	10
Approach %	0.0	100.0	0.0		60.0	40.0	0.0		100.0	0.0	0.0		
Total %	0.0	30.0	0.0	30.0	30.0	20.0	0.0	50.0	20.0	0.0	0.0	20.0	
Exiting Leg Total				3				5				2	10

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:15 PM	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
2:45 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
3:00 PM	0	0	0	0	0	0	0	0	2	0	0	2	2
<b>Total Volume</b>	0	3	0	3	1	0	0	1	2	0	0	2	6
<b>% Approach Total</b>	0.0	100.0	0.0		100.0	0.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.375	0.000	0.375	0.250	0.000	0.000	0.250	0.250	0.000	0.000	0.250	0.750
Entering Leg	0	3	0	3	1	0	0	1	2	0	0	2	6
Exiting Leg				1				5				0	6
<b>Total</b>				4				6				2	12



PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**



**Single-Unit Trucks**

	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
2:15 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
2:30 PM	0	1	0	1	1	0	0	1	1	0	1	2	4
2:45 PM	0	2	0	2	4	0	0	4	0	0	0	0	6
<b>Total</b>	0	5	0	5	9	0	0	9	1	0	1	2	16
3:00 PM	0	1	0	1	0	1	0	1	0	0	0	0	2
3:15 PM	0	1	0	1	5	0	0	5	1	0	0	1	7
3:30 PM	0	2	0	2	1	1	0	2	1	0	0	1	5
3:45 PM	0	2	0	2	2	0	0	2	0	0	0	0	4
<b>Total</b>	0	6	0	6	8	2	0	10	2	0	0	2	18
<b>Grand Total</b>	0	11	0	11	17	2	0	19	3	0	1	4	34
Approach %	0.0	100.0	0.0		89.5	10.5	0.0		75.0	0.0	25.0		
Total %	0.0	32.4	0.0	32.4	50.0	5.9	0.0	55.9	8.8	0.0	2.9	11.8	
Exiting Leg Total				17				14				3	34

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:45 PM	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:45 PM	0	2	0	2	4	0	0	4	0	0	0	0	6
3:00 PM	0	1	0	1	0	1	0	1	0	0	0	0	2
3:15 PM	0	1	0	1	5	0	0	5	1	0	0	1	7
3:30 PM	0	2	0	2	1	1	0	2	1	0	0	1	5
Total Volume	0	6	0	6	10	2	0	12	2	0	0	2	20
% Approach Total	0.0	100.0	0.0		83.3	16.7	0.0		100.0	0.0	0.0		
PHF	0.000	0.750	0.000	0.750	0.500	0.500	0.000	0.600	0.500	0.000	0.000	0.500	0.714
Entering Leg	0	6	0	6	10	2	0	12	2	0	0	2	20
Exiting Leg				10				8				2	20
Total				16				20				4	40

PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**



**Articulated Trucks**

	Farm Street				Farm Street				Old Nahant Road (South)				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	1
2:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	1
<b>Total</b>	0	0	0	0	2	0	0	2	0	0	0	0	0	2
3:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	2	0	0	2	0	0	0	0	0	2
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	1	0	1	2	0	0	2	0	0	0	0	0	3
<b>Grand Total</b>	0	1	0	1	4	0	0	4	0	0	0	0	0	5
Approach %	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0			
Total %	0.0	20.0	0.0	20.0	80.0	0.0	0.0	80.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				4				1					0	5

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:45 PM	Farm Street				Farm Street				Old Nahant Road (South)				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
3:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	2	0	0	2	0	0	0	0	2
<b>Total Volume</b>	0	1	0	1	3	0	0	3	0	0	0	0	4
<b>% Approach Total</b>	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.250	0.375	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	1	0	1	3	0	0	3	0	0	0	0	4
Exiting Leg				3				1				0	4
<b>Total</b>				4				4				0	8

PDI File #: 217949 E  
 Location: N: Farm Street S: Farm Street  
 Location: W: Old Nahant Road (South)  
 City, State: Wakefield, MA  
 Client: Nitsch/ D. Birru  
 Site Code: 13872.2  
 Count Date: Thursday, May 27, 2021  
 Start Time: 2:00 PM  
 End Time: 4:00 PM



**Bicycles (on Roadway and Crosswalks)**

	Farm Street						Farm Street						Old Nahant Road (South)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Approach %	0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	0						2						0						2

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:00 PM	Farm Street						Farm Street						Old Nahant Road (South)						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% Approach Total	0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Exiting Leg	0						1						0						1
Total	1						1						0						2

PDI File #: **217949 E**  
 Location: **N: Farm Street S: Farm Street**  
 Location: **W: Old Nahant Road (South)**  
 City, State: **Wakefield, MA**  
 Client: **Nitsch/ D. Birru**  
 Site Code: **13872.2**  
 Count Date: **Thursday, May 27, 2021**  
 Start Time: **2:00 PM**  
 End Time: **4:00 PM**  
 Class:



**Pedestrians**

	Farm Street						Farm Street						Old Nahant Road (South)						Total	
	from North						from South						from West							
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	3	
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	3	
Approach %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33.333	66.667			
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33.333	66.667	100		
Exiting Leg Total	0						0						0						3	3

Peak Hour Analysis from 02:00 PM to 04:00 PM begins at:

2:00 PM	Farm Street						Farm Street						Old Nahant Road (South)						Total	
	from North						from South						from West							
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	3	
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	66.7			
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.500	0.750	0.750	
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	3	
Exiting Leg	0						0						0						3	3
Total	0						0						0						6	6

Weekday Seasonal Adjustment Factors

Massachusetts Highway Department  
Statewide Traffic Data Collection  
2017 Weekday Seasonal Factors

Factor Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Axle Factor
R1	1.30	1.23	1.21	1.04	0.98	0.92	0.86	0.81	0.95	0.99	1.03	1.10	0.80
R2	0.95	0.96	0.98	0.97	0.97	0.93	0.97	0.94	0.96	0.90	0.92	0.93	0.96
R3	1.05	1.01	1.04	0.99	0.94	0.93	0.91	0.92	0.96	0.94	1.01	1.03	0.97
R4-R7	1.10	1.07	1.09	1.00	0.95	0.89	0.88	0.87	0.92	0.95	1.04	1.09	0.93
U1-Boston	1.01	1.04	0.99	0.94	0.93	0.92	0.96	0.93	0.94	0.93	0.95	0.98	0.95
U1-Essex	1.04	1.05	1.00	0.96	0.93	0.89	0.90	0.90	0.93	0.93	0.98	1.03	0.90
U1-Southeast	1.07	1.05	1.02	0.97	0.95	0.90	0.89	0.88	0.92	0.94	0.98	1.01	0.97
U1-West	1.00	0.96	0.94	0.92	0.93	0.92	0.95	0.93	0.92	0.92	0.97	0.97	0.89
U1-Worcester	1.10	1.10	1.04	0.97	0.95	0.94	0.93	0.91	0.95	0.96	0.98	1.04	0.89
U2	1.01	1.03	0.98	0.95	0.93	0.91	0.94	0.92	0.95	0.95	0.95	0.97	0.98
U3	1.03	1.05	1.01	0.95	0.92	0.90	0.94	0.93	0.93	0.92	0.96	0.99	0.96
U4-U7	1.06	1.05	1.02	0.96	0.92	0.89	0.95	0.95	0.92	0.92	0.98	1.03	0.98
Rec - East	1.18	1.17	1.08	1.03	0.95	0.87	0.83	0.83	0.97	0.98	1.19	1.19	0.98
Rec - West	1.30	1.23	1.32	1.18	0.95	0.82	0.70	0.69	0.97	0.96	1.16	1.15	0.95

Round off:

0-999 = 10

>1000 = 100

U = Urban

R = Rural

1 - Interstate

2 - Freeway and Expressway

3 - Other Principal Arterial

4 - Minor Arterial

5 - Major Collector

6 - Minor Collector

7 - Local Road and Street

**Recreational - East Group** - Cape Cod (all towns) including the town of Plymouth south of Route 3A (stations 7014,7079,7080,7090,7091,7092,7093,7094,7095,7096,7097,7108 and 7178), Martha's Vineyard and Nantucket.

**Recreational - West Group** - Continuous Stations 2 and 189 including stations 1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1113,1114, 1116,2196,2197 and 2198.

Section A-3

Crash Data









# INTERSECTION CRASH RATE WORKSHEET, 2014-2018

CITY/TOWN : WAKEFIELD COUNT DATE : 5/25/2021

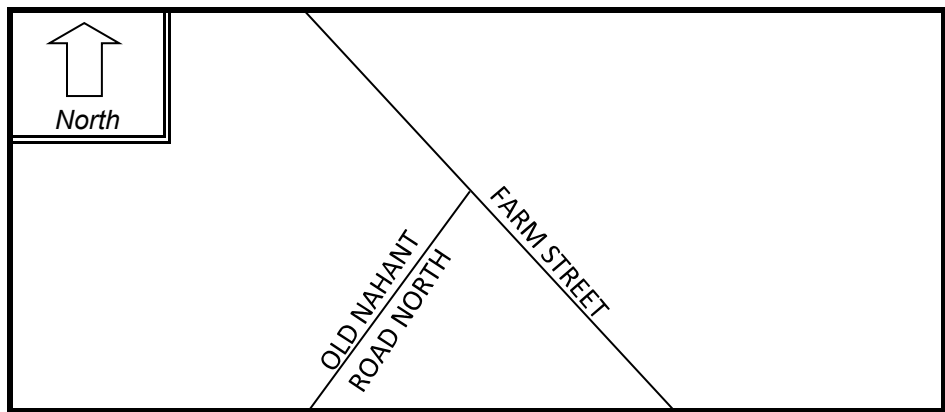
DISTRICT : 4 UNSIGNALIZED :  SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Farm Street

MINOR STREET(S) : Old Nahant Road North

INTERSECTION  
DIAGRAM



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	NB	SB			
PEAK HOURLY VOLUMES (AM/PM) :	151	599	636			1,386

" K " FACTOR :  INTERSECTION ADT ( V ) = TOTAL DAILY APPROACH VOLUME :

TOTAL # OF CRASHES :  # OF YEARS :  AVERAGE # OF CRASHES PER YEAR ( A ) :

CRASH RATE CALCULATION :

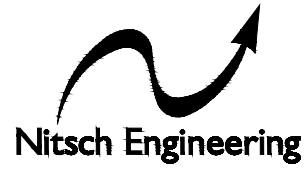
RATE =

$$\frac{( A * 1,000,000 )}{( V * 365 )}$$

Comments : Saturday Peak used

Project Title & Date : NEMT Traffic Study 05/30/2021





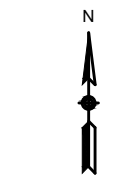
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- ▶ Transportation Engineering
- ▶ Structural Engineering
- ▶ Green Infrastructure
- ▶ Planning
- ▶ GIS

SYMBOLS		TYPE OF CRASH	SEVERITY
→	Moving Vehicle	↔	Head on
←	Backing Vehicle	→	Rear End
- - -	Non-Involved Vehicle	↘	Angle
⊠	Involved	↪	Turning Movement
⊠	Non-Involved	↘↗	Sideswipe
⊠	Pedestrian	⊠	Out of Control
⊠	Bicycle	■	Night Time Crash
⊠	Animal		
⊠	Direction of Motion		
⊠	Parked Vehicle		
⊠	Fixed Object		
		⊠	Injury
		⊠	Fatal
		⊠	Property Damage Only

**WAKEFIELD, MA**  
 NORTHEAST METROPOLITAN REGIONAL VOCATIONAL SCHOOL: WATER STREET (ROUTE 129) AND FARM STREET  
 REGION: WAKEFIELD

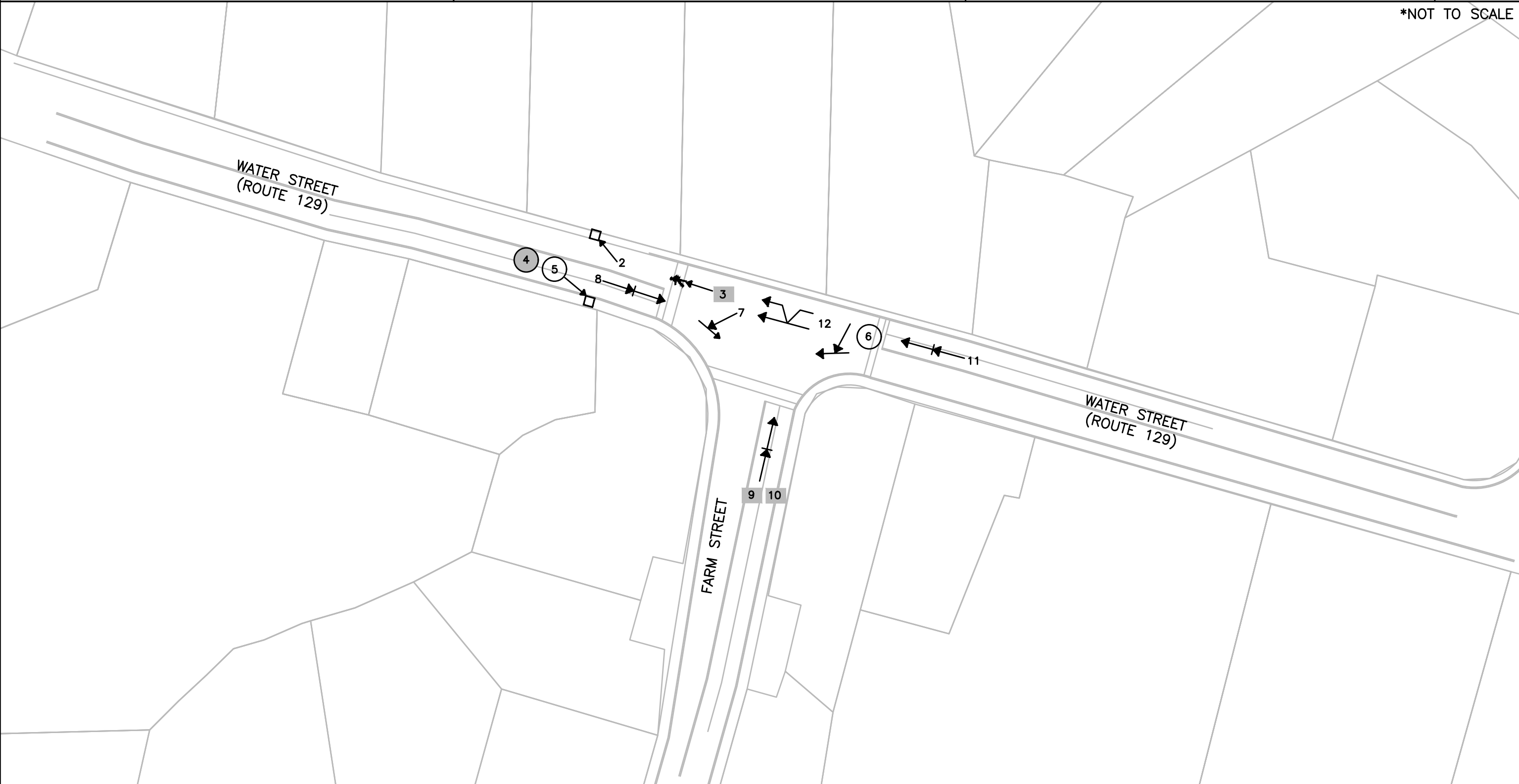
TIME PERIOD ANALYZED: 2014-2018  
 SOURCE OF CRASH REPORTS: MASSDOT CRASH PORTAL  
 DATE PREPARED: JUNE 2021  
 PREPARED BY: DAWIT BIRRU

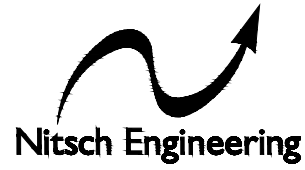


SHEET 1 OF 4

# CRASH DIAGRAM

\*NOT TO SCALE





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**SYMBOLS**

- Moving Vehicle
- ← Backing Vehicle
- - - Non-Involved Vehicle
- Involved Non-Involved
- Pedestrian
- Bicycle
- Animal
- Direction of Motion
- Parked Vehicle
- Fixed Object

**TYPE OF CRASH**

- Head on
- Rear End
- Angle
- Turning Movement
- Sideswipe
- Out of Control
- Night Time Crash

**SEVERITY**

- Injury
- Fatal
- Property Damage Only

**WAKEFIELD, MA**

NORTHEAST METROPOLITAN REGIONAL VOCATIONAL SCHOOL: WATER STREET (ROUTE 129) AND FARM STREET  
 REGION: WAKEFIELD

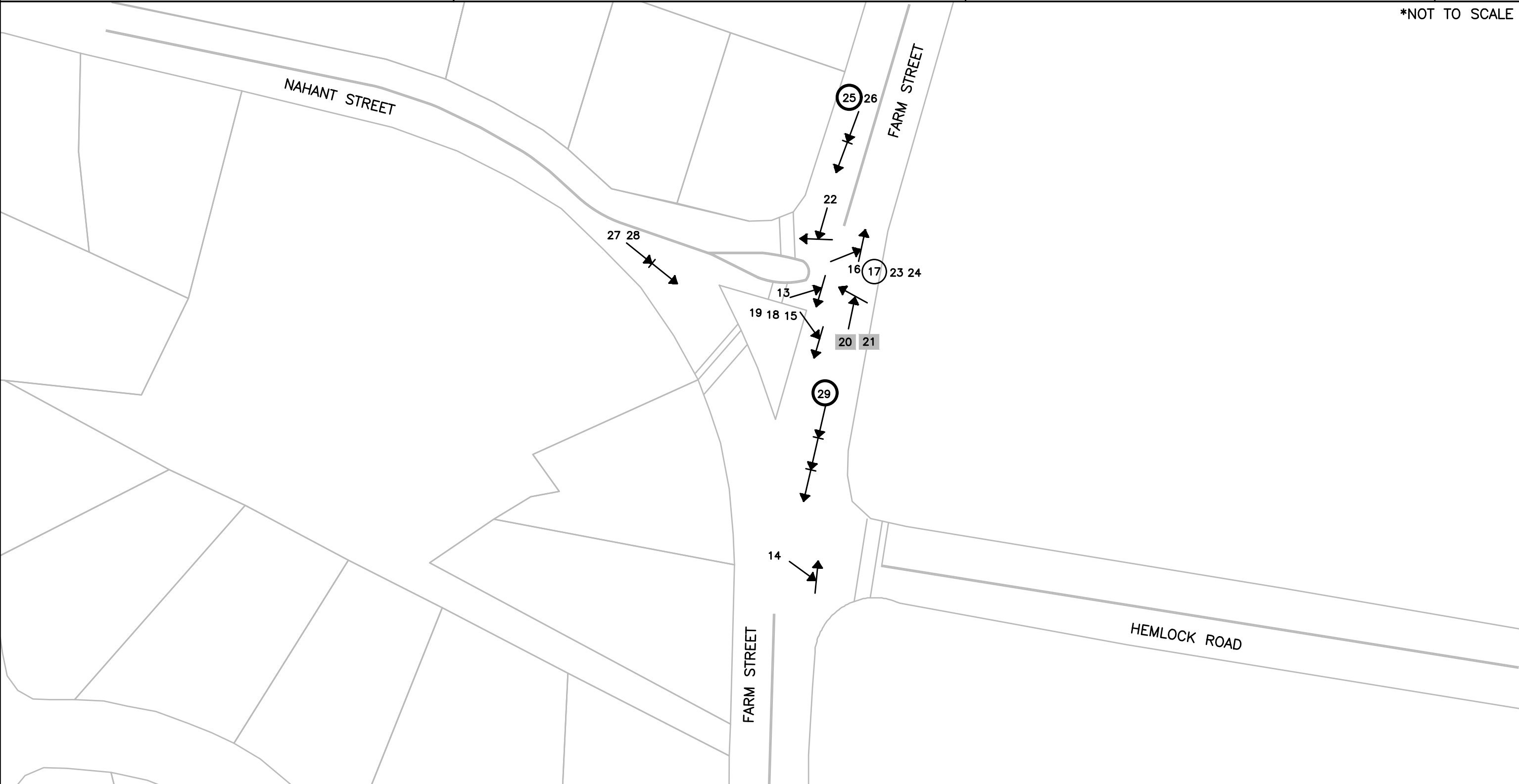
TIME PERIOD ANALYZED: 2014-2018  
 SOURCE OF CRASH REPORTS: MASSDOT CRASH PORTAL  
 DATE PREPARED: JUNE 2021  
 PREPARED BY: DAWIT BIRRU

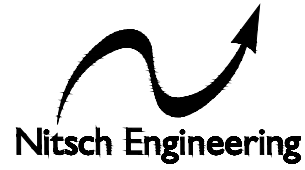


SHEET 2 OF 4

**CRASH DIAGRAM**

\*NOT TO SCALE





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- ▶ Structural Engineering
- ▶ Green Infrastructure
- ▶ Planning
- ▶ GIS

**SYMBOLS**

- Moving Vehicle
- ← Backing Vehicle
- - - Non-Involved Vehicle
- Involved Non-Involved
- Pedestrian
- Bicycle
- Animal
- Direction of Motion
- Parked Vehicle
- Fixed Object

**TYPE OF CRASH**

- Head on
- Rear End
- Angle
- Turning Movement
- Sideswipe
- Out of Control
- Night Time Crash

**SEVERITY**

- Injury
- Fatal
- Property Damage Only

**WAKEFIELD, MA**

NORTHEAST METROPOLITAN REGIONAL VOCATIONAL SCHOOL: WATER STREET (ROUTE 129) AND FARM STREET  
 REGION: WAKEFIELD

TIME PERIOD ANALYZED: 2014-2018  
 SOURCE OF CRASH REPORTS: MASSDOT CRASH PORTAL  
 DATE PREPARED: JUNE 2021  
 PREPARED BY: DAWIT BIRRU

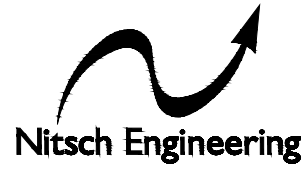


SHEET 3 OF 4

CRASH DIAGRAM

\*NOT TO SCALE





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- ▶ Structural Engineering
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- ▶ Planning
- ▶ GIS

**SYMBOLS**

- Moving Vehicle
- ← Backing Vehicle
- - - Non-Involved Vehicle
- Involved Non-Involved
- Pedestrian
- Bicycle
- Animal
- Direction of Motion
- Parked Vehicle
- Fixed Object

**TYPE OF CRASH**

- Head on
- Rear End
- Angle
- Turning Movement
- Sideswipe
- Out of Control
- Night Time Crash

**SEVERITY**

- Injury
- Fatal
- Property Damage Only

**WAKEFIELD, MA**

NORTHEAST METROPOLITAN REGIONAL VOCATIONAL SCHOOL: WATER STREET (ROUTE 129) AND FARM STREET  
 REGION: WAKEFIELD

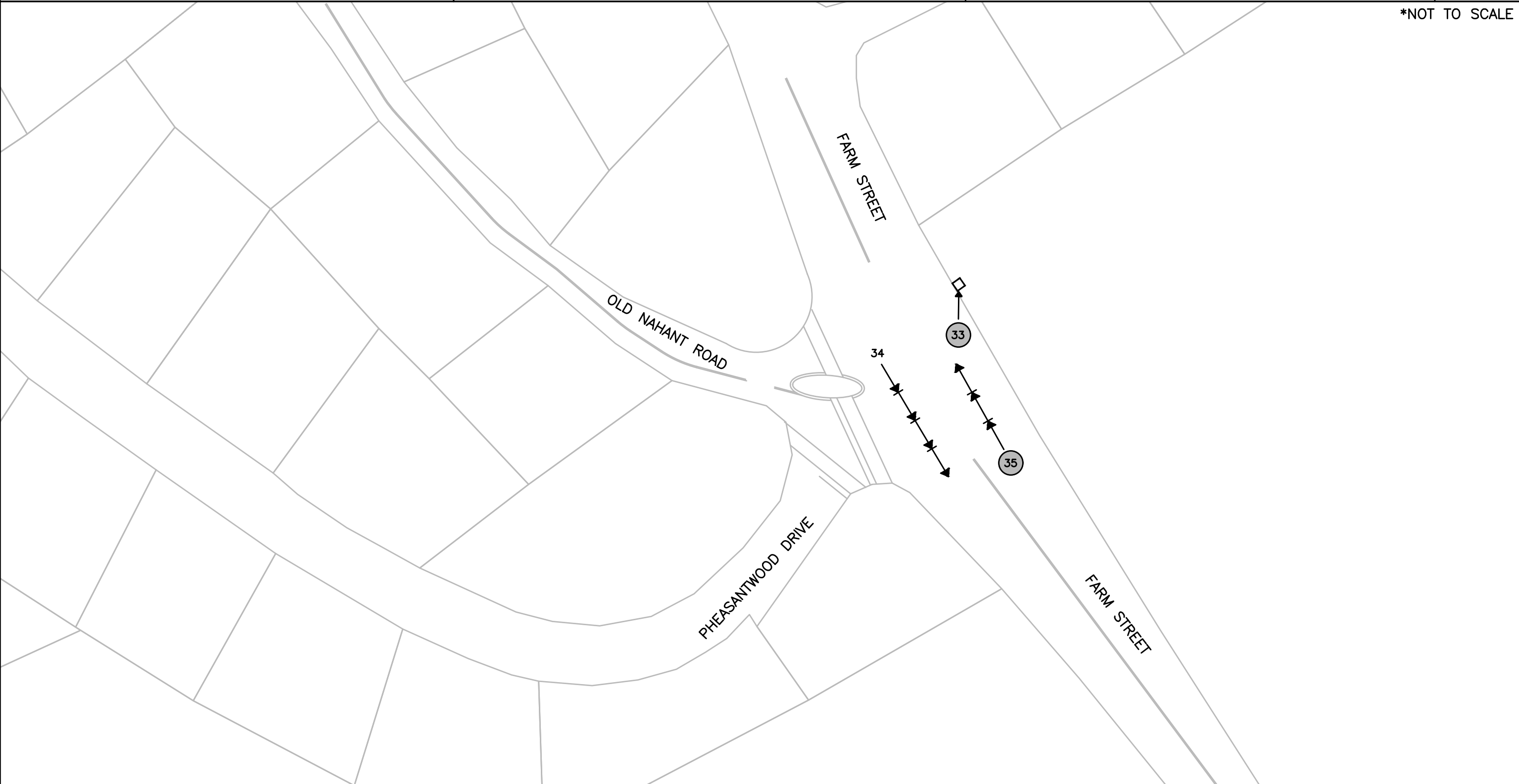
TIME PERIOD ANALYZED: 2014-2018  
 SOURCE OF CRASH REPORTS: MASSDOT CRASH PORTAL  
 DATE PREPARED: JUNE 2021  
 PREPARED BY: DAWIT BIRRU



SHEET 4 OF 4

CRASH DIAGRAM

\*NOT TO SCALE





## Traffic Signal Warrant Analysis

## MUTCD Traffic Signal Warrant Summary Worksheet

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: Farm Street at New School Drive  
Town: Wakefield, MA

**100%**  
**Volume Level**

Major Street: Farm Street  
Critical Approach Speed: 30 mph  
Lanes: 2 or more lanes

Minor Street: New School Drive  
Critical Approach Speed: 15 mph  
Lanes: 2 or more lanes

% Right Turns Included  
From North (SB) 0%  
From East (WB) 0%  
From South (NB) 0%  
From West (EB) 100%

In built-up area of isolated community of < 10,000 population? No  
Total number of approaches at intersection? 3  
We request that the Applicant Manually set volume level? No

**Analysis based on PROJECTED volume data.**

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM

Warrant Evaluation Summary	Warrant Met:
<b>Warrant 1: Eight - Hour Vehicular Volume</b>	<b>No</b>
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	No
Condition C: Combination: 80% of A and B	No
<b>Warrant 2: Four-Hour Volume</b>	<b>No</b>
<b>Warrant 3: Peak Hour Volume</b>	<b>No</b>
<b>Warrant 4: Pedestrian Volume</b>	<b>N/A</b>
Criterion A: Four-Hour	
Criterion B: Peak-Hour	
<b>Warrant 5: School Crossing</b>	<b>No</b>
<b>Warrant 6: Coordinated Signal System</b>	<b>N/A</b>
<b>Warrant 7: Crash Experience</b>	<b>N/A</b>
<b>Warrant 8: Roadway Network</b>	<b>No</b>
<b>Warrant 9: Intersection Near a Grade Crossing</b>	<b>N/A</b>

**Warrant Analysis Conducted By:**

Name: Nick Havan, PE, PTOE, ENV SP

Date: 6/27/2021

**Nitsch Engineering**

## Warrant 1: Eight - Hour Vehicular Volume

**100%**

**Warrant Evaluated? Yes**

<b>Condition A :</b>		
Min. Veh. Volume		
Volume Level	100%	80%
Major Rd. Req	600	480
Minor Rd. Req	200	160
Number of Hours	0	0

**Satisfied? No**

<b>Condition B:</b>		
Interruption of Continuous Traffic		
Volume Level	100%	80%
Major Rd. Req	900	720
Minor Rd. Req	100	80
Number of Hours	1	2

**Satisfied? No**

<b>Condition C:</b>		
Combination of A & B at 80%		

**Satisfied? No**

**Warrant Satisfied? No**

**Manually Set To:**

6:00 AM		Enter Start Time (Military Time) (HH:MM)			Total
Time Period	From	To	Major Road: Both App. (VPH)	Minor Road: High App. (VPH)	
1	6:00	7:00	0	0	0
2	7:00	8:00	0	0	0
3	8:00	9:00	840	85	925
4	9:00	10:00	0	0	0
5	10:00	11:00	0	0	0
6	11:00	12:00	0	0	0
7	12:00	13:00	0	0	0
8	13:00	14:00	0	0	0
9	14:00	15:00	1022	108	1130
10	15:00	16:00	0	0	0
11	16:00	17:00	0	0	0
12	17:00	18:00	0	0	0
13	18:00	19:00	0	0	0
14	19:00	20:00	0	0	0
15	20:00	21:00	0	0	0
16	21:00	22:00	0	0	0

## Warrant 2: Four-Hour Volume

**100%**

*Four hours with highest total volume meeting warrant criteria:*

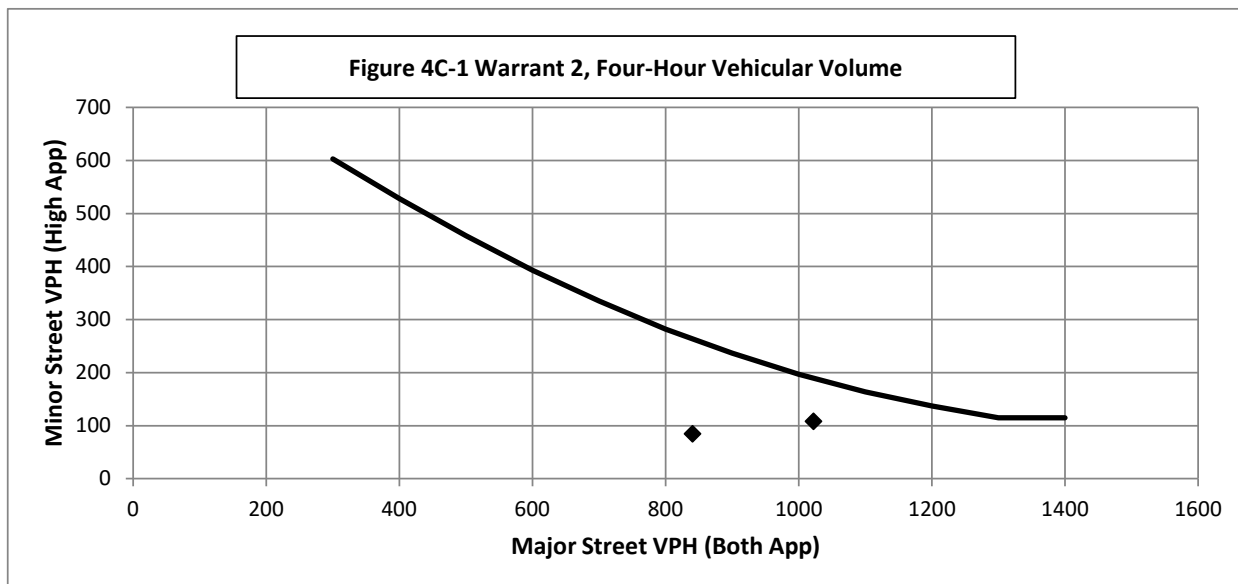
Hour Start	14:00	8:00	#N/A	#N/A
Major Road Vol.	1022	840	#N/A	#N/A
Minor Road Vol.	108	85	#N/A	#N/A

**Warrant Evaluated? Yes**

**Number of Hours 0**

**Warrant Satisfied? No**

**Manually Set To:**



### Warrant 3: Peak Hour Volume

100%

Warrant Evaluated? Yes

Warrant Satisfied? No

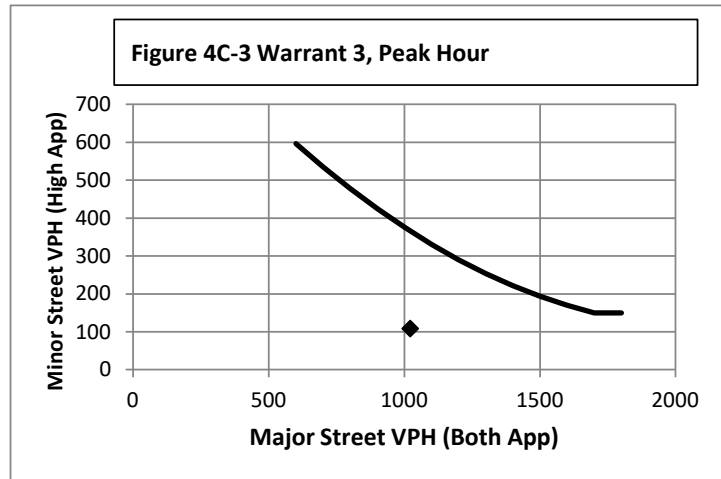
Manually Set To:

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	5	No
Volume on Minor Approach	150	No
Total Entering Volume (veh/h)	650	

**Manually Set Peak Hour?**

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
14:00	1022	108



### Warrant 4: Pedestrian Volume

100%

Warrant Evaluated? No

Warrant Satisfied? N/A

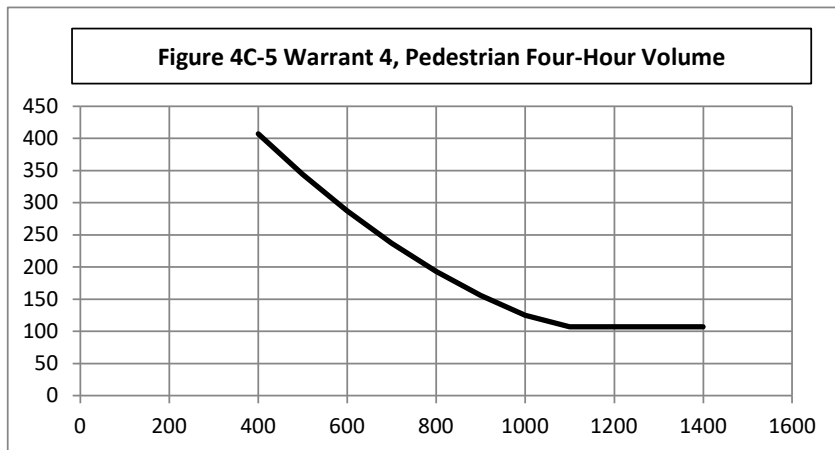
Manually Set To:

**Criterion A: Four Hour**

Hour (Start)	Pedestrian Volume	Major Road Vol.
		0
		0
		0
		0

Manually Set Major Rd Vol?  
15th % walk speed < 3.5 ft/s?

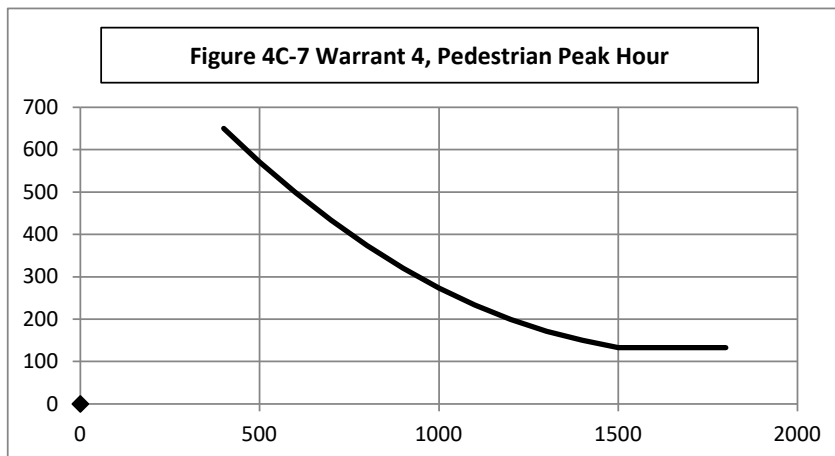
Criterion A Satisfied?



**Criterion B: Peak Hour**

Peak Hour	Pedestrian Vol.	Major Road Vol.
0:00	0	0

Criterion B Satisfied?



## Warrant 5: School Crossing

Warrant Evaluated? Yes

Warrant Satisfied? No

Manually Set To:

Criteria		Fulfilled?
1	There are a MINIMUM of 20 school children during the highest crossing hour.	Yes
2	There are fewer adequate gaps in the major road traffic stream during the period when the school children are using the crossing than the number of minutes in the same period.	No
3	The nearest traffic signal along the major road is located more than 300 ft away. Or, the nearest traffic signal is within 300 ft but the proposed traffic signal will not restrict the progressive movement of traffic.	Yes

## Warrant 6: Coordinated Signal System

Warrant Evaluated? No

Warrant Satisfied? N/A

Manually Set To:

Criteria		Fulfilled?
1	Signal spacing > 1000 ft	
2	On a one-way road or a road that has traffic predominantly in one direction, the adjacent signals are so far apart that they do not provide the necessary degree of vehicle platooning.	
3	On a two-way road, adjacent signals do not provide the necessary degree of platooning and the proposed and the adjacent signals will collectively provide a progressive operation.	

## Warrant 7: Crash Experience

**100%**

Warrant Evaluated? No

Warrant Satisfied? N/A

Manually Set To:

Criteria		Met?	Fulfilled?
1	Adequate trial of other remedial measures has failed to reduce crash frequency. Measures Tried:		
2	Five or more reported crashes, of types susceptible to correction by signal, have occurred within a 12 month period.	# of crashes per 12 months	
3	Warrant 1, Condition A (80%)		
	Warrant 1, Condition B (80%)		
	Warrant 4, Criterion A (80%)		
	Warrant 4, Criterion B (80%)		

## Warrant 8: Roadway Network

Warrant Evaluated? Yes

Warrant Satisfied? No

Manually Set To:

Criteria			Met?	Fulfilled?
1	Total entering volume of at least 1,000 veh/h during typical weekday peak hour	1130	Yes	No
	Five-year projected volumes that satisfy one or more of Warrants 1, 2, or 3.		No	
2	Total entering vol. of at least 1,000 veh/h for each of any 5 hrs of non-normal business day (Sat. or Sun.)			
	Hour			
	Volume			

Criteria	Characteristics of Major Routes - Select yes if all intersecting routes have characteristic	Fulfilled?
1	Part of the road or highway system that serves as the principal roadway network for through traffic flow	
2	Rural or suburban highway outside of, entering, or traversing a city	
3	Appears as a major route on an official plan	

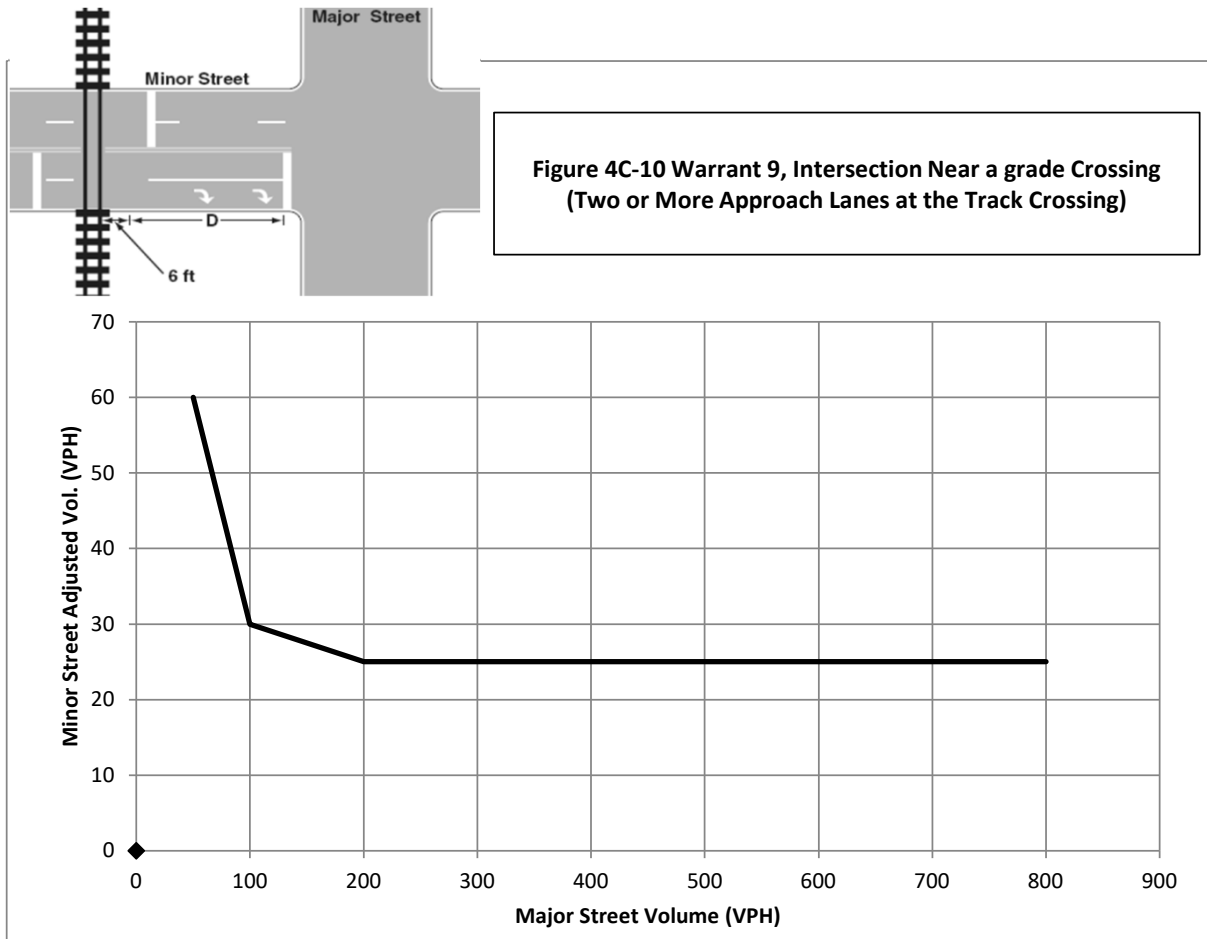
## Warrant 9: Intersection Near a Grade Crossing

Warrant Evaluated? No

Warrant Satisfied? N/A

Manually Set To:

Adjustment Factors			Manually Set Peak Hour?				
Rail Traffic per Day	% High Occupancy Buses on Minor Road	% Tractor-Trailer Trucks on Minor Road	D	Peak Hour	Major Road Vol.	Minor Road Vol.	Adjusted Minor Vol.
					0	0	0



Conclusions/Comments:

Section A-5

Capacity Analysis

### Lanes, Volumes, Timings 3: Farm St & Water St

06/25/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations	↑	↑	↑	↑	↑	↑	
Traffic Volume (vph)	164	304	423	345	227	215	
Future Volume (vph)	164	304	423	345	227	215	
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 <sub>t</sub>		0.850				0.850	
Fl <sub>t</sub> Protected			0.950		0.950		
Satd. Flow (prot)	1743	1538	1770	1827	1752	1583	
Fl <sub>t</sub> Permitted			0.433		0.950		
Satd. Flow (perm)	1743	1538	807	1827	1752	1583	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		543				242	
Link Speed (mph)	30			31	30		
Link Distance (ft)	1706			3653	1716		
Travel Time (s)	38.8			80.3	39.0		
Peak Hour Factor	0.81	0.56	0.97	0.81	0.64	0.89	
Heavy Vehicles (%)	9%	5%	2%	4%	3%	2%	
Adj. Flow (vph)	202	543	436	426	355	242	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	202	543	436	426	355	242	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	12			12	12		
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)		9	15		15	9	
Number of Detectors	2	1	1	2	1	1	
Detector Template	Thru	Right	Left	Thru	Left	Right	
Leading Detector (ft)	100	20	20	100	20	20	
Trailing Detector (ft)	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	
Detector 1 Size(ft)	6	20	20	6	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	94			94			
Detector 2 Size(ft)	6			6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	pm+ov	pm+pt	NA	Prot	pm+ov	
Protected Phases	6	16	5	2	16	5	9
Permitted Phases		6	2			16	
Detector Phase	6	16	5	2	16	5	
Switch Phase							



Lanes, Volumes, Timings  
3: Farm St & Water St

06/25/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Minimum Initial (s)	10.0	6.0	6.0	10.0	6.0	6.0	1.0
Minimum Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (%)	35.1%	30.7%	13.2%	48.2%	30.7%	13.2%	21%
Maximum Green (s)	35.0	30.0	11.0	50.0	30.0	11.0	21.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	0.0	1.0	1.0	0.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	
Lead/Lag	Lag		Lead		Lead		
Lead-Lag Optimize?	Yes		Yes		Yes		
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0
Recall Mode	C-Min	None	None	C-Min	None	None	Ped
Walk Time (s)							7.0
Flash Dont Walk (s)							13.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	27.6	55.3	54.3	53.3	27.7	54.4	
Actuated g/C Ratio	0.24	0.49	0.48	0.47	0.24	0.48	
v/c Ratio	0.48	0.53	0.77	0.50	0.83	0.27	
Control Delay	43.7	2.7	33.8	25.1	57.4	2.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	43.7	2.7	33.8	25.1	57.4	2.7	
LOS	D	A	C	C	E	A	
Approach Delay	13.8			29.5	35.2		
Approach LOS	B			C	D		
90th %ile Green (s)	24.5	35.6	16.9	45.4	35.6	16.9	20.0
90th %ile Term Code	Coord	Gap	Max	Coord	Gap	Max	Ped
70th %ile Green (s)	20.3	31.8	24.9	49.2	31.8	24.9	20.0
70th %ile Term Code	Coord	Gap	Max	Coord	Gap	Max	Ped
50th %ile Green (s)	22.1	27.8	27.1	53.2	27.8	27.1	20.0
50th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
30th %ile Green (s)	30.2	24.3	22.5	56.7	24.3	22.5	20.0
30th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
10th %ile Green (s)	40.7	19.2	17.1	61.8	19.2	17.1	20.0
10th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
Stops (vph)	142	15	272	241	209	14	
Fuel Used(gal)	4	4	16	13	7	3	
CO Emissions (g/hr)	309	300	1144	898	478	215	
NOx Emissions (g/hr)	60	58	223	175	93	42	
VOC Emissions (g/hr)	72	70	265	208	111	50	
Dilemma Vehicles (#)	0	0	0	0	0	0	
Queue Length 50th (ft)	136	0	216	211	248	0	
Queue Length 95th (ft)	185	0	#457	300	212	38	
Internal Link Dist (ft)	1626			3573	1636		
Turn Bay Length (ft)							
Base Capacity (vph)	552	1058	567	870	484	882	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	

Lanes, Volumes, Timings  
 3: Farm St & Water St

06/25/2021

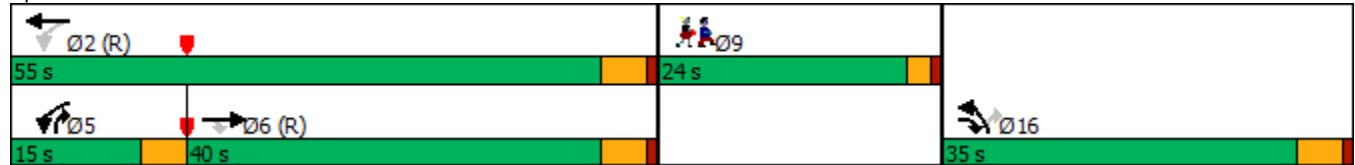


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Reduced v/c Ratio	0.37	0.51	0.77	0.49	0.73	0.27	

Intersection Summary

Area Type: Other  
 Cycle Length: 114  
 Actuated Cycle Length: 114  
 Offset: 22.5 (20%), Referenced to phase 2:WBTL and 6:EBT, Start of Green  
 Natural Cycle: 115  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 25.7  
 Intersection LOS: C  
 Intersection Capacity Utilization 56.3%  
 ICU Level of Service B  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Farm St & Water St



# HCM Unsignalized Intersection Capacity Analysis

## 10: Hemlock Rd & WHS Parking Lot

06/29/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↕	
Traffic Volume (veh/h)	82	558	195	2	3	16
Future Volume (Veh/h)	82	558	195	2	3	16
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.45	0.77	0.46	0.50	0.38	0.50
Hourly flow rate (vph)	182	725	424	4	8	32
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	428				1515	426
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	428				1515	426
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	84				93	95
cM capacity (veh/h)	1137				112	633
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	907	428	40			
Volume Left	182	0	8			
Volume Right	0	4	32			
cSH	1137	1700	327			
Volume to Capacity	0.16	0.25	0.12			
Queue Length 95th (ft)	14	0	10			
Control Delay (s)	3.7	0.0	17.5			
Lane LOS	A		C			
Approach Delay (s)	3.7	0.0	17.5			
Approach LOS			C			
<b>Intersection Summary</b>						
Average Delay			3.0			
Intersection Capacity Utilization			57.6%	ICU Level of Service		B
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 6: Farm/Farm St & Nahant

06/27/2021



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	95	277	167	329	567	95
Future Volume (Veh/h)	95	277	167	329	567	95
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.67	0.75	0.87	0.82	0.86	0.76
Hourly flow rate (vph)	142	369	192	401	659	125
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	12					
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1506	722	784			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1506	722	784			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	0	14	76			
cM capacity (veh/h)	102	429	817			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	511	593	784			
Volume Left	142	192	0			
Volume Right	369	0	125			
cSH	358	817	1700			
Volume to Capacity	1.43	0.24	0.46			
Queue Length 95th (ft)	661	23	0			
Control Delay (s)	237.1	5.7	0.0			
Lane LOS	F	A				
Approach Delay (s)	237.1	5.7	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			66.0			
Intersection Capacity Utilization			77.4%	ICU Level of Service	D	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 7: Farm St & Hemlock Rd

06/25/2021



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	79	106	390	277	403	441
Future Volume (Veh/h)	79	106	390	277	403	441
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.37	0.50	0.82	0.73	0.82	0.86
Hourly flow rate (vph)	214	212	476	379	491	513
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2160	666			855	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2160	666			855	
tC, single (s)	6.6	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.3			2.2	
p0 queue free %	0	54			38	
cM capacity (veh/h)	18	463			789	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>		
Volume Total	426	855	491	513		
Volume Left	214	0	491	0		
Volume Right	212	379	0	0		
cSH	34	1700	789	1700		
Volume to Capacity	12.47	0.50	0.62	0.30		
Queue Length 95th (ft)	Err	0	110	0		
Control Delay (s)	Err	0.0	16.8	0.0		
Lane LOS	F		C			
Approach Delay (s)	Err	0.0	8.2			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			1867.7			
Intersection Capacity Utilization			80.6%	ICU Level of Service	D	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 12: Farm St & Old Nahant

06/25/2021



Movement	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	235	5	359	186	5	601
Future Volume (Veh/h)	235	5	359	186	5	601
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.31	0.92	0.77	0.33	0.89
Hourly flow rate (vph)	261	16	390	242	15	675
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1095	390			632	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1095	390			632	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	98			98	
cM capacity (veh/h)	235	663			960	
<b>Direction, Lane #</b>						
	EB 1	SB 1	NW 1			
Volume Total	277	632	690			
Volume Left	261	0	15			
Volume Right	16	242	0			
cSH	244	1700	960			
Volume to Capacity	1.14	0.37	0.02			
Queue Length 95th (ft)	312	0	1			
Control Delay (s)	142.2	0.0	0.4			
Lane LOS	F		A			
Approach Delay (s)	142.2	0.0	0.4			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			24.8			
Intersection Capacity Utilization			Err%	ICU Level of Service		H
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 13: Farm St & O.d Nahant

06/25/2021



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	19	38	29	498	341	3
Future Volume (Veh/h)	19	38	29	498	341	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.45	0.84	0.64	0.86	0.85	0.75
Hourly flow rate (vph)	42	45	45	579	401	4
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1072	403	405			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1072	403	405			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	82	93	96			
cM capacity (veh/h)	236	652	1107			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	87	624	405			
Volume Left	42	45	0			
Volume Right	45	0	4			
cSH	352	1107	1700			
Volume to Capacity	0.25	0.04	0.24			
Queue Length 95th (ft)	24	3	0			
Control Delay (s)	18.5	1.1	0.0			
Lane LOS	C	A				
Approach Delay (s)	18.5	1.1	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.1			
Intersection Capacity Utilization			59.3%	ICU Level of Service	B	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
3: Farm St & Water St

06/25/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations	↑	↑	↑	↑	↑	↑	
Traffic Volume (vph)	209	197	280	230	277	512	
Future Volume (vph)	209	197	280	230	277	512	
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 <sub>t</sub>		0.850				0.850	
Fl <sub>t</sub> Protected			0.950		0.950		
Satd. Flow (prot)	1845	1599	1770	1810	1736	1568	
Fl <sub>t</sub> Permitted			0.390		0.950		
Satd. Flow (perm)	1845	1599	726	1810	1736	1568	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		235				563	
Link Speed (mph)	30			30	30		
Link Distance (ft)	1706			3653	1716		
Travel Time (s)	38.8			83.0	39.0		
Peak Hour Factor	0.82	0.84	0.82	0.71	0.76	0.91	
Heavy Vehicles (%)	3%	1%	2%	5%	4%	3%	
Adj. Flow (vph)	255	235	341	324	364	563	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	255	235	341	324	364	563	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	12			12	12		
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)		9	15		15	9	
Number of Detectors	2	1	1	2	1	1	
Detector Template	Thru	Right	Left	Thru	Left	Right	
Leading Detector (ft)	100	20	20	100	20	20	
Trailing Detector (ft)	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	
Detector 1 Size(ft)	6	20	20	6	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	94			94			
Detector 2 Size(ft)	6			6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	pm+ov	pm+pt	NA	Prot	pm+ov	
Protected Phases	6	16	5	2	16	5	9
Permitted Phases		6	2			16	
Detector Phase	6	16	5	2	16	5	
Switch Phase							



Lanes, Volumes, Timings  
3: Farm St & Water St

06/25/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Minimum Initial (s)	10.0	6.0	6.0	10.0	6.0	6.0	1.0
Minimum Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (%)	35.1%	30.7%	13.2%	48.2%	30.7%	13.2%	21%
Maximum Green (s)	35.0	30.0	11.0	50.0	30.0	11.0	21.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	0.0	1.0	1.0	0.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	
Lead/Lag	Lag		Lead		Lead		
Lead-Lag Optimize?	Yes		Yes		Yes		
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0
Recall Mode	C-Min	None	None	C-Min	None	None	Ped
Walk Time (s)							7.0
Flash Dont Walk (s)							13.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	31.8	60.2	53.6	52.6	28.4	50.2	
Actuated g/C Ratio	0.28	0.53	0.47	0.46	0.25	0.44	
v/c Ratio	0.50	0.25	0.69	0.39	0.84	0.56	
Control Delay	40.5	1.5	30.6	23.2	57.9	3.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	40.5	1.5	30.6	23.2	57.9	3.7	
LOS	D	A	C	C	E	A	
Approach Delay	21.8		27.0		25.0		
Approach LOS	C		C		C		
90th %ile Green (s)	27.4	35.7	13.9	45.3	35.7	13.9	20.0
90th %ile Term Code	Coord	Gap	Max	Coord	Gap	Max	Ped
70th %ile Green (s)	22.7	32.1	22.2	48.9	32.1	22.2	20.0
70th %ile Term Code	Coord	Gap	Max	Coord	Gap	Max	Ped
50th %ile Green (s)	28.6	28.8	19.6	52.2	28.8	19.6	20.0
50th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
30th %ile Green (s)	35.5	25.3	16.2	55.7	25.3	16.2	20.0
30th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
10th %ile Green (s)	44.9	20.1	12.0	60.9	20.1	12.0	20.0
10th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
Stops (vph)	177	12	177	151	257	33	
Fuel Used(gal)	5	3	11	8	8	7	
CO Emissions (g/hr)	383	192	748	592	586	519	
NOx Emissions (g/hr)	75	37	145	115	114	101	
VOC Emissions (g/hr)	89	44	173	137	136	120	
Dilemma Vehicles (#)	0	0	0	0	0	0	
Queue Length 50th (ft)	163	0	161	153	253	0	
Queue Length 95th (ft)	225	13	236	188	270	58	
Internal Link Dist (ft)	1626		3573		1636		
Turn Bay Length (ft)							
Base Capacity (vph)	600	993	495	853	480	1005	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	

# Lanes, Volumes, Timings

## 3: Farm St & Water St

06/25/2021

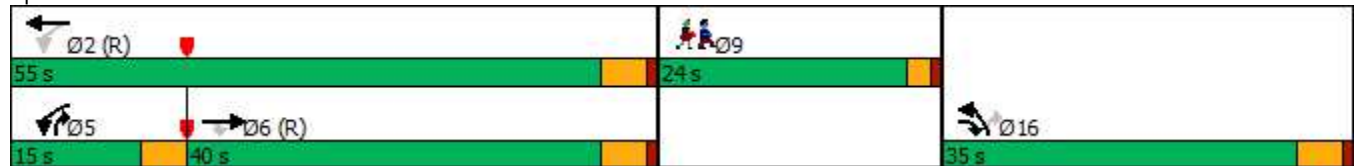


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Reduced v/c Ratio	0.42	0.24	0.69	0.38	0.76	0.56	

### Intersection Summary

Area Type:	Other
Cycle Length:	114
Actuated Cycle Length:	114
Offset:	22.5 (20%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle:	115
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	24.9
Intersection LOS:	C
Intersection Capacity Utilization	53.5%
ICU Level of Service	A
Analysis Period (min)	15

### Splits and Phases: 3: Farm St & Water St



# HCM Unsignalized Intersection Capacity Analysis

## 10: Hemlock Rd & WHS Parking Lot

06/29/2021













Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	40	97	231	21	1	83
Future Volume (Veh/h)	40	97	231	21	1	83
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.77	0.84	0.68	0.33	0.25	0.55
Hourly flow rate (vph)	52	115	340	64	4	151
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	404			591	372	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	404			591	372	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	96			99	78	
cM capacity (veh/h)	1166			452	678	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	167	404	155			
Volume Left	52	0	4			
Volume Right	0	64	151			
cSH	1166	1700	670			
Volume to Capacity	0.04	0.24	0.23			
Queue Length 95th (ft)	3	0	22			
Control Delay (s)	2.8	0.0	12.0			
Lane LOS	A		B			
Approach Delay (s)	2.8	0.0	12.0			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			3.2			
Intersection Capacity Utilization			35.9%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 6: Farm/Farm St & Nahant

06/27/2021

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	57	203	318	565	457	120
Future Volume (Veh/h)	57	203	318	565	457	120
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.74	0.85	0.68	0.81	0.82	0.54
Hourly flow rate (vph)	77	239	468	698	557	222
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	12					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2302	668	779			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2302	668	779			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.2			
p0 queue free %	0	48	44			
cM capacity (veh/h)	18	458	842			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	316	1166	779			
Volume Left	77	468	0			
Volume Right	239	0	222			
cSH	68	842	1700			
Volume to Capacity	4.65	0.56	0.46			
Queue Length 95th (ft)	Err	87	0			
Control Delay (s)	Err	14.0	0.0			
Lane LOS	F	B				
Approach Delay (s)	Err	14.0	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			1404.7			
Intersection Capacity Utilization			92.0%	ICU Level of Service	F	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 7: Farm St & Hemlock Rd

06/25/2021



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	122	204	679	56	86	574
Future Volume (Veh/h)	122	204	679	56	86	574
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.68	0.77	0.81	0.74	0.79	0.82
Hourly flow rate (vph)	179	265	838	76	109	700
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1794	876			914	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1794	876			914	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	24			85	
cM capacity (veh/h)	75	348			746	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>		
Volume Total	444	914	109	700		
Volume Left	179	0	109	0		
Volume Right	265	76	0	0		
cSH	141	1700	746	1700		
Volume to Capacity	3.14	0.54	0.15	0.41		
Queue Length 95th (ft)	Err	0	13	0		
Control Delay (s)	Err	0.0	10.7	0.0		
Lane LOS	F		B			
Approach Delay (s)	Err	0.0	1.4			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			2049.2			
Intersection Capacity Utilization			73.2%	ICU Level of Service	D	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 12: Farm St & Old Nahant

06/25/2021



Movement	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	174	9	456	188	5	601
Future Volume (Veh/h)	174	9	456	188	5	601
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.80	0.45	0.91	0.94	0.42	0.98
Hourly flow rate (vph)	218	20	501	200	12	613
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1138	501			701	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1138	501			701	
tC, single (s)	6.4	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.4	
p0 queue free %	1	97			99	
cM capacity (veh/h)	221	574			818	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>SB 1</b>	<b>NW 1</b>			
Volume Total	238	701	625			
Volume Left	218	0	12			
Volume Right	20	200	0			
cSH	233	1700	818			
Volume to Capacity	1.02	0.41	0.01			
Queue Length 95th (ft)	245	0	1			
Control Delay (s)	110.3	0.0	0.4			
Lane LOS	F		A			
Approach Delay (s)	110.3	0.0	0.4			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			16.9			
Intersection Capacity Utilization			Err%	ICU Level of Service		H
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 13: Farm St & O.d Nahant

06/25/2021



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	37	35	627	428	8
Future Volume (Veh/h)	3	37	35	627	428	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.82	0.64	0.89	0.94	0.92
Hourly flow rate (vph)	4	45	55	704	455	9
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1274	460	464			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1274	460	464			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	98	93	95			
cM capacity (veh/h)	177	606	1047			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	49	759	464			
Volume Left	4	55	0			
Volume Right	45	0	9			
cSH	506	1047	1700			
Volume to Capacity	0.10	0.05	0.27			
Queue Length 95th (ft)	8	4	0			
Control Delay (s)	12.9	1.3	0.0			
Lane LOS	B	A				
Approach Delay (s)	12.9	1.3	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			1.3			
Intersection Capacity Utilization			71.3%	ICU Level of Service	C	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 6: Farm/Farm St & Nahant

06/27/2021



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	86	250	209	625	376	92
Future Volume (Veh/h)	86	250	209	625	376	92
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.72	0.91	0.82	0.88	0.86	0.82
Hourly flow rate (vph)	119	275	255	710	437	112
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	12					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1713	493	549			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1713	493	549			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	52	75			
cM capacity (veh/h)	76	576	1031			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	394	965	549			
Volume Left	119	255	0			
Volume Right	275	0	112			
cSH	242	1031	1700			
Volume to Capacity	1.63	0.25	0.32			
Queue Length 95th (ft)	623	24	0			
Control Delay (s)	336.5	5.6	0.0			
Lane LOS	F	A				
Approach Delay (s)	336.5	5.6	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			72.3			
Intersection Capacity Utilization			84.6%	ICU Level of Service	E	
Analysis Period (min)			15			



# HCM Unsignalized Intersection Capacity Analysis

## 7: Farm St & Hemlock Rd

06/25/2021



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	72	171	663	42	78	548
Future Volume (Veh/h)	72	171	663	42	78	548
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.69	0.73	0.88	0.88	0.86	0.86
Hourly flow rate (vph)	104	234	753	48	91	637
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1596	777			801	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1596	777			801	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	41			89	
cM capacity (veh/h)	104	397			818	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>		
Volume Total	338	801	91	637		
Volume Left	104	0	91	0		
Volume Right	234	48	0	0		
cSH	212	1700	818	1700		
Volume to Capacity	1.59	0.47	0.11	0.37		
Queue Length 95th (ft)	540	0	9	0		
Control Delay (s)	328.2	0.0	10.0	0.0		
Lane LOS	F		A			
Approach Delay (s)	328.2	0.0	1.2			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			59.9			
Intersection Capacity Utilization			66.3%	ICU Level of Service	C	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 12: Farm St & Old Nahant

06/25/2021



Movement	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations	W			W	W	
Traffic Volume (veh/h)	152	5	500	161	9	614
Future Volume (Veh/h)	152	5	500	161	9	614
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.85	0.31	0.90	0.79	0.56	0.95
Hourly flow rate (vph)	179	16	556	204	16	646
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1234	556				760
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1234	556				760
tC, single (s)	6.4	6.2				4.1
tC, 2 stage (s)						
tF (s)	3.5	3.3				2.2
p0 queue free %	7	97				98
cM capacity (veh/h)	192	534				861
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>SB 1</b>	<b>NW 1</b>			
Volume Total	195	760	662			
Volume Left	179	0	16			
Volume Right	16	204	0			
cSH	203	1700	861			
Volume to Capacity	0.96	0.45	0.02			
Queue Length 95th (ft)	202	0	1			
Control Delay (s)	101.9	0.0	0.5			
Lane LOS	F		A			
Approach Delay (s)	101.9	0.0	0.5			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			12.5			
Intersection Capacity Utilization			Err%	ICU Level of Service		H
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 13: Farm St & O.d Nahant

06/25/2021



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	19	38	30	609	477	4
Future Volume (Veh/h)	19	38	30	609	477	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.42	0.77	0.66	0.95	0.93	0.33
Hourly flow rate (vph)	45	49	45	641	513	12
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1250	519	525			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1250	519	525			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	76	91	96			
cM capacity (veh/h)	184	561	1037			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	94	686	525			
Volume Left	45	45	0			
Volume Right	49	0	12			
cSH	283	1037	1700			
Volume to Capacity	0.33	0.04	0.31			
Queue Length 95th (ft)	35	3	0			
Control Delay (s)	23.9	1.1	0.0			
Lane LOS	C	A				
Approach Delay (s)	23.9	1.1	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.3			
Intersection Capacity Utilization			66.5%	ICU Level of Service	C	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
3: Farm St & Water St

06/25/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations	↑	↗	↖	↑	↖	↗	
Traffic Volume (vph)	215	200	264	239	300	423	
Future Volume (vph)	215	200	264	239	300	423	
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 <sub>t</sub>		0.850				0.850	
Fl <sub>t</sub> Protected			0.950		0.950		
Satd. Flow (prot)	1881	1583	1787	1881	1770	1599	
Fl <sub>t</sub> Permitted			0.420		0.950		
Satd. Flow (perm)	1881	1583	790	1881	1770	1599	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		220				475	
Link Speed (mph)	30			31	30		
Link Distance (ft)	1706			3653	1716		
Travel Time (s)	38.8			80.3	39.0		
Peak Hour Factor	0.89	0.91	0.79	0.86	0.84	0.89	
Heavy Vehicles (%)	1%	2%	1%	1%	2%	1%	
Adj. Flow (vph)	242	220	334	278	357	475	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	242	220	334	278	357	475	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	12			12	12		
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)		9	15		15	9	
Number of Detectors	2	1	1	2	1	1	
Detector Template	Thru	Right	Left	Thru	Left	Right	
Leading Detector (ft)	100	20	20	100	20	20	
Trailing Detector (ft)	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	
Detector 1 Size(ft)	6	20	20	6	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	94			94			
Detector 2 Size(ft)	6			6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	pm+ov	pm+pt	NA	Prot	pm+ov	
Protected Phases	6	16	5	2	16	5	9
Permitted Phases		6	2			16	
Detector Phase	6	16	5	2	16	5	
Switch Phase							

Lanes, Volumes, Timings  
3: Farm St & Water St

06/25/2021

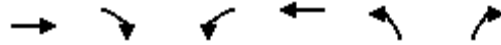


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Minimum Initial (s)	10.0	6.0	6.0	10.0	6.0	6.0	1.0
Minimum Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (%)	35.1%	30.7%	13.2%	48.2%	30.7%	13.2%	21%
Maximum Green (s)	35.0	30.0	11.0	50.0	30.0	11.0	21.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	0.0	1.0	1.0	0.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	
Lead/Lag	Lag		Lead		Lead		
Lead-Lag Optimize?	Yes		Yes		Yes		
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0
Recall Mode	C-Min	None	None	C-Min	None	None	Ped
Walk Time (s)							7.0
Flash Dont Walk (s)							13.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	33.1	60.5	54.7	53.7	27.3	48.9	
Actuated g/C Ratio	0.29	0.53	0.48	0.47	0.24	0.43	
v/c Ratio	0.44	0.23	0.64	0.31	0.84	0.50	
Control Delay	38.6	1.6	27.2	21.3	58.7	3.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	38.6	1.6	27.2	21.3	58.7	3.4	
LOS	D	A	C	C	E	A	
Approach Delay	21.0		24.5		27.1		
Approach LOS	C		C		C		
90th %ile Green (s)	26.1	34.8	16.1	46.2	34.8	16.1	20.0
90th %ile Term Code	Coord	Gap	Max	Coord	Gap	Max	Ped
70th %ile Green (s)	24.0	30.9	22.1	50.1	30.9	22.1	20.0
70th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
50th %ile Green (s)	31.0	27.7	18.3	53.3	27.7	18.3	20.0
50th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
30th %ile Green (s)	37.8	24.2	15.0	56.8	24.2	15.0	20.0
30th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
10th %ile Green (s)	46.8	19.1	11.1	61.9	19.1	11.1	20.0
10th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
Stops (vph)	178	13	170	148	278	25	
Fuel Used(gal)	6	3	10	9	9	6	
CO Emissions (g/hr)	387	195	689	602	638	426	
NOx Emissions (g/hr)	75	38	134	117	124	83	
VOC Emissions (g/hr)	90	45	160	139	148	99	
Dilemma Vehicles (#)	0	0	0	0	0	0	
Queue Length 50th (ft)	149	0	153	124	250	0	
Queue Length 95th (ft)	240	17	216	199	304	50	
Internal Link Dist (ft)	1626		3573		1636		
Turn Bay Length (ft)							
Base Capacity (vph)	625	988	523	898	483	956	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	

# Lanes, Volumes, Timings

## 3: Farm St & Water St

06/25/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Reduced v/c Ratio	0.39	0.22	0.64	0.31	0.74	0.50	

### Intersection Summary

Area Type:	Other
Cycle Length:	114
Actuated Cycle Length:	114
Offset:	22.5 (20%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle:	115
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	24.8
Intersection LOS:	C
Intersection Capacity Utilization	54.2%
ICU Level of Service	A
Analysis Period (min)	15

### Splits and Phases: 3: Farm St & Water St



# HCM Unsignalized Intersection Capacity Analysis

## 10: Hemlock Rd & WHS Parking Lot

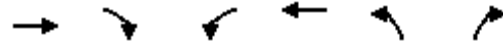
06/29/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	17	109	189	2	2	52
Future Volume (Veh/h)	17	109	189	2	2	52
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.61	0.81	0.76	0.50	0.25	0.52
Hourly flow rate (vph)	28	135	249	4	8	100
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	253			442	251	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	253			442	251	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	98			99	87	
cM capacity (veh/h)	1324			565	793	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	163	253	108			
Volume Left	28	0	8			
Volume Right	0	4	100			
cSH	1324	1700	770			
Volume to Capacity	0.02	0.15	0.14			
Queue Length 95th (ft)	2	0	12			
Control Delay (s)	1.5	0.0	10.4			
Lane LOS	A		B			
Approach Delay (s)	1.5	0.0	10.4			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			2.6			
Intersection Capacity Utilization			30.1%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
3: Farm St & Water St

06/25/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations	↑	↑	↑	↑	↑	↑	
Traffic Volume (vph)	170	315	438	357	235	223	
Future Volume (vph)	170	315	438	357	235	223	
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 <sub>t</sub>		0.850				0.850	
Fl <sub>t</sub> Protected			0.950		0.950		
Satd. Flow (prot)	1743	1538	1770	1827	1752	1583	
Fl <sub>t</sub> Permitted			0.403		0.950		
Satd. Flow (perm)	1743	1538	751	1827	1752	1583	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		563				251	
Link Speed (mph)	30			31	30		
Link Distance (ft)	1706			3653	1716		
Travel Time (s)	38.8			80.3	39.0		
Peak Hour Factor	0.81	0.56	0.97	0.81	0.64	0.89	
Heavy Vehicles (%)	9%	5%	2%	4%	3%	2%	
Adj. Flow (vph)	210	563	452	441	367	251	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	210	563	452	441	367	251	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	12			12	12		
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)		9	15		15	9	
Number of Detectors	2	1	1	2	1	1	
Detector Template	Thru	Right	Left	Thru	Left	Right	
Leading Detector (ft)	100	20	20	100	20	20	
Trailing Detector (ft)	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	
Detector 1 Size(ft)	6	20	20	6	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	94			94			
Detector 2 Size(ft)	6			6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	pm+ov	pm+pt	NA	Prot	pm+ov	
Protected Phases	6	16	5	2	16	5	9
Permitted Phases		6	2			16	
Detector Phase	6	16	5	2	16	5	
Switch Phase							



Lanes, Volumes, Timings  
3: Farm St & Water St

06/25/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Minimum Initial (s)	10.0	6.0	6.0	10.0	6.0	6.0	1.0
Minimum Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (%)	35.1%	30.7%	13.2%	48.2%	30.7%	13.2%	21%
Maximum Green (s)	35.0	30.0	11.0	50.0	30.0	11.0	21.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	0.0	1.0	1.0	0.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	
Lead/Lag	Lag		Lead		Lead		
Lead-Lag Optimize?	Yes		Yes		Yes		
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0
Recall Mode	C-Min	None	None	C-Min	None	None	Ped
Walk Time (s)							7.0
Flash Dont Walk (s)							13.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	25.9	54.4	53.4	52.4	28.6	56.1	
Actuated g/C Ratio	0.23	0.48	0.47	0.46	0.25	0.49	
v/c Ratio	0.53	0.55	0.82	0.53	0.84	0.28	
Control Delay	45.7	2.7	38.3	26.2	56.9	2.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	45.7	2.7	38.3	26.2	56.9	2.7	
LOS	D	A	D	C	E	A	
Approach Delay	14.4			32.3	34.9		
Approach LOS	B			C	C		
90th %ile Green (s)	26.9	36.2	13.9	44.8	36.2	13.9	20.0
90th %ile Term Code	Coord	Gap	Max	Coord	Gap	Max	Ped
70th %ile Green (s)	21.1	32.7	23.2	48.3	32.7	23.2	20.0
70th %ile Term Code	Coord	Gap	Max	Coord	Gap	Max	Ped
50th %ile Green (s)	18.5	28.7	29.8	52.3	28.7	29.8	20.0
50th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
30th %ile Green (s)	25.9	25.2	25.9	55.8	25.2	25.9	20.0
30th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
10th %ile Green (s)	37.0	20.0	20.0	61.0	20.0	20.0	20.0
10th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
Stops (vph)	151	15	276	254	216	15	
Fuel Used(gal)	5	4	17	13	7	3	
CO Emissions (g/hr)	327	311	1210	937	493	223	
NOx Emissions (g/hr)	64	60	236	182	96	43	
VOC Emissions (g/hr)	76	72	281	217	114	52	
Dilemma Vehicles (#)	0	0	0	0	0	0	
Queue Length 50th (ft)	148	0	231	225	256	0	
Queue Length 95th (ft)	187	0	#567	314	216	40	
Internal Link Dist (ft)	1626			3573	1636		
Turn Bay Length (ft)							
Base Capacity (vph)	541	1056	553	862	488	906	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	

Lanes, Volumes, Timings  
 3: Farm St & Water St

06/25/2021

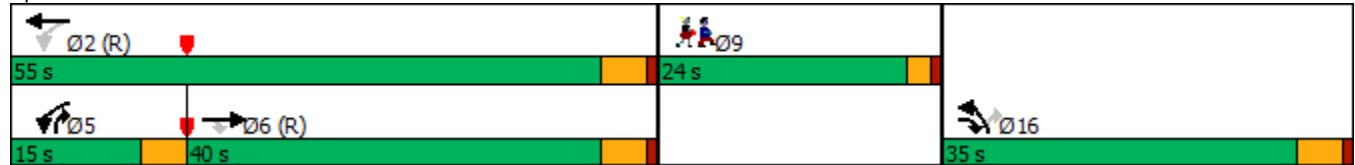


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Reduced v/c Ratio	0.39	0.53	0.82	0.51	0.75	0.28	

Intersection Summary

Area Type: Other  
 Cycle Length: 114  
 Actuated Cycle Length: 114  
 Offset: 22.5 (20%), Referenced to phase 2:WBTL and 6:EBT, Start of Green  
 Natural Cycle: 115  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.84  
 Intersection Signal Delay: 27.0 Intersection LOS: C  
 Intersection Capacity Utilization 57.9% ICU Level of Service B  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Farm St & Water St



# HCM Unsignalized Intersection Capacity Analysis

## 10: Hemlock Rd & WHS Parking Lot

06/29/2021













Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↕	
Traffic Volume (veh/h)	82	558	195	2	3	16
Future Volume (Veh/h)	82	558	195	2	3	16
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.45	0.77	0.46	0.50	0.38	0.50
Hourly flow rate (vph)	182	725	424	4	8	32
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	428				1515	426
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	428				1515	426
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	84				93	95
cM capacity (veh/h)	1137				112	633
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	907	428	40			
Volume Left	182	0	8			
Volume Right	0	4	32			
cSH	1137	1700	327			
Volume to Capacity	0.16	0.25	0.12			
Queue Length 95th (ft)	14	0	10			
Control Delay (s)	3.7	0.0	17.5			
Lane LOS	A		C			
Approach Delay (s)	3.7	0.0	17.5			
Approach LOS			C			
<b>Intersection Summary</b>						
Average Delay			3.0			
Intersection Capacity Utilization			57.6%	ICU Level of Service		B
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 6: Nahant & Farm St

06/27/2021

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	98	282	171	338	577	98
Future Volume (Veh/h)	98	282	171	338	577	98
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.67	0.75	0.87	0.82	0.86	0.76
Hourly flow rate (vph)	146	376	197	412	671	129
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	12					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1542	736	800			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1542	736	800			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	0	11	76			
cM capacity (veh/h)	96	421	806			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	522	609	800			
Volume Left	146	197	0			
Volume Right	376	0	129			
cSH	319	806	1700			
Volume to Capacity	1.64	0.24	0.47			
Queue Length 95th (ft)	790	24	0			
Control Delay (s)	330.0	5.9	0.0			
Lane LOS	F	A				
Approach Delay (s)	330.0	5.9	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			91.1			
Intersection Capacity Utilization			79.0%	ICU Level of Service	D	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 7: Farm St & Hemlock Rd

06/25/2021



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	79	106	403	277	403	441
Future Volume (Veh/h)	79	106	403	277	403	441
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.37	0.50	0.82	0.73	0.82	0.86
Hourly flow rate (vph)	214	212	491	379	491	513
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2176	680			870	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2176	680			870	
tC, single (s)	6.6	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.3			2.2	
p0 queue free %	0	53			37	
cM capacity (veh/h)	17	454			779	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>		
Volume Total	426	870	491	513		
Volume Left	214	0	491	0		
Volume Right	212	379	0	0		
cSH	33	1700	779	1700		
Volume to Capacity	13.02	0.51	0.63	0.30		
Queue Length 95th (ft)	Err	0	114	0		
Control Delay (s)	Err	0.0	17.2	0.0		
Lane LOS	F		C			
Approach Delay (s)	Err	0.0	8.4			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			1855.7			
Intersection Capacity Utilization			81.3%	ICU Level of Service	D	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 12: Farm St & Old Nahant

06/25/2021



Movement	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	243	5	372	193	4	562
Future Volume (Veh/h)	243	5	372	193	4	562
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.31	0.92	0.77	0.33	0.89
Hourly flow rate (vph)	270	16	404	251	12	631
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1184	530				655
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1184	530				655
tC, single (s)	6.4	6.2				4.1
tC, 2 stage (s)						
tF (s)	3.5	3.3				2.2
p0 queue free %	0	97				99
cM capacity (veh/h)	208	553				942
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>SB 1</b>	<b>NW 1</b>			
Volume Total	286	655	643			
Volume Left	270	0	12			
Volume Right	16	251	0			
cSH	216	1700	942			
Volume to Capacity	1.33	0.39	0.01			
Queue Length 95th (ft)	391	0	1			
Control Delay (s)	218.8	0.0	0.3			
Lane LOS	F		A			
Approach Delay (s)	218.8	0.0	0.3			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			39.6			
Intersection Capacity Utilization			91.2%	ICU Level of Service		F
Analysis Period (min)	15					

# HCM Unsignalized Intersection Capacity Analysis

## 13: Farm St & Old Nahant

06/25/2021



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	39	30	516	353	3
Future Volume (Veh/h)	20	39	30	516	353	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.45	0.84	0.64	0.86	0.85	0.75
Hourly flow rate (vph)	44	46	47	600	415	4
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1111	417	419			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1111	417	419			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	80	93	96			
cM capacity (veh/h)	223	640	1093			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	90	647	419			
Volume Left	44	47	0			
Volume Right	46	0	4			
cSH	335	1093	1700			
Volume to Capacity	0.27	0.04	0.25			
Queue Length 95th (ft)	27	3	0			
Control Delay (s)	19.7	1.1	0.0			
Lane LOS	C	A				
Approach Delay (s)	19.7	1.1	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.2			
Intersection Capacity Utilization			61.1%	ICU Level of Service	B	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
3: Farm St & Water St

06/25/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations	↑	↗	↖	↑	↘	↗	
Traffic Volume (vph)	216	204	290	238	287	530	
Future Volume (vph)	216	204	290	238	287	530	
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		0.850				0.850	
Flt Protected			0.950		0.950		
Satd. Flow (prot)	1845	1599	1770	1810	1736	1568	
Flt Permitted			0.370		0.950		
Satd. Flow (perm)	1845	1599	689	1810	1736	1568	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		243				582	
Link Speed (mph)	30			30	30		
Link Distance (ft)	1706			3653	1716		
Travel Time (s)	38.8			83.0	39.0		
Peak Hour Factor	0.82	0.84	0.82	0.71	0.76	0.91	
Heavy Vehicles (%)	3%	1%	2%	5%	4%	3%	
Adj. Flow (vph)	263	243	354	335	378	582	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	263	243	354	335	378	582	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	12			12	12		
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)		9	15		15	9	
Number of Detectors	2	1	1	2	1	1	
Detector Template	Thru	Right	Left	Thru	Left	Right	
Leading Detector (ft)	100	20	20	100	20	20	
Trailing Detector (ft)	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	
Detector 1 Size(ft)	6	20	20	6	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	94			94			
Detector 2 Size(ft)	6			6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	pm+ov	pm+pt	NA	Prot	pm+ov	
Protected Phases	6	16	5	2	16	5	9
Permitted Phases		6	2			16	
Detector Phase	6	16	5	2	16	5	
Switch Phase							



Lanes, Volumes, Timings  
3: Farm St & Water St

06/25/2021

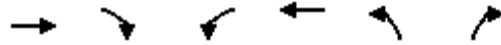


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Minimum Initial (s)	10.0	6.0	6.0	10.0	6.0	6.0	1.0
Minimum Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (%)	35.1%	30.7%	13.2%	48.2%	30.7%	13.2%	21%
Maximum Green (s)	35.0	30.0	11.0	50.0	30.0	11.0	21.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	0.0	1.0	1.0	0.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	
Lead/Lag	Lag		Lead		Lead		
Lead-Lag Optimize?	Yes		Yes		Yes		
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0
Recall Mode	C-Min	None	None	C-Min	None	None	Ped
Walk Time (s)							7.0
Flash Dont Walk (s)							13.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	30.8	60.3	52.5	51.5	29.5	51.2	
Actuated g/C Ratio	0.27	0.53	0.46	0.45	0.26	0.45	
v/c Ratio	0.53	0.25	0.75	0.41	0.84	0.57	
Control Delay	41.8	1.5	34.6	24.3	56.7	3.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	41.8	1.5	34.6	24.3	56.7	3.8	
LOS	D	A	C	C	E	A	
Approach Delay	22.4		29.6		24.6		
Approach LOS	C		C		C		
90th %ile Green (s)	28.0	36.8	12.2	44.2	36.8	12.2	20.0
90th %ile Term Code	Coord	Gap	Max	Coord	Gap	Max	Ped
70th %ile Green (s)	23.8	33.2	20.0	47.8	33.2	20.0	20.0
70th %ile Term Code	Coord	Gap	Max	Coord	Gap	Max	Ped
50th %ile Green (s)	26.1	29.9	21.0	51.1	29.9	21.0	20.0
50th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
30th %ile Green (s)	33.3	26.4	17.3	54.6	26.4	17.3	20.0
30th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
10th %ile Green (s)	43.0	21.1	12.9	59.9	21.1	12.9	20.0
10th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
Stops (vph)	185	11	180	161	265	34	
Fuel Used(gal)	6	3	11	9	9	8	
CO Emissions (g/hr)	401	198	790	618	602	537	
NOx Emissions (g/hr)	78	39	154	120	117	105	
VOC Emissions (g/hr)	93	46	183	143	140	125	
Dilemma Vehicles (#)	0	0	0	0	0	0	
Queue Length 50th (ft)	175	0	172	163	262	0	
Queue Length 95th (ft)	231	13	#292	198	278	59	
Internal Link Dist (ft)	1626		3573		1636		
Turn Bay Length (ft)							
Base Capacity (vph)	592	990	475	843	487	1024	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	

# Lanes, Volumes, Timings

## 3: Farm St & Water St

06/25/2021

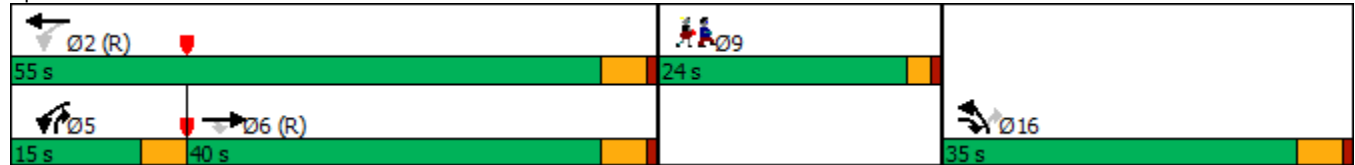


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Reduced v/c Ratio	0.44	0.25	0.75	0.40	0.78	0.57	

### Intersection Summary

Area Type:	Other
Cycle Length:	114
Actuated Cycle Length:	114
Offset:	22.5 (20%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle:	115
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	25.7
Intersection LOS:	C
Intersection Capacity Utilization	55.0%
ICU Level of Service	B
Analysis Period (min)	15
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

### Splits and Phases: 3: Farm St & Water St



# HCM Unsignalized Intersection Capacity Analysis

## 10: Hemlock Rd & WHS Parking Lot

06/29/2021













Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	40	97	231	21	1	83
Future Volume (Veh/h)	40	97	231	21	1	83
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.77	0.84	0.68	0.33	0.25	0.55
Hourly flow rate (vph)	52	115	340	64	4	151
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	404			591	372	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	404			591	372	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	96			99	78	
cM capacity (veh/h)	1166			452	678	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	167	404	155			
Volume Left	52	0	4			
Volume Right	0	64	151			
cSH	1166	1700	670			
Volume to Capacity	0.04	0.24	0.23			
Queue Length 95th (ft)	3	0	22			
Control Delay (s)	2.8	0.0	12.0			
Lane LOS	A		B			
Approach Delay (s)	2.8	0.0	12.0			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			3.2			
Intersection Capacity Utilization			35.9%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 6: Nahant & Farm St

06/27/2021

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	59	209	327	581	471	124
Future Volume (Veh/h)	59	209	327	581	471	124
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.74	0.85	0.68	0.81	0.82	0.54
Hourly flow rate (vph)	80	246	481	717	574	230
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	12					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2368	689	804			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2368	689	804			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.2			
p0 queue free %	0	45	42			
cM capacity (veh/h)	15	446	825			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	326	1198	804			
Volume Left	80	481	0			
Volume Right	246	0	230			
cSH	58	825	1700			
Volume to Capacity	5.67	0.58	0.47			
Queue Length 95th (ft)	Err	96	0			
Control Delay (s)	Err	15.3	0.0			
Lane LOS	F	C				
Approach Delay (s)	Err	15.3	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			1408.1			
Intersection Capacity Utilization			94.3%	ICU Level of Service	F	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 7: Farm St & Hemlock Rd

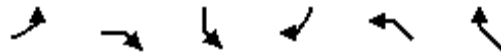
06/25/2021



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	122	204	704	56	86	594
Future Volume (Veh/h)	122	204	704	56	86	594
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.68	0.77	0.81	0.74	0.79	0.82
Hourly flow rate (vph)	179	265	869	76	109	724
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1849	907			945	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1849	907			945	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	21			85	
cM capacity (veh/h)	69	334			726	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>		
Volume Total	444	945	109	724		
Volume Left	179	0	109	0		
Volume Right	265	76	0	0		
cSH	131	1700	726	1700		
Volume to Capacity	3.38	0.56	0.15	0.43		
Queue Length 95th (ft)	Err	0	13	0		
Control Delay (s)	Err	0.0	10.8	0.0		
Lane LOS	F		B			
Approach Delay (s)	Err	0.0	1.4			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			1998.5			
Intersection Capacity Utilization			74.5%	ICU Level of Service	D	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 12: Farm St & Old Nahant

06/25/2021



Movement	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	195	9	472	195	5	622
Future Volume (Veh/h)	195	9	472	195	5	622
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.80	0.45	0.91	0.94	0.42	0.98
Hourly flow rate (vph)	244	20	519	207	12	635
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1282	622			726	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1282	622			726	
tC, single (s)	6.4	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.4	
p0 queue free %	0	96			99	
cM capacity (veh/h)	181	490			800	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>SB 1</b>	<b>NW 1</b>			
Volume Total	264	726	647			
Volume Left	244	0	12			
Volume Right	20	207	0			
cSH	190	1700	800			
Volume to Capacity	1.39	0.43	0.01			
Queue Length 95th (ft)	390	0	1			
Control Delay (s)	252.0	0.0	0.4			
Lane LOS	F		A			
Approach Delay (s)	252.0	0.0	0.4			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			40.8			
Intersection Capacity Utilization			98.2%	ICU Level of Service	F	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 13: Farm St & Old Nahant

06/25/2021



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	38	36	649	443	8
Future Volume (Veh/h)	3	38	36	649	443	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.82	0.64	0.89	0.94	0.92
Hourly flow rate (vph)	4	46	56	729	471	9
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1316	476	480			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1316	476	480			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	98	92	95			
cM capacity (veh/h)	166	593	1032			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	50	785	480			
Volume Left	4	56	0			
Volume Right	46	0	9			
cSH	492	1032	1700			
Volume to Capacity	0.10	0.05	0.28			
Queue Length 95th (ft)	8	4	0			
Control Delay (s)	13.1	1.4	0.0			
Lane LOS	B	A				
Approach Delay (s)	13.1	1.4	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			1.3			
Intersection Capacity Utilization			73.3%	ICU Level of Service	D	
Analysis Period (min)			15			

### Lanes, Volumes, Timings 3: Farm St & Water St

06/25/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations	↑	↑	↑	↑	↑	↑	
Traffic Volume (vph)	223	207	273	247	311	447	
Future Volume (vph)	223	207	273	247	311	447	
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 <sub>t</sub>		0.850				0.850	
Fl <sub>t</sub> Protected			0.950		0.950		
Satd. Flow (prot)	1881	1583	1787	1881	1770	1599	
Fl <sub>t</sub> Permitted			0.394		0.950		
Satd. Flow (perm)	1881	1583	741	1881	1770	1599	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		227				502	
Link Speed (mph)	30			31	30		
Link Distance (ft)	1706			3653	1716		
Travel Time (s)	38.8			80.3	39.0		
Peak Hour Factor	0.89	0.91	0.79	0.86	0.84	0.89	
Heavy Vehicles (%)	1%	2%	1%	1%	2%	1%	
Adj. Flow (vph)	251	227	346	287	370	502	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	251	227	346	287	370	502	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	12			12	12		
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)		9	15		15	9	
Number of Detectors	2	1	1	2	1	1	
Detector Template	Thru	Right	Left	Thru	Left	Right	
Leading Detector (ft)	100	20	20	100	20	20	
Trailing Detector (ft)	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	
Detector 1 Size(ft)	6	20	20	6	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	94			94			
Detector 2 Size(ft)	6			6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	pm+ov	pm+pt	NA	Prot	pm+ov	
Protected Phases	6	16	5	2	16	5	9
Permitted Phases		6	2			16	
Detector Phase	6	16	5	2	16	5	
Switch Phase							



Lanes, Volumes, Timings  
3: Farm St & Water St

06/25/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Minimum Initial (s)	10.0	6.0	6.0	10.0	6.0	6.0	1.0
Minimum Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (%)	35.1%	30.7%	13.2%	48.2%	30.7%	13.2%	21%
Maximum Green (s)	35.0	30.0	11.0	50.0	30.0	11.0	21.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	0.0	1.0	1.0	0.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	
Lead/Lag	Lag		Lead		Lead		
Lead-Lag Optimize?	Yes		Yes		Yes		
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0
Recall Mode	C-Min	None	None	C-Min	None	None	Ped
Walk Time (s)							7.0
Flash Dont Walk (s)							13.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	31.6	59.9	53.7	52.7	28.3	50.4	
Actuated g/C Ratio	0.28	0.53	0.47	0.46	0.25	0.44	
v/c Ratio	0.48	0.24	0.68	0.33	0.84	0.51	
Control Delay	40.5	1.5	30.0	22.1	57.8	3.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	40.5	1.5	30.0	22.1	57.8	3.4	
LOS	D	A	C	C	E	A	
Approach Delay	22.0		26.4		26.4		
Approach LOS	C		C		C		
90th %ile Green (s)	26.7	35.6	14.7	45.4	35.6	14.7	20.0
90th %ile Term Code	Coord	Gap	Max	Coord	Gap	Max	Ped
70th %ile Green (s)	21.7	32.0	23.3	49.0	32.0	23.3	20.0
70th %ile Term Code	Coord	Gap	Max	Coord	Gap	Max	Ped
50th %ile Green (s)	28.7	28.7	19.6	52.3	28.7	19.6	20.0
50th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
30th %ile Green (s)	35.7	25.2	16.1	55.8	25.2	16.1	20.0
30th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
10th %ile Green (s)	45.0	20.0	12.0	61.0	20.0	12.0	20.0
10th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
Stops (vph)	188	13	173	157	288	27	
Fuel Used(gal)	6	3	10	9	9	6	
CO Emissions (g/hr)	408	202	723	626	658	450	
NOx Emissions (g/hr)	79	39	141	122	128	88	
VOC Emissions (g/hr)	95	47	167	145	152	104	
Dilemma Vehicles (#)	0	0	0	0	0	0	
Queue Length 50th (ft)	160	0	163	131	258	0	
Queue Length 95th (ft)	245	17	227	208	313	51	
Internal Link Dist (ft)	1626		3573		1636		
Turn Bay Length (ft)							
Base Capacity (vph)	612	977	506	888	489	987	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	

# Lanes, Volumes, Timings

## 3: Farm St & Water St

06/25/2021

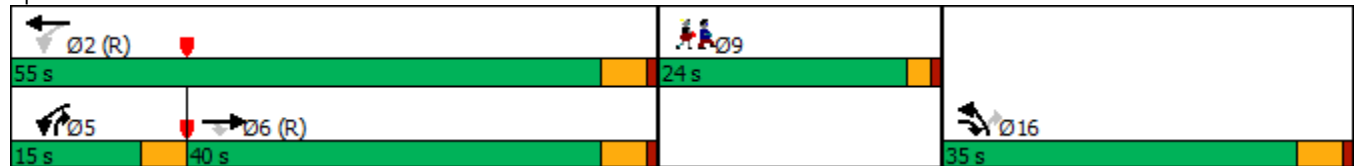


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Reduced v/c Ratio	0.41	0.23	0.68	0.32	0.76	0.51	

### Intersection Summary

Area Type:	Other
Cycle Length:	114
Actuated Cycle Length:	114
Offset:	22.5 (20%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle:	115
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	25.4
Intersection LOS:	C
Intersection Capacity Utilization	55.8%
ICU Level of Service	B
Analysis Period (min)	15

### Splits and Phases: 3: Farm St & Water St



# HCM Unsignalized Intersection Capacity Analysis

## 10: Hemlock Rd & WHS Parking Lot

06/29/2021













Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	17	109	189	2	2	52
Future Volume (Veh/h)	17	109	189	2	2	52
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.61	0.81	0.76	0.50	0.25	0.52
Hourly flow rate (vph)	28	135	249	4	8	100
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	253			442	251	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	253			442	251	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	98			99	87	
cM capacity (veh/h)	1324			565	793	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	163	253	108			
Volume Left	28	0	8			
Volume Right	0	4	100			
cSH	1324	1700	770			
Volume to Capacity	0.02	0.15	0.14			
Queue Length 95th (ft)	2	0	12			
Control Delay (s)	1.5	0.0	10.4			
Lane LOS	A		B			
Approach Delay (s)	1.5	0.0	10.4			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			2.6			
Intersection Capacity Utilization			30.1%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 6: Nahant & Farm St

06/27/2021

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	89	257	215	643	388	95
Future Volume (Veh/h)	89	257	215	643	388	95
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.72	0.91	0.82	0.88	0.86	0.82
Hourly flow rate (vph)	124	282	262	731	451	116
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	12					
Median type	None None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1764	509	567			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1764	509	567			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	50	74			
cM capacity (veh/h)	69	564	1015			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	406	993	567			
Volume Left	124	262	0			
Volume Right	282	0	116			
cSH	211	1015	1700			
Volume to Capacity	1.93	0.26	0.33			
Queue Length 95th (ft)	740	26	0			
Control Delay (s)	472.8	5.8	0.0			
Lane LOS	F	A				
Approach Delay (s)	472.8	5.8	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			100.6			
Intersection Capacity Utilization			86.9%	ICU Level of Service	E	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 7: Farm St & Hemlock Rd

06/25/2021

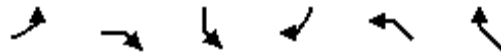


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	72	171	687	42	78	567
Future Volume (Veh/h)	72	171	687	42	78	567
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.69	0.73	0.88	0.88	0.86	0.86
Hourly flow rate (vph)	104	234	781	48	91	659
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1646	805			829	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1646	805			829	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	39			89	
cM capacity (veh/h)	96	382			798	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>		
Volume Total	338	829	91	659		
Volume Left	104	0	91	0		
Volume Right	234	48	0	0		
cSH	200	1700	798	1700		
Volume to Capacity	1.69	0.49	0.11	0.39		
Queue Length 95th (ft)	571	0	10	0		
Control Delay (s)	373.5	0.0	10.1	0.0		
Lane LOS	F		B			
Approach Delay (s)	373.5	0.0	1.2			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			66.3			
Intersection Capacity Utilization			67.5%	ICU Level of Service	C	
Analysis Period (min)	15					

# HCM Unsignalized Intersection Capacity Analysis

## 12: Farm St & Old Nahant

06/25/2021



Movement	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	157	5	518	167	9	636
Future Volume (Veh/h)	157	5	518	167	9	636
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.85	0.31	0.90	0.79	0.56	0.95
Hourly flow rate (vph)	185	16	576	211	16	669
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1382	682				787
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1382	682				787
tC, single (s)	6.4	6.2				4.1
tC, 2 stage (s)						
tF (s)	3.5	3.3				2.2
p0 queue free %	0	96				98
cM capacity (veh/h)	156	454				841
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>SB 1</b>	<b>NW 1</b>			
Volume Total	201	787	685			
Volume Left	185	0	16			
Volume Right	16	211	0			
cSH	165	1700	841			
Volume to Capacity	1.22	0.46	0.02			
Queue Length 95th (ft)	281	0	1			
Control Delay (s)	196.1	0.0	0.5			
Lane LOS	F		A			
Approach Delay (s)	196.1	0.0	0.5			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			23.8			
Intersection Capacity Utilization			97.8%	ICU Level of Service		F
Analysis Period (min)	15					

# HCM Unsignalized Intersection Capacity Analysis

## 13: Farm St & Old Nahant

06/25/2021



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	39	31	631	494	4
Future Volume (Veh/h)	10	39	31	631	494	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.42	0.77	0.66	0.95	0.93	0.33
Hourly flow rate (vph)	24	51	47	664	531	12
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1295	537	543			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1295	537	543			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	86	91	95			
cM capacity (veh/h)	173	548	1021			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	75	711	543			
Volume Left	24	47	0			
Volume Right	51	0	12			
cSH	323	1021	1700			
Volume to Capacity	0.23	0.05	0.32			
Queue Length 95th (ft)	22	4	0			
Control Delay (s)	19.5	1.2	0.0			
Lane LOS	C	A				
Approach Delay (s)	19.5	1.2	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			1.7			
Intersection Capacity Utilization			68.4%	ICU Level of Service	C	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
3: Farm St & Water St

06/25/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations	↑	↗	↖	↑	↘	↗	
Traffic Volume (vph)	170	345	468	357	249	237	
Future Volume (vph)	170	345	468	357	249	237	
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 <sub>t</sub>		0.850				0.850	
Fl <sub>t</sub> Protected			0.950		0.950		
Satd. Flow (prot)	1743	1538	1770	1827	1752	1583	
Fl <sub>t</sub> Permitted			0.360		0.950		
Satd. Flow (perm)	1743	1538	671	1827	1752	1583	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		616				266	
Link Speed (mph)	30			31	30		
Link Distance (ft)	1706			3653	1716		
Travel Time (s)	38.8			80.3	39.0		
Peak Hour Factor	0.81	0.56	0.97	0.81	0.64	0.89	
Heavy Vehicles (%)	9%	5%	2%	4%	3%	2%	
Adj. Flow (vph)	210	616	482	441	389	266	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	210	616	482	441	389	266	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	12			12	12		
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)		9	15		15	9	
Number of Detectors	2	1	1	2	1	1	
Detector Template	Thru	Right	Left	Thru	Left	Right	
Leading Detector (ft)	100	20	20	100	20	20	
Trailing Detector (ft)	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	
Detector 1 Size(ft)	6	20	20	6	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	94			94			
Detector 2 Size(ft)	6			6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	pm+ov	pm+pt	NA	Prot	pm+ov	
Protected Phases	6	16	5	2	16	5	9
Permitted Phases		6	2			16	
Detector Phase	6	16	5	2	16	5	
Switch Phase							



Lanes, Volumes, Timings  
3: Farm St & Water St

06/25/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Minimum Initial (s)	10.0	6.0	6.0	10.0	6.0	6.0	1.0
Minimum Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (%)	35.1%	30.7%	13.2%	48.2%	30.7%	13.2%	21%
Maximum Green (s)	35.0	30.0	11.0	50.0	30.0	11.0	21.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	0.0	1.0	1.0	0.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	
Lead/Lag	Lag		Lead		Lead		
Lead-Lag Optimize?	Yes		Yes		Yes		
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0
Recall Mode	C-Min	None	None	C-Min	None	None	Ped
Walk Time (s)							7.0
Flash Dont Walk (s)							13.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	22.2	52.5	51.7	50.7	30.3	59.8	
Actuated g/C Ratio	0.19	0.46	0.45	0.44	0.27	0.52	
v/c Ratio	0.62	0.59	0.89	0.54	0.84	0.28	
Control Delay	50.7	3.1	48.4	27.7	55.0	2.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	50.7	3.1	48.4	27.7	55.0	2.7	
LOS	D	A	D	C	E	A	
Approach Delay	15.2		38.5		33.8		
Approach LOS	B		D		C		
90th %ile Green (s)	28.1	37.4	11.5	43.6	37.4	11.5	20.0
90th %ile Term Code	Coord	Gap	Max	Coord	Gap	Max	Ped
70th %ile Green (s)	21.1	34.3	21.6	46.7	34.3	21.6	20.0
70th %ile Term Code	Coord	Gap	Max	Coord	Gap	Max	Ped
50th %ile Green (s)	18.0	31.2	27.8	49.8	31.2	27.8	20.0
50th %ile Term Code	Coord	Gap	Max	Coord	Gap	Max	Ped
30th %ile Green (s)	17.8	27.0	32.2	54.0	27.0	32.2	20.0
30th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
10th %ile Green (s)	26.0	21.7	29.3	59.3	21.7	29.3	20.0
10th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
Stops (vph)	154	16	285	262	229	17	
Fuel Used(gal)	5	5	19	14	7	3	
CO Emissions (g/hr)	340	342	1356	948	516	237	
NOx Emissions (g/hr)	66	67	264	184	100	46	
VOC Emissions (g/hr)	79	79	314	220	120	55	
Dilemma Vehicles (#)	0	0	0	0	0	0	
Queue Length 50th (ft)	149	0	263	235	267	0	
Queue Length 95th (ft)	184	0	#658	320	226	42	
Internal Link Dist (ft)	1626		3573		1636		
Turn Bay Length (ft)							
Base Capacity (vph)	535	1058	540	844	500	956	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	

Lanes, Volumes, Timings  
 3: Farm St & Water St

06/25/2021

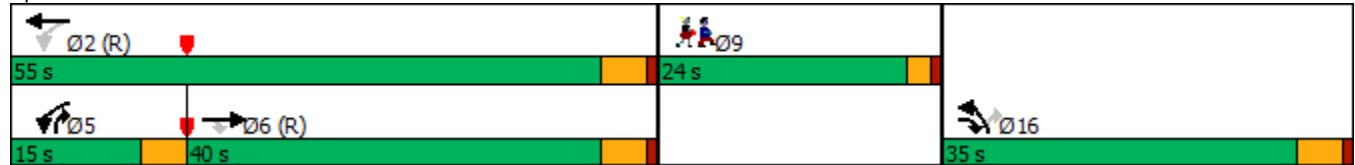


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Reduced v/c Ratio	0.39	0.58	0.89	0.52	0.78	0.28	

Intersection Summary

Area Type: Other  
 Cycle Length: 114  
 Actuated Cycle Length: 114  
 Offset: 22.5 (20%), Referenced to phase 2:WBTL and 6:EBT, Start of Green  
 Natural Cycle: 115  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.89  
 Intersection Signal Delay: 29.2 Intersection LOS: C  
 Intersection Capacity Utilization 60.3% ICU Level of Service B  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Farm St & Water St



# HCM Unsignalized Intersection Capacity Analysis

## 10: Hemlock Rd & WHS Parking Lot

06/29/2021















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	82	378	111	2	3	16
Future Volume (Veh/h)	82	378	111	2	3	16
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.45	0.77	0.46	0.50	0.38	0.50
Hourly flow rate (vph)	182	491	241	4	8	32
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	245				1098	243
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	245				1098	243
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	86				96	96
cM capacity (veh/h)	1327				205	801
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	673	245	40			
Volume Left	182	0	8			
Volume Right	0	4	32			
cSH	1327	1700	506			
Volume to Capacity	0.14	0.14	0.08			
Queue Length 95th (ft)	12	0	6			
Control Delay (s)	3.3	0.0	12.7			
Lane LOS	A		B			
Approach Delay (s)	3.3	0.0	12.7			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			2.9			
Intersection Capacity Utilization			41.1%	ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 16: Farm St











06/28/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	85	71	418	179	150	272
Future Volume (Veh/h)	85	71	418	179	150	272
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	92	77	454	195	163	296
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1076	454			649	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1076	454			649	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	54	87			83	
cM capacity (veh/h)	201	606			937	
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	92	77	454	195	163	296
Volume Left	92	0	0	0	163	0
Volume Right	0	77	0	195	0	0
cSH	201	606	1700	1700	937	1700
Volume to Capacity	0.46	0.13	0.27	0.11	0.17	0.17
Queue Length 95th (ft)	55	11	0	0	16	0
Control Delay (s)	37.3	11.8	0.0	0.0	9.6	0.0
Lane LOS	E	B			A	
Approach Delay (s)	25.7		0.0		3.4	
Approach LOS	D					
Intersection Summary						
Average Delay			4.6			
Intersection Capacity Utilization			45.0%		ICU Level of Service	A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 6: Nahant & Farm St

06/27/2021

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	98	305	182	366	637	98
Future Volume (Veh/h)	98	305	182	366	637	98
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.67	0.75	0.87	0.82	0.86	0.76
Hourly flow rate (vph)	146	407	209	446	741	129
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	12					
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1670	806	870			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1670	806	870			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	0	0	72			
cM capacity (veh/h)	77	384	758			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	553	655	870			
Volume Left	146	209	0			
Volume Right	407	0	129			
cSH	242	758	1700			
Volume to Capacity	2.29	0.28	0.51			
Queue Length 95th (ft)	1092	28	0			
Control Delay (s)	625.2	6.6	0.0			
Lane LOS	F	A				
Approach Delay (s)	625.2	6.6	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			168.5			
Intersection Capacity Utilization			84.2%	ICU Level of Service	E	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 7: Farm St & Hemlock Rd

06/25/2021



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	89	459	135	366	576
Future Volume (Veh/h)	12	89	459	135	366	576
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.37	0.50	0.82	0.73	0.82	0.86
Hourly flow rate (vph)	32	178	560	185	446	670
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2214	652			745	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2214	652			745	
tC, single (s)	6.6	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.3			2.2	
p0 queue free %	0	62			49	
cM capacity (veh/h)	21	471			867	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>		
Volume Total	210	745	446	670		
Volume Left	32	0	446	0		
Volume Right	178	185	0	0		
cSH	111	1700	867	1700		
Volume to Capacity	1.89	0.44	0.51	0.39		
Queue Length 95th (ft)	425	0	75	0		
Control Delay (s)	498.5	0.0	13.5	0.0		
Lane LOS	F		B			
Approach Delay (s)	498.5	0.0	5.4			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			53.4			
Intersection Capacity Utilization			68.8%	ICU Level of Service	C	
Analysis Period (min)	15					

# HCM Unsignalized Intersection Capacity Analysis

## 12: Farm St & Old Nahant

06/25/2021



Movement	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	228	5	432	186	4	551
Future Volume (Veh/h)	228	5	432	186	4	551
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.31	0.92	0.77	0.33	0.89
Hourly flow rate (vph)	253	16	470	242	12	619
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1113	470			712	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1113	470			712	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	97			99	
cM capacity (veh/h)	230	598			897	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>SB 1</b>	<b>NW 1</b>			
Volume Total	269	712	631			
Volume Left	253	0	12			
Volume Right	16	242	0			
cSH	238	1700	897			
Volume to Capacity	1.13	0.42	0.01			
Queue Length 95th (ft)	303	0	1			
Control Delay (s)	141.2	0.0	0.4			
Lane LOS	F		A			
Approach Delay (s)	141.2	0.0	0.4			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			23.7			
Intersection Capacity Utilization			Err%	ICU Level of Service		H
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 13: Farm St & Old Nahant

06/25/2021



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	69	44	445	413	3
Future Volume (Veh/h)	20	69	44	445	413	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.45	0.84	0.64	0.86	0.85	0.75
Hourly flow rate (vph)	44	82	69	517	486	4
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)	533					
pX, platoon unblocked	0.83					
vC, conflicting volume	1143	488	490			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1072	488	490			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	77	86	93			
cM capacity (veh/h)	192	584	1028			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	126	586	490			
Volume Left	44	69	0			
Volume Right	82	0	4			
cSH	341	1028	1700			
Volume to Capacity	0.37	0.07	0.29			
Queue Length 95th (ft)	41	5	0			
Control Delay (s)	21.6	1.8	0.0			
Lane LOS	C	A				
Approach Delay (s)	21.6	1.8	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			3.1			
Intersection Capacity Utilization			63.1%	ICU Level of Service	B	
Analysis Period (min)			15			



### Lanes, Volumes, Timings 3: Farm St & Water St

06/25/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations	↑	↑	↑	↑	↑	↑	
Traffic Volume (vph)	216	213	299	238	305	548	
Future Volume (vph)	216	213	299	238	305	548	
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 <sub>t</sub>		0.850				0.850	
Fl <sub>t</sub> Protected			0.950		0.950		
Satd. Flow (prot)	1845	1599	1770	1810	1736	1568	
Fl <sub>t</sub> Permitted			0.349		0.950		
Satd. Flow (perm)	1845	1599	650	1810	1736	1568	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		254				602	
Link Speed (mph)	30			30	30		
Link Distance (ft)	1706			3653	1716		
Travel Time (s)	38.8			83.0	39.0		
Peak Hour Factor	0.82	0.84	0.82	0.71	0.76	0.91	
Heavy Vehicles (%)	3%	1%	2%	5%	4%	3%	
Adj. Flow (vph)	263	254	365	335	401	602	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	263	254	365	335	401	602	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	12			12	12		
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)		9	15		15	9	
Number of Detectors	2	1	1	2	1	1	
Detector Template	Thru	Right	Left	Thru	Left	Right	
Leading Detector (ft)	100	20	20	100	20	20	
Trailing Detector (ft)	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	
Detector 1 Size(ft)	6	20	20	6	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	94			94			
Detector 2 Size(ft)	6			6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	pm+ov	pm+pt	NA	Prot	pm+ov	
Protected Phases	6	16	5	2	16	5	9
Permitted Phases		6	2			16	
Detector Phase	6	16	5	2	16	5	
Switch Phase							

Lanes, Volumes, Timings  
3: Farm St & Water St

06/25/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Minimum Initial (s)	10.0	6.0	6.0	10.0	6.0	6.0	1.0
Minimum Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (%)	35.1%	30.7%	13.2%	48.2%	30.7%	13.2%	21%
Maximum Green (s)	35.0	30.0	11.0	50.0	30.0	11.0	21.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	0.0	1.0	1.0	0.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	
Lead/Lag	Lag		Lead		Lead		
Lead-Lag Optimize?	Yes		Yes		Yes		
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0
Recall Mode	C-Min	None	None	C-Min	None	None	Ped
Walk Time (s)							7.0
Flash Dont Walk (s)							13.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	28.7	60.1	50.6	49.6	31.4	53.3	
Actuated g/C Ratio	0.25	0.53	0.44	0.44	0.28	0.47	
v/c Ratio	0.57	0.26	0.80	0.43	0.84	0.57	
Control Delay	44.2	1.4	40.4	25.7	54.7	3.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	44.2	1.4	40.4	25.7	54.7	3.7	
LOS	D	A	D	C	D	A	
Approach Delay	23.2		33.4		24.1		
Approach LOS	C		C		C		
90th %ile Green (s)	28.0	38.0	11.0	43.0	38.0	11.0	20.0
90th %ile Term Code	Coord	Max	Max	Coord	Max	Max	Ped
70th %ile Green (s)	23.8	34.9	18.3	46.1	34.9	18.3	20.0
70th %ile Term Code	Coord	Gap	Max	Coord	Gap	Max	Ped
50th %ile Green (s)	22.3	32.1	22.6	48.9	32.1	22.6	20.0
50th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
30th %ile Green (s)	29.7	28.6	18.7	52.4	28.6	18.7	20.0
30th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
10th %ile Green (s)	39.8	23.3	13.9	57.7	23.3	13.9	20.0
10th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
Stops (vph)	190	12	187	164	281	35	
Fuel Used(gal)	6	3	12	9	9	8	
CO Emissions (g/hr)	410	207	840	624	631	555	
NOx Emissions (g/hr)	80	40	163	121	123	108	
VOC Emissions (g/hr)	95	48	195	145	146	129	
Dilemma Vehicles (#)	0	0	0	0	0	0	
Queue Length 50th (ft)	183	0	186	169	275	0	
Queue Length 95th (ft)	231	13	#346	202	291	60	
Internal Link Dist (ft)	1626		3573		1636		
Turn Bay Length (ft)							
Base Capacity (vph)	582	982	454	825	502	1053	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	

Lanes, Volumes, Timings  
 3: Farm St & Water St

06/25/2021

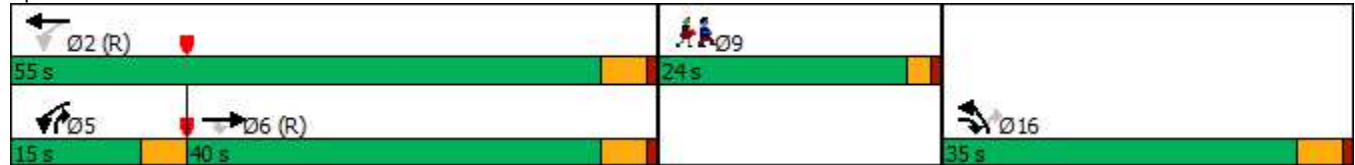


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Reduced v/c Ratio	0.45	0.26	0.80	0.41	0.80	0.57	

Intersection Summary

Area Type: Other  
 Cycle Length: 114  
 Actuated Cycle Length: 114  
 Offset: 22.5 (20%), Referenced to phase 2:WBTL and 6:EBT, Start of Green  
 Natural Cycle: 115  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.84  
 Intersection Signal Delay: 26.8 Intersection LOS: C  
 Intersection Capacity Utilization 56.5% ICU Level of Service B  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Farm St & Water St



# HCM Unsignalized Intersection Capacity Analysis

## 10: Hemlock Rd & WHS Parking Lot

06/29/2021















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	40	46	123	21	1	83
Future Volume (Veh/h)	40	46	123	21	1	83
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.77	0.84	0.68	0.33	0.25	0.55
Hourly flow rate (vph)	52	55	181	64	4	151
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	245				372	213
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	245				372	213
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				99	82
cM capacity (veh/h)	1333				608	832
Direction, Lane #						
	EB 1	WB 1	SB 1			
Volume Total	107	245	155			
Volume Left	52	0	4			
Volume Right	0	64	151			
cSH	1333	1700	824			
Volume to Capacity	0.04	0.14	0.19			
Queue Length 95th (ft)	3	0	17			
Control Delay (s)	4.0	0.0	10.4			
Lane LOS	A		B			
Approach Delay (s)	4.0	0.0	10.4			
Approach LOS			B			
Intersection Summary						
Average Delay			4.0			
Intersection Capacity Utilization			27.6%		ICU Level of Service	A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 16: Farm St











06/28/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	108	90	649	51	42	331
Future Volume (Veh/h)	108	90	649	51	42	331
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	117	98	705	55	46	360
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1157	705			760	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1157	705			760	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	43	78			95	
cM capacity (veh/h)	205	436			852	
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	117	98	705	55	46	360
Volume Left	117	0	0	0	46	0
Volume Right	0	98	0	55	0	0
cSH	205	436	1700	1700	852	1700
Volume to Capacity	0.57	0.22	0.41	0.03	0.05	0.21
Queue Length 95th (ft)	78	21	0	0	4	0
Control Delay (s)	43.5	15.6	0.0	0.0	9.5	0.0
Lane LOS	E	C			A	
Approach Delay (s)	30.8		0.0		1.1	
Approach LOS	D					
Intersection Summary						
Average Delay			5.1			
Intersection Capacity Utilization			47.6%		ICU Level of Service	A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 6: Nahant & Farm St

06/27/2021

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	59	215	341	617	489	124
Future Volume (Veh/h)	59	215	341	617	489	124
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.74	0.85	0.68	0.81	0.82	0.54
Hourly flow rate (vph)	80	253	501	762	596	230
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	12					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2475	711	826			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2475	711	826			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.2			
p0 queue free %	0	42	38			
cM capacity (veh/h)	12	433	809			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	333	1263	826			
Volume Left	80	501	0			
Volume Right	253	0	230			
cSH	46	809	1700			
Volume to Capacity	7.21	0.62	0.49			
Queue Length 95th (ft)	Err	110	0			
Control Delay (s)	Err	16.4	0.0			
Lane LOS	F	C				
Approach Delay (s)	Err	16.4	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			1383.3			
Intersection Capacity Utilization			97.9%	ICU Level of Service	F	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 7: Farm St & Hemlock Rd

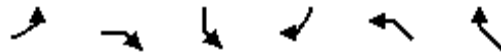
06/25/2021



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	37	182	776	32	76	628
Future Volume (Veh/h)	37	182	776	32	76	628
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.68	0.77	0.81	0.74	0.79	0.82
Hourly flow rate (vph)	54	236	958	43	96	766
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1938	980			1001	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1938	980			1001	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	12	22			86	
cM capacity (veh/h)	62	303			692	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>		
Volume Total	290	1001	96	766		
Volume Left	54	0	96	0		
Volume Right	236	43	0	0		
cSH	175	1700	692	1700		
Volume to Capacity	1.65	0.59	0.14	0.45		
Queue Length 95th (ft)	496	0	12	0		
Control Delay (s)	364.9	0.0	11.0	0.0		
Lane LOS	F		B			
Approach Delay (s)	364.9	0.0	1.2			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			49.6			
Intersection Capacity Utilization			70.3%	ICU Level of Service	C	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 12: Farm St & Old Nahant

06/25/2021



Movement	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	176	9	430	186	5	598
Future Volume (Veh/h)	176	9	430	186	5	598
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.80	0.45	0.91	0.94	0.42	0.98
Hourly flow rate (vph)	220	20	473	198	12	610
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1107	473			671	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1107	473			671	
tC, single (s)	6.4	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.4	
p0 queue free %	4	97			99	
cM capacity (veh/h)	230	595			840	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>SB 1</b>	<b>NW 1</b>			
Volume Total	240	671	622			
Volume Left	220	0	12			
Volume Right	20	198	0			
cSH	243	1700	840			
Volume to Capacity	0.99	0.39	0.01			
Queue Length 95th (ft)	233	0	1			
Control Delay (s)	98.6	0.0	0.4			
Lane LOS	F		A			
Approach Delay (s)	98.6	0.0	0.4			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			15.6			
Intersection Capacity Utilization			Err%	ICU Level of Service		H
Analysis Period (min)			15			



HCM Unsignalized Intersection Capacity Analysis  
 13: Farm St & Old Nahant

06/25/2021



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	47	54	685	401	8
Future Volume (Veh/h)	3	47	54	685	401	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.82	0.64	0.89	0.94	0.92
Hourly flow rate (vph)	4	57	84	770	427	9
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)	533					
pX, platoon unblocked	0.72					
vC, conflicting volume	1370	432	436			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1320	432	436			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	97	91	92			
cM capacity (veh/h)	117	628	1072			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	61	854	436			
Volume Left	4	84	0			
Volume Right	57	0	9			
cSH	488	1072	1700			
Volume to Capacity	0.13	0.08	0.26			
Queue Length 95th (ft)	11	6	0			
Control Delay (s)	13.4	2.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	13.4	2.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			1.8			
Intersection Capacity Utilization			74.0%	ICU Level of Service	D	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
3: Farm St & Water St

06/25/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations	↑	↑	↑	↑	↑	↑	
Traffic Volume (vph)	223	212	278	247	314	450	
Future Volume (vph)	223	212	278	247	314	450	
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 <sub>t</sub>		0.850				0.850	
Fl <sub>t</sub> Protected			0.950		0.950		
Satd. Flow (prot)	1881	1583	1787	1881	1770	1599	
Fl <sub>t</sub> Permitted			0.390		0.950		
Satd. Flow (perm)	1881	1583	734	1881	1770	1599	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		233				506	
Link Speed (mph)	30			31	30		
Link Distance (ft)	1706			3653	1716		
Travel Time (s)	38.8			80.3	39.0		
Peak Hour Factor	0.89	0.91	0.79	0.86	0.84	0.89	
Heavy Vehicles (%)	1%	2%	1%	1%	2%	1%	
Adj. Flow (vph)	251	233	352	287	374	506	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	251	233	352	287	374	506	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	12			12	12		
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)		9	15		15	9	
Number of Detectors	2	1	1	2	1	1	
Detector Template	Thru	Right	Left	Thru	Left	Right	
Leading Detector (ft)	100	20	20	100	20	20	
Trailing Detector (ft)	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	
Detector 1 Size(ft)	6	20	20	6	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	94			94			
Detector 2 Size(ft)	6			6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	pm+ov	pm+pt	NA	Prot	pm+ov	
Protected Phases	6	16	5	2	16	5	9
Permitted Phases		6	2			16	
Detector Phase	6	16	5	2	16	5	
Switch Phase							

Lanes, Volumes, Timings  
3: Farm St & Water St

06/25/2021

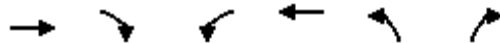


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Minimum Initial (s)	10.0	6.0	6.0	10.0	6.0	6.0	1.0
Minimum Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (s)	40.0	35.0	15.0	55.0	35.0	15.0	24.0
Total Split (%)	35.1%	30.7%	13.2%	48.2%	30.7%	13.2%	21%
Maximum Green (s)	35.0	30.0	11.0	50.0	30.0	11.0	21.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	0.0	1.0	1.0	0.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	
Lead/Lag	Lag		Lead		Lead		
Lead-Lag Optimize?	Yes		Yes		Yes		
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0
Recall Mode	C-Min	None	None	C-Min	None	None	Ped
Walk Time (s)							7.0
Flash Dont Walk (s)							13.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	31.1	59.7	53.4	52.4	28.6	50.9	
Actuated g/C Ratio	0.27	0.52	0.47	0.46	0.25	0.45	
v/c Ratio	0.49	0.25	0.70	0.33	0.84	0.51	
Control Delay	40.9	1.5	31.0	22.3	57.5	3.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	40.9	1.5	31.0	22.3	57.5	3.4	
LOS	D	A	C	C	E	A	
Approach Delay	21.9		27.1		26.4		
Approach LOS	C		C		C		
90th %ile Green (s)	26.7	35.8	14.5	45.2	35.8	14.5	20.0
90th %ile Term Code	Coord	Gap	Max	Coord	Gap	Max	Ped
70th %ile Green (s)	21.9	32.3	22.8	48.7	32.3	22.8	20.0
70th %ile Term Code	Coord	Gap	Max	Coord	Gap	Max	Ped
50th %ile Green (s)	27.9	29.0	20.1	52.0	29.0	20.1	20.0
50th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
30th %ile Green (s)	34.9	25.5	16.6	55.5	25.5	16.6	20.0
30th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
10th %ile Green (s)	44.3	20.3	12.4	60.7	20.3	12.4	20.0
10th %ile Term Code	Coord	Gap	Gap	Coord	Gap	Gap	Ped
Stops (vph)	188	13	176	157	290	27	
Fuel Used(gal)	6	3	11	9	9	6	
CO Emissions (g/hr)	410	207	740	627	663	453	
NOx Emissions (g/hr)	80	40	144	122	129	88	
VOC Emissions (g/hr)	95	48	171	145	154	105	
Dilemma Vehicles (#)	0	0	0	0	0	0	
Queue Length 50th (ft)	161	0	167	132	260	0	
Queue Length 95th (ft)	245	17	232	209	316	51	
Internal Link Dist (ft)	1626		3573		1636		
Turn Bay Length (ft)							
Base Capacity (vph)	608	976	503	885	490	993	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	

# Lanes, Volumes, Timings

## 3: Farm St & Water St

06/25/2021

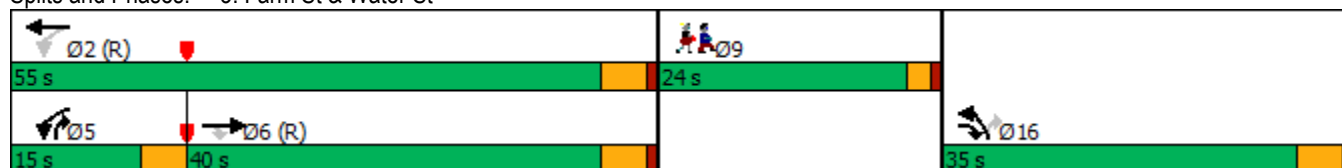


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Reduced v/c Ratio	0.41	0.24	0.70	0.32	0.76	0.51	

### Intersection Summary

Area Type:	Other
Cycle Length:	114
Actuated Cycle Length:	114
Offset:	22.5 (20%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle:	115
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	25.5
Intersection LOS:	C
Intersection Capacity Utilization	56.2%
ICU Level of Service	B
Analysis Period (min)	15

### Splits and Phases: 3: Farm St & Water St



# HCM Unsignalized Intersection Capacity Analysis

## 10: Hemlock Rd & WHS Parking Lot

06/29/2021















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	
Traffic Volume (veh/h)	17	78	171	2	2	52
Future Volume (Veh/h)	17	78	171	2	2	52
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.61	0.81	0.76	0.50	0.25	0.52
Hourly flow rate (vph)	28	96	225	4	8	100
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	229				379	227
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	229				379	227
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				99	88
cM capacity (veh/h)	1351				614	817
Direction, Lane #						
	EB 1	WB 1	SB 1			
Volume Total	124	229	108			
Volume Left	28	0	8			
Volume Right	0	4	100			
cSH	1351	1700	798			
Volume to Capacity	0.02	0.13	0.14			
Queue Length 95th (ft)	2	0	12			
Control Delay (s)	1.9	0.0	10.2			
Lane LOS	A		B			
Approach Delay (s)	1.9	0.0	10.2			
Approach LOS			B			
Intersection Summary						
Average Delay			2.9			
Intersection Capacity Utilization			27.5%		ICU Level of Service	A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 16: Farm St

06/28/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	18	15	639	30	25	507
Future Volume (Veh/h)	18	15	639	30	25	507
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	16	695	33	27	551
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1300	695			728	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1300	695			728	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	96			97	
cM capacity (veh/h)	172	442			876	
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	20	16	695	33	27	551
Volume Left	20	0	0	0	27	0
Volume Right	0	16	0	33	0	0
cSH	172	442	1700	1700	876	1700
Volume to Capacity	0.12	0.04	0.41	0.02	0.03	0.32
Queue Length 95th (ft)	10	3	0	0	2	0
Control Delay (s)	28.6	13.4	0.0	0.0	9.2	0.0
Lane LOS	D	B			A	
Approach Delay (s)	21.9		0.0		0.4	
Approach LOS	C					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			43.6%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 7: Farm St & Hemlock Rd

06/25/2021



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	58	168	699	18	71	587
Future Volume (Veh/h)	58	168	699	18	71	587
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.69	0.73	0.88	0.88	0.86	0.86
Hourly flow rate (vph)	84	230	794	20	83	683
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1653	804			814	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1653	804			814	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	13	40			90	
cM capacity (veh/h)	97	383			809	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>		
Volume Total	314	814	83	683		
Volume Left	84	0	83	0		
Volume Right	230	20	0	0		
cSH	214	1700	809	1700		
Volume to Capacity	1.47	0.48	0.10	0.40		
Queue Length 95th (ft)	470	0	9	0		
Control Delay (s)	277.2	0.0	10.0	0.0		
Lane LOS	F		A			
Approach Delay (s)	277.2	0.0	1.1			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			46.4			
Intersection Capacity Utilization			65.4%	ICU Level of Service	C	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 12: Farm St & Old Nahant

06/25/2021



Movement	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	154	5	525	166	9	626
Future Volume (Veh/h)	154	5	525	166	9	626
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.85	0.31	0.90	0.79	0.56	0.95
Hourly flow rate (vph)	181	16	583	210	16	659
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1274	583			793	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1274	583			793	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	97			98	
cM capacity (veh/h)	182	516			837	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>SB 1</b>	<b>NW 1</b>			
Volume Total	197	793	675			
Volume Left	181	0	16			
Volume Right	16	210	0			
cSH	192	1700	837			
Volume to Capacity	1.03	0.47	0.02			
Queue Length 95th (ft)	223	0	1			
Control Delay (s)	123.0	0.0	0.5			
Lane LOS	F		A			
Approach Delay (s)	123.0	0.0	0.5			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			14.8			
Intersection Capacity Utilization			Err%	ICU Level of Service		H
Analysis Period (min)			15			



HCM Unsignalized Intersection Capacity Analysis  
 13: Farm St & Old Nahant

06/25/2021













Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	44	33	621	501	4
Future Volume (Veh/h)	10	44	33	621	501	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.42	0.77	0.66	0.95	0.93	0.33
Hourly flow rate (vph)	24	57	50	654	539	12
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)	533					
pX, platoon unblocked	0.63					
vC, conflicting volume	1299	545	551			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1182	545	551			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	89	95			
cM capacity (veh/h)	127	542	1014			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	81	704	551			
Volume Left	24	50	0			
Volume Right	57	0	12			
cSH	276	1014	1700			
Volume to Capacity	0.29	0.05	0.32			
Queue Length 95th (ft)	30	4	0			
Control Delay (s)	23.4	1.3	0.0			
Lane LOS	C	A				
Approach Delay (s)	23.4	1.3	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.1			
Intersection Capacity Utilization			69.6%	ICU Level of Service	C	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 6: Nahant & Farm St

06/27/2021

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	89	261	218	649	398	95
Future Volume (Veh/h)	89	261	218	649	398	95
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.72	0.91	0.82	0.88	0.86	0.82
Hourly flow rate (vph)	124	287	266	738	463	116
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	12					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1791	521	579			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1791	521	579			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	48	74			
cM capacity (veh/h)	66	555	1005			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	411	1004	579			
Volume Left	124	266	0			
Volume Right	287	0	116			
cSH	200	1005	1700			
Volume to Capacity	2.05	0.26	0.34			
Queue Length 95th (ft)	782	27	0			
Control Delay (s)	529.3	6.0	0.0			
Lane LOS	F	A				
Approach Delay (s)	529.3	6.0	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			112.1			
Intersection Capacity Utilization			87.9%	ICU Level of Service	E	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 7: Farm St & Hemlock Rd

06/25/2021



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	58	168	699	18	71	587
Future Volume (Veh/h)	58	168	699	18	71	587
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.69	0.73	0.88	0.88	0.86	0.86
Hourly flow rate (vph)	84	230	794	20	83	683
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1653	804			814	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1653	804			814	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	13	40			90	
cM capacity (veh/h)	97	383			809	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>		
Volume Total	314	814	83	683		
Volume Left	84	0	83	0		
Volume Right	230	20	0	0		
cSH	214	1700	809	1700		
Volume to Capacity	1.47	0.48	0.10	0.40		
Queue Length 95th (ft)	470	0	9	0		
Control Delay (s)	277.2	0.0	10.0	0.0		
Lane LOS	F		A			
Approach Delay (s)	277.2	0.0	1.1			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			46.4			
Intersection Capacity Utilization			65.4%		ICU Level of Service	C
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 12: Farm St & Old Nahant

06/25/2021



Movement	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations	W			W	W	
Traffic Volume (veh/h)	154	5	525	166	9	626
Future Volume (Veh/h)	154	5	525	166	9	626
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.85	0.31	0.90	0.79	0.56	0.95
Hourly flow rate (vph)	181	16	583	210	16	659
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1274	583				793
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1274	583				793
tC, single (s)	6.4	6.2				4.1
tC, 2 stage (s)						
tF (s)	3.5	3.3				2.2
p0 queue free %	0	97				98
cM capacity (veh/h)	182	516				837
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>SB 1</b>	<b>NW 1</b>			
Volume Total	197	793	675			
Volume Left	181	0	16			
Volume Right	16	210	0			
cSH	192	1700	837			
Volume to Capacity	1.03	0.47	0.02			
Queue Length 95th (ft)	223	0	1			
Control Delay (s)	123.0	0.0	0.5			
Lane LOS	F		A			
Approach Delay (s)	123.0	0.0	0.5			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			14.8			
Intersection Capacity Utilization			Err%	ICU Level of Service		H
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 13: Farm St & Old Nahant

06/25/2021



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	44	33	621	501	4
Future Volume (Veh/h)	10	44	33	621	501	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.42	0.77	0.66	0.95	0.93	0.33
Hourly flow rate (vph)	24	57	50	654	539	12
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)	533					
pX, platoon unblocked	0.63					
vC, conflicting volume	1299	545	551			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1182	545	551			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	89	95			
cM capacity (veh/h)	127	542	1014			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	81	704	551			
Volume Left	24	50	0			
Volume Right	57	0	12			
cSH	276	1014	1700			
Volume to Capacity	0.29	0.05	0.32			
Queue Length 95th (ft)	30	4	0			
Control Delay (s)	23.4	1.3	0.0			
Lane LOS	C	A				
Approach Delay (s)	23.4	1.3	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.1			
Intersection Capacity Utilization			69.6%	ICU Level of Service	C	
Analysis Period (min)			15			

# Lanes, Volumes, Timings

## 16: Farm St

06/25/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	71	418	179	150	272
Future Volume (vph)	85	71	418	179	150	272
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0		120	120	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850		0.850		
Fl <sub>t</sub> Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Fl <sub>t</sub> Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1863	1583	1770	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		77		195		
Link Speed (mph)	30		30			30
Link Distance (ft)	407		962			533
Travel Time (s)	9.3		21.9			12.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	92	77	454	195	163	296
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	77	454	195	163	296
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (ft)	20	20	100	20	20	100
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	pm+ov	NA	pt+ov	Prot	NA
Protected Phases	8	1	2	2 8	1	6
Permitted Phases		8				

# Lanes, Volumes, Timings

## 16: Farm St

06/25/2021

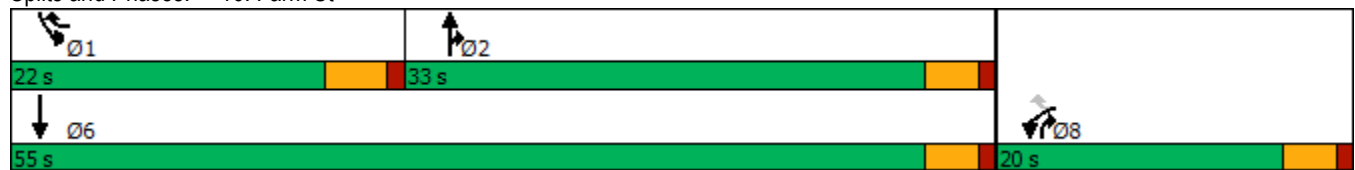


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8	1	2	2 8	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0
Minimum Split (s)	20.0	14.5	20.0		14.5	20.0
Total Split (s)	20.0	22.0	33.0		22.0	55.0
Total Split (%)	26.7%	29.3%	44.0%		29.3%	73.3%
Maximum Green (s)	16.0	17.5	29.0		17.5	51.0
Yellow Time (s)	3.0	3.5	3.0		3.5	3.0
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.5	4.0		4.5	4.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Recall Mode	None	None	Max		None	Max
Act Effct Green (s)	10.3	25.8	35.0	49.2	11.6	51.0
Actuated g/C Ratio	0.15	0.37	0.51	0.71	0.17	0.74
v/c Ratio	0.35	0.12	0.48	0.17	0.55	0.22
Control Delay	30.7	4.0	14.1	1.0	33.7	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.7	4.0	14.1	1.0	33.7	3.4
LOS	C	A	B	A	C	A
Approach Delay	18.6		10.1			14.1
Approach LOS	B		B			B
90th %ile Green (s)	11.3	15.0	31.5		15.0	51.0
90th %ile Term Code	Gap	Gap	Hold		Gap	MaxR
70th %ile Green (s)	10.0	12.3	34.2		12.3	51.0
70th %ile Term Code	Min	Gap	Hold		Gap	MaxR
50th %ile Green (s)	10.0	10.6	35.9		10.6	51.0
50th %ile Term Code	Min	Gap	Hold		Gap	MaxR
30th %ile Green (s)	10.0	10.0	36.5		10.0	51.0
30th %ile Term Code	Min	Min	Hold		Min	MaxR
10th %ile Green (s)	10.0	10.0	36.8		10.0	51.3
10th %ile Term Code	Min	Min	Dwell		Min	Dwell
Stops (vph)	73	12	266	10	133	74
Fuel Used(gal)	1	0	6	1	2	2
CO Emissions (g/hr)	84	24	405	100	167	121
NOx Emissions (g/hr)	16	5	79	20	32	23
VOC Emissions (g/hr)	20	6	94	23	39	28
Dilemma Vehicles (#)	0	0	0	0	0	0
Queue Length 50th (ft)	36	0	113	0	65	30
Queue Length 95th (ft)	76	21	219	17	115	55
Internal Link Dist (ft)	327		882			453
Turn Bay Length (ft)	200			120	120	
Base Capacity (vph)	408	766	940	1296	446	1372
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.10	0.48	0.15	0.37	0.22

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	69.3
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.55
Intersection Signal Delay:	12.7
Intersection LOS:	B
Intersection Capacity Utilization:	49.1%
ICU Level of Service:	A
Analysis Period (min):	15
90th %ile Actuated Cycle:	70.3
70th %ile Actuated Cycle:	69
50th %ile Actuated Cycle:	69
30th %ile Actuated Cycle:	69
10th %ile Actuated Cycle:	69.3

Splits and Phases: 16: Farm St





# Lanes, Volumes, Timings

## 16: Farm St

06/25/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	108	90	649	51	42	331
Future Volume (vph)	108	90	649	51	42	331
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0		120	120	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1863	1583	1770	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		97		55		
Link Speed (mph)	15		30			30
Link Distance (ft)	407		962			533
Travel Time (s)	18.5		21.9			12.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	117	98	705	55	46	360
Shared Lane Traffic (%)						
Lane Group Flow (vph)	117	98	705	55	46	360
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
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)	60	60		60	60	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (ft)	20	20	100	20	20	100
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		

# Lanes, Volumes, Timings

## 16: Farm St

06/25/2021

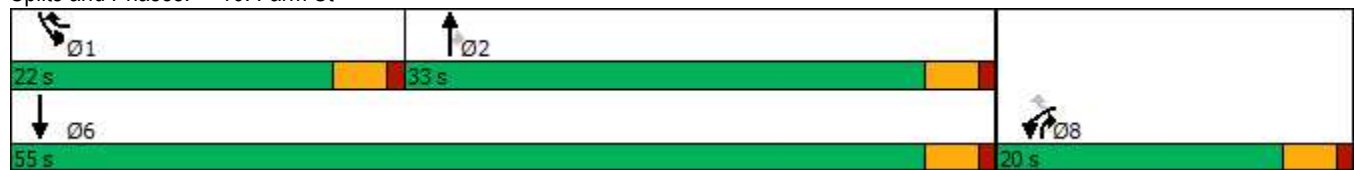


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8	1	2	8	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	14.5	20.0	20.0	14.5	20.0
Total Split (s)	20.0	22.0	33.0	20.0	22.0	55.0
Total Split (%)	26.7%	29.3%	44.0%	26.7%	29.3%	73.3%
Maximum Green (s)	16.0	18.0	29.0	16.0	18.0	51.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None	Max	None	None	Max
Act Effect Green (s)	10.7	21.9	43.6	55.5	10.0	54.8
Actuated g/C Ratio	0.15	0.31	0.62	0.79	0.14	0.78
v/c Ratio	0.43	0.17	0.61	0.04	0.18	0.25
Control Delay	32.2	4.7	14.3	0.8	28.7	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.2	4.7	14.3	0.8	28.7	3.4
LOS	C	A	B	A	C	A
Approach Delay	19.7		13.3			6.3
Approach LOS	B		B			A
90th %ile Green (s)	12.9	10.0	37.0	12.9	10.0	51.0
90th %ile Term Code	Gap	Min	Hold	Gap	Min	MaxR
70th %ile Green (s)	10.4	10.0	37.0	10.4	10.0	51.0
70th %ile Term Code	Gap	Min	Hold	Gap	Min	MaxR
50th %ile Green (s)	10.0	10.0	37.0	10.0	10.0	51.0
50th %ile Term Code	Min	Min	Hold	Min	Min	MaxR
30th %ile Green (s)	10.0	10.0	37.0	10.0	10.0	51.0
30th %ile Term Code	Min	Min	Hold	Min	Min	MaxR
10th %ile Green (s)	0.0	0.0	66.0	0.0	0.0	66.0
10th %ile Term Code	Skip	Skip	Dwell	Skip	Skip	Dwell
Stops (vph)	94	16	426	4	38	89
Fuel Used(gal)	1	0	9	0	1	2
CO Emissions (g/hr)	91	34	637	29	44	147
NOx Emissions (g/hr)	18	7	124	6	9	29
VOC Emissions (g/hr)	21	8	148	7	10	34
Dilemma Vehicles (#)	0	0	0	0	0	0
Queue Length 50th (ft)	46	0	205	0	17	37
Queue Length 95th (ft)	92	27	360	6	47	75
Internal Link Dist (ft)	327		882			453
Turn Bay Length (ft)	200			120	120	
Base Capacity (vph)	405	732	1162	1358	456	1461
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.13	0.61	0.04	0.10	0.25

Intersection Summary

Area Type:	Other		
Cycle Length:	75		
Actuated Cycle Length:	69.9		
Natural Cycle:	65		
Control Type:	Semi Act-Uncoord		
Maximum v/c Ratio:	0.61		
Intersection Signal Delay:	12.2	Intersection LOS:	B
Intersection Capacity Utilization:	49.9%	ICU Level of Service:	A
Analysis Period (min):	15		
90th %ile Actuated Cycle:	71.9		
70th %ile Actuated Cycle:	69.4		
50th %ile Actuated Cycle:	69		
30th %ile Actuated Cycle:	69		
10th %ile Actuated Cycle:	70		

Splits and Phases: 16: Farm St



# Lanes, Volumes, Timings

## 16: Farm St

06/25/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	18	15	639	30	25	507
Future Volume (vph)	18	15	639	30	25	507
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0		120	120	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1863	1583	1770	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		16		22		
Link Speed (mph)	30		30			30
Link Distance (ft)	407		962			533
Travel Time (s)	9.3		21.9			12.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	16	695	33	27	551
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	16	695	33	27	551
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
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)	60	60		60	60	
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Minimum Split (s)	20.0	20.0	20.0	20.0	14.5	20.0
Total Split (s)	20.0	20.0	34.0	34.0	21.0	55.0
Total Split (%)	26.7%	26.7%	45.3%	45.3%	28.0%	73.3%
Maximum Green (s)	16.0	16.0	30.0	30.0	17.0	51.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Act Effect Green (s)	16.0	16.0	30.0	30.0	17.0	51.0
Actuated g/C Ratio	0.21	0.21	0.40	0.40	0.23	0.68
v/c Ratio	0.05	0.05	0.93	0.05	0.07	0.44
Control Delay	24.1	12.3	43.9	8.1	23.4	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.1	12.3	43.9	8.1	23.4	6.8

Lanes, Volumes, Timings

16: Farm St

06/25/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	C	B	D	A	C	A
Approach Delay	18.8		42.2			7.5
Approach LOS	B		D			A
Stops (vph)	16	8	532	11	21	211
Fuel Used(gal)	0	0	13	0	0	4
CO Emissions (g/hr)	16	9	939	23	24	278
NOx Emissions (g/hr)	3	2	183	5	5	54
VOC Emissions (g/hr)	4	2	218	5	5	64
Dilemma Vehicles (#)	0	0	0	0	0	0
Queue Length 50th (ft)	7	0	300	3	10	98
Queue Length 95th (ft)	24	15	#517	19	29	153
Internal Link Dist (ft)	327		882			453
Turn Bay Length (ft)	200			120	120	
Base Capacity (vph)	377	350	745	646	401	1266
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.05	0.93	0.05	0.07	0.44

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 65

Control Type: Pretimed

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 26.7

Intersection LOS: C

Intersection Capacity Utilization 48.6%

ICU Level of Service A

Analysis Period (min) 15

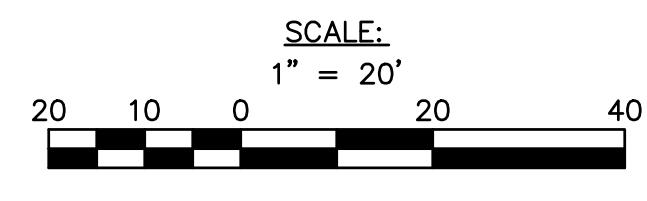
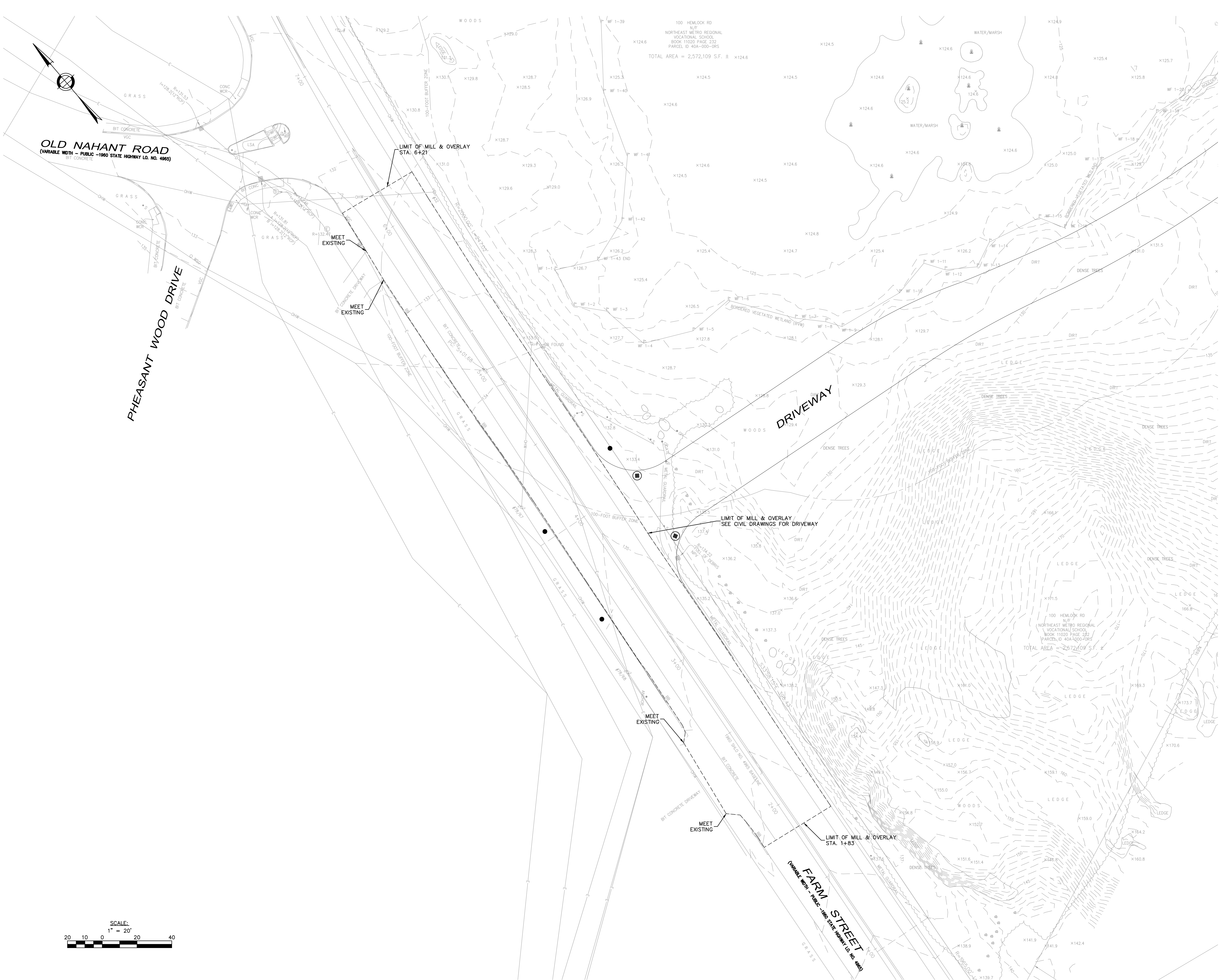
# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 16: Farm St



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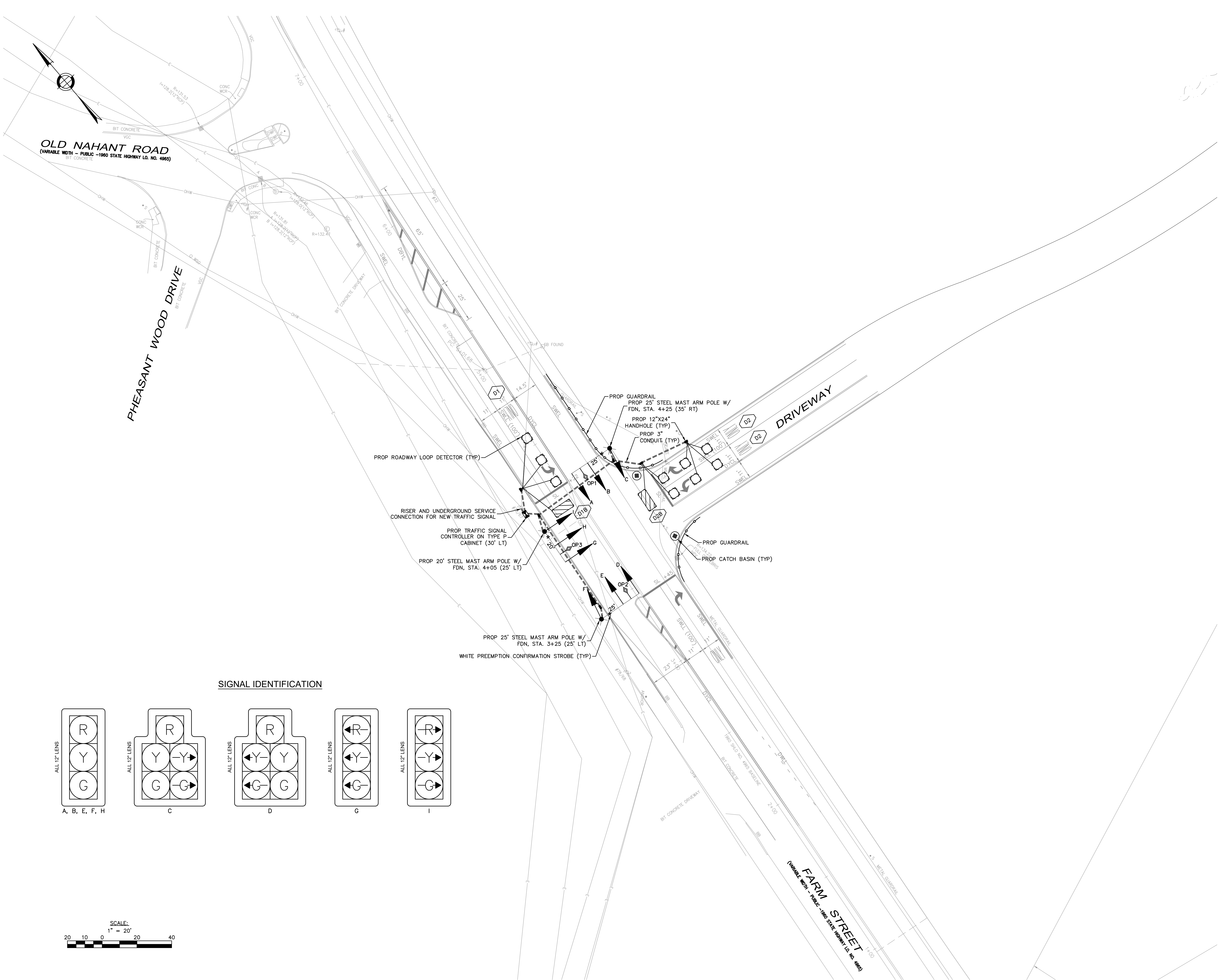
**CONCEPT PLAN**

**CONSTRUCTION  
 PLAN**

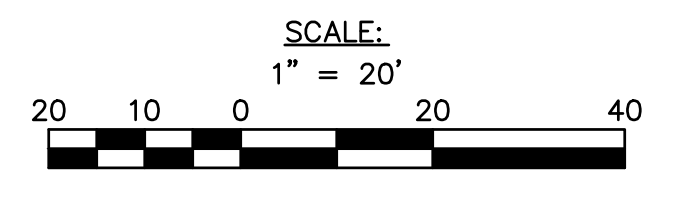
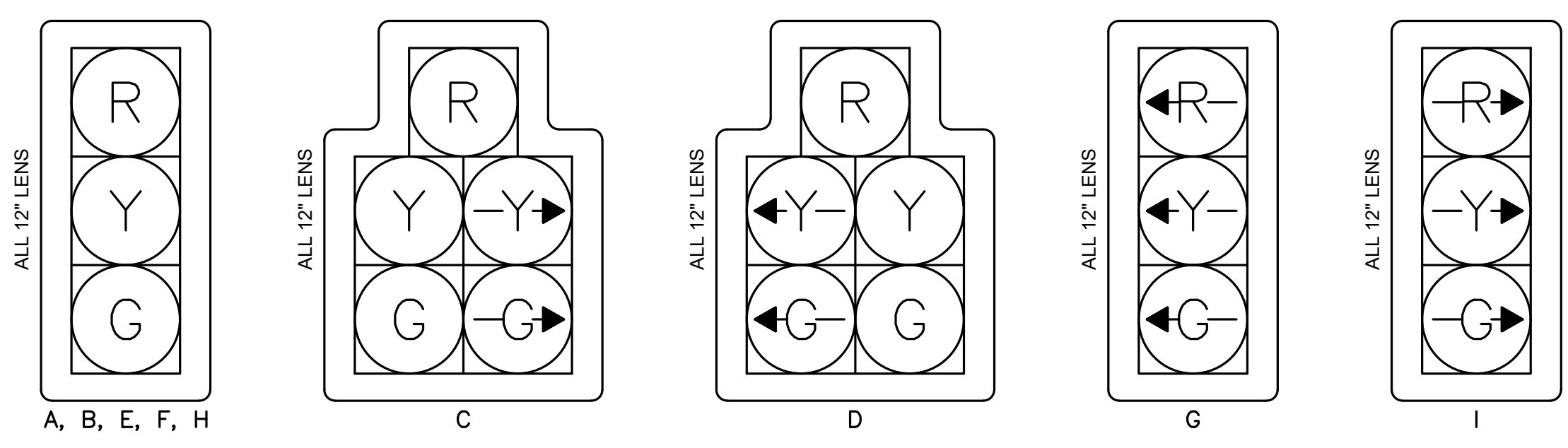
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 Job No.: 13872.2  
 Drawn By: LB  
 Date: 5/19/2022

**TR-001**

LAST SAVE: 5/19/2022 2:19:24 PM by: lb



**SIGNAL IDENTIFICATION**



**NORTHEAST METRO TECHNICAL HIGH SCHOOL**

Wakefield, Massachusetts

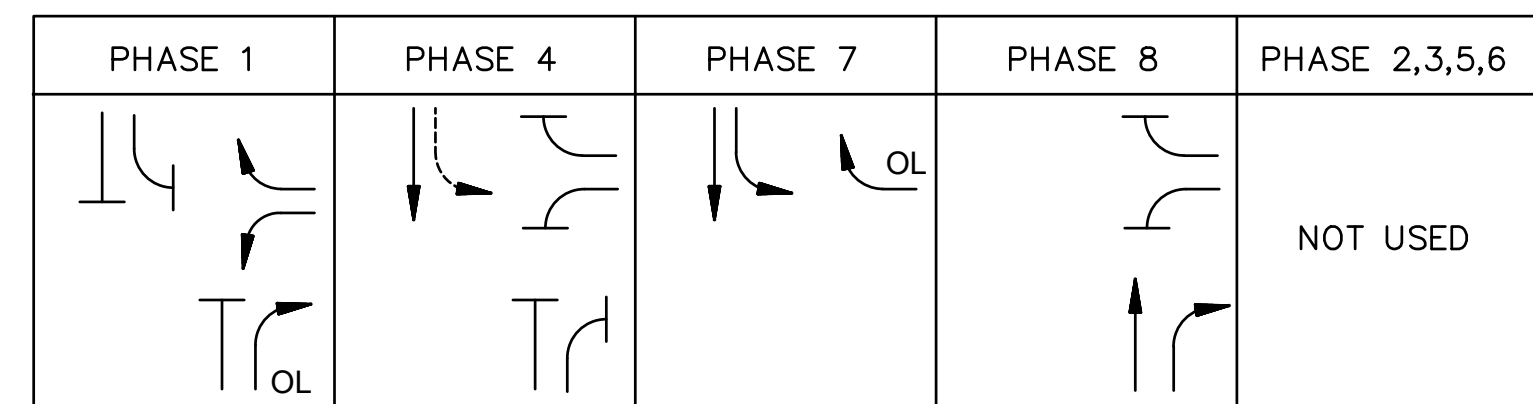


**CONCEPT PLAN**

**TRAFFIC SIGNAL PLAN**

Scale: 1" = 20'-0"  
 Job No.: 13872.2  
 Drawn By: LB  
 Date: 5/19/2022

**TR-002**



SEQUENCE AND TIMING FOR FULL ACTUATED CONTROL (ISOLATED)																		
STREET	DIRECTION	HOUSINGS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	FLASH OPER.
FARM STREET	NB	A, B	R	R	R	R	R	R	R	R	R	G	Y	R	-	-	-	FY
FARM STREET	NB	C	-	-	-	R	R	R	R	R	R	R	G	Y	R	-	-	FY
FARM STREET	SB	D	R	R	R	-	Y	R	G	Y	R	R	R	R	-	-	-	FR
FARM STREET	SB	E, F	R	R	R	G	Y	R	G	Y	R	R	R	R	-	-	-	FY
DRIVEWAY	WB	G	G	Y	R	R	R	R	R	R	R	R	R	R	-	-	-	FR
DRIVEWAY	WB	H	G	Y	R	R	R	R	R	R	R	R	R	R	-	-	-	FR
DRIVEWAY	WB	I	G	Y	R	R	R	R	-	-	-	R	R	R	-	-	-	FR

TIMING IN SECONDS																		
MINIMUM GREEN (INITIAL)	10			10			10				10							
PASSAGE TIME (VEHICLE)	2			2			2				2							
MAXIMUM 1	16			16			4				16							
MAXIMUM 2	16			29			18				29							
YELLOW CLEARANCE			3			3				3				3				
RED CLEARANCE				1			1				1				1			
WALK (W)																		
PEDESTRIAN CLEARANCE																		
RECALL				RECALL			RECALL				RECALL				RECALL			
MEMORY																		

COORDINATION DATA			COORDINATION PHASE TIMING				
TIMING PLAN	CYCLE LENGTH	REF/OFFSET	SEC.	SEC.	SEC.	SEC.	SEC.

### FIRE PREEMPTION SCHEDULE

APPROACH	PREEMPTION RECEIVER	PREEMPTION PHASE	NEXT PHASE CALLED
NORTHBOUND	1	8	4+7
SOUTHBOUND	2	4	4+8
WESTBOUND	3	1	4+7

- EMERGENCY VEHICLE PREEMPTION OPERATION:**
- EMERGENCY VEHICLE PREEMPTION SHALL BE ACTUATED BY AN OPTICAL SIGNAL FROM AN OPTICAL EMITTER MOUNTED ON AN EMERGENCY VEHICLE AND RECEIVED BY AN OPTICAL DETECTOR LOCATED AT INTERSECTION. A SEPARATE RECEIVING DETECTOR IS REQUIRED FOR EACH DETECTED APPROACH. PREEMPTION SIGNALS FROM MULTIPLE APPROACHES SHALL BE SERVICED ON A FIRST DETECTED FIRST SERVED BASIS.
  - IN RESPONSE TO A PREEMPTION SIGNAL RECEIVED AT AN INTERSECTION BY AN OPTICAL DETECTOR, THE CONTROLLER SHALL TIME THE CLEARANCE INTERVALS OF THE ACTIVE PHASE (IF DIFFERENT THAT TO BE SERVICED) AND ADVANCE TO AND/OR HOLD IN EMERGENCY VEHICLE PREEMPTION PHASE UNTIL PREEMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME CLEARANCES AND SIMILARLY SERVICE OTHER EMERGENCY VEHICLE PREEMPTION SEQUENCES IN THE ORDER RECEIVED (IF RECEIVED) OTHERWISE, RESUME NORMAL PREFERENTIAL PHASE SEQUENCE.
  - PREEMPTION MINIMUM GREENS SHALL BE SIX SECONDS.
  - NORMAL CLEARANCES SHALL BE PROVIDED ON PHASES THAT ARE TERMINATED BY PREEMPTION DEMAND.
  - ACTUAL TIMING FOR PREEMPTION SHALL BE DETERMINED IN THE FIELD IN COORDINATION WITH THE FIRE DEPARTMENT AND SHALL BE APPROVED BY MHD PRIOR TO OPERATION.

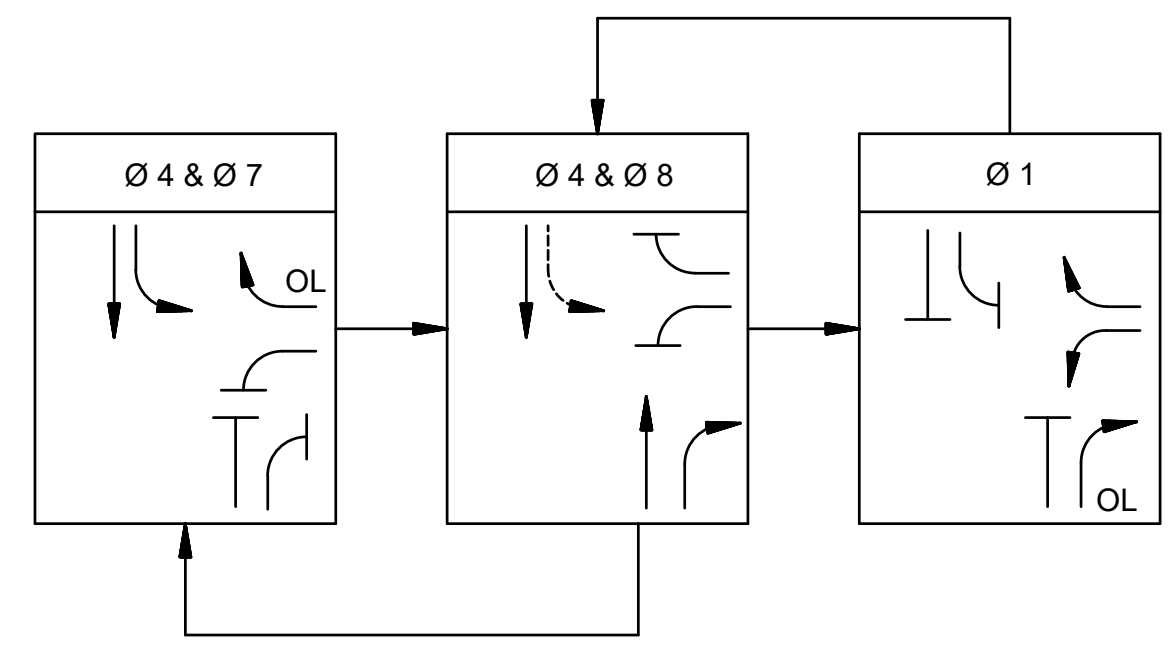
MAJOR ITEMS REQUIRED		
PAY ITEM	QUANTITY	ITEM
	1	CONTROLLER NEMA 8 PHASE TS2-TYPE 1, CAB. CONCRETE PAD, & FDN. (SIZE P)
	1	SERVICE CONNECTION TYPE OVERHEAD
	2	25 FT TYPE II, GALV. STEEL MAST ARM ASSEMBLY, BASE, & FDN.
	1	20 FT TYPE II, GALV. STEEL MAST ARM ASSEMBLY, BASE, & FDN.
	7	12", 3 SECTION, L.E.D. VEHICLE SIGNAL INDICATION
	2	12", 5 SECTION, L.E.D. VEHICLE SIGNAL INDICATION
	7	3-SECTION BACK PLATES (LOUVERED) WITH 3" RETROREFLECTIVE BORDER
	2	5-SECTION BACK PLATES (LOUVERED) WITH 3" RETROREFLECTIVE BORDER
	2	EMERGENCY VEHICLE PRE-EMPTION RECEIVER SINGLE CHANNEL
	2	EMERGENCY VEHICLE PRE-EMPTION PHASE SELECTOR MODULE-DUAL CHANNEL
	1	PRE-EMPTION CARD RACK
	1	EMERGENCY VEHICLE PRE-EMPTION CONFIRMATION STROBE (WHITE)
	1	EMERGENCY VEHICLE PRE-EMPTION EMITTER-SINGLE CHANNEL
	1	MULTIFUNCTION MONITORING UNIT (MMU)
	4	RACK MOUNTED LOOP DETECTOR AMPLIFIER (DUAL CHANNEL)
	11	ROADWAY LOOP DETECTORS
	6	12"x24" PULL BOX
	50	3" SCH. 80 PVC CONDUIT
		Plus all necessary duct, cable, labor, miscellaneous material and equipment to complete the installation.

### LOOP DETECTOR DATA

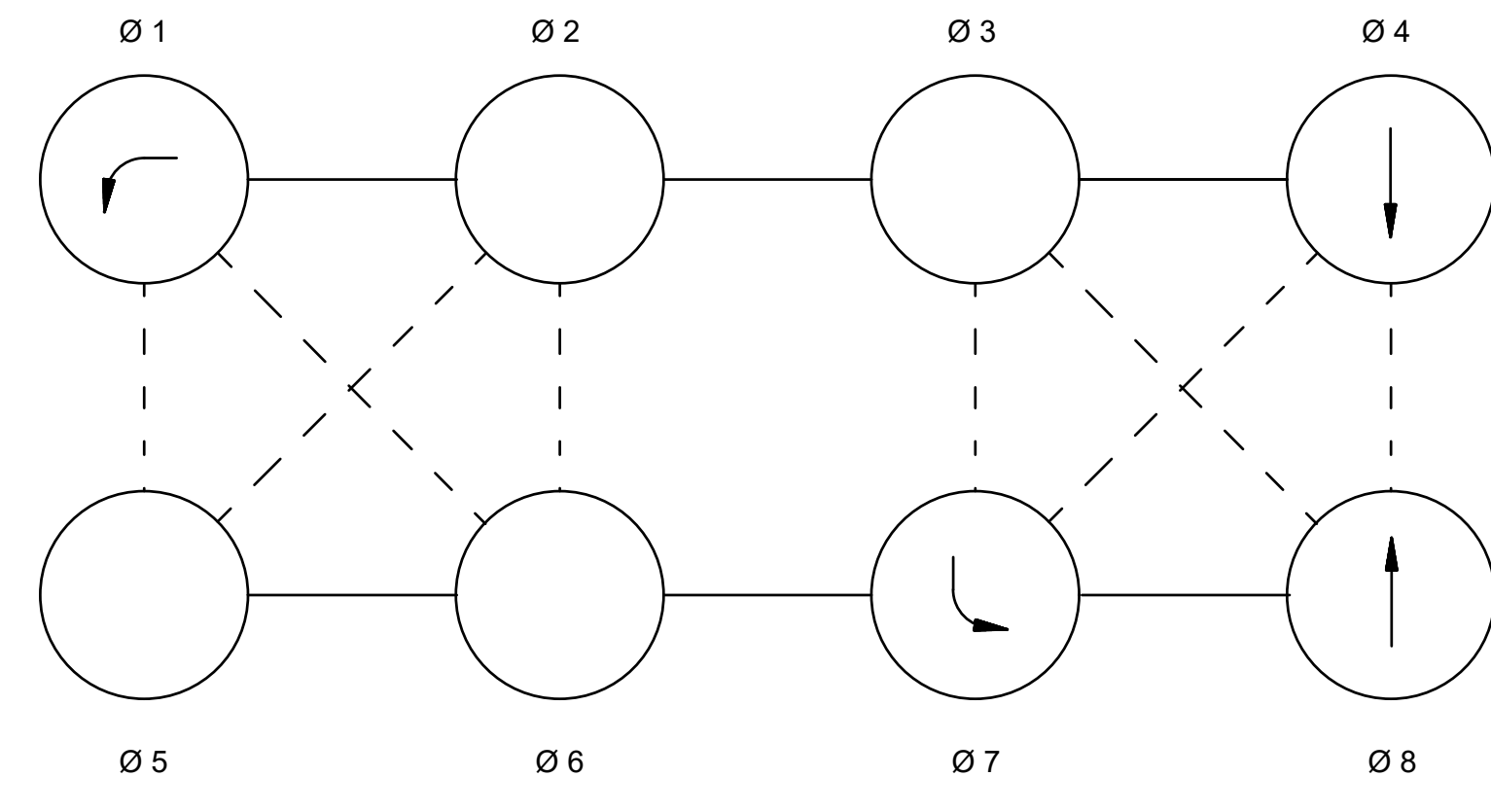
SEE PLAN SHEET-LOOP DETECTOR DETAILS FOR LOOP CONSTRUCTION. SPlicing, DETAILS & NOTES. DELAY TIME EFFECTIVE ONLY DURING CALLED Ø RED. TIME IN SEC.

DETECTOR NUMBER	QUANTITY	SPLICE	LOOP SIZE	NUM. OF TURNS	Ø CALLED	Ø EXT.	MODE A=PULSE B=PRES.	CHANNEL NUMBER
D1	3	S/P	5' X 5'	3	7	7	B	1
D1B	1	S/P	5' X 12'	3	7	7	B	2
D2	6	S/P	5' X 5'	3	1	1	B	3
D2B	1	S/P	5' X 15'	3	1	1	B	4

### PREFERENTIAL PHASING SEQUENCE



### NEMA DUAL RING PHASING NOTES:

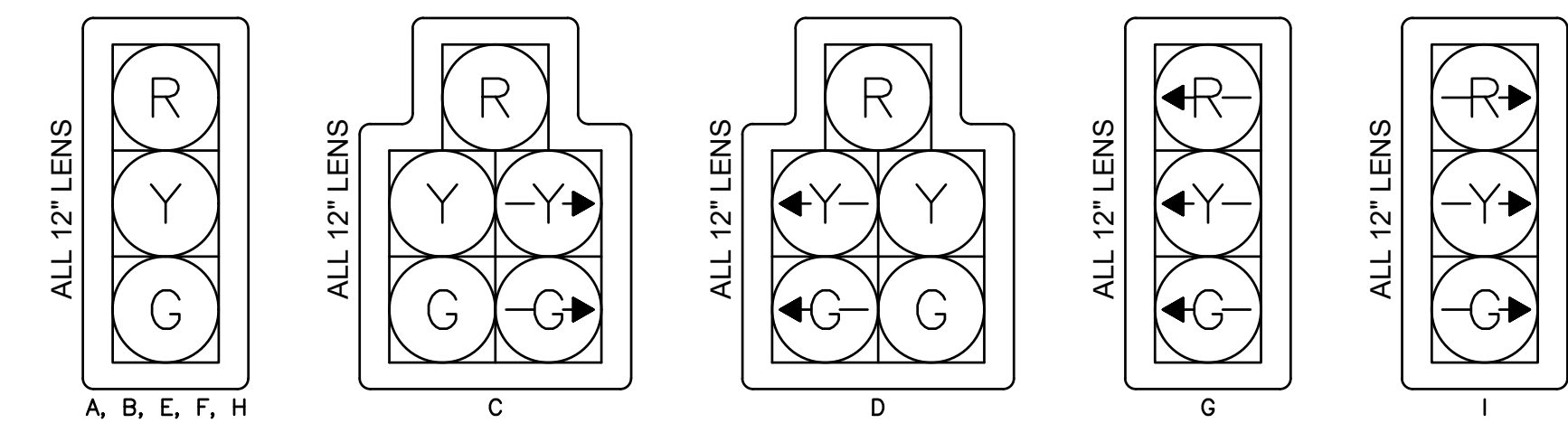


- PHASES ASSOCIATED BY A SOLID LINE SHALL NOT OPERATE CONCURRENTLY.
- PHASES ASSOCIATED BY A DASHED LINE MAY OPERATE CONCURRENTLY.
- THROUGH MOVEMENTS MAY INCLUDE RIGHT TURNS.
- IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT SHALL NOT CHANGE DURING THE CHANGE INTERVAL(S) UNLESS OTHERWISE NOTED.

### TRAFFIC SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		VEHICULAR SIGNAL HEAD
		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
		MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		PEDESTRIAN SIGNAL POST AND BASE
		PEDESTRIAN SIGNAL HEAD
		AUDIBLE PEDESTRIAN SIGNAL
		SIGN AND POST
		CONTROL CABINET, GROUND MOUNTED
		PULL BOX 12"x12" (OR AS NOTED)
		EMERGENCY VEHICLE PRE-EMPTION RECEIVER
		EMERGENCY VEHICLE PRE-EMPTION CONFIRMATION STROBE
		TRAFFIC SIGNAL CONDUIT
		VEHICLE MOVEMENT DURING FLASHING
		FIRE VEHICLE DURING PROTECTED PHASE

### SIGNAL IDENTIFICATION



- NOTES:**
- ALL SIGNALS SHALL HAVE CUT AWAY VISORS.

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 www.DRAarchitects.com

**NORTHEAST METRO TECHNICAL HIGH SCHOOL**  
 Wakefield, Massachusetts

**WARNER LARSON LANDSCAPE ARCHITECTS**  
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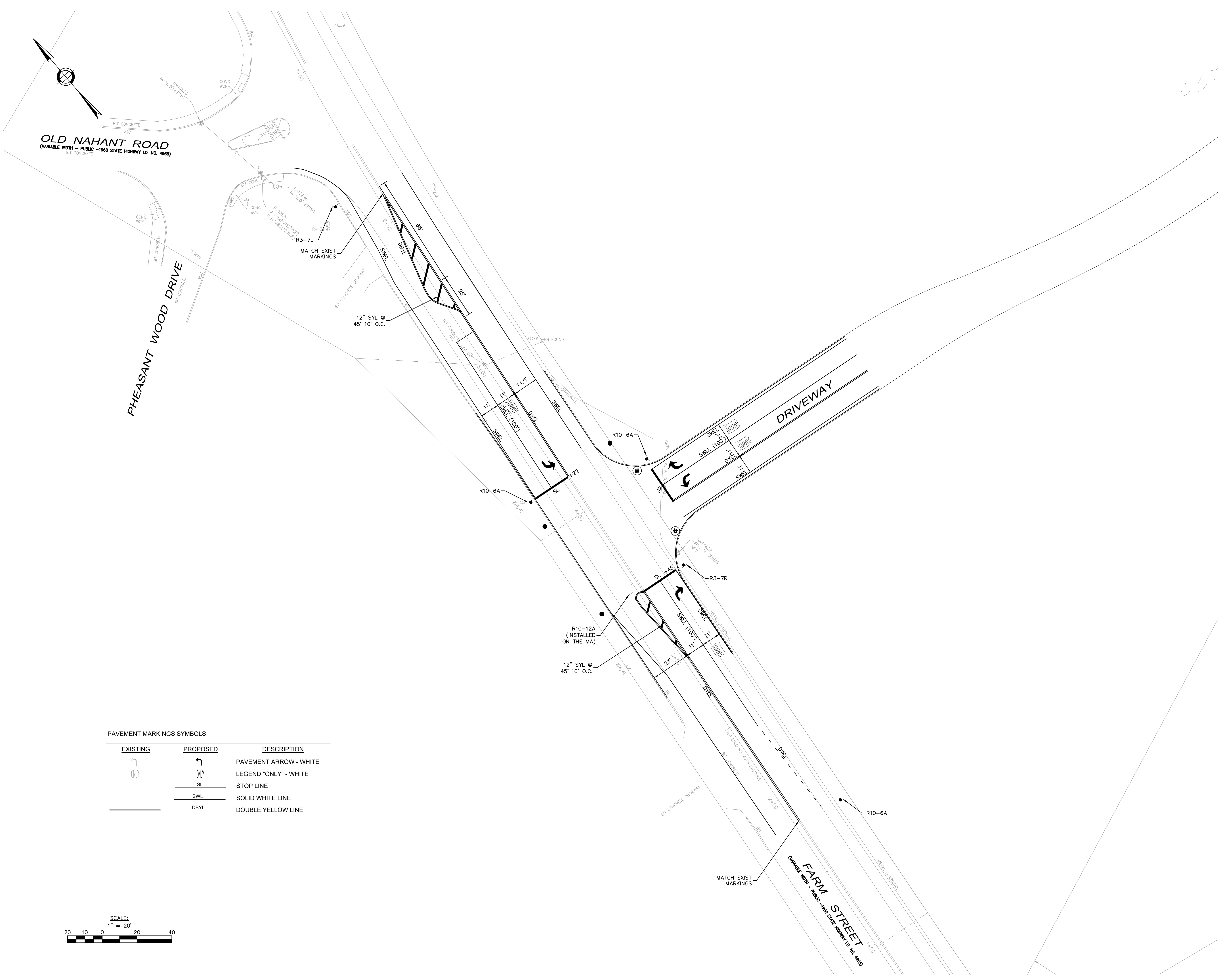
### CONCEPT PLAN

### TRAFFIC SIGNAL DATA PLAN

Scale: 1" = 20'-0"  
 Job No.: 13872.2  
 Drawn By: LB  
 Date: 5/19/2022  
**TR-003**

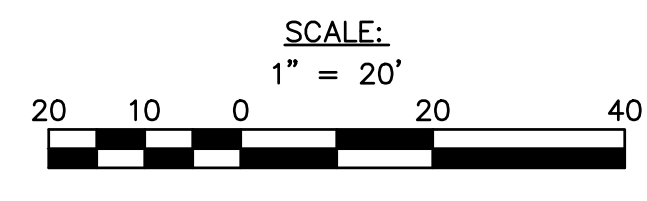


LAST DATE: 5/19/2022 2:19:24 PM by: shb



PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
		LEGEND "ONLY" - WHITE
		STOP LINE
		SOLID WHITE LINE
		DOUBLE YELLOW LINE



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 Wakefield, Massachusetts

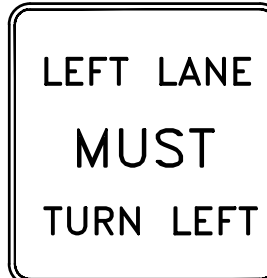


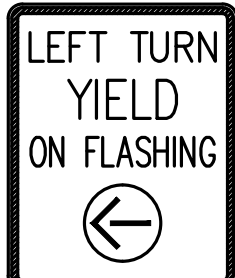
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CONCEPT PLAN

PAVEMENT MARKING AND SIGNAGE PLAN

Scale: 1" = 20'-0"  
 Job No.: 13872.2  
 Drawn By: LB  
 Date: 5/19/2022

TR-004

IDENTIFI- CATION NUMBER	SIZE OF SIGN (IN)		TEXT	DIMENSIONS (mm)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW		BACK- GROUND	LEGEND	BORDER			
R3-7L	36	36		SEE 2003 MUTCD STANDARDS			1	SEE 2003 MUTCD STANDARDS			MTD ON SIGN POST	9.00	9.00
R3-7R	36	36					1				MTD ON SIGN POST	9.00	9.00
R10-6A	24	30					3				MTD ON SIGN POST	5.00	15.00
R10-12A	30	36		↓	↓	↓	1	↓	↓	↓	MTD ON MAST ARM	7.50	7.50

CONCEPT PLAN

**SIGN  
SUMMARY**

Scale: 1" = 20'-0"  
Job No.: 13872.2  
Drawn By: LB  
Date: 5/19/2022

**TR-005**

# MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION

## INDEX

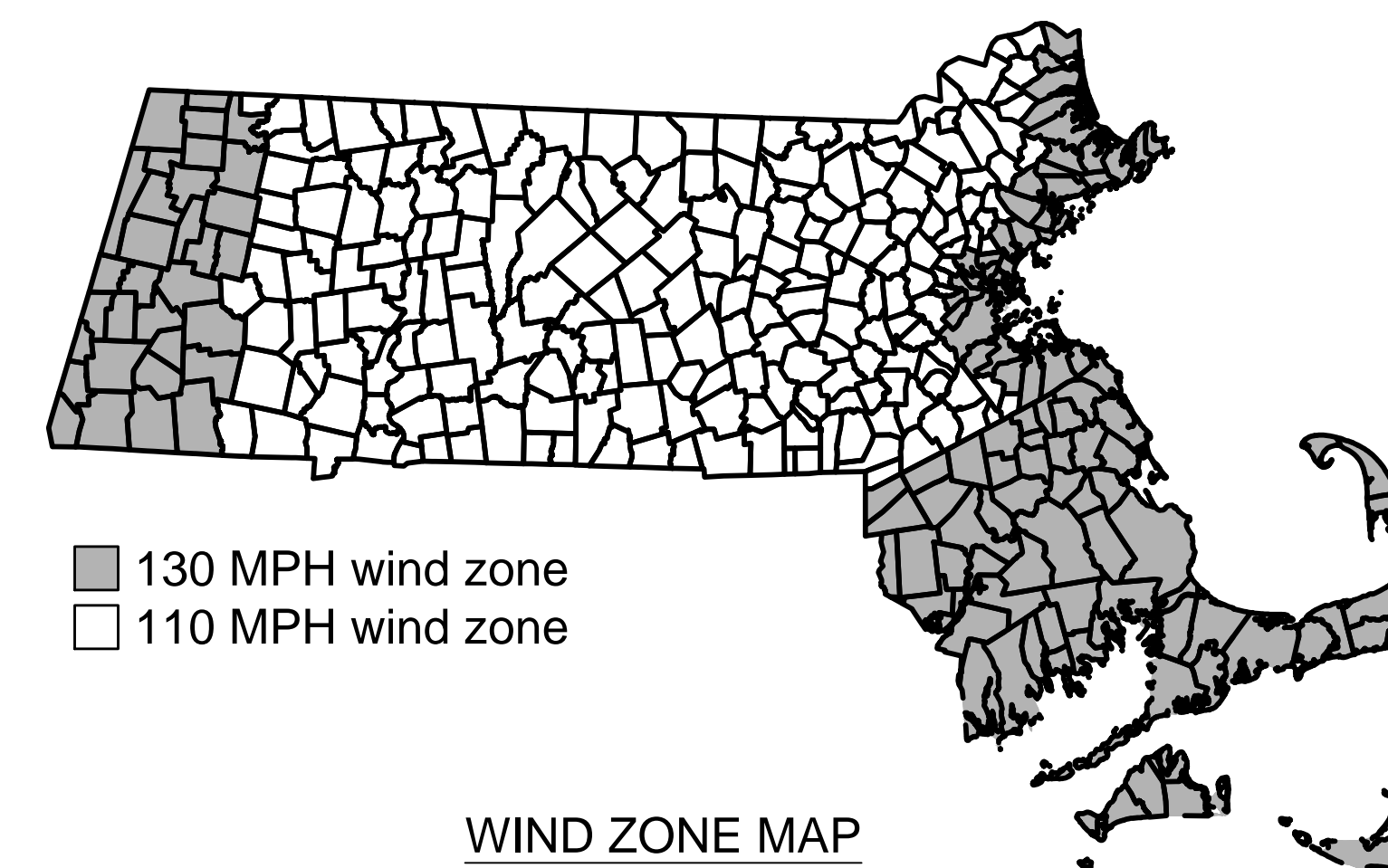
SHEET NO.	DESCRIPTION
1	Title Sheet
2	15' - 40' Arm Load Diagrams
3	45' - 60' Arm Load Diagrams
4	Mast Arm Details
5	Mast Arm Cored Pier Foundations
6	Span Wire Details
7	Span Wire Cored Pier Foundations


All work shall comply to the latest edition of the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals* and the latest edition of the Massachusetts Department of Transportation - Highway Division *Standard Specifications for Highways and Bridges*, including the latest Supplemental and Interim Supplemental Specifications.

## OVERHEAD SIGNAL STRUCTURE & FOUNDATION Standard Drawings

### NOTES

- These drawings are intended to provide standard designs for mast arms and foundations or design standards that must be met for span wire assemblies or non-standard mast arms and their respective foundations.
- If a standard mast arm design is used the Design Engineer shall not propose overhead traffic signal components and signage that exceed the loading conditions depicted on Sheets 2 and 3 of this set.
- For non-standard mast arms, including but not limited to specialty mast arms or mast arms that have loading conditions that exceed what is depicted on Sheets 2 and 3 of this set, it shall be the responsibility of the Design Engineer to submit a design for the structure and foundation that conforms to the latest edition of the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*.
- For span wire assemblies, the Design Engineer shall provide span length(s) and soil classification at proposed strain pole locations. The contractor shall provide the Design Engineer with shop drawings for the strain poles and foundations that conform to the latest edition of the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals* and are stamped and signed by a Massachusetts Professional Structural Engineer.
- The Design Engineer is responsible for providing soil classification for all overhead signal structures, regardless of type, and for selecting a foundation design for standard mast arms.
- Overhead signal structures and foundations located in the shaded region on the wind zone map shall use a Design Wind Speed of 130 MPH. This region includes all of Plymouth, Bristol, Barnstable, Dukes, Nantucket, Suffolk, and Berkshire counties, and coastal towns in Norfolk, Middlesex, and Essex counties as shown on the wind zone map. A Design Wind Speed of 110 MPH shall be used for all other regions.
- With the exception of Note 8, mast arm structures and strain poles shall have a 50 year Design Life using Fatigue Category No. 2, with truck wind gusts excluded.
- Overhead signal structures located at intersections with an AADT that exceeds 40,000 vehicles per day and a truck percentage of greater than 10% shall utilize a non-standard design. The Design Life shall be 50 years using Fatigue Category No. 1.



  
**STANDARD DRAWINGS**  
 OVERHEAD SIGNAL STRUCTURE & FOUNDATION  
 TITLE SHEET  
  
 MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
 HIGHWAY DIVISION  
 10 PARK PLAZA BOSTON, MASS  
 DECEMBER, 2015  
 SHEET 1 OF 7 SHEETS

**NORTHEAST  
METRO  
TECHNICAL  
HIGH SCHOOL**

Wakefield,  
Massachusetts



**WARNER LARSON**  
LANDSCAPE ARCHITECTS  
180 WEST BROADWAY, BOSTON, MA 02107  
617-464-1140  
warnerlarson.com

CONCEPT PLAN

**TRAFFIC AND  
SIGNALS  
DETAILS**

Scale: 1" = 20'-0"  
Job No.: 13872.2  
Drawn By: LB  
Date: 5/19/2022

**TR-006**

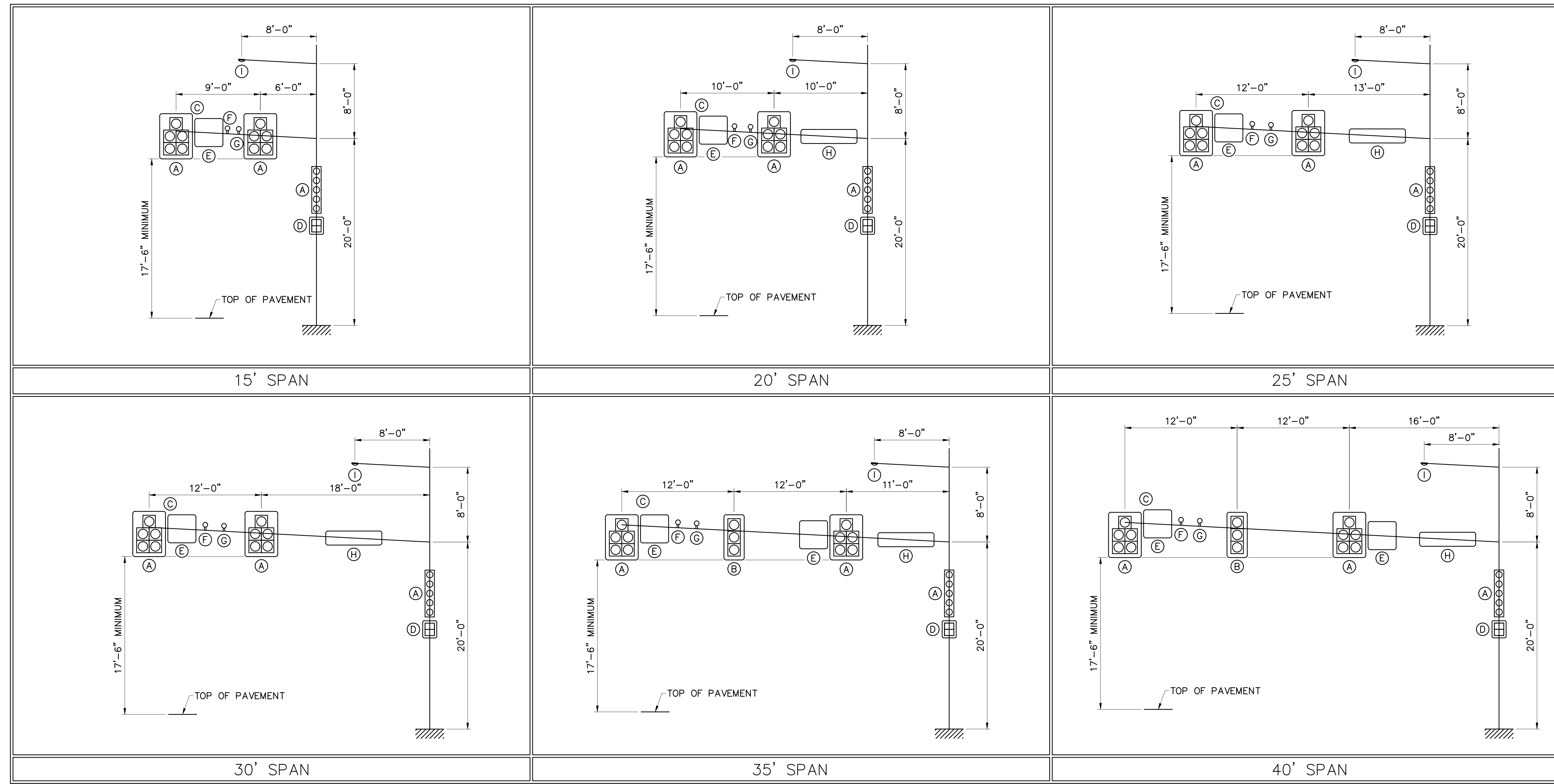
**NORTHEAST METRO TECHNICAL HIGH SCHOOL**

Wakefield, Massachusetts



CONCEPT PLAN

TRAFFIC AND SIGNALS DETAILS



DESIGN LOADING						
DEVICE	DESCRIPTION	PROJ. AREA (FT <sup>2</sup> )	WEIGHT (LBS)	DEVICE	DESCRIPTION	WEIGHT (LBS)
(A)	5 SECTION, 1 WAY SIGNAL	13.33	110	(F)	DETECTOR	10
(B)	3 SECTION, 1 WAY SIGNAL	8.67	74	(G)	STROBE	10
(C)	DAMPENER PLATE (NOT SHOWN)	0.00	9	(H)	72" X 18" STREET NAME SIGN	12
(D)	DUAL PEDESTRIAN SIGNAL	8.00	80	(I)	OPTIONAL LUMINAIRE	75
(E)	36" X 36" REGULATORY SIGN	9.00	12			

NOTE: ALL SIGNALS HAVE 5.0" NON-LOUVERED BACKPLATES WITH REFLECTIVE BORDERS

**massDOT**  
 Massachusetts Department of Transportation  
 Highway Division

STANDARD DRAWINGS  
 OVERHEAD SIGNAL STRUCTURE & FOUNDATION  
 15' - 40' ARM  
 LOAD DIAGRAMS  
 MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
 HIGHWAY DIVISION  
 10 PARK PLAZA BOSTON, MASS  
 DECEMBER, 2015

SHEET 2 OF 7 SHEETS

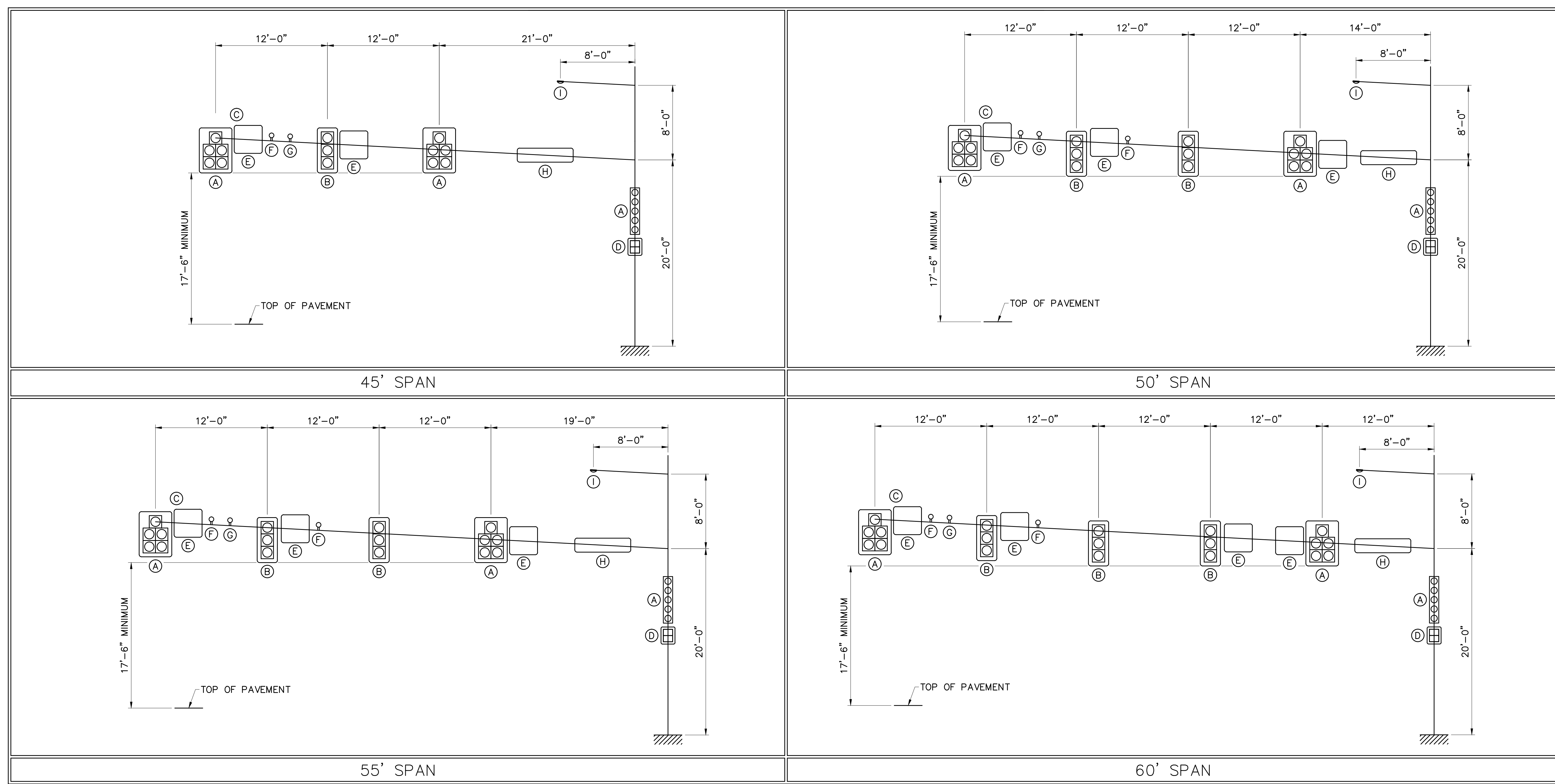
**NORTHEAST METRO TECHNICAL HIGH SCHOOL**

Wakefield, Massachusetts



CONCEPT PLAN

**TRAFFIC AND SIGNALS DETAILS**



DESIGN LOADING							
DEVICE	DESCRIPTION	PROJ. AREA (FT <sup>2</sup> )	WEIGHT (LBS)	DEVICE	DESCRIPTION	PROJ. AREA (FT <sup>2</sup> )	WEIGHT (LBS)
(A)	5 SECTION, 1 WAY SIGNAL	13.33	110	(F)	DETECTOR	1.00	10
(B)	3 SECTION, 1 WAY SIGNAL	8.67	74	(G)	STROBE	1.00	10
(C)	DAMPENER PLATE (NOT SHOWN)	0.00	9	(H)	72" X 18" STREET NAME SIGN	9.00	12
(D)	DUAL PEDESTRIAN SIGNAL	8.00	80	(I)	OPTIONAL LUMINAIRE	3.30	75
(E)	36" X 36" REGULATORY SIGN	9.00	12				

NOTE: ALL SIGNALS HAVE 5.0" NON-LOUVERED BACKPLATES WITH REFLECTIVE BORDERS

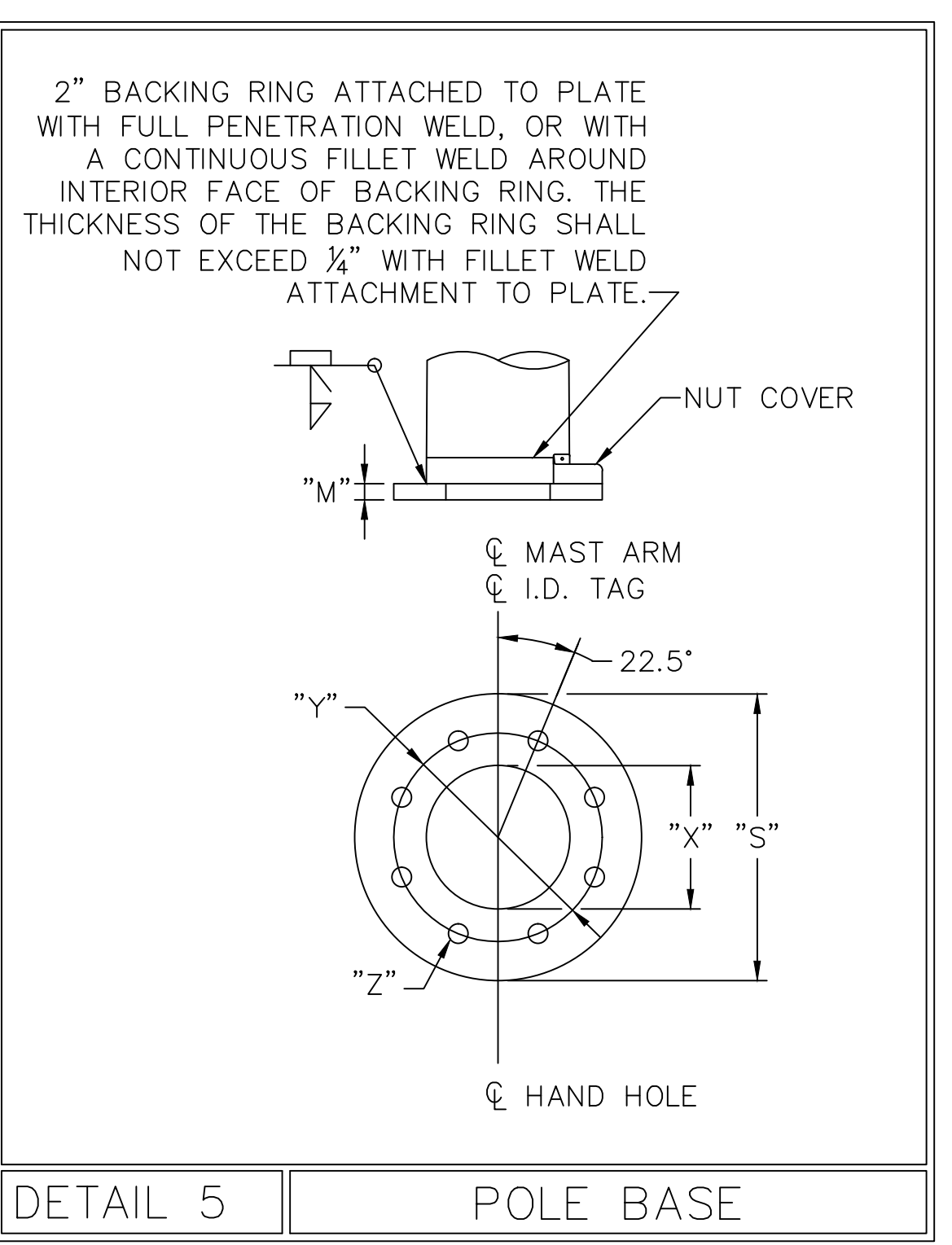
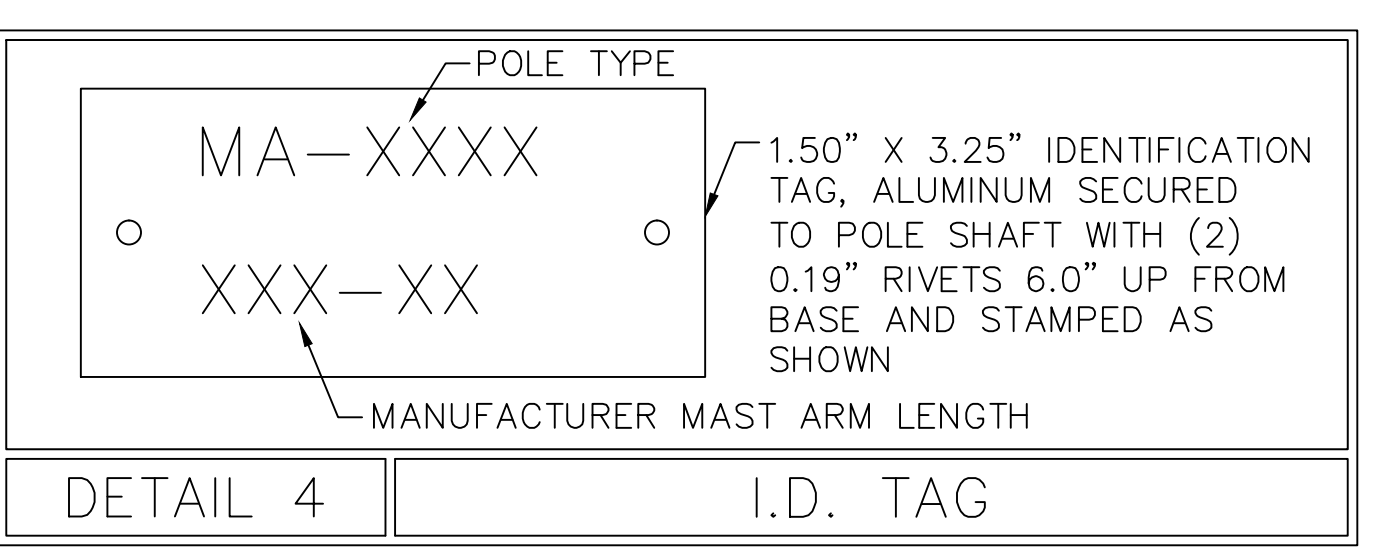
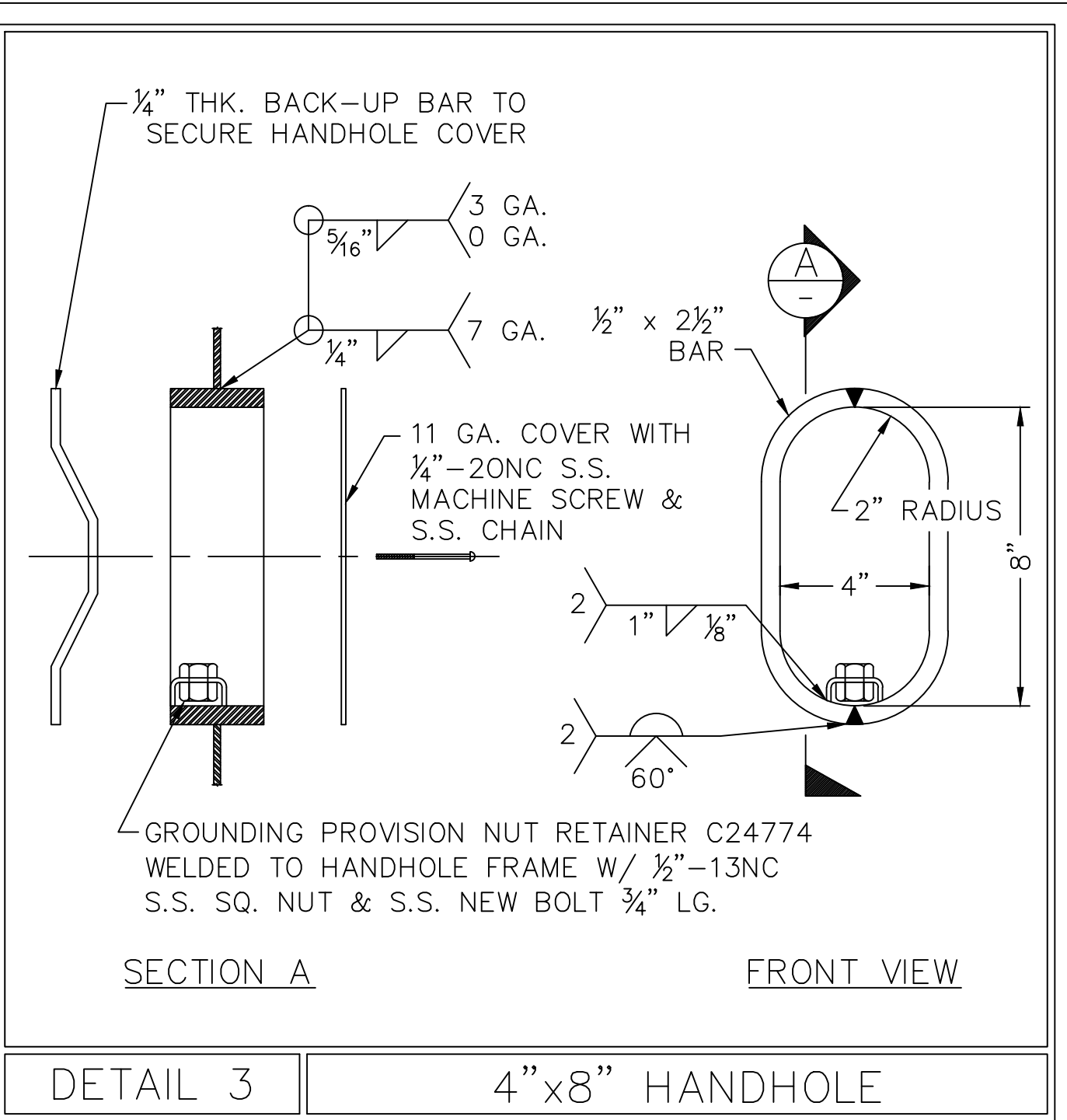
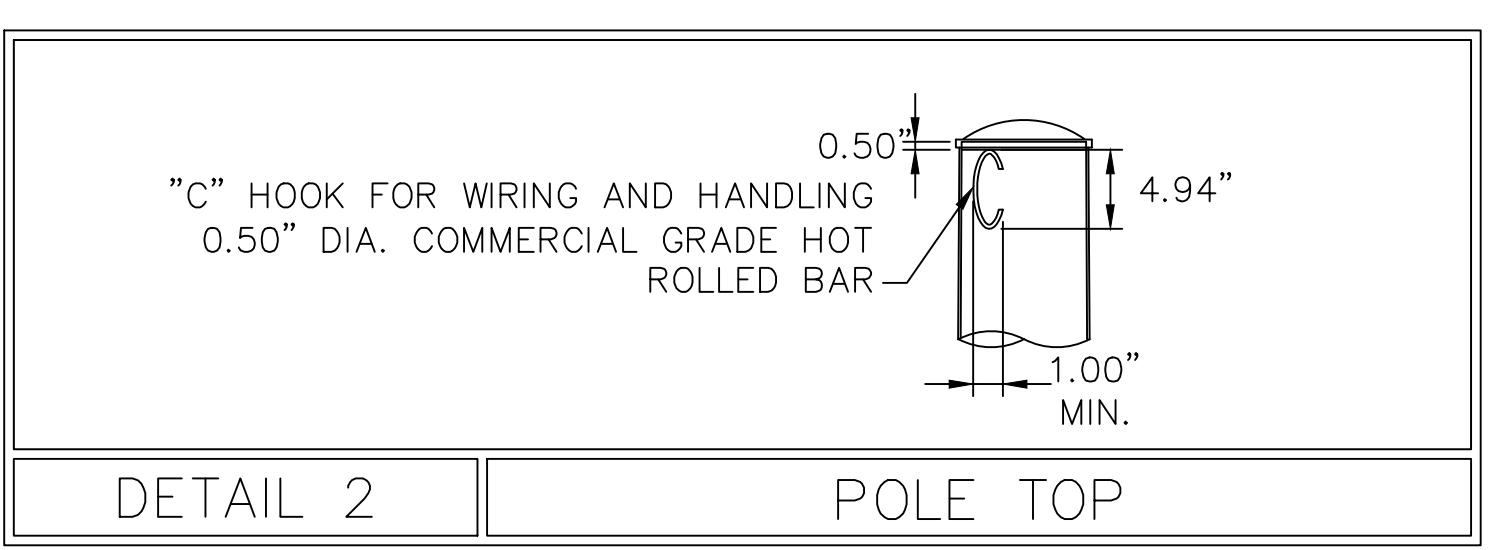
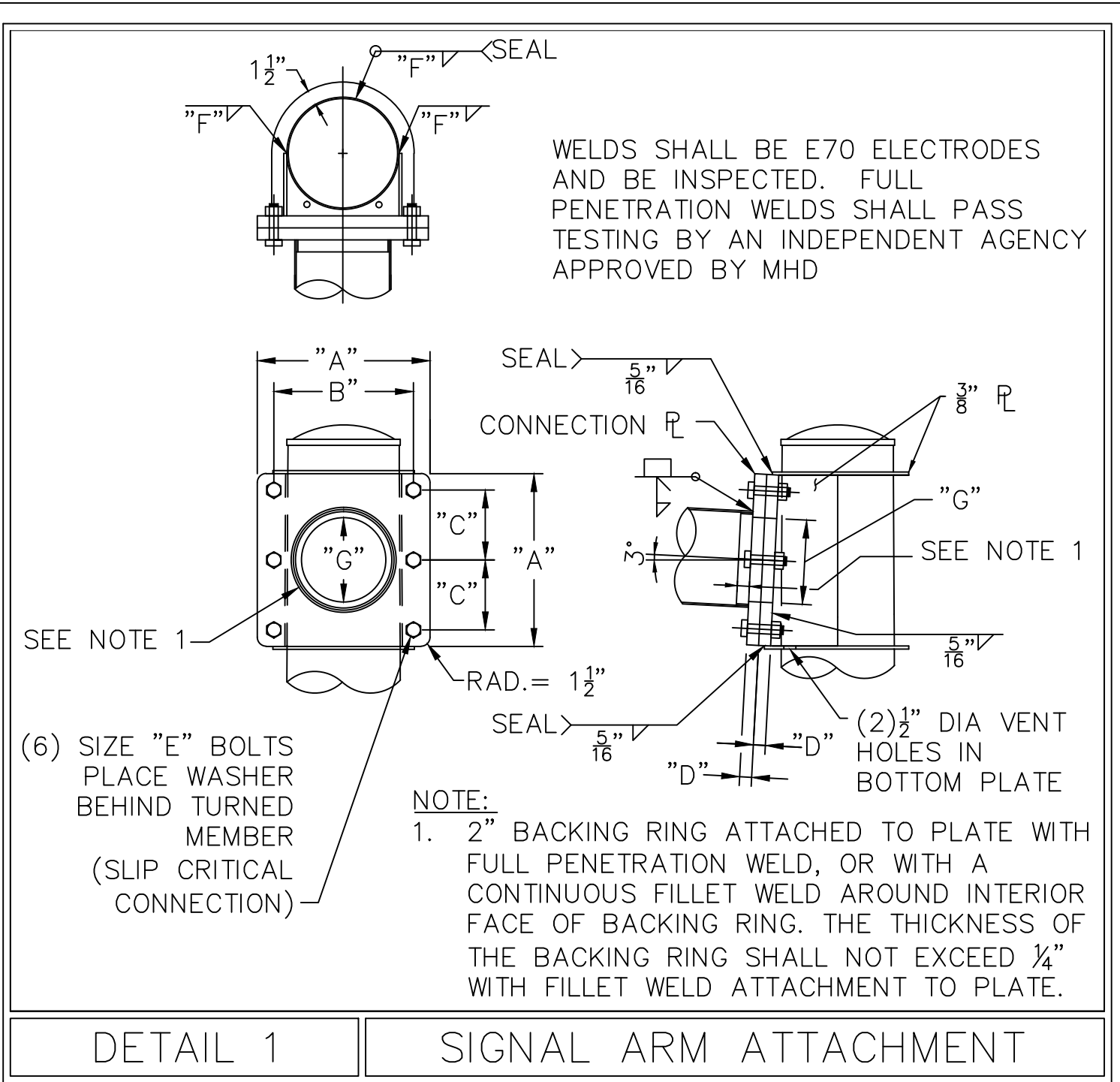
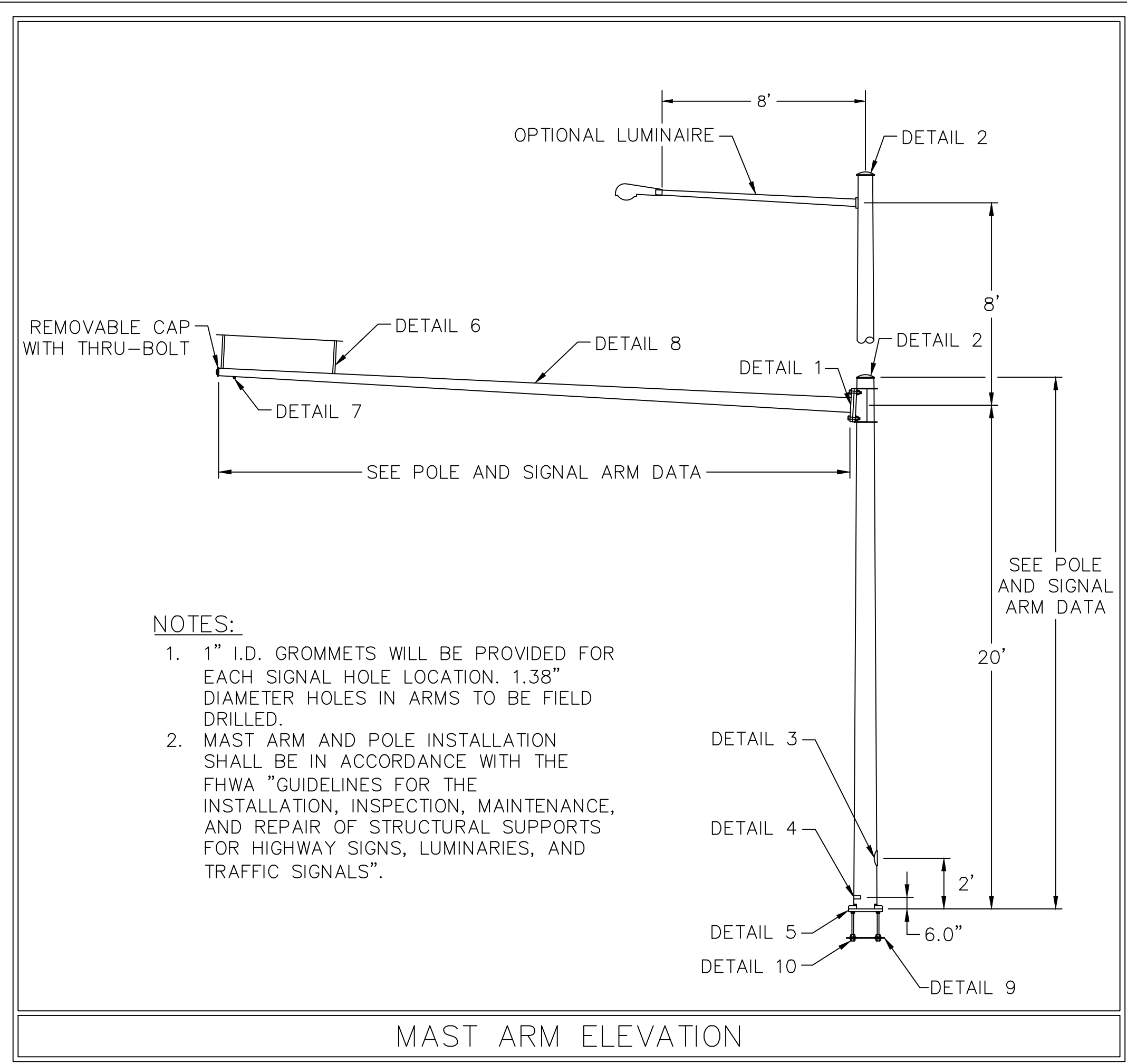
**massDOT**  
 Highway Division  
 STANDARD DRAWINGS  
 OVERHEAD SIGNAL STRUCTURE & FOUNDATION  
 45' - 60' ARM  
 LOAD DIAGRAMS  
 MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
 HIGHWAY DIVISION  
 10 PARK PLAZA BOSTON, MASS  
 DECEMBER, 2015  
 SHEET 3 OF 7 SHEETS

**NORTHEAST METRO TECHNICAL HIGH SCHOOL**  
 Wakefield, Massachusetts



**CONCEPT PLAN**

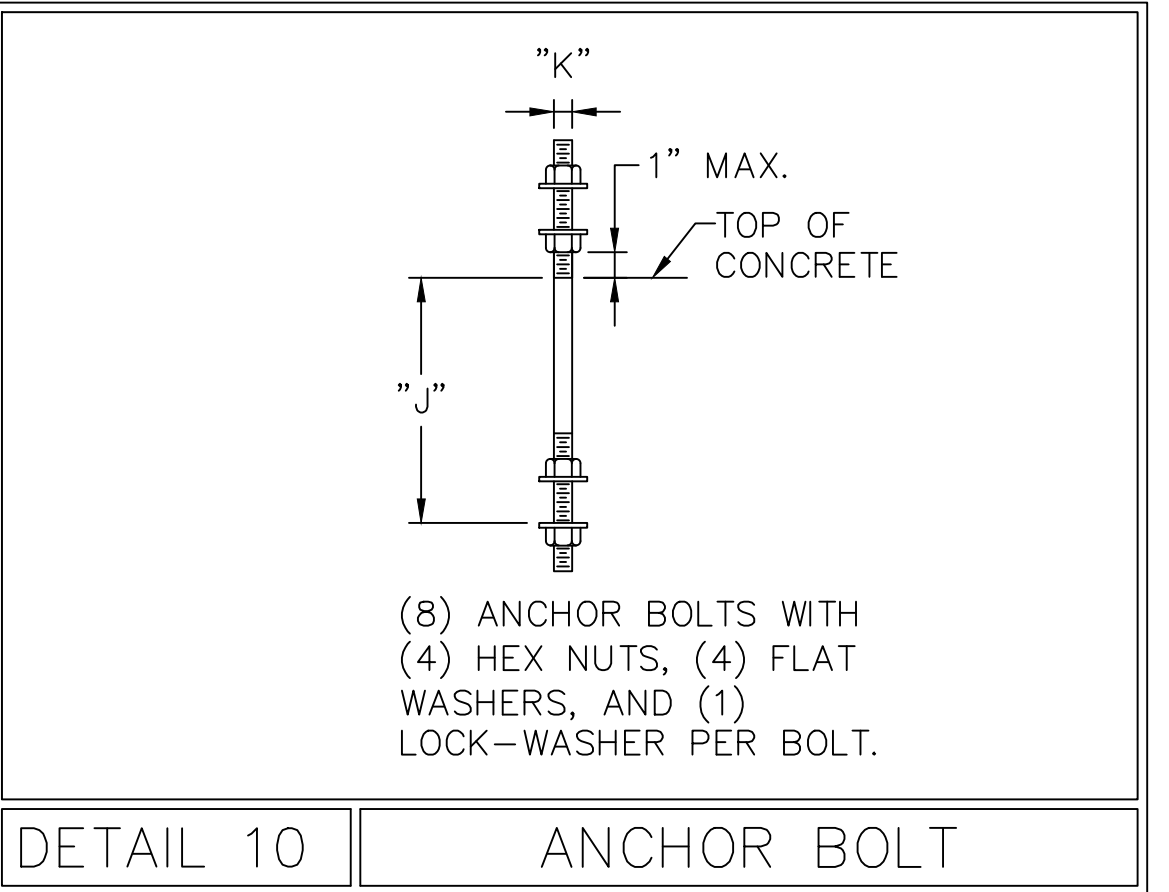
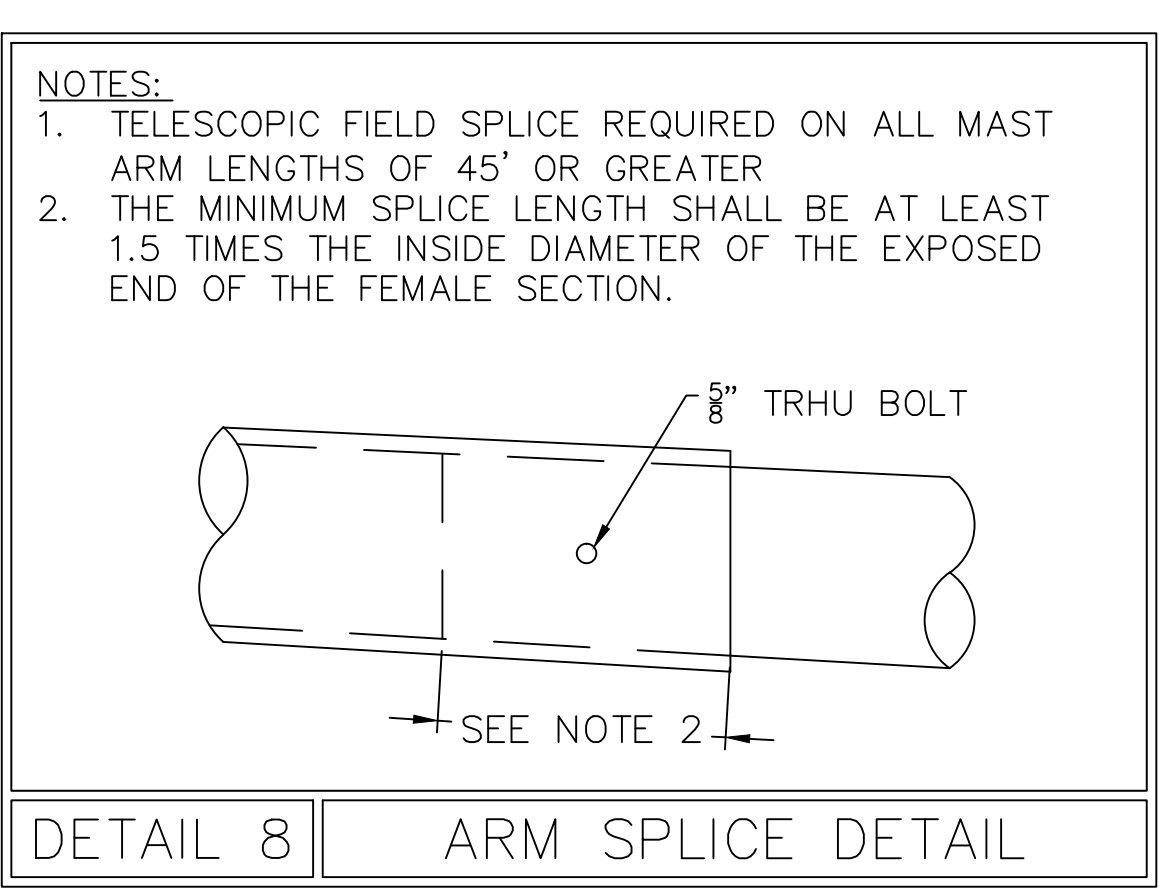
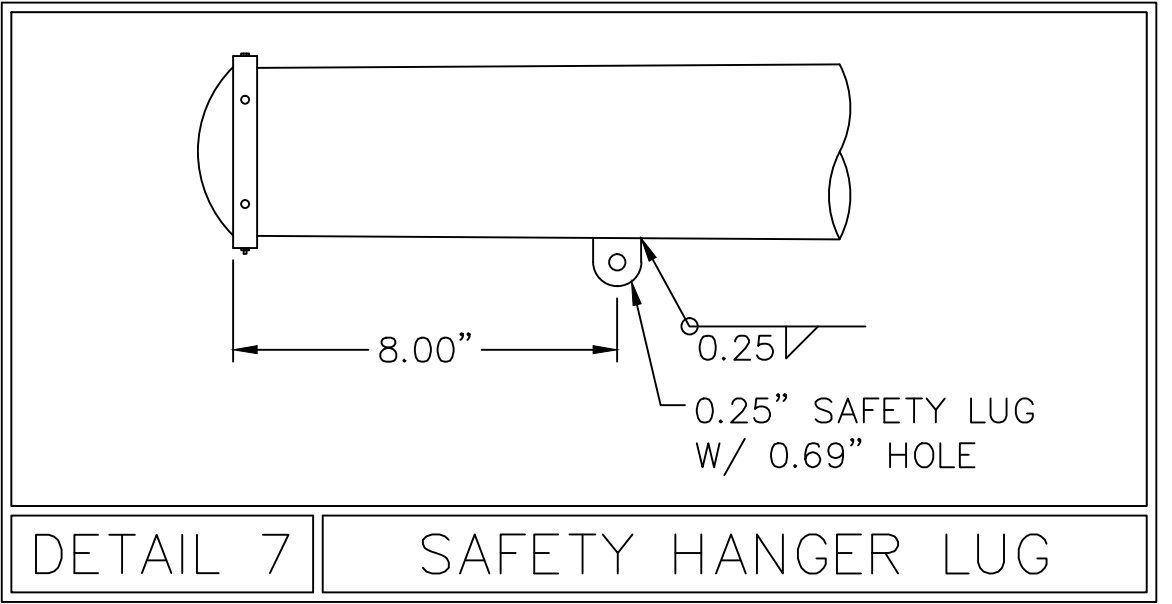
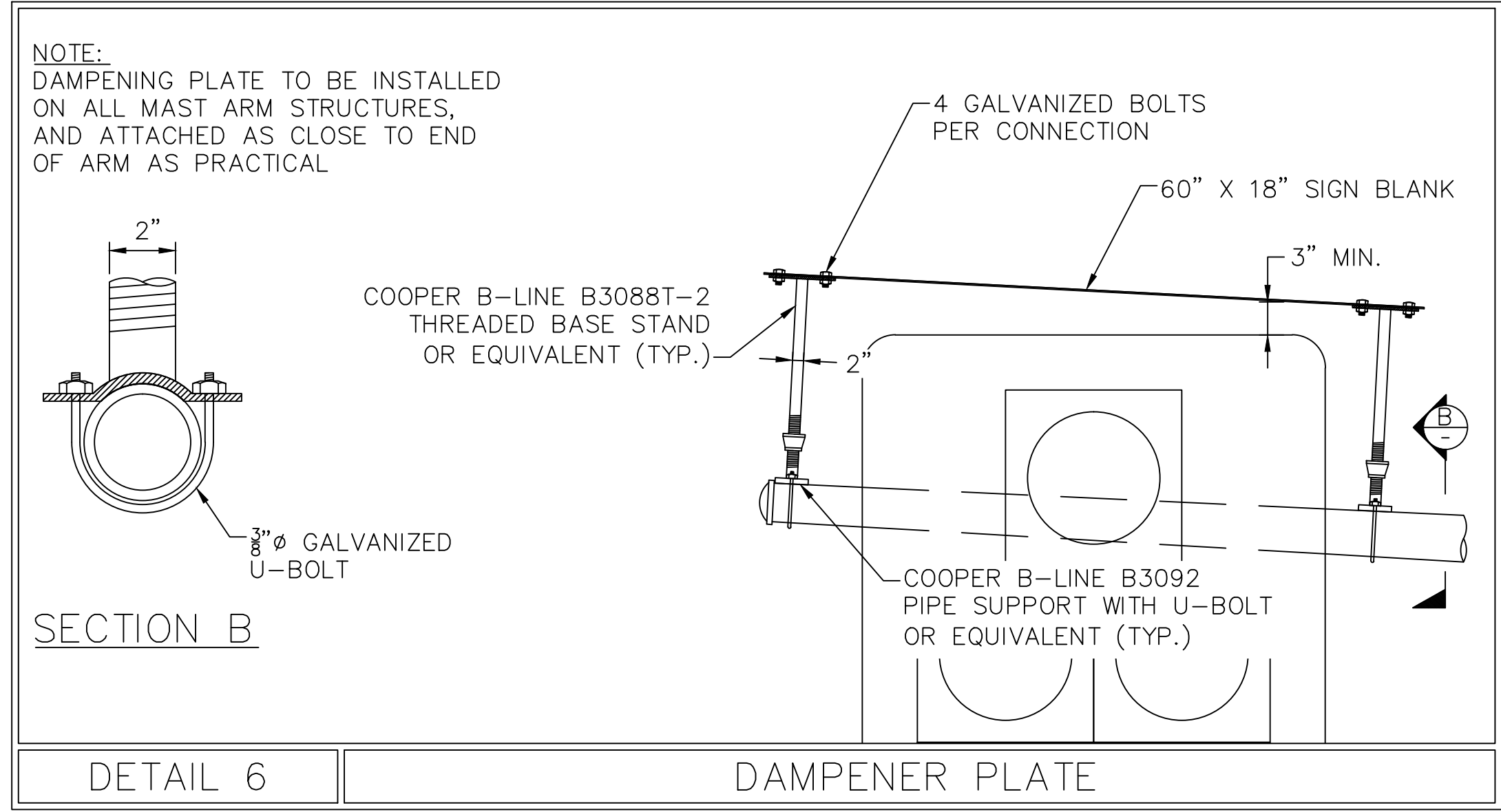
**TRAFFIC AND SIGNALS DETAILS**



**MATERIAL DATA**

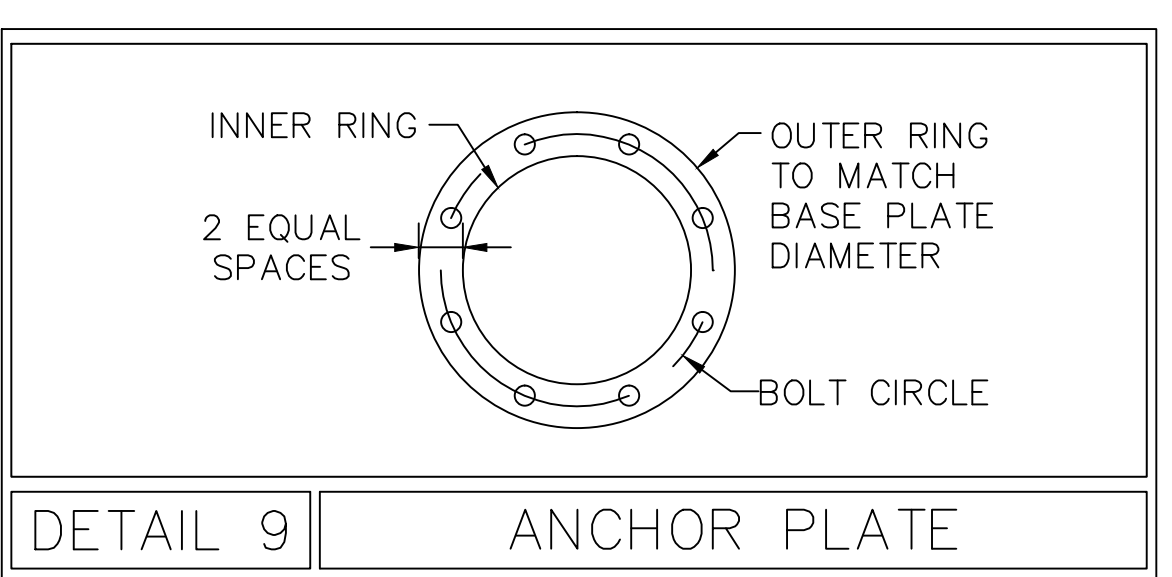
COMPONENT	DESIGNATION	YIELD (KSI)
POLE TUBE	ASTM A595 GR. A	55
POLE BASE PLATE	AASHTO M270, OR ASTM A709	50
ANCHOR BOLTS	AASHTO M314, OR ASTM A307 GR. C	55
GALVANIZING	AASHTO M111 OR M232	
ARM TUBE	ASTM A595 GR. A	55
ARM CONNECTION PLATE	AASHTO M270, OR ASTM A709	50
ARM CONNECTING BOLTS	AASHTO M164, OR ASTM A325 **	

\*\* BOLTS WHICH ACCUMULATE RUST OR DIRT SHALL BE DISCARDED.



**POLE AND SIGNAL ARM DATA**

LOCATIONS	SIGNAL ARM TUBE				POLE TUBE				POLE BASE						SIGNAL ARM ATTACHMENT DATA							
	SPAN (FT)	FIXED END DIA. (IN)	FREE END DIA. (IN)	WALL THK.	BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	WALL THK.	PLATE CIRCLE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE "Z" (IN)	HOLE "X" (IN)	DIA. "K" (IN)	EMBED. LENGTH (IN)	"A" (IN)	"B" (IN)	"C" (IN)	"D" (IN)	"E" (IN)	"F" (IN)	"G" (IN)
	15.00	9.00	6.90	7 GA.	13.00	9.92	22.00	7 GA.	24.00	19.00	2.00	1.50	10.00	1.25	36.00	17.25	14.00	7.00	2.00	1.00	0.188	7.00
	20.00	9.00	6.20	7 GA.	13.00	9.92	22.00	3 GA.	27.00	22.00	2.00	1.75	10.00	1.50	36.00	17.75	14.50	7.25	2.00	1.00	0.250	7.00
	25.00	10.00	6.50	7 GA.	13.00	9.92	22.00	3 GA.	27.00	22.00	2.00	1.75	10.00	1.50	36.00	18.25	15.00	7.50	2.00	1.00	0.250	7.50
	30.00	11.00	6.80	7 GA.	13.50	10.42	22.00	3 GA.	27.00	22.00	2.00	1.75	10.50	1.50	36.00	18.75	15.50	7.75	2.00	1.00	0.250	8.75
	35.00	12.00	7.10	3 GA.	15.00	11.92	22.00	3 GA.	27.00	22.00	2.00	1.75	12.50	1.50	36.00	20.25	17.00	8.50	2.00	1.25	0.313	6.50
	40.00	13.00	7.40	3 GA.	16.00	12.92	22.00	3 GA.	29.00	24.00	2.00	2.00	12.00	1.75	36.00	21.25	18.00	9.00	2.00	1.25	0.313	6.75
	45.00	13.50	7.20	3 GA.	17.50	14.42	22.00	3 GA.	29.00	24.00	2.00	2.00	12.00	1.75	48.00	22.25	19.00	9.50	2.25	1.25	0.313	8.00
	50.00	14.50	7.50	3 GA.	17.00	13.92	22.00	0 GA.	29.00	24.00	2.00	2.00	12.00	1.75	48.00	22.75	19.50	9.75	2.25	1.25	0.313	8.50
	55.00	16.00	8.30	3 GA.	18.00	14.92	22.00	0 GA.	31.00	26.00	2.00	2.25	12.00	2.00	48.00	23.75	20.00	10.00	2.25	1.25	0.313	8.75
	60.00	16.00	8.00	0 GA.	19.50	16.42	22.00	0 GA.	31.00	26.00	2.00	2.25	14.00	2.00	48.00	25.75	22.00	11.00	2.50	1.50	0.313	7.50



**massDOT**  
 Highway Division  
 STANDARD DRAWINGS  
 OVERHEAD SIGNAL STRUCTURE & FOUNDATION  
 MAST ARM DETAILS

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
 HIGHWAY DIVISION  
 10 PARK PLAZA BOSTON, MASS  
 DECEMBER, 2015

SHEET 4 OF 7 SHEETS

PIER FOUNDATIONS FOR 110 MPH WIND SPEED ZONE

SOIL TYPE	15' & 20' MAST ARMS				25' & 30' MAST ARMS				35' & 40' MAST ARMS				45' & 50' MAST ARMS				55' & 60' MAST ARMS			
	DIAMETER	DEPTH	VERT. BARS	TIE BARS	DIAMETER	DEPTH	VERT. BARS	TIE BARS	DIAMETER	DEPTH	VERT. BARS	TIE BARS	DIAMETER	DEPTH	VERT. BARS	TIE BARS	DIAMETER	DEPTH	VERT. BARS	TIE BARS
DRY SAND (LOOSE)	3'-6"	8'-6"	18-#8	#5 @ 12"	3'-6"	9'-0"	18-#8	#5 @ 12"	3'-6"	11'-6"	18-#8	#5 @ 9"	4'-0"	12'-0"	18-#9	#5 @ 9"	4'-6"	13'-0"	18-#10	#5 @ 6"
DRY SAND (DENSE)	3'-6"	7'-6"	18-#8	#5 @ 12"	3'-6"	7'-6"	18-#8	#5 @ 12"	3'-6"	8'-6"	18-#8	#5 @ 9"	4'-0"	9'-0"	18-#9	#5 @ 9"	4'-6"	9'-6"	18-#10	#5 @ 6"
WET SAND (LOOSE)	3'-6"	9'-6"	18-#8	#5 @ 12"	3'-6"	11'-6"	18-#8	#5 @ 12"	3'-6"	14'-6"	18-#8	#5 @ 9"	4'-0"	15'-6"	18-#9	#5 @ 9"	4'-6"	16'-6"	18-#10	#5 @ 6"
WET SAND (DENSE)	3'-6"	8'-6"	18-#8	#5 @ 12"	3'-6"	9'-0"	18-#8	#5 @ 12"	3'-6"	10'-6"	18-#8	#5 @ 9"	4'-0"	11'-6"	18-#9	#5 @ 9"	4'-6"	12'-0"	18-#10	#5 @ 6"
CLAY (SOFT TO MEDIUM STIFF)	3'-6"	12'-0"	18-#8	#5 @ 12"	3'-6"	12'-0"	18-#8	#5 @ 12"	3'-6"	13'-0"	18-#8	#5 @ 9"	4'-0"	14'-0"	18-#9	#5 @ 9"	4'-6"	15'-6"	18-#10	#5 @ 6"
CLAY (STIFF)	3'-6"	10'-6"	18-#8	#5 @ 12"	3'-6"	10'-6"	18-#8	#5 @ 12"	3'-6"	11'-0"	18-#8	#5 @ 9"	4'-0"	12'-0"	18-#9	#5 @ 9"	4'-6"	13'-6"	18-#10	#5 @ 6"

PIER FOUNDATIONS FOR 130 MPH WIND SPEED ZONE

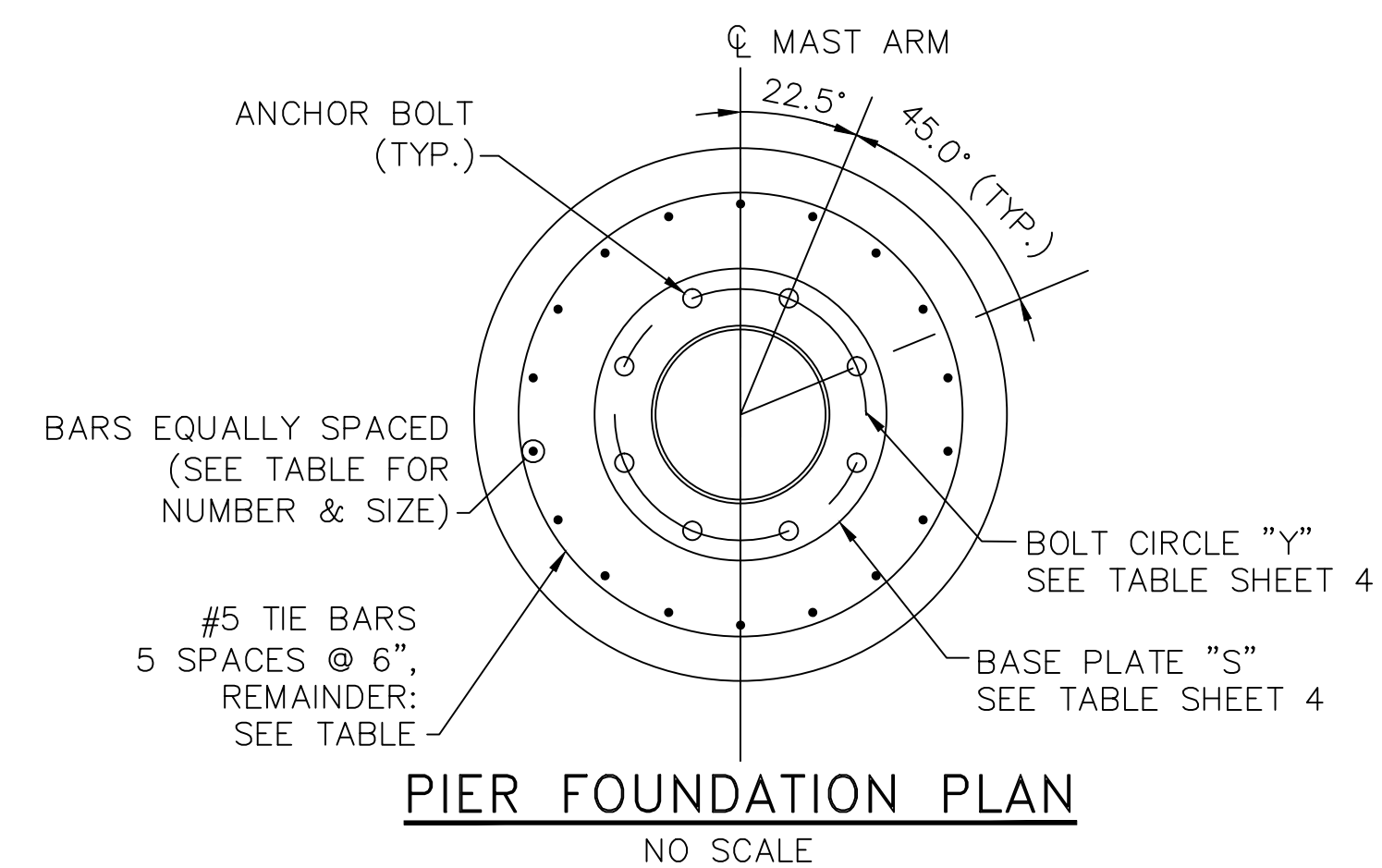
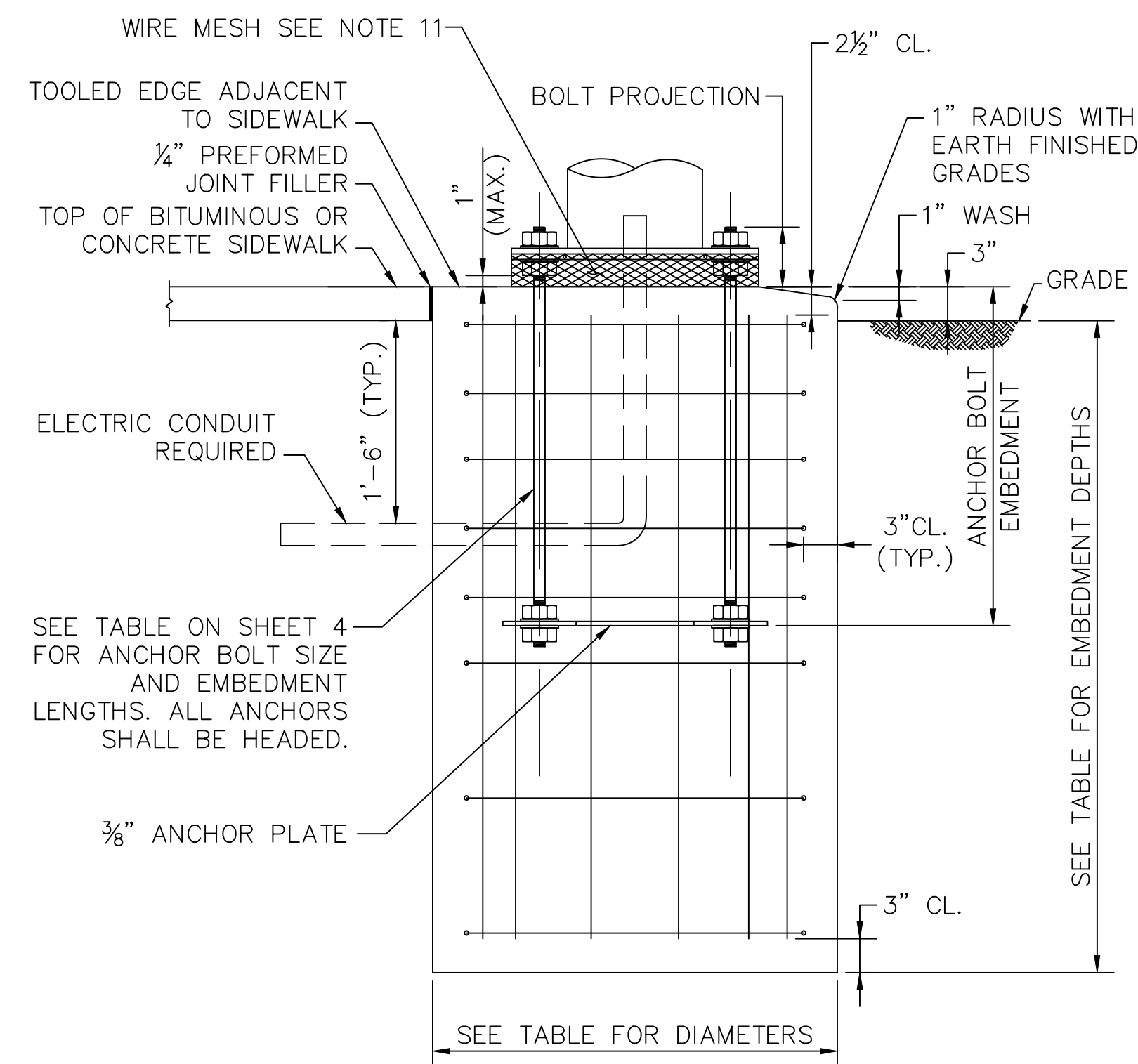
SOIL TYPE	15' & 20' MAST ARMS				25' & 30' MAST ARMS				35' & 40' MAST ARMS				45' & 50' MAST ARMS				55' & 60' MAST ARMS			
	DIAMETER	DEPTH	VERT. BARS	TIE BARS	DIAMETER	DEPTH	VERT. BARS	TIE BARS	DIAMETER	DEPTH	VERT. BARS	TIE BARS	DIAMETER	DEPTH	VERT. BARS	TIE BARS	DIAMETER	DEPTH	VERT. BARS	TIE BARS
DRY SAND (LOOSE)	3'-6"	10'-0"	18-#8	#5 @ 12"	3'-6"	10'-6"	18-#8	#5 @ 12"	3'-6"	13'-6"	18-#8	#5 @ 8"	4'-0"	14'-6"	18-#9	#5 @ 6"	4'-6"	15'-6"	18-#10	#5 @ 5"
DRY SAND (DENSE)	3'-6"	8'-6"	18-#8	#5 @ 12"	3'-6"	9'-0"	18-#8	#5 @ 12"	3'-6"	10'-0"	18-#8	#5 @ 8"	4'-0"	11'-0"	18-#9	#5 @ 6"	4'-6"	11'-6"	18-#10	#5 @ 5"
WET SAND (LOOSE)	3'-6"	11'-6"	18-#8	#5 @ 12"	3'-6"	13'-6"	18-#8	#5 @ 12"	3'-6"	17'-0"	18-#8	#5 @ 8"	4'-0"	18'-6"	18-#9	#5 @ 6"	4'-6"	19'-6"	18-#10	#5 @ 5"
WET SAND (DENSE)	3'-6"	10'-0"	18-#8	#5 @ 12"	3'-6"	10'-0"	18-#8	#5 @ 12"	3'-6"	12'-6"	18-#8	#5 @ 6"	4'-0"	13'-6"	18-#9	#5 @ 6"	4'-6"	14'-6"	18-#10	#5 @ 5"
CLAY (SOFT TO MEDIUM STIFF)	3'-6"	12'-6"	18-#8	#5 @ 12"	3'-6"	13'-0"	18-#8	#5 @ 12"	3'-6"	14'-0"	18-#8	#5 @ 8"	4'-0"	16'-0"	18-#9	#5 @ 6"	4'-6"	17'-6"	18-#10	#5 @ 5"
CLAY (STIFF)	3'-6"	11'-0"	18-#8	#5 @ 12"	3'-6"	11'-0"	18-#8	#5 @ 12"	3'-6"	12'-0"	18-#8	#5 @ 8"	4'-0"	13'-0"	18-#9	#5 @ 6"	4'-6"	14'-0"	18-#10	#5 @ 5"

BASIS OF DESIGN

ALL MAST ARM STRUCTURES AND FOUNDATIONS ARE DESIGNED IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, SIXTH EDITION 2013, AND THE FOLLOWING PARAMETERS:		
OVERTURNING DESIGN	FOUNDATIONS ARE SIZED TO RESIST OVERTURNING ACCORDING TO BROMS' DESIGN METHOD WITH A SAFETY FACTOR THAT INCLUDES AN OVERLOAD FACTOR OF 2.0 AND A SOIL UNDERSTRENGTH FACTOR OF 0.7.	
SOIL PARAMETERS	LOOSE DRY SAND:	UNIT WEIGHT $\gamma = 102$ PCF
	DENSE DRY SAND:	UNIT WEIGHT $\gamma = 116$ PCF
	LOOSE WET SAND:	UNIT WEIGHT $\gamma = 125$ PCF
	DENSE WET SAND:	UNIT WEIGHT $\gamma = 135$ PCF
DEFLECTION LIMITS	SOFT TO MEDIUM STIFF CLAY:	UNIT WEIGHT $\gamma = 113$ PCF
	STIFF CLAY:	UNIT WEIGHT $\gamma = 120$ PCF
		FRICITION ANGLE $\phi = 33^\circ$ $\phi = 39^\circ$ $\phi = 33^\circ$ $\phi = 39^\circ$
		SHEAR STRENGTH $S_u = 1.0$ KSF $S_u = 1.9$ KSF
MAXIMUM LATERAL DEFLECTION AT TOP OF MAST ARM FOUNDATION SHAFTS: $\frac{1}{2}$ "		

NOTES:

- FOUNDATIONS SHALL BE 4000 PSI, 565 MASSDOT APPROVED MIX DESIGN.
- FOUNDATIONS SHALL BE INSTALLED IN ACCORDANCE WITH MASSDOT STANDARD SPECIFICATIONS ITEM 945 - DRILLED SHAFTS
- REINFORCEMENT SHALL BE ASTM A615 GRADE 60.
- ANCHOR BOLTS SHALL BE SET BY TEMPLATE.
- PROVIDE FOR ELECTRICAL CONDUIT.
- EXCAVATION SHALL BE BY THE AUGER METHOD TO THE NEAT LINES OF THE OUTSIDE DIMENSION OF THE FOUNDATIONS WITHOUT DISTURBING THE SOIL AROUND AND BELOW THE PROPOSED FOUNDATION BOTTOM. ALTERNATE METHODS OF EXCAVATION MAY BE SUBMITTED TO MASSDOT FOR APPROVAL IF THEY MEET THE REQUIREMENTS LISTED IN NOTES 6, 7, AND 8.
- THE EARTH WALLS OF THE FOUNDATION SHALL BE ADEQUATELY AND SECURELY PROTECTED AT ALL TIMES AGAINST CAVE-INS, DISPLACEMENT OF THE SURROUNDING EARTH AND FOR THE EXCLUSION OF GROUND WATER. THIS MAY BE DONE BY THE USE OF STEEL CYLINDER LINERS OR CASINGS THAT ARE APPROVED BY MASSDOT. IF LINERS ARE USED THEY MAY BE RECLAIMED PROVIDED THAT THEY ARE WITHDRAWN AS THE CONCRETE IS BEING PLACED, MAINTAINING A SUFFICIENT HEAD OF CONCRETE WITHIN THE LINER TO PREVENT REDUCTION IN THE FOUNDATION DIAMETER AND TO PREVENT EXTRANEQUS MATERIAL FROM FALLING IN FROM THE SIDES AND MIXING WITH THE CONCRETE.
- IF THE SOIL IS DISTURBED OR REMOVED BEYOND THE NEAT LINES OF THE OUTSIDE DIMENSION OF THE FOUNDATION, IT SHALL BE REPLACED WITH CONCRETE. ANY ADDITIONAL COST FOR THE CONCRETE SHALL BE PAID FOR BY THE CONTRACTOR.
- SPECIAL CARE SHOULD BE GIVEN TO AREAS WHERE WET SOIL IS ENCOUNTERED, TO INSURE THAT THE PREAUGERED HOLE DOES NOT COLLAPSE. THIS MAY REQUIRE THE USE OF STEEL CYLINDER LINERS OR CASINGS TO HOLD THE SOIL IN PLACE UNTIL READY FOR CONCRETE PLACEMENT, UPON APPROVAL FROM THE MASSDOT. THE STEEL CYLINDERS OR CASINGS SHALL BE WITHDRAWN AS THE FOUNDATION CONCRETE IS PLACED.
- IF LEDGE OR UNSUITABLE SOIL IS ENCOUNTERED (i.e. ONE WHICH DOES NOT APPLY TO THE DESIGN TABLES SHOWN ON THIS SHEET), AN ALTERNATIVE DESIGN SHALL BE PROVIDED BY THE DESIGN ENGINEER. IF UTILITIES OR OTHER UNDERGROUND OBSTRUCTIONS ARE ENCOUNTERED, THE CONTRACTOR SHALL BACKFILL THE AREA TO ITS ORIGINAL CONDITION UNTIL AN ALTERNATE DESIGN HAS BEEN PROVIDED BY THE DESIGN ENGINEER AND APPROVED BY MASSDOT. SPECIAL FOUNDATIONS SHALL BE DESIGNED IN ACCORDANCE WITH BASIS OF DESIGN TABLE ABOVE.
- A GALVANIZED WIRE MESH SCREEN SHALL BE INSTALLED AT BASE OF POLE. SCREEN SHALL BE PRESS-FORMED OF 3 OR 4 MESH, 21 GAGE OR HEAVIER, STAINLESS STEEL OR HOT DIPPED GALVANIZED WIRE SCREEN OR APPROVED EQUIVALENT. SCREEN SHALL BE SCREWED INTO POLE BASE PLATE, AND SHALL BE FLUSH WITH THE TOP OF THE PIER FOUNDATION.
- SANDY SOILS WITH STANDARD PENETRATION VALUES GREATER THAN 20 BLOWS PER FOOT SHALL BE CLASSIFIED AS DENSE DRY SAND AND DENSE WET SAND. SANDY SOILS WITH STANDARD PENETRATION VALUES RANGING FROM 6 TO 20 BLOWS PER FOOT SHALL BE CLASSIFIED LOOSE DRY SAND AND LOOSE WET SAND. SANDY SOILS WITH FEWER THAN 6 BLOWS PER FOOT SHALL REQUIRE SPECIAL FOUNDATION DESIGNS BY THE DESIGN ENGINEER AND APPROVED BY MASSDOT. SPECIAL FOUNDATIONS SHALL BE DESIGNED IN ACCORDANCE WITH BASIS OF DESIGN TABLE ABOVE.
- CLAYS WITH STANDARD PENETRATION VALUES GREATER THAN 6 BLOWS PER FOOT SHALL BE CLASSIFIED AS STIFF CLAY. CLAYS WITH STANDARD PENETRATION VALUES RANGING FROM 2 TO 6 BLOWS PER FOOT SHALL BE CLASSIFIED AS SOFT TO MEDIUM STIFF CLAY. CLAYS WITH FEWER THAN 2 BLOWS PER FOOT SHALL REQUIRE SPECIAL FOUNDATION DESIGNS BY THE DESIGN ENGINEER AND APPROVED BY MASSDOT. SPECIAL FOUNDATIONS SHALL BE DESIGNED IN ACCORDANCE WITH BASIS OF DESIGN TABLE ABOVE.
- A SANDY SOIL SHALL ONLY BE CLASSIFIED AS 'DRY' IF THE ENTIRE DRY SAND SHAFT LENGTH SITS ABOVE WET SOILS ACCORDING TO THE BORING LOGS. IF ANY PART OF THE SHAFT LENGTH IS CAST AT OR BELOW THE GROUNDWATER LEVEL, THE SOIL SHALL BE CLASSIFIED AS 'WET'.
- WHERE THE PREDOMINATING SOIL TYPE IS INORGANIC SILT, THE SOIL SHOULD BE TREATED AS CLAY OR WET LOOSE SAND, WHICHEVER LEADS TO A MORE CONSERVATIVE FOUNDATION. INORGANIC SILTS WITH STANDARD PENETRATION N-VALUES LESS THAN 2 BLOWS PER FOOT, ORGANIC SILTS, AND PEAT SHALL REQUIRE SPECIAL FOUNDATION DESIGNS BY THE DESIGN ENGINEER AND APPROVED BY MASSDOT. SPECIAL FOUNDATIONS SHALL BE DESIGNED IN ACCORDANCE WITH BASIS OF DESIGN TABLE ABOVE.
- WHERE FILL CONTAINS CLAY OR SILT, IT SHOULD BE TREATED AS SOFT CLAY.
- MAST ARM FOUNDATIONS ARE DESIGNED TO SUPPORT MAST ARMS WITH OR WITHOUT OPTIONAL LUMINAIRE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT FOUNDATION DIAMETER IS AT LEAST 17.5" GREATER THAN BOLT CIRCLE DIAMETER FOR ALL STRUCTURES
- IN ORDER TO CREATE A FLUSH SURFACE, CONTRACTOR SHALL REFER TO THE FINAL ELEVATIONS SHOWN ON THE DESIGN PLANS WHEN INSTALLING FOUNDATIONS IMMEDIATELY ADJACENT TO OR WITHIN A SIDEWALK AREA.



**massDOT**  
Highway Division

STANDARD DRAWINGS  
OVERHEAD SIGNAL STRUCTURE & FOUNDATION  
MAST ARM CORED PIER FOUNDATIONS

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
HIGHWAY DIVISION  
10 PARK PLAZA BOSTON, MASS

DECEMBER, 2015

SHEET 5 OF 7 SHEETS

NORTHEAST METRO TECHNICAL HIGH SCHOOL

Wakefield, Massachusetts



CONCEPT PLAN

TRAFFIC AND SIGNALS DETAILS

Scale: 1" = 20'-0"  
Job No.: 13872.2  
Drawn By: LB  
Date: 5/19/2022

TR-010

**D·R·A**

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Interior Design

617-964-1700  
www.DRArchitects.com

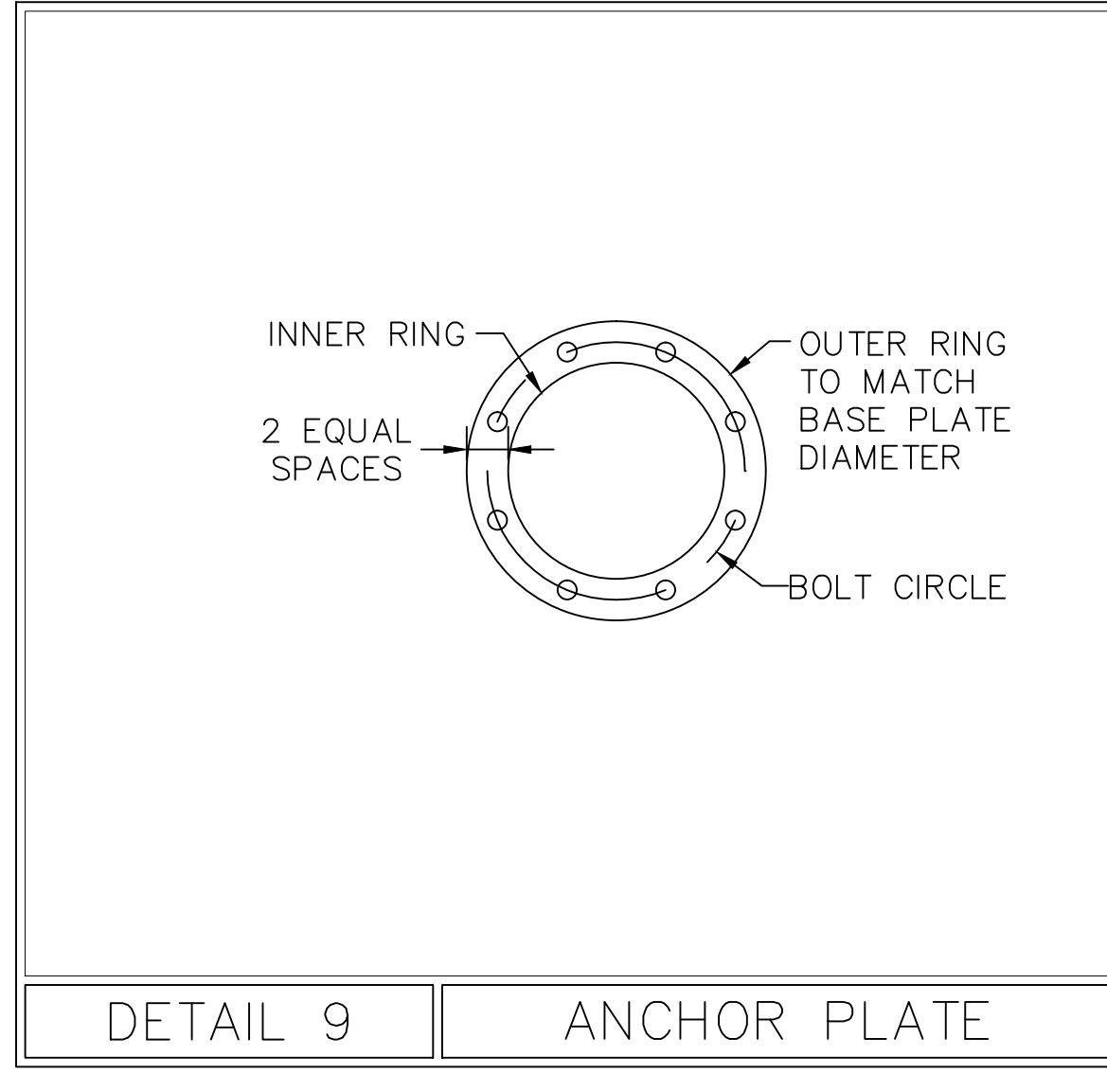
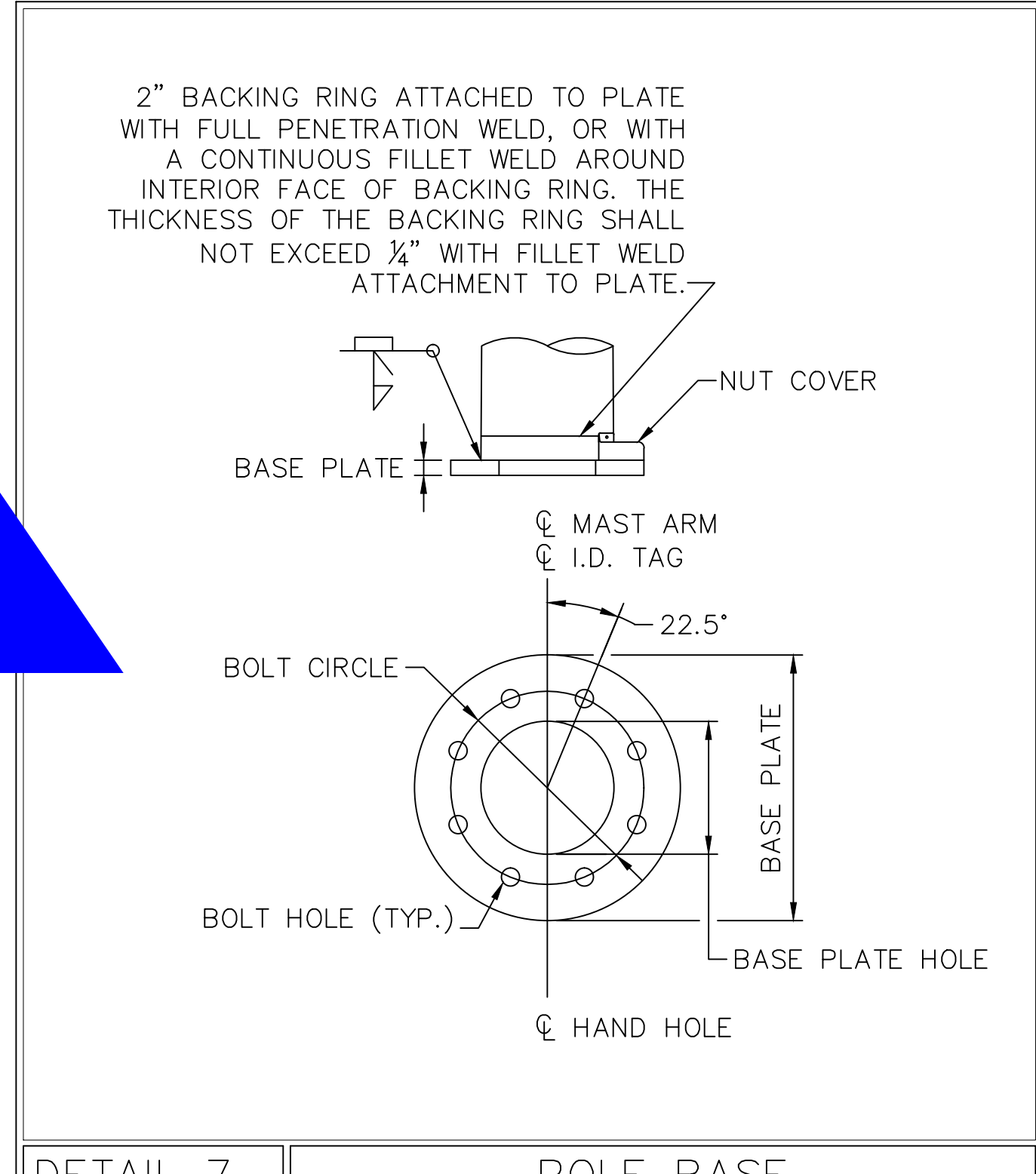
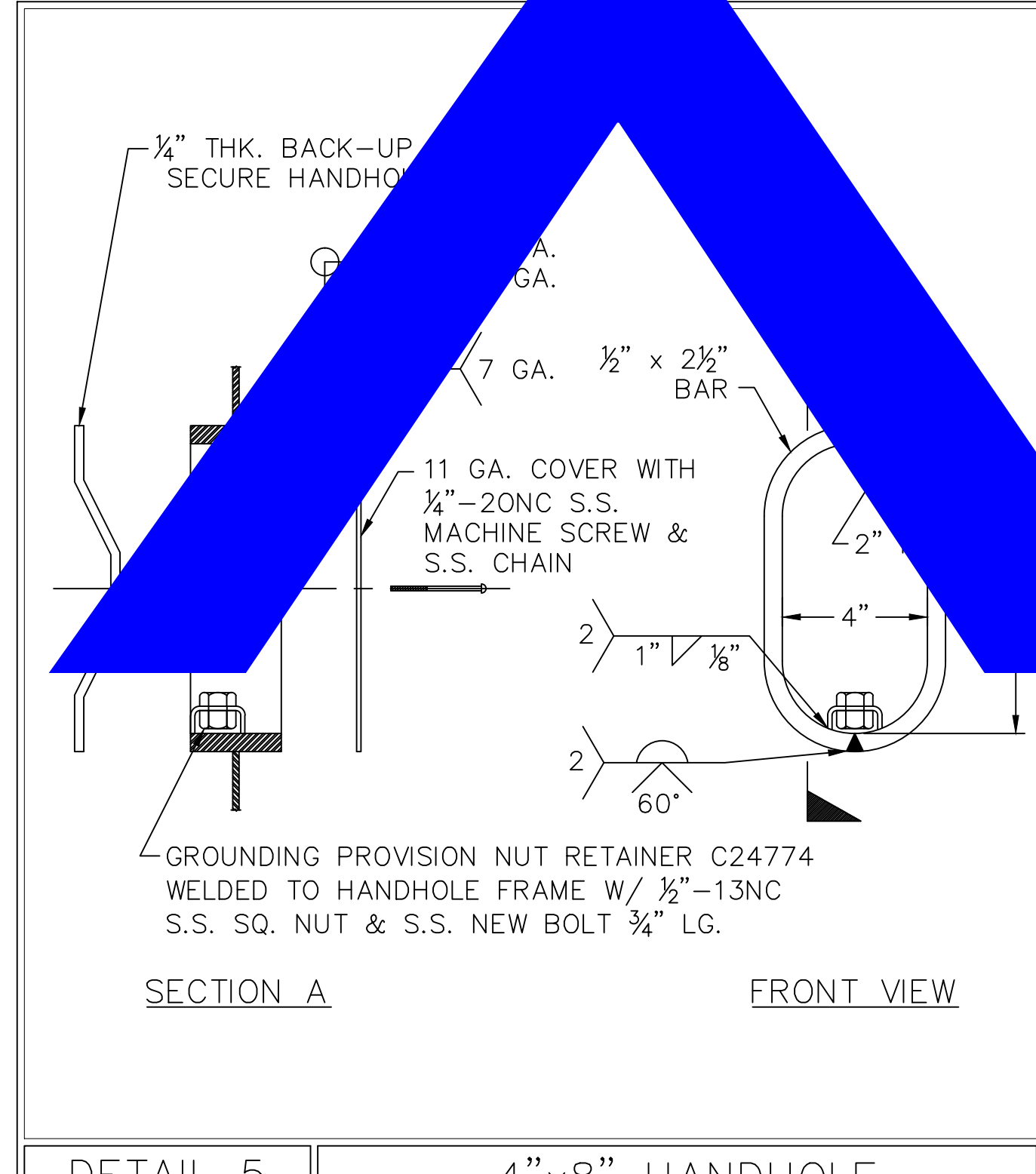
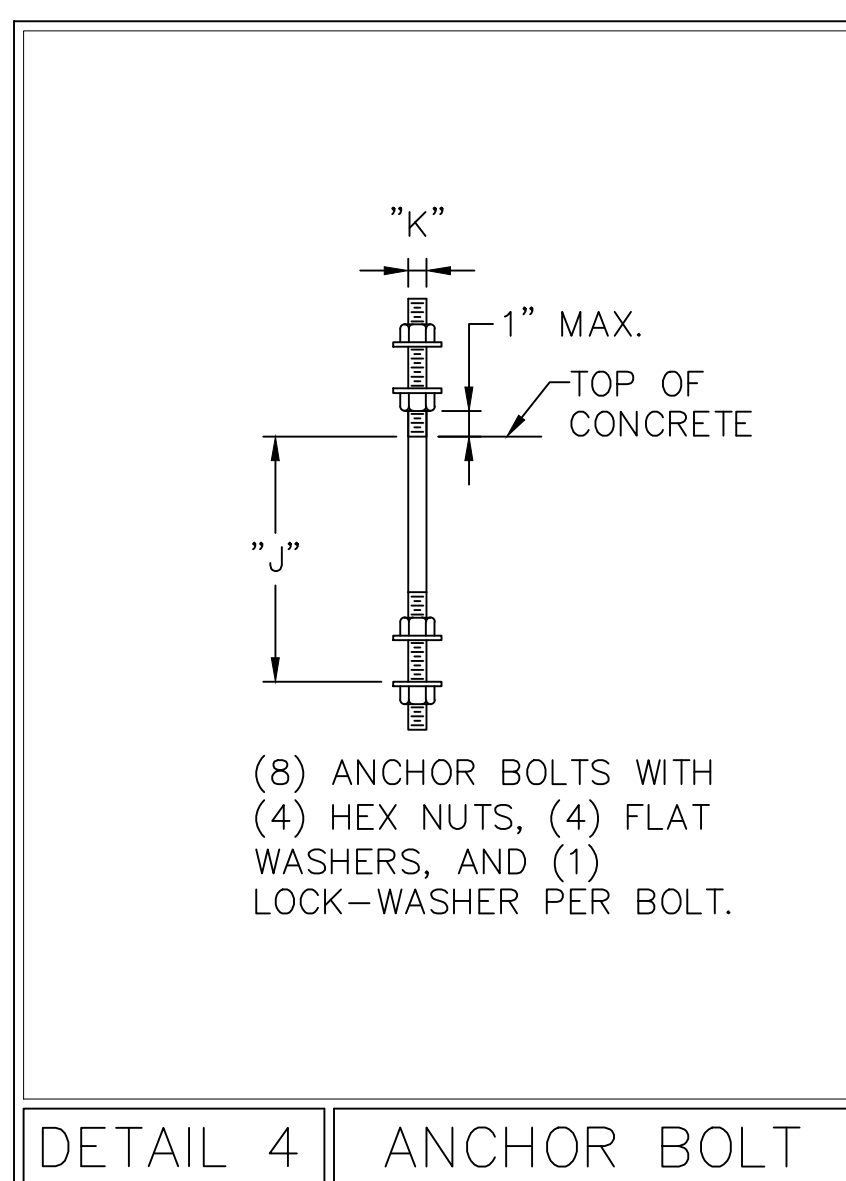
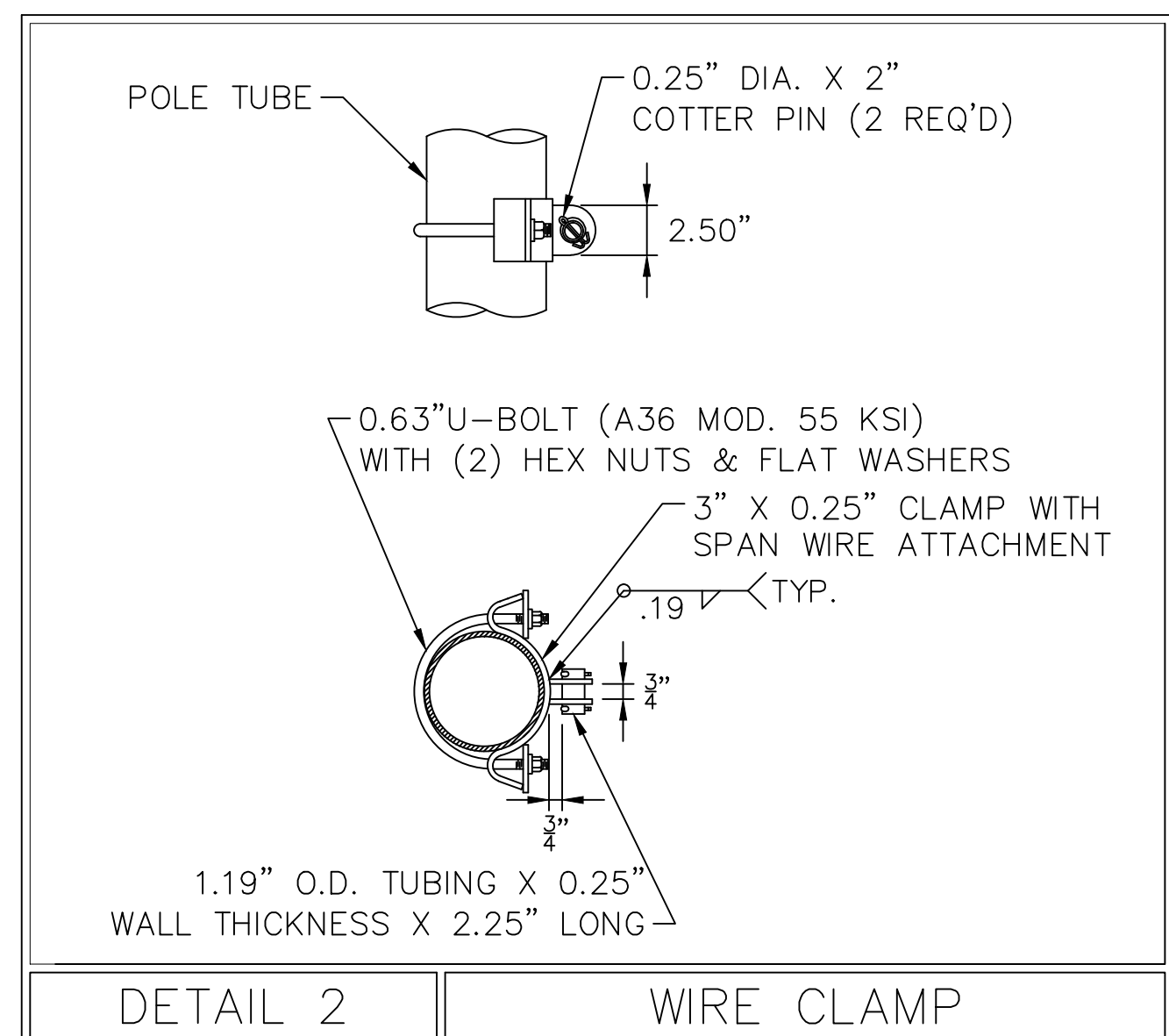
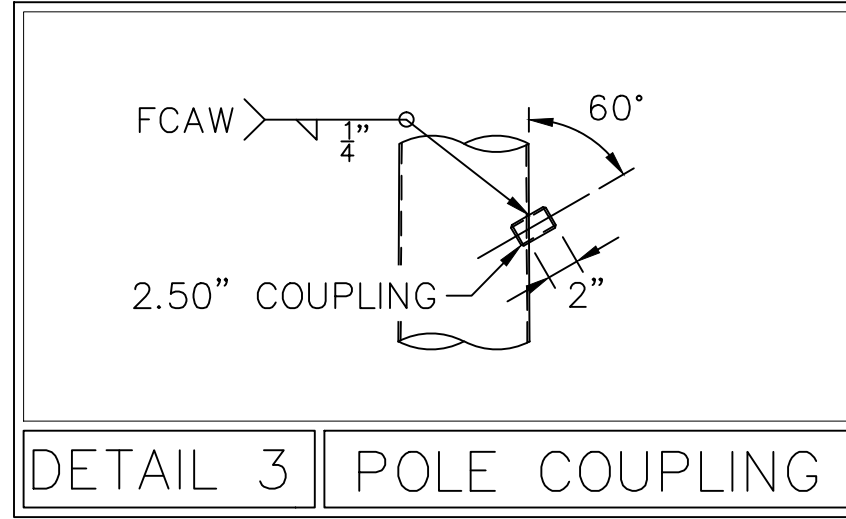
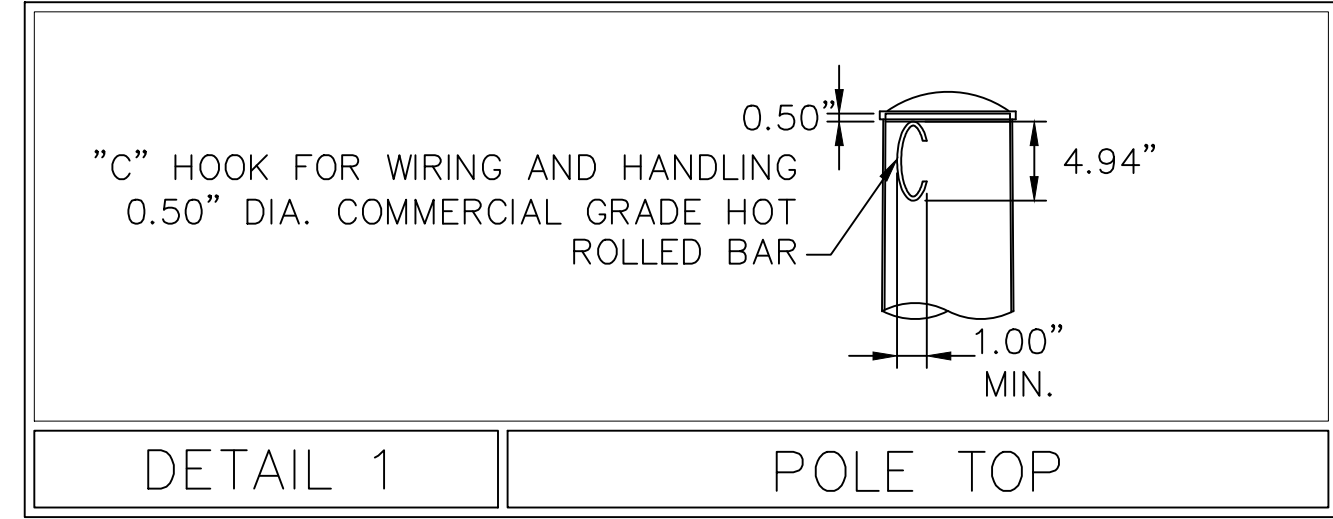
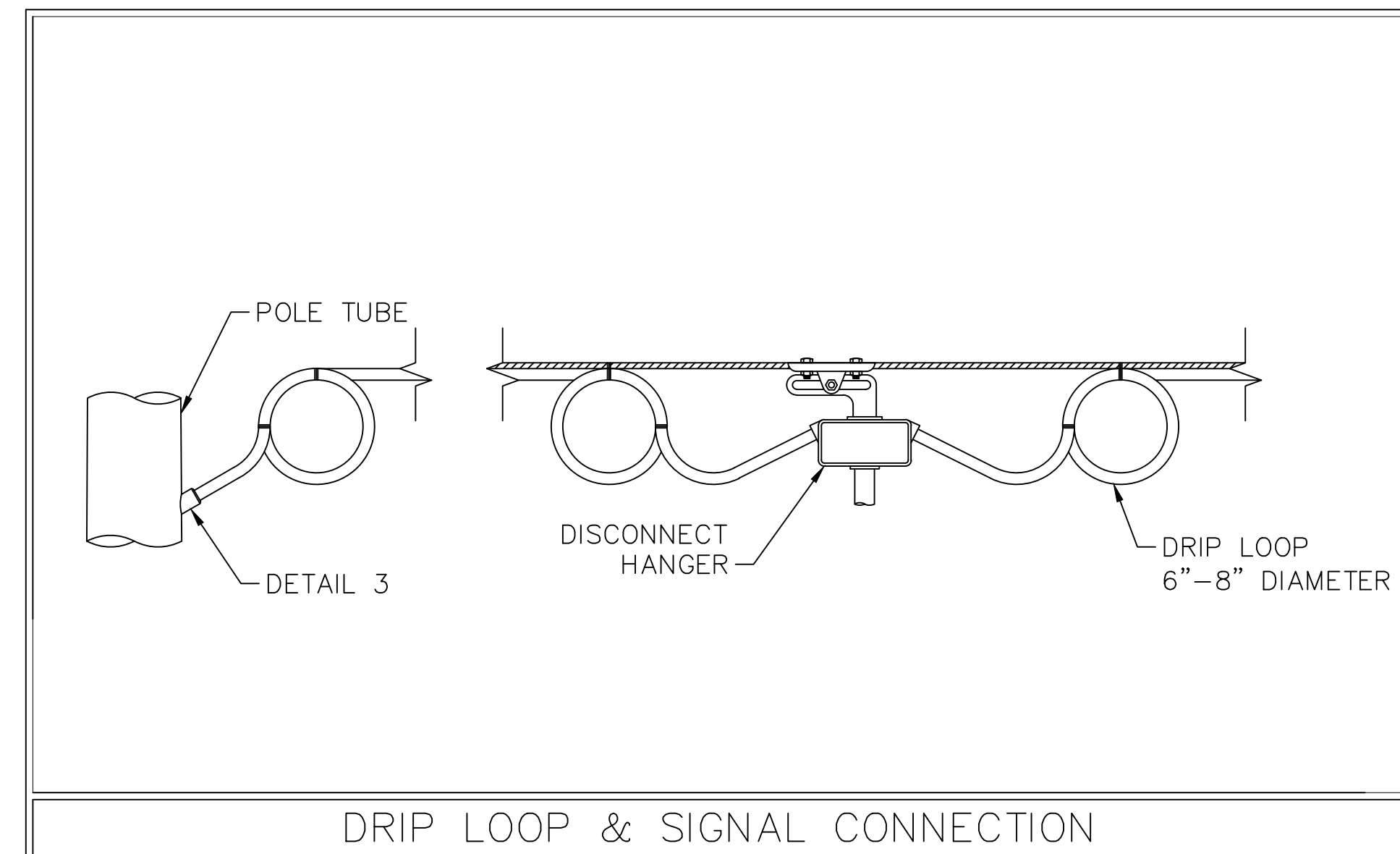
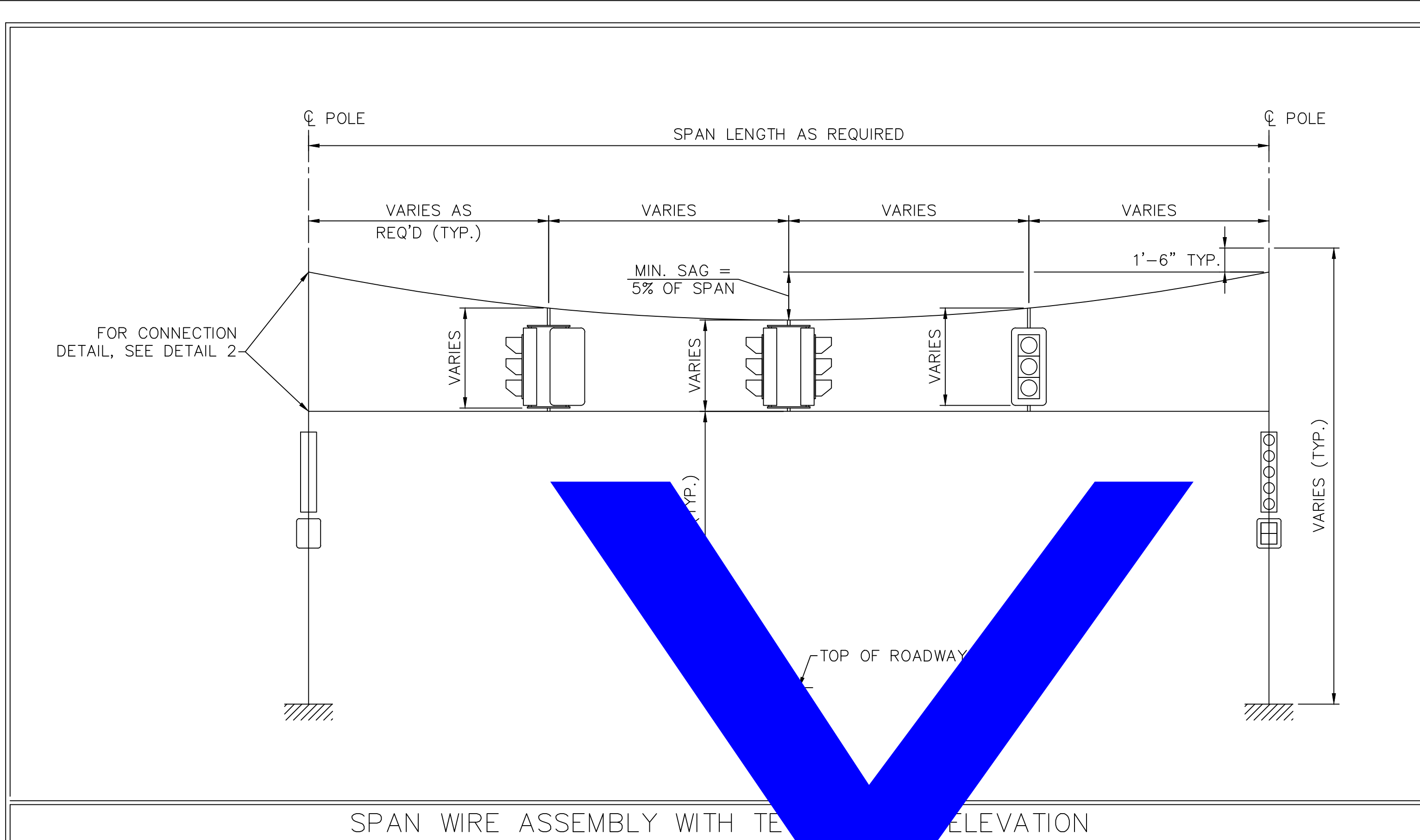
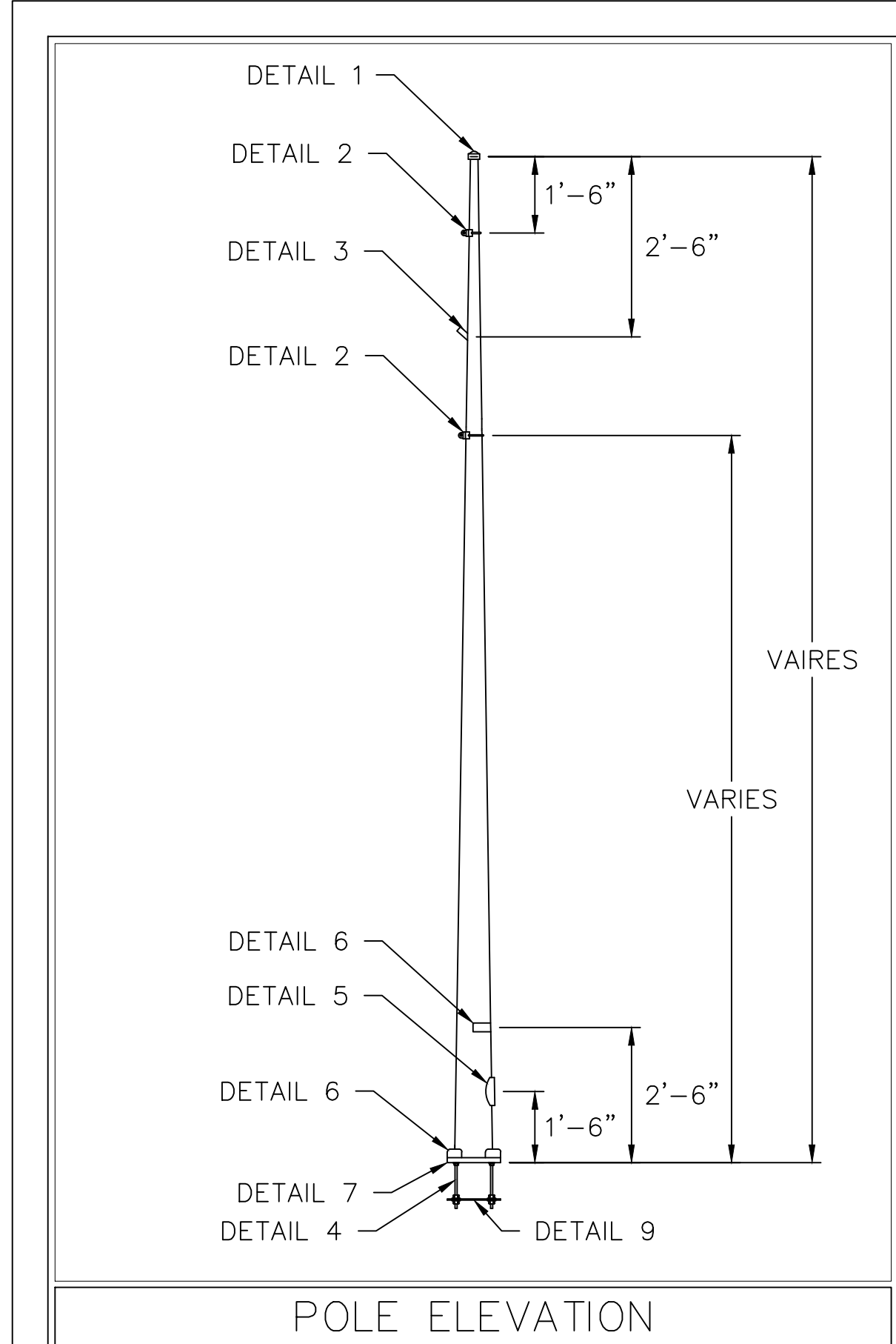
**NORTHEAST METRO TECHNICAL HIGH SCHOOL**

Wakefield, Massachusetts

**WARNER LARSON**  
 LANDSCAPE ARCHITECTS  
 180 WEST BROADWAY, BOSTON, MA 02127  
 617-644-1440  
 warnerlarson.com

CONCEPT PLAN

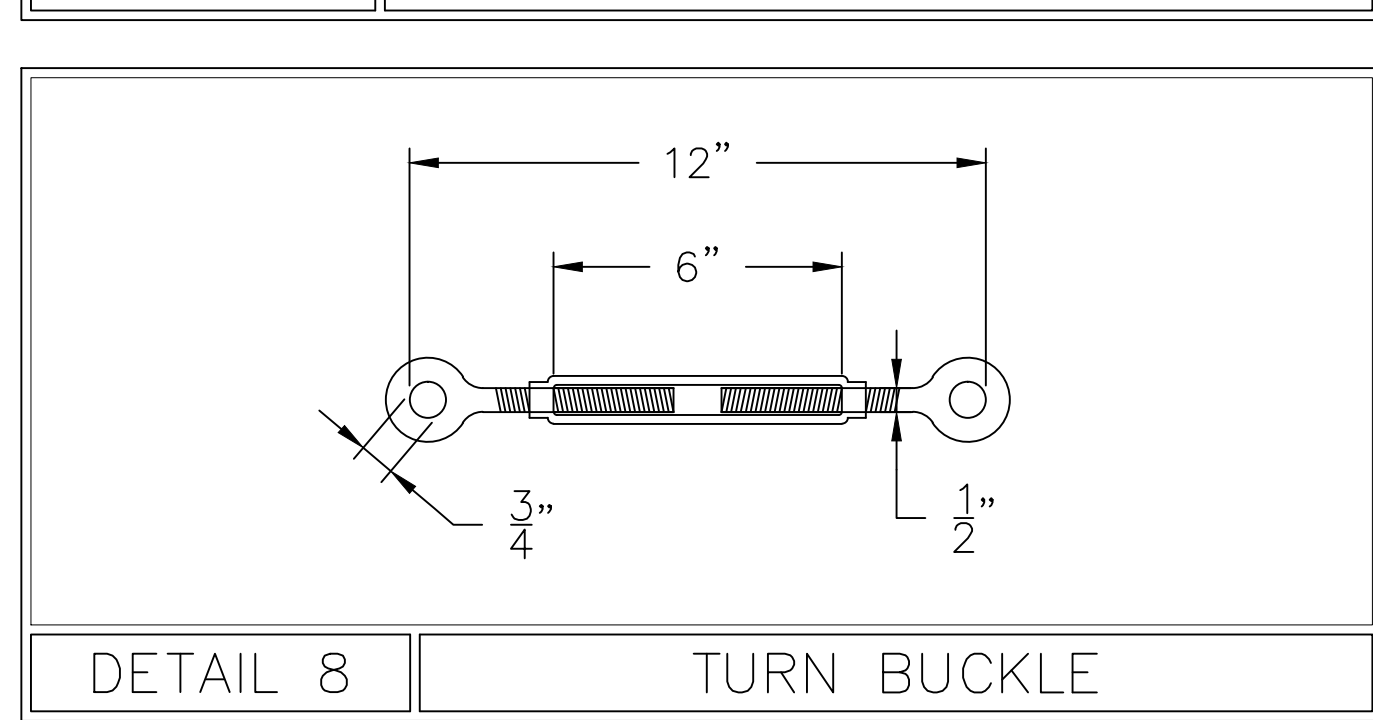
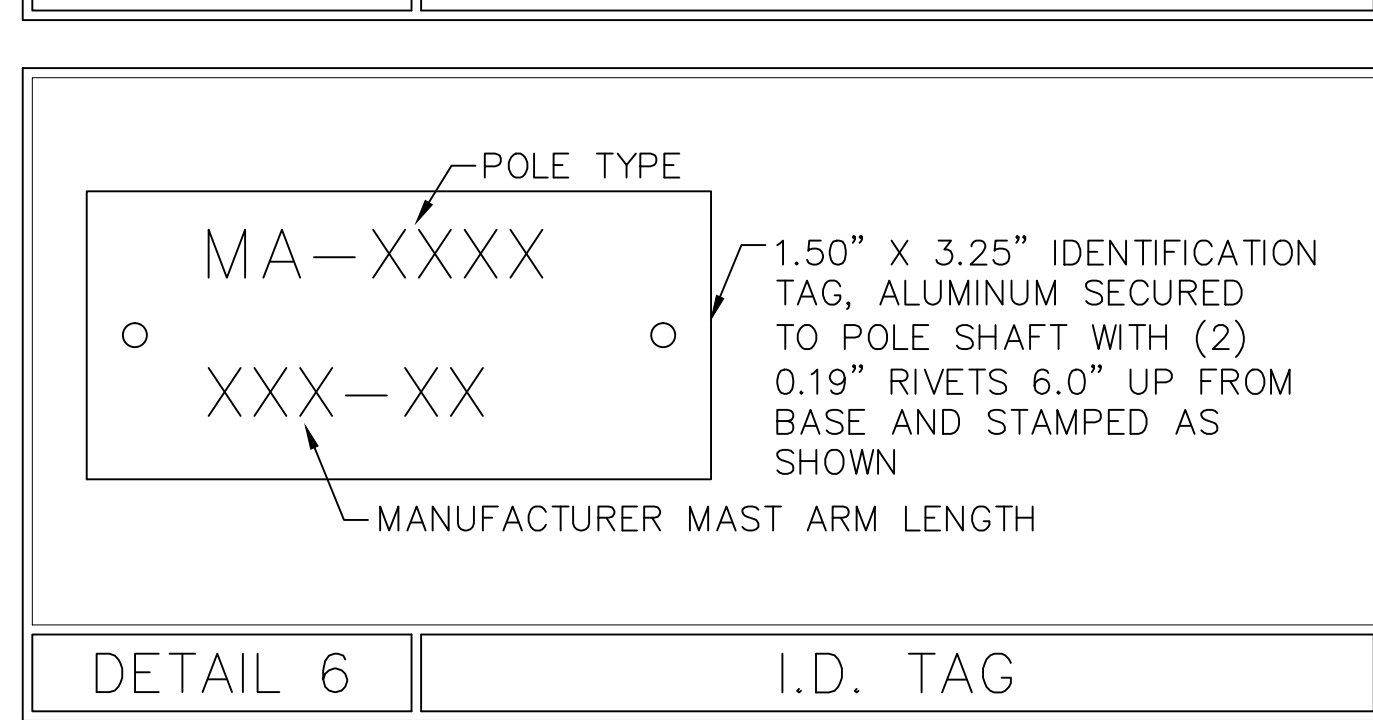
**TRAFFIC AND SIGNALS DETAILS**



**MATERIAL DATA**

COMPONENT	DESIGNATION	YIELD (KSI)
POLE TUBE	ASTM A595 GR. A	55
POLE BASE PLATE	AASHTO M270, OR ASTM A709	50
ANCHOR BOLTS	AASHTO M314, OR ASTM A307 GR. C	55
GALVANIZING	AASHTO M111 OR M232	

\*\* BOLTS WHICH ACCUMULATE RUST OR DIRT SHALL BE DISCARDED.



**massDOT**  
 Highway Division  
 STANDARD DRAWINGS  
 OVERHEAD SIGNAL STRUCTURE & FOUNDATION  
 SPAN WIRE DETAILS  
 MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
 HIGHWAY DIVISION  
 10 PARK PLAZA BOSTON, MASS  
 DECEMBER, 2015  
 SHEET 6 OF 7 SHEETS



**SOIL TYPE: DRY SAND (LOOSE)**

MOMENT AT BASE OF POLE (KIP-FT.)	DIA. (B) = 3'-0"		DIA. (B) = 3'-6"		DIA. (B) = 4'-0"	
	DEPTH (D)	VERTICAL BARS	DEPTH (D)	VERTICAL BARS	DEPTH (D)	VERTICAL BARS
100 OR LESS	11'-6"	18 - #8	10'-6"	18 - #8	10'-0"	18 - #9
150	12'-0"	18 - #8	11'-6"	18 - #8	11'-0"	18 - #9
200	13'-0"	18 - #8	12'-6"	18 - #8	12'-0"	18 - #9
250	13'-6"	18 - #8	13'-0"	18 - #8	12'-6"	18 - #9
300	-	-	13'-6"	18 - #8	13'-0"	18 - #9
350	-	-	14'-0"	18 - #8	13'-6"	18 - #9
400	-	-	14'-6"	18 - #8	14'-0"	18 - #9
450	-	-	15'-0"	18 - #8	14'-6"	18 - #9
500	-	-	15'-6"	18 - #8	15'-0"	18 - #9
550	-	-	16'-0"	18 - #8	15'-0"	18 - #9
600	-	-	16'-6"	18 - #8	15'-6"	18 - #9
650	-	-	-	-	16'-0"	18 - #9
700	-	-	-	-	16'-6"	18 - #9

**SOIL TYPE: DRY SAND (DENSE)**

MOMENT AT BASE OF POLE (KIP-FT.)	DIA. (B) = 3'-0"		DIA. (B) = 3'-6"		DIA. (B) = 4'-0"	
	DEPTH (D)	VERTICAL BARS	DEPTH (D)	VERTICAL BARS	DEPTH (D)	VERTICAL BARS
100 OR LESS	10'-0"	18 - #8	9'-6"	18 - #8	9'-0"	18 - #9
150	10'-6"	18 - #8	10'-0"	18 - #8	10'-0"	18 - #9
200	11'-6"	18 - #8	11'-0"	18 - #8	10'-6"	18 - #9
250	12'-0"	18 - #8	11'-6"	18 - #8	11'-0"	18 - #9
300	-	-	12'-0"	18 - #8	11'-6"	18 - #9
350	-	-	12'-6"	18 - #8	12'-0"	18 - #9
400	-	-	13'-0"	18 - #8	12'-6"	18 - #9
450	-	-	13'-6"	18 - #8	13'-0"	18 - #9
500	-	-	13'-6"	18 - #8	13'-0"	18 - #9
550	-	-	14'-0"	18 - #8	13'-6"	18 - #9
600	-	-	14'-6"	18 - #8	14'-0"	18 - #9
650	-	-	-	-	14'-0"	18 - #9
700	-	-	-	-	14'-6"	18 - #9

**SOIL TYPE: WET SAND (LOOSE)**

MOMENT AT BASE OF POLE (KIP-FT.)	DIA. (B) = 3'-0"		DIA. (B) = 3'-6"		DIA. (B) = 4'-0"	
	DEPTH (D)	VERTICAL BARS	DEPTH (D)	VERTICAL BARS	DEPTH (D)	VERTICAL BARS
100 OR LESS	13'-6"	18 - #8	12'-6"	18 - #8	12'-0"	18 - #9
150	14'-6"	18 - #8	13'-6"	18 - #8	13'-0"	18 - #9
200	15'-6"	18 - #8	14'-6"	18 - #8	14'-0"	18 - #9
250	16'-0"	18 - #8	15'-6"	18 - #8	14'-6"	18 - #9
300	-	-	16'-0"	18 - #8	15'-6"	18 - #9
350	-	-	16'-6"	18 - #8	16'-0"	18 - #9
400	-	-	17'-0"	18 - #8	16'-6"	18 - #9
450	-	-	18'-0"	18 - #8	17'-0"	18 - #9
500	-	-	18'-0"	18 - #8	17'-6"	18 - #9
550	-	-	18'-6"	18 - #8	18'-0"	18 - #9
600	-	-	19'-0"	18 - #8	18'-6"	18 - #9
650	-	-	-	-	18'-6"	18 - #9
700	-	-	-	-	19'-0"	18 - #9

**SOIL TYPE: WET SAND (DENSE)**

MOMENT AT BASE OF POLE (KIP-FT.)	DIA. (B) = 3'-0"		DIA. (B) = 3'-6"		DIA. (B) = 4'-0"	
	DEPTH (D)	VERTICAL BARS	DEPTH (D)	VERTICAL BARS	DEPTH (D)	VERTICAL BARS
100 OR LESS	11'-6"	18 - #8	11'-0"	18 - #8	10'-6"	18 - #9
150	12'-6"	18 - #8	11'-6"	18 - #8	11'-6"	18 - #9
200	13'-6"	18 - #8	12'-6"	18 - #8	12'-0"	18 - #9
250	14'-0"	18 - #8	13'-6"	18 - #8	13'-0"	18 - #9
300	-	-	13'-6"	18 - #8	13'-6"	18 - #9
350	-	-	14'-0"	18 - #8	14'-0"	18 - #9
400	-	-	14'-6"	18 - #8	14'-6"	18 - #9
450	-	-	15'-6"	18 - #8	15'-0"	18 - #9
500	-	-	16'-0"	18 - #8	15'-6"	18 - #9
550	-	-	16'-6"	18 - #8	16'-0"	18 - #9
600	-	-	16'-6"	18 - #8	16'-6"	18 - #9
650	-	-	-	-	16'-6"	18 - #9
700	-	-	-	-	16'-6"	18 - #9

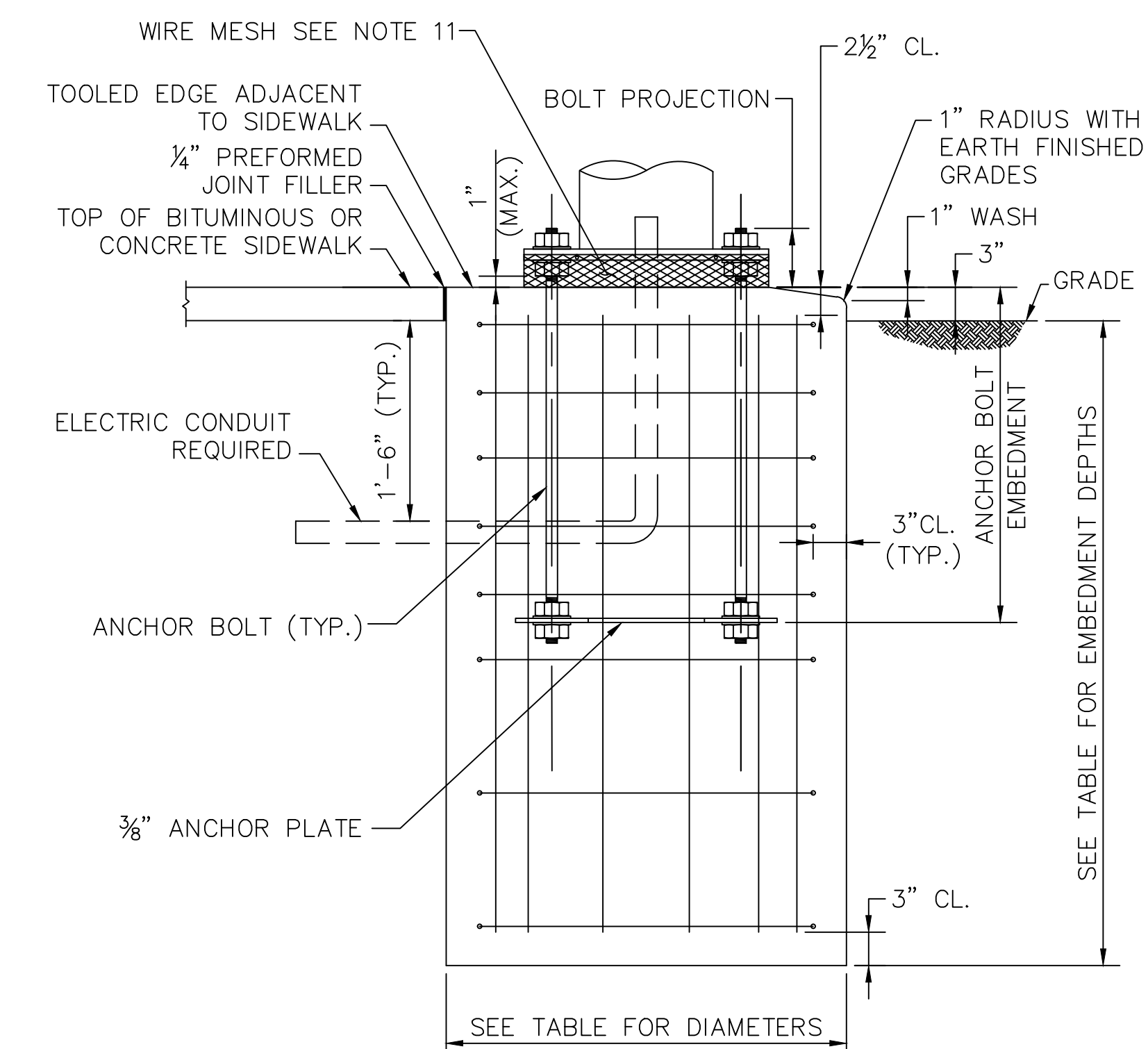
**SOIL TYPE: CLAY (SOFT TO MEDIUM STIFF)**

MOMENT AT BASE OF POLE (KIP-FT.)	DIA. (B) = 3'-0"		DIA. (B) = 3'-6"		DIA. (B) = 4'-0"	
	DEPTH (D)	VERTICAL BARS	DEPTH (D)	VERTICAL BARS	DEPTH (D)	VERTICAL BARS
100 OR LESS	14'-6"	18 - #8	14'-6"	18 - #8	15'-0"	18 - #9
150	15'-6"	18 - #8	15'-6"	18 - #8	16'-0"	18 - #9
200	16'-6"	18 - #8	16'-6"	18 - #8	17'-0"	18 - #9
250	17'-6"	18 - #8	17'-6"	18 - #8	17'-6"	18 - #9
300	-	-	18'-6"	18 - #8	18'-6"	18 - #9
350	-	-	19'-0"	18 - #8	19'-0"	18 - #9
400	-	-	20'-0"	18 - #8	20'-0"	18 - #9
450	-	-	20'-6"	18 - #8	20'-6"	18 - #9
500	-	-	21'-6"	18 - #8	21'-0"	18 - #9
550	-	-	22'-0"	18 - #8	21'-6"	18 - #9
600	-	-	22'-6"	18 - #8	22'-6"	18 - #9
650	-	-	-	-	23'-0"	18 - #9
700	-	-	-	-	23'-6"	18 - #9

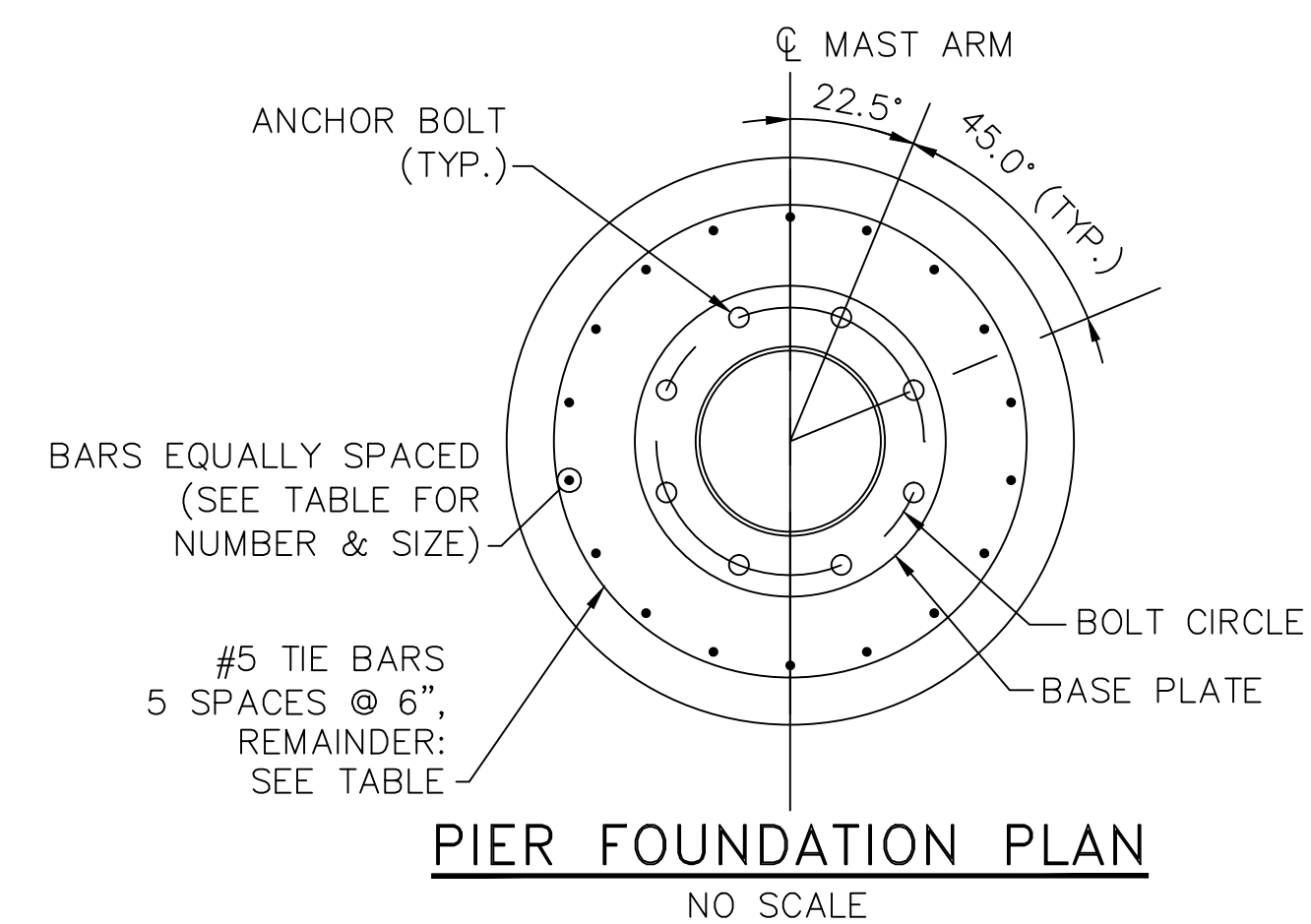
**SOIL TYPE: CLAY (STIFF)**

MOMENT AT BASE OF POLE (KIP-FT.)	DIA. (B) = 3'-0"		DIA. (B) = 3'-6"		DIA. (B) = 4'-0"	
	DEPTH (D)	VERTICAL BARS	DEPTH (D)	VERTICAL BARS	DEPTH (D)	VERTICAL BARS
100 OR LESS	12'-0"	18 - #8	12'-0"	18 - #8	12'-6"	18 - #9
150	12'-6"	18 - #8	13'-0"	18 - #8	13'-6"	18 - #9
200	13'-6"	18 - #8	13'-6"	18 - #8	14'-0"	18 - #9
250	14'-0"	18 - #8	14'-6"	18 - #8	14'-6"	18 - #9
300	-	-	15'-0"	18 - #8	15'-0"	18 - #9
350	-	-	15'-6"	18 - #8	16'-0"	18 - #9
400	-	-	16'-0"	18 - #8	16'-6"	18 - #9
450	-	-	16'-6"	18 - #8	16'-6"	18 - #9
500	-	-	17'-0"	18 - #8	17'-0"	18 - #9
550	-	-	17'-6"	18 - #8	17'-6"	18 - #9
600	-	-	18'-0"	18 - #8	18'-0"	18 - #9
650	-	-	-	-	18'-6"	18 - #9
700	-	-	-	-	19'-0"	18 - #9

NOTES:  
SEE NOTES SHEET 5 OF 7



**PIER FOUNDATION DETAIL**  
NO SCALE



**PIER FOUNDATION PLAN**  
NO SCALE

**massDOT**  
Highway Division

STANDARD DRAWINGS  
OVERHEAD SIGNAL STRUCTURE & FOUNDATION  
SPAN WIRE CORED PIER FOUNDATIONS

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
HIGHWAY DIVISION  
10 PARK PLAZA BOSTON, MASS

DECEMBER, 2015

SHEET 7 OF 7 SHEETS

**D·R·A**

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Rosane  
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**NORTHEAST  
METRO  
TECHNICAL  
HIGH SCHOOL**

Wakefield,  
Massachusetts

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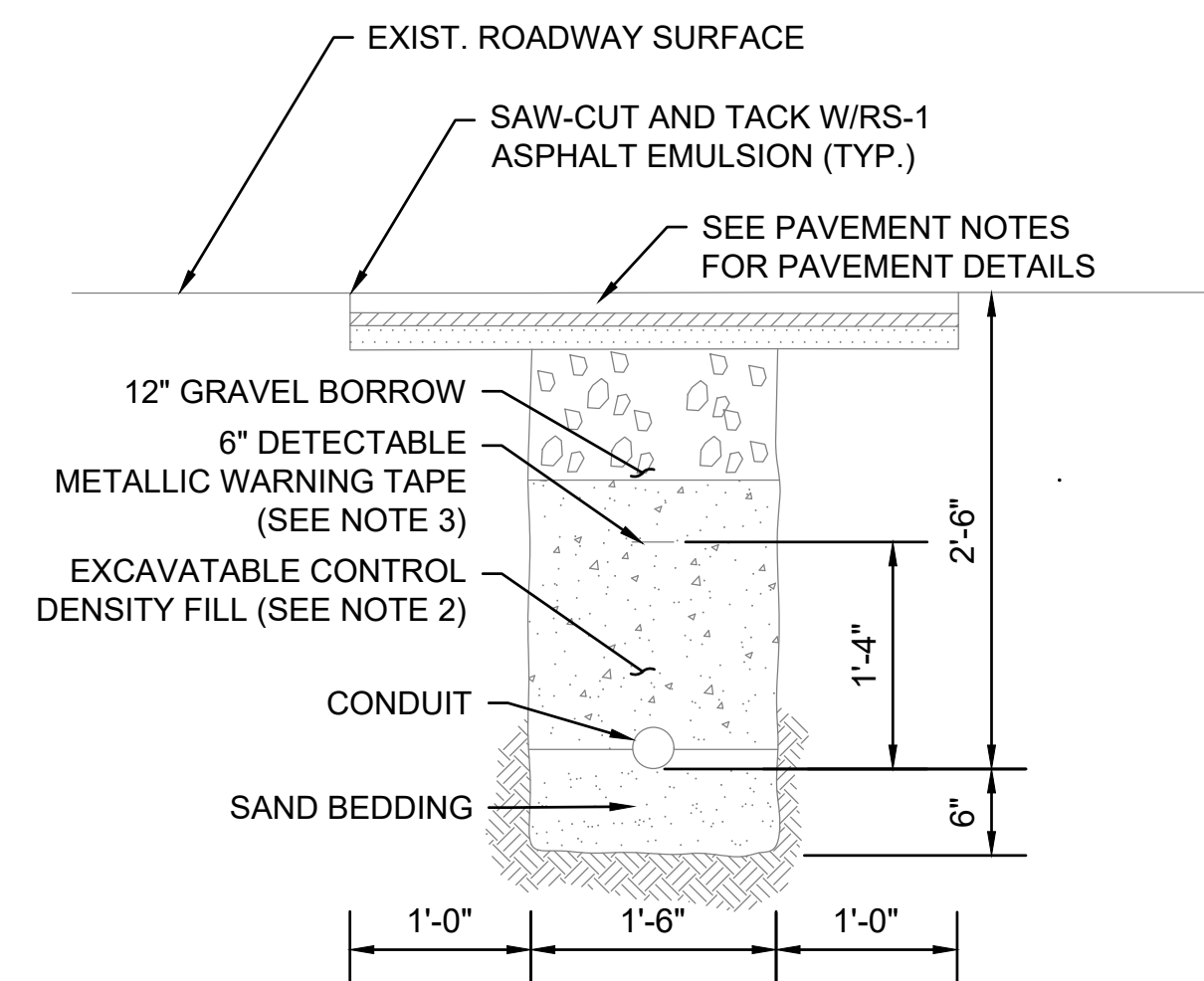
180 WEST BROADWAY, BOSTON MA 02127  
617-644-1140  
warnerlarson.com

CONCEPT PLAN

**TRAFFIC AND  
SIGNALS  
DETAILS**

Scale: 1" = 20'-0"  
Job No.: 13872.2  
Drawn By: LB  
Date: 5/19/2022

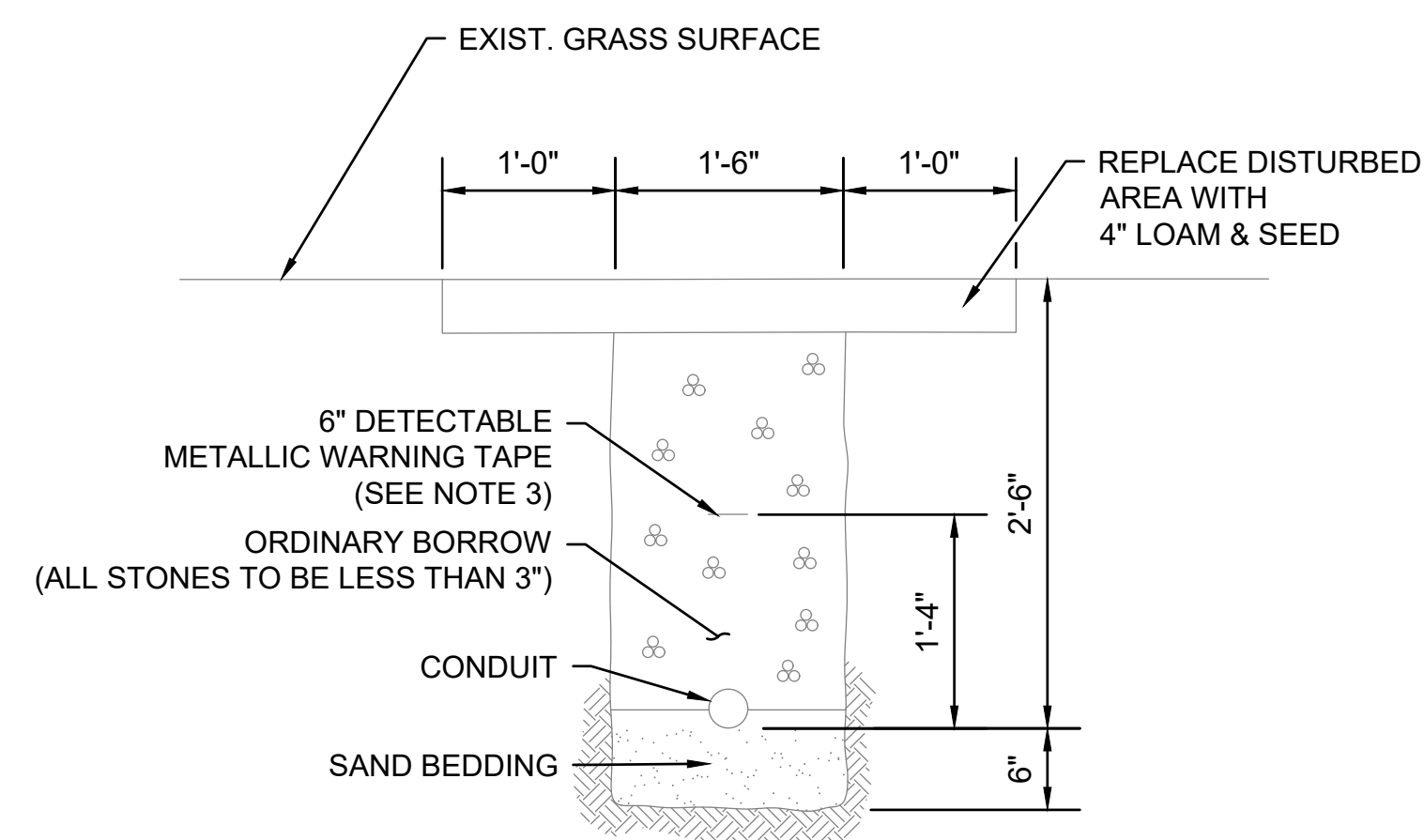
**TR-012**



**NOTES:**

1. SCHEDULE 80 ELECTRICAL CONDUIT TYPE NM-PLASTIC (UL), WITH PULL ROPE, UNLESS OTHERWISE APPROVED BY MASSDOT.
2. CONTROL DENSITY FILL SHALL MEET THE REQUIREMENTS OF SUBSECTION M4.08.0
3. WARNING TAPE SHALL BE PER CURRENT APWA STANDARDS.

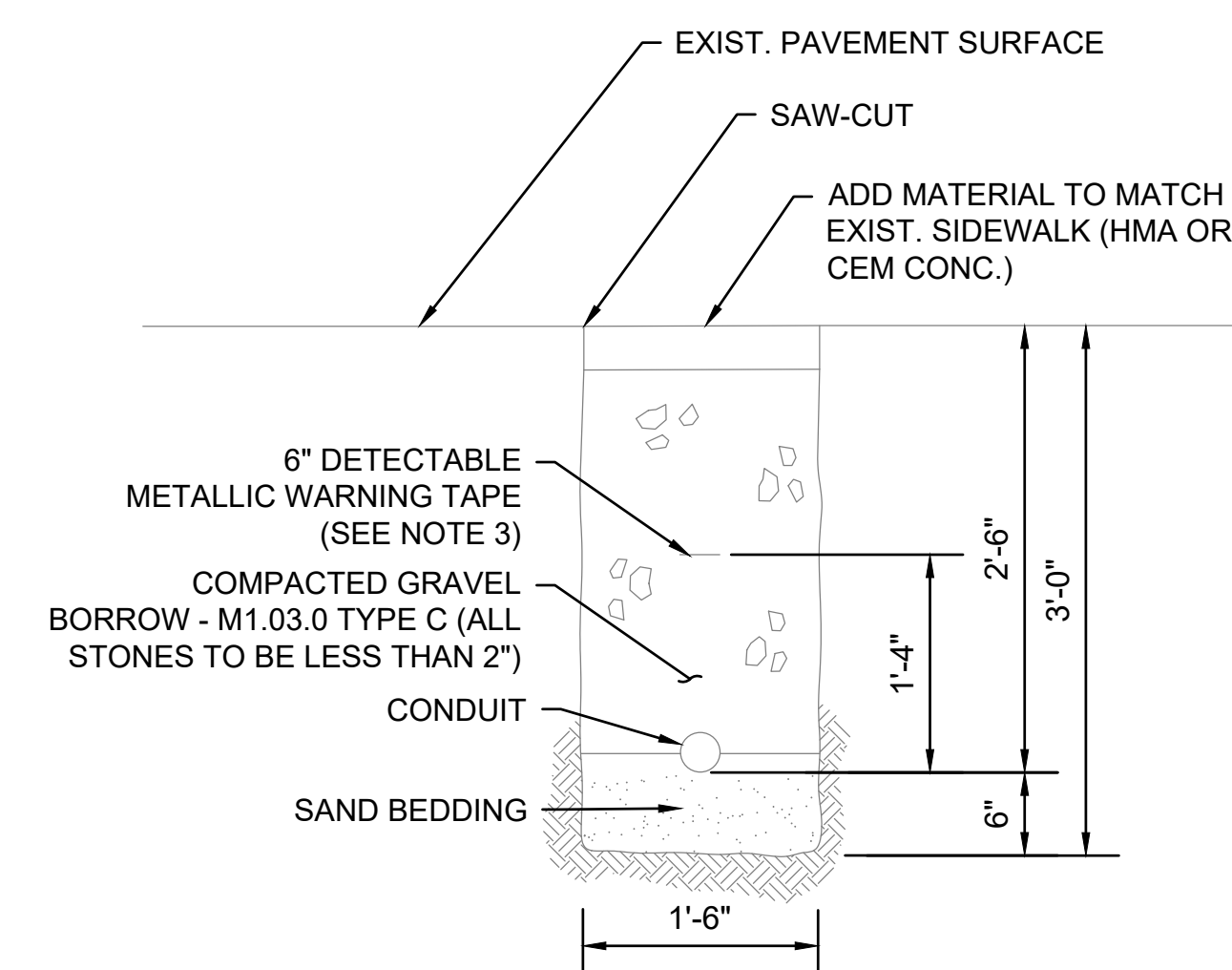
**CONDUIT CROSSING ROADWAY**  
NOT TO SCALE



**NOTES:**

1. SCHEDULE 80 ELECTRICAL CONDUIT TYPE NM-PLASTIC (UL), WITH PULL ROPE, UNLESS OTHERWISE APPROVED BY MASSDOT.
2. WARNING TAPE SHALL BE PER CURRENT APWA STANDARDS.

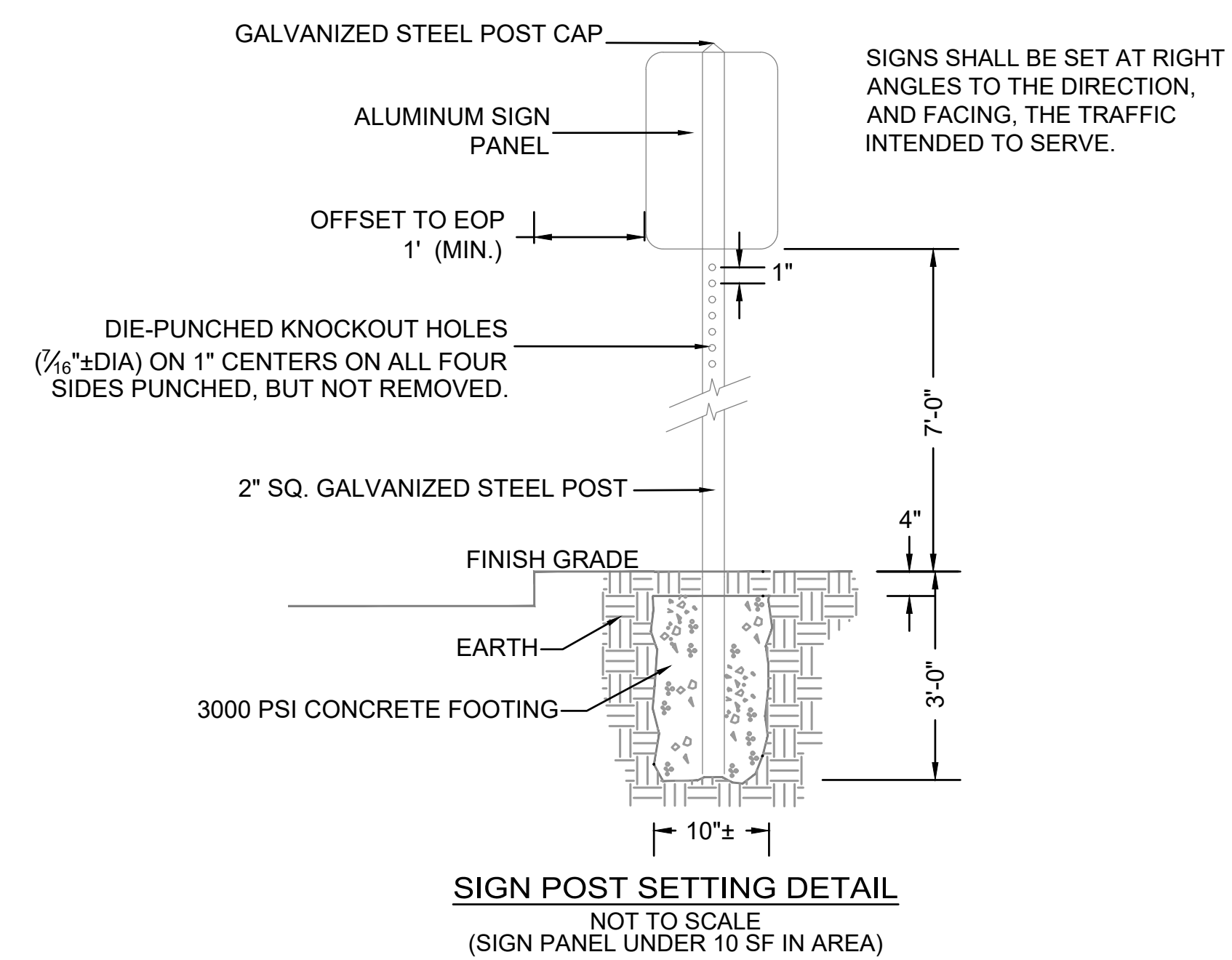
**CONDUIT UNDER GRASS AREAS**  
NOT TO SCALE



**NOTES:**

1. SCHEDULE 80 ELECTRICAL CONDUIT TYPE NM-PLASTIC (UL), WITH PULL ROPE, UNLESS OTHERWISE APPROVED BY MASSDOT.
2. WARNING TAPE SHALL BE PER CURRENT APWA STANDARDS.

**CONDUIT UNDER SIDEWALK**  
NOT TO SCALE



**SIGN POST SETTING DETAIL**  
NOT TO SCALE  
(SIGN PANEL UNDER 10 SF IN AREA)

**NORTHEAST METRO TECHNICAL HIGH SCHOOL**  
Wakefield, Massachusetts



**CONCEPT PLAN**

**TRAFFIC AND SIGNALS DETAILS**

LAST DATE: 02/02/2023 11:15 AM BY: bjb

**NOTES:**

- ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
- ALL SIGN LEGENDS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
- TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
- TEMPORARY CONSTRUCTION SIGNING, BARRICADES, AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
- SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
- CONTRACTORS SHALL NOTIFY EACH ADJUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT, AND SIMILAR OPERATIONS.
- THE FIRST TEN PLASTIC DRUMS OF A TAPER SHALL BE MOUNTED WITH TYPE A LIGHTS.
- THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
- DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
- MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
- MINIMUM LANE WIDTH IS TO BE 11 FEET (3.3m) UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.
- ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.

**LEGEND:**

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- WORK ZONE
- WORK VEHICLE
- P/F POLICE/FLAGGER DETAIL
- DIRECTION OF TRAFFIC
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- IMPACT ATTENUATOR
- TRAFFIC OR PEDESTRIAN SIGNAL
- CHANGEABLE MESSAGE SIGN
- MEDIAN BARRIER
- SIGN
- ARROW BOARD
- MEDIAN BARRIER WITH WARNING LIGHTS

THE IDEAL CAPACITY OF A MAJOR HIGHWAY IS GENERALLY CONSIDERED TO BE 1900 PASSENGER CARS PER HOUR PER LANE (PCPHPL). IN WORK ZONES ON A MULTI-LANE DIVIDED HIGHWAY, THE FOLLOWING VOLUME GUIDELINES HAVE BEEN SUGGESTED:

**MEASURED AVERAGE WORK ZONE CAPACITIES**

NUMBER OF LANES		NUMBER OF STUDIES	AVERAGE CAPACITY	
NORMAL (EXISTING)	OPEN (TO TRAFFIC)		VPH	VPHPL
3	1	7	1,170	1,170
2	1	8	1,340	1,340
5	2	8	2,740	1,370
4	2	4	2,980	1,490
3	2	9	2,980	1,490
4	3	4	4,560	1,520

Source: Dudek, C., *Notes on Work Zone Capacity and Level of Service*. Texas Transportation Institute, Texas A&M University, College Station, Texas (1984)

BY OBTAINING HOURLY TRAFFIC COUNTS FOR A PARTICULAR ROADWAY (WITH A MINIMUM OF A 48-HOUR AUTOMATIC TRAFFIC RECORDER (ATR) COUNT), THIS WILL HELP TO DETERMINE AT WHAT TIMES OF THE DAY OR NIGHT A CERTAIN NUMBER OF LANES MAY BE CLOSED.

**SUGGESTED WORK ZONE WARNING SIGN SPACING**

ROAD TYPE	DISTANCE BETWEEN SIGNS **		
	A	B	C
LOCAL OR LOW VOLUME ROADWAYS*	350 (100)	350 (100)	350 (100)
MOST OTHER ROADWAYS*	500 (150)	500 (150)	500 (150)
FREEWAYS AND EXPRESSWAYS*	1,000 (300)	1,500 (450)	2,640 (800)

\* ROAD TYPE TO BE DETERMINED BY MASSDOT OFFICE OF TRANSPORTATION PLANNING.

\*\* DISTANCES ARE SHOWN IN FEET (METERS). THE COLUMN HEADINGS A, B, AND C ARE THE DIMENSIONS SHOWN IN THE DETAIL/ TYPICAL SETUP FIGURES. THE A DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE B DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. (THE "THIRD" SIGN IS THE FIRST ONE TYPICALLY ENCOUNTERED BY A DRIVER APPROACHING A TEMPORARY TRAFFIC CONTROL (TTC) ZONE.)

THE "THIRD" SIGN ABOVE IS TYPICALLY REFERRED TO AS AN "ADVANCE WARNING" SIGN ON THE TTOP SETUPS. THESE ADVANCE WARNING SIGNS ARE LOCATED PRIOR TO THE PROJECT LIMITS ON ALL APPROACHES (I.E. THE W20-1 SERIES (ROAD WORK XX FT) SIGNS), AND USUALLY REMAIN FOR THE DURATION OF THE PROJECT. ADDITIONAL SIGNS (I.E. "RIGHT LANE CLOSED 1 MILE" AND "LEFT LANE CLOSED 1 MILE") HAVE BEEN SHOWN IN SOME FIGURES AS EXAMPLES OF REINFORCEMENT SIGN PLACEMENT BUT ARE USED IN RARE OCCASIONS.

THE FIRST AND SECOND WARNING SIGNS ABOVE ARE REFERRED TO AS THE OPERATIONAL (DAY-TO-DAY) WORK ZONE SIGNS AND MAY BE MOVED DEPENDING ON WHERE THE SPECIFIC ROADWAY WORK FOR THAT DAY IS LOCATED.

R2-10a SIGNS SHALL BE PLACED BETWEEN THE SECOND AND THIRD SIGNS AS DESCRIBED ABOVE.

R2-10a, R2-10e, AND W20-1 SERIES SIGNS ARE TO BE INCLUDED ON ALL DETAILS/TYPICAL SETUPS.

Based on: Table 6C-1 MUTCD LATEST EDITION

**STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED**

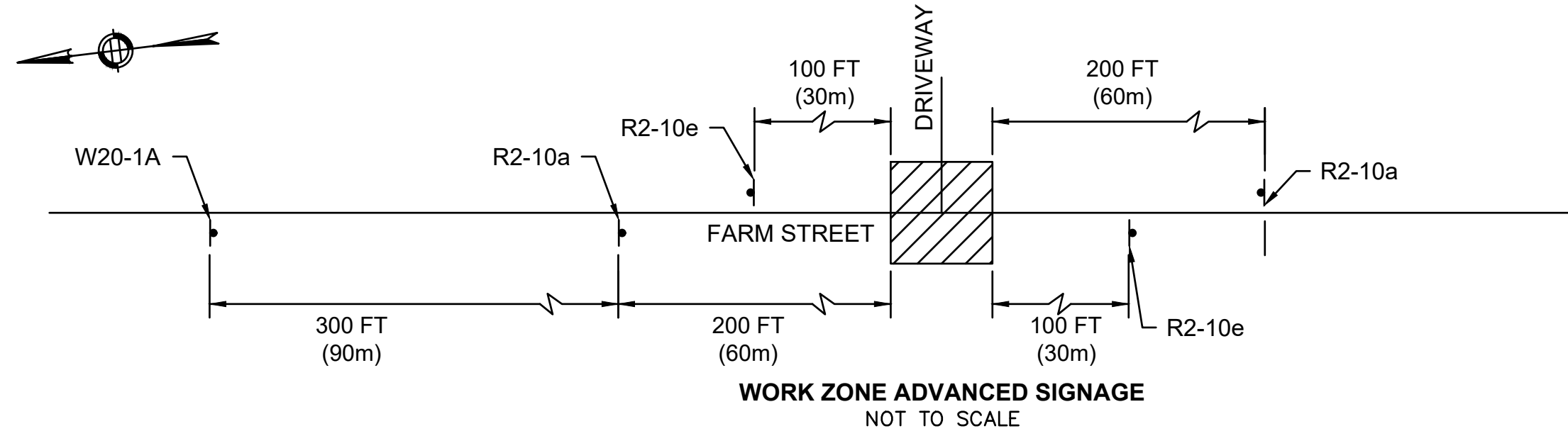
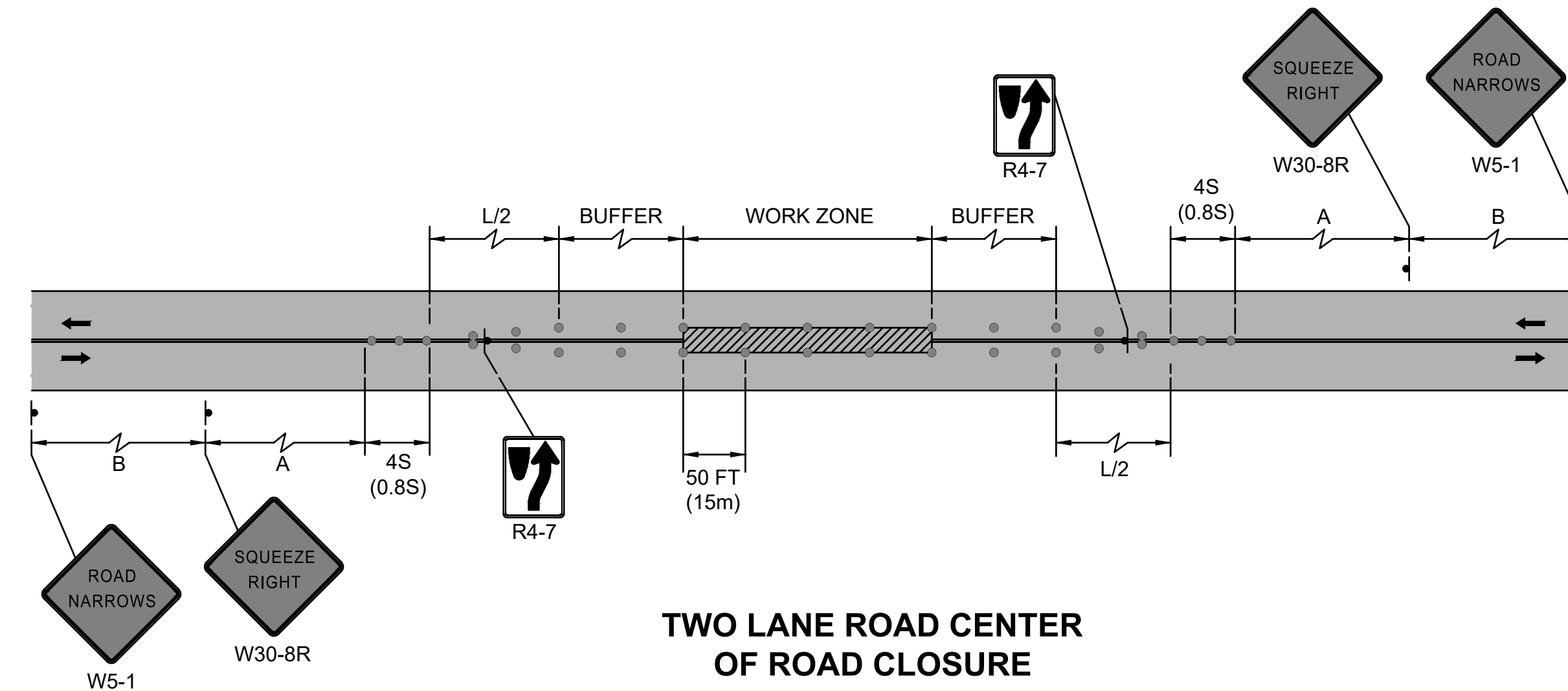
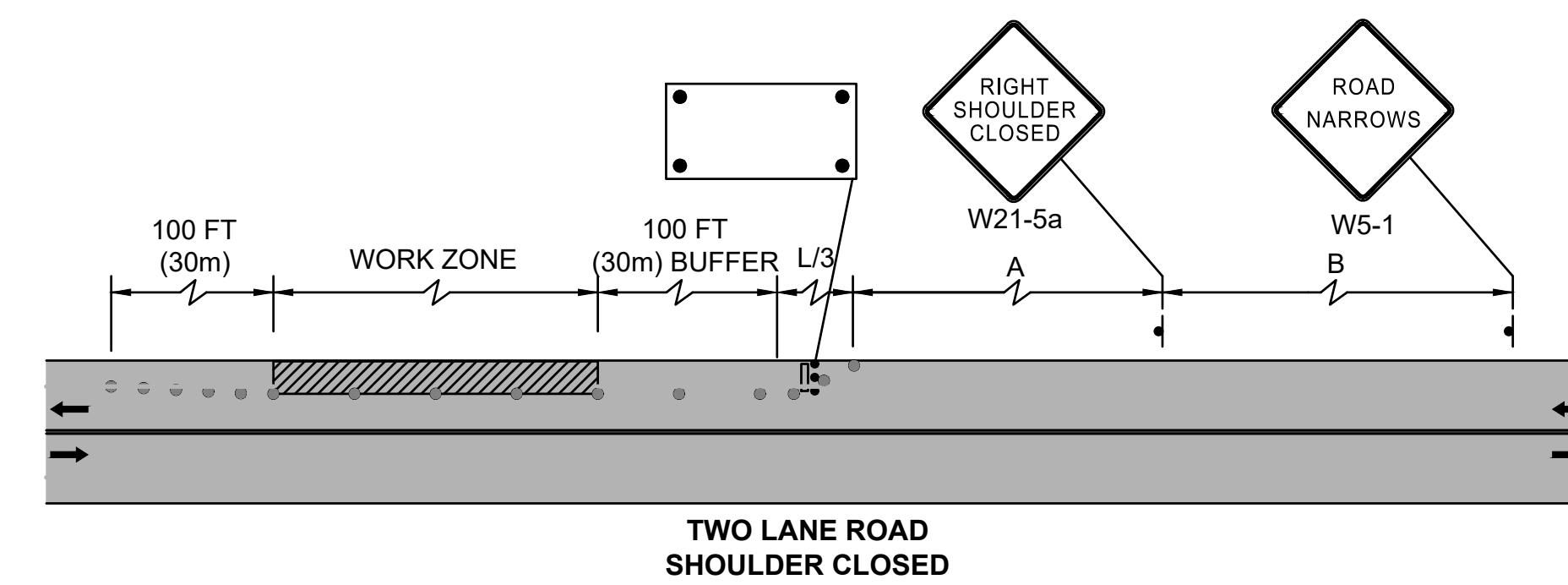
SPEED* (km/h)	DISTANCE (m)	SPEED* (mph)	DISTANCE (ft)
30	35	20	115
40	50	25	155
50	65	30	200
60	85	35	250
70	105	40	305
80	130	45	360
90	160	50	425
100	185	55	495
110	220	60	570
120	250	65	645
		70	730
		75	820

\*POSTED SPEED, OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED

THESE VALUES MAY BE USED TO DETERMINE THE LENGTH OF LONGITUDINAL BUFFER SPACES.

THE DISTANCES IN THE ABOVE CHART REPRESENT THE MINIMAL VALUES FOR BUFFER SPACING.

Source: Table 6C-2 MUTCD LATEST EDITION



- CONVENTIONAL ROADWAY**- A STREET OR HIGHWAY OTHER THAN A LOW-VOLUME ROAD, EXPRESSWAY, OR FREEWAY.
  - EXPRESSWAY**- A DIVIDED HIGHWAY WITH PARTIAL CONTROL OF ACCESS.
  - FREEWAY**- A DIVIDED HIGHWAY WITH FULL CONTROL OF ACCESS.
  - LOW-VOLUME ROAD**- A FACILITY LYING OUTSIDE OF BUILT-UP AREAS OF CITIES, TOWNS, AND COMMUNITIES, AND IT SHALL HAVE A TRAFFIC VOLUME OF LESS THAN 400 AADT. IT SHALL NOT BE A FREEWAY, EXPRESSWAY, INTERCHANGE RAMP, FREEWAY SERVICE ROAD OR A ROAD ON A DESIGNATED STATE HIGHWAY SYSTEM.
- Source: MUTCD LATEST EDITION

**TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES**

TYPE OF TAPER	TAPER LENGTH (L)*
MERGING TAPER	AT LEAST L
SHIFTING TAPER	AT LEAST 0.5L
SHOULDER TAPER	AT LEAST 0.33L
ONE-LANE, TWO-WAY TRAFFIC TAPER	50 FT MIN.(15 m) 100 FT(30 m) MAX.
DOWNSTREAM TAPER	50 FT MIN.(15 m) 100 FT MAX.(30 m) PER LANE

Source: Table 6C-3 MUTCD LATEST EDITION

**FORMULAS FOR DETERMINING TAPER LENGTHS**

SPEED LIMIT (S)	TAPER LENGTH (L) FEET	SPEED LIMIT (S)	TAPER LENGTH (L) Meters
40 MPH OR LESS	$L = \frac{WS^2}{60}$	60 KM/H OR LESS	$L = \frac{WS^2}{155}$
45 MPH OR MORE	$L = WS$	70 KM/H OR MORE	$L = \frac{WS}{1.6}$

WHERE: L = TAPER LENGTH IN FEET (METERS)

W = WIDTH OF OFFSET IN FEET (METERS)

S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH (KM/H)

Source: Table 6C-4 MUTCD LATEST EDITION

**CONSTRUCTION SIGN SUMMARY**

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	DIMENSIONS (in.)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW		BACK-GROUND	LEGEND	BORDER			
R2-10a	24"	30"	WORK ZONE BEGIN DOUBLE FINES	SEE MUTCD STANDARDS	SEE MUTCD STANDARDS	SEE MUTCD STANDARDS	2	SEE MUTCD STANDARDS	SEE MUTCD STANDARDS	SEE MUTCD STANDARDS	P-5 2	5.00	10.0
R2-10e	24"	30"	END ROAD WORK DOUBLE FINES END	SEE MUTCD STANDARDS	SEE MUTCD STANDARDS	SEE MUTCD STANDARDS	2	SEE MUTCD STANDARDS	SEE MUTCD STANDARDS	SEE MUTCD STANDARDS	P-5 2	5.00	10.0
W20-1A	36"	36"	ROAD WORK 500 FT	SEE MUTCD STANDARDS	SEE MUTCD STANDARDS	SEE MUTCD STANDARDS	3	SEE MUTCD STANDARDS	SEE MUTCD STANDARDS	SEE MUTCD STANDARDS	P-5 3	9.0	27.0



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**NORTHEAST METRO TECHNICAL HIGH SCHOOL**

Wakefield, Massachusetts



Warner Larson  
Landscape Architects  
180 WEST BROADWAY, BOSTON MA 02127  
617-664-1140  
warnerlarson.com

**CONCEPT PLAN**

**TEMPORARY TRAFFIC CONTROL DETAILS**

Scale: 1" = 20'-0"  
Job No.: 13872.2  
Drawn By: LB  
Date: 5/19/2022

**TR-014**

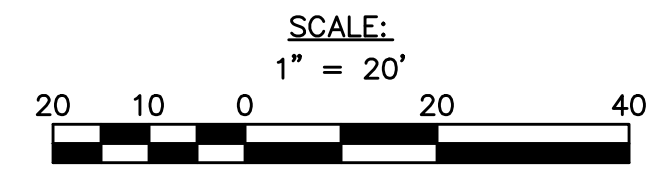
LAST DATE: 07/27/2021 10:05 AM BY: BZ/awg



**OLD NAHANT ROAD**  
 (VARIABLE WIDTH - PUBLIC - 1950 STATE HIGHWAY CO. NO. 4865)  
 BIT CONCRETE

**PHEASANT WOOD DRIVE**  
 BIT CONCRETE

**FARM STREET**  
 (VARIABLE WIDTH - PUBLIC - 1950 STATE HIGHWAY CO. NO. 4865)  
 BIT CONCRETE



**D·R·A**

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**NORTHEAST METRO TECHNICAL HIGH SCHOOL**

Wakefield, Massachusetts

**WARNER LARSON**  
 LANDSCAPE ARCHITECTS

130 WEST BROADWAY, BOSTON, MA 02107  
 617-464-1440  
 warnerlarson.com

**MSBA SCHEMATIC DESIGN SUBMITTAL**

June 17, 2021

**FARM STREET AT SITE DRIVEWAY**

Scale: 1" = 20'-0"

Job No.: 13872.2

Drawn By: BZ

Date: 6/17/2021

**TR-001**

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BUILDING SYSTEMS NARRATIVES  
**SITE NARRATIVE**



**WARNER LARSON**  
LANDSCAPE ARCHITECTS

**Northeast Metro Technical High School**  
Wakefield, MA

**MSBA Schematic Design Submission**

**SITE NARRATIVE – June 17, 2021**

The Northeast Metro Technical High School (NEMT) site is located between Farm Street and Water Street, off of Hemlock Road in the Town of Wakefield MA. The Site is behind, to the east of the Wakefield Memorial High School. South of the existing school building lies a forested area. To the east of the site, abutting the property is the Breakheart Reservation. Access to the Breakheart Reservation is provided through the school property.

The proposed site design and landscape character is inspired by the natural beauty found throughout the surrounding area and take inspiration from the Breakheart Reservation Park aesthetics. The proposed site topography is influenced by the existing granite bedrock formation. Minimal disturbance to the surround areas is a focus of the overall site design. The new school and surrounding site improvements are designed to maximize the existing forest and topography of the site. This will anchor the school into the landscape and keep the character of the area.

The new high school building is positioned on the high point of the property to the south of the existing school location. A new, secondary, site access point will be created off Farm Street to the west as well as maintaining the current site access drive off Hemlock Road. This new access road weaves its way through the site and follows the existing topography. The school building was positioned as to minimize the amount of rock cut required for construction. The elevation of the building will provide commanding views of the surrounding area. A student parking lot will be constructed to the south of the new school building with separate bus loops for student drop-off and pickup. A larger parking lot will be located north of the new school building on the existing school site. A series of low impact elevated boardwalks will provide an accessible path to the lower parking lot along with a series of stairs for a more direct connection. The area where the current school building is located will become the athletic fields for the school. This new building location allows the existing school facility and athletic fields to remain in operation while the new high school building is constructed and minimizes the need for temporary facilities and services in the process.

A 24 feet wide service/emergency driveway loops around the building providing access to the culinary program, high-bay shops and service area. Supporting facilities such as auto repair and

**Northeast Metro Technical High School  
MSBA Schematic Design Submission**

SITE NARRATIVE

June 17, 2021

Page 2 of 4

body shop repair storage are located along the north side of the building. A separate maintenance garage is located south of the school at the school parking lot. The lower parking lot is for students and is controlled by electronic access gates. On the weekend and after school hours this parking lot will be opened to the general community. A separate parking lot will be dedicated for school vehicle use only and is located on the existing basketball courts, south of the existing running track/football field. A 12-stall parking lot is dedicated for users of the Breakheart Reservation and will be open to the community at all times.

All driveways and parking areas will be constructed of vehicular rate bituminous asphalt and be curbed. Radius on turns is designed to allow cars, buses, emergency and service vehicles to navigate the site. Parking stall dimensions and access drive lanes are designed to conform to the Town of Wakefield's by-laws. Parking stalls are 9' wide and 18' deep, drive lanes are 24' wide for 2-way traffic.

The athletic fields are located on the existing school building area. A new running track with a synthetic football field will be installed. A 750-person grandstand structure will be installed on the west side of the track. A confession/restroom building will be located under this bleacher structure. To the west of the track an irrigated natural grass turf field will be installed. This field will host softball and soccer fields. Athletic sports lights will be installed for the track and football fields. A bank of 5 tennis courts will be installed to the north of the softball/soccer field. The existing irrigated natural grass baseball field will be renovated and upgraded. The lower natural grass practice fields will be renovated and a new JV softball field installed. Asphalt access drives will provide maintenance and emergency access to the sport fields. A satellite athletic support building is located at the base of the main access drive and will house changing rooms, offices and additional support for the athletic complex.

The building configuration creates a main entrance plaza on the southern side of the school building. This courtyard provides comfortable microclimates in the spring and fall. This area can be used for gathering spaces that maximize the days per year students can utilize the outdoors for their studies and lunch period. There is also a separate outdoor dining space for staff that is buffered by planting. Another outdoor area will be provided on the eastern side of the building and will support the culinary program. This culinary program provides food service open to the public and the outdoor dining terrace is prominently visible at the approach to the main entrance to the school. Green roofs are proposed on various portions of the school building for

**Northeast Metro Technical High School  
MSBA Schematic Design Submission**

SITE NARRATIVE

June 17, 2021

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sustainability and climate resiliency. There are 2 large roof decks that will provide students the ability to utilize the outdoor environment and learn about green roof technology. These roof courtyards are a mix of pedestal pavers, natural surfacing materials and seating. There is a single non-accessible green roof that will be installed over the cafeteria area. The planting medium is primarily extensive green roof with some areas being semi-intensive to support shade loving native perennials/grasses and a smaller area being intensive with 24 inches soil profile to support large shrubs. An outdoor playground to support the Pre-K program will be located on a roof with complete safety and compliance. The need for locating this on the roof was to provide the Pre-K students a safe access away from the vehicular traffic and vocational shops.

Pedestrian movement through the site has been carefully designed to minimize driveway crossings while connecting to parking areas and athletic fields. Vertical granite curbs line all building adjacent sidewalks. Driveway approach angles are engineered to eliminate straight lines heading directly toward entry doors. There will be vertical obstructions at the main entry doors providing another level of security. These vertical obstructions will be bollards, stone block seat walls or changes in the topography. Accessible parking stalls have been distributed into all the parking areas and all are located within 200' of a building entry or to the facility they are intended to support. These accessible parking stalls have the associated curb ramps where necessary along with striped crosswalks. Each of the main entries of the school building have extended canopies to protect the entrances and adjacent walkways. Students arriving to the school by bus are dropped off along the sidewalks on the eastern and southern driveways. They will enter the school at the main south entrance (adjacent to the High School Office) or the eastern entrance (next to the Superintendent's Office). Parent drop-off will be in the southern parking lot where the students will walk to the main entry along a paved sidewalk. This walkway in the southern parking lot has raised crosswalks to help slow vehicles and increase pedestrian safety. Students that arrive by their own vehicles will either park in the southern parking lot and walk to the main entry along the main access path. Students will also be able to park in the lower parking lot at the athletic fields. These students will then walk up the hill along the pathway consisting of stairs and landings, or along an accessible route of elevated ramping boardwalks. During dismissal busses will queue along the eastern and southern driveways and along the back of the building. Students will be dismissed from their last period class/ shop and leave via the most convenient exit to the front of the building. Parents in cars who arrive early will wait to pick up students in the south parking lot. Students will exit the building via the south



**Northeast Metro Technical High School  
MSBA Schematic Design Submission**

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June 17, 2021

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entrance to meet them. Students leaving via their own vehicle will leave via the main entrance or lower-level entrance and walk back down the hill to the student parking lot. Accessible routes are provided to all site program areas. There is an accessible route from the lower parking lot to the main school building that utilizes an elevator within the athletic support building and a series of elevated boardwalk HC ramps. All the athletic fields, including the bleacher structure and press box, will be fully accessible.

The planting scheme on the site intends to compliment the surrounding forested area. Native species are proposed and laid out in an organic pattern to mimic the forest. Low points are strategically located to help direct stormwater into bioretention basins. Irrigation of the sites planting are limited to high impact areas at the school building and to the natural grass baseball field. The lower athletic practice fields will remain non-irrigated. Irrigation source is from the town water supply.

Site Lighting will be set on pole mounted fixtures. Roadway and drive lanes will be illuminated with 25' tall fixtures. Pedestrian light fixtures will be installed at a lower height to provide a more people friendly lighting level. These site lighting fixtures will have LED lamps and are intended to meet the dark sky or similar guidelines. There will be lighting at the athletic fields for after hour use. Illumination levels will conform to IES guidelines for site lighting levels. Security cameras will use light poles as needed to ensure site coverage as designed.

DRA

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# NORTHEAST METRO TECHNICAL HIGH SCHOOL

Wakefield, Massachusetts



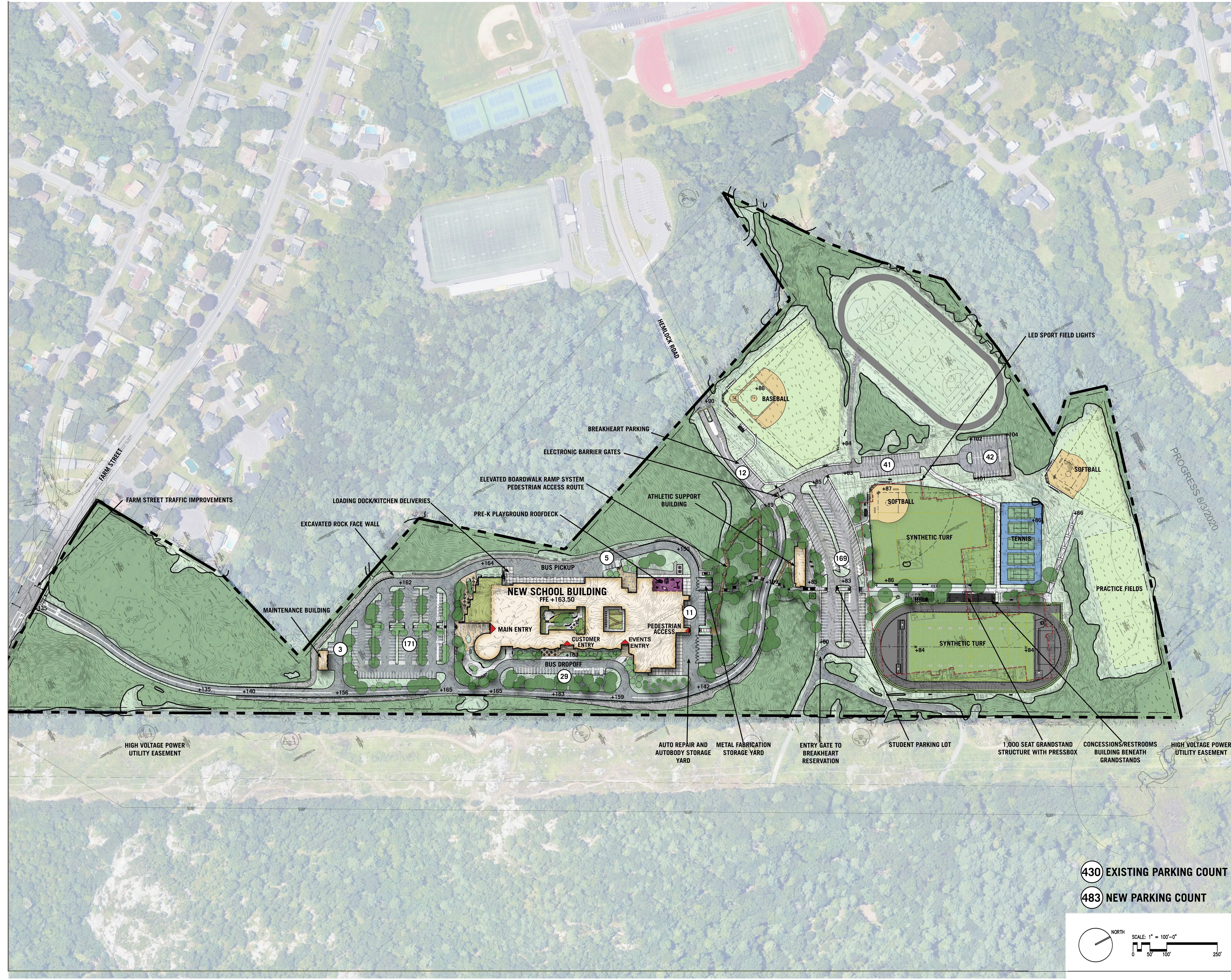
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100 WEST BROADWAY, BOSTON, MA 02107  
617.444.1440 warnerlarson.com

## SCHEMATIC DESIGN COST ESTIMATE SET

## SITE PLAN RENDERING

Scale: 1" = 100'-0"  
Job No.:  
Drawn By: JM/IEH  
Date: 05/19/2021

R-100



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