RANDOLPH, MASSCHUSETTS

Randolph North Redevelopment

Traffic Impact Study

Prepared for
Town of Randolph

Prepared by
Howard Stein Hudson

Prepared on Behalf of
Core Investments Development, Inc

December 2023

HOWARD STEIN HUDSON

Engineers + Planners

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Executive Summary

This Traffic Impact Study (TIS) presents the comprehensive transportation evaluation completed by ***Howard Stein Hudson (HSH)*** for the proposed Project, Randolph North Development, located on Scanlon Drive in Randolph, Massachusetts. The study was completed in conformance with the Massachusetts Department of Transportation's (MassDOT's) *Transportation Impact Assessment (TIA) Guidelines*. The study analyzes existing conditions within the Project study area, as well as conditions forecast to be in place under the seven-year planning horizon of 2030.

The site is currently occupied by a two-event venue building, and three parking lots totaling 747 spaces. The Project will consist of demolition of existing venue buildings and construction of two new buildings, one supporting a crane operations tenant that will feature a laydown area to the west of High Street, and another building primarily housing the cGMP uses. Overall, the Project consists of constructing 68,000 square feet (sf) of general office space, 22,000 sf of warehousing space, 75,000 sf of research and development space, and 110,000 sf of cGMP space (Laboratory/current Good Manufacturing Practice) with 326 parking spaces across the development.

Designated loading/service areas for the cGMP building are located at the north edge of the site with parking located at the frontage along Scanlon Drive. The site will also construct a new trailhead and parking lot for the Department of Conservation and Recreation's (DCR's) Blue Hills Reservation near the intersection of High Street and Scanlon Street with approximately 18 parking spaces.

The transportation analysis employed mode use data for the area surrounding the Project site based on U.S. Census data and identifies the number of trips expected to be generated by the Project by mode (walk, bicycle, transit, and vehicle). The Project is expected to generate approximately 242 new vehicle trips, 24 new transit trips, and 6 new walk/bicycle trips during the weekday a.m. peak hour, and 241 new vehicle trips, 23 new transit trips, and 6 new walk/bicycle trips during the weekday p.m. peak hour. The Project is expected to see 184 net new trips for the a.m. peak hour and 171 net new trips during the p.m. peak hour compared to the existing conditions.

A detailed traffic operations analysis was conducted for the following intersections:

- Scanlon Drive/North Main Street (signalized);
- Reed Street/High Street (signalized); and
- Scanlon Drive/High Street (unsignalized).

The Project is expected to have minimal impact on traffic operations at the study area intersections.

Introduction

Howard Stein Hudson (HSH) has prepared this Traffic Impact Study (TIS) to determine the potential impacts related to Randolph North redevelopment project (the Project) in Randolph, Massachusetts. The Project consists of constructing approximately 68,000 square feet (sf) of general office space, 22,000 sf of warehousing space, 75,000 sf of research and development space, and 110,000 sf of cGMP space with 324 parking spaces. The site is currently occupied by an event venue, a closed restaurant, and parking lots. **Table 1** presents the program summary of the existing and proposed uses on the site.

Table 1. Existing Site and Proposed Building Program

Land Use	Proposed
cGMP (Manufacturing)	110,000 sf
Warehousing	22,000 sf
General Office	68,000 sf
Research and Development	75,000 sf
Parking Spaces	324 spaces

Study Area

Based on the project traffic demands, proposed site circulation, traffic circulation in this area of the Town, and discussions with the Town of Randolph, the study area includes the following intersection locations:

- Scanlon Drive/North Main Street (signalized);
- Reed Street/High Street (signalized); and
- Scanlon Drive/High Street (unsignalized).

The study area intersection locations are shown on **Figure 1**.

Figure 1. *Study Area*

Methodology

This TIS follows the Massachusetts Department of Transportation's (MassDOT's) *Transportation Impact Assessment (TIA) Guidelines*, as described below:

- The Existing (2023) Condition analysis includes an inventory of the existing transportation conditions such as traffic characteristics, parking, curb usage, transit, pedestrian circulation, bicycle facilities, loading, and site conditions. Existing counts for vehicles, bicycles, and pedestrians were collected at the study area intersections. Operations at the study area intersections are calculated using Synchro 11.0, which is based on the traffic operational analysis methodology of the Transportation Research Board's (TRB's) *Highway Capacity Manual* (HCM) 6th edition.[1]
- The future transportation conditions analyses evaluate potential transportation impacts associated with the Project. The long-term transportation impacts are evaluated for Year 2030, based on a seven-year horizon.
  - The No-build (2030) Condition analysis includes general background traffic growth, traffic growth associated with specific developments (not including this Project), and transportation improvements that are planned in the vicinity of the Project Site.
  - The Build (2030) Condition analysis includes a net increase in traffic volume due to the addition of Project-generated trips. The transportation study identifies expected roadway, parking, transit, pedestrian, and bicycle accommodations, as well as loading capabilities and deficiencies.
  - The Build-Mitigated (2030) Condition includes an analysis of traffic operations in the design year with the implementation of significant roadway or intersection improvements, if applicable.
- The final section of the transportation study summarizes transportation conclusions and identifies potential transportation recommendations.

Existing (2023) Condition

This section documents the condition of the roadways and intersections located in the study area including geometric layout, lane use, traffic count data, pedestrian and bicycle count data, crash data, and other existing information. Crash analysis was performed using the most recent available data from the MassDOT IMPACT Crash Portal.

1 Highway Capacity Manual, Sixth Edition; Transportation Research Board; Washington, D.C.; 2016.

Roadway Descriptions

Scanlon Drive is classified as an urban minor arterial under the jurisdiction of the Town of Randolph. It runs east-west between North Main Street to the east and High Street to the west. It is a two-way, two-lane road. On-street parking is not provided on either side of the road. A sidewalk is provided on the south side of the road.

North Main Street (Route 28) is classified as an urban principal arterial under Massachusetts Department of Transportation jurisdiction. It runs north-south between the I-93 interchange to the north and South Main Street to the south. Within the study area, it is a two-way, four-lane road. On-street parking is not provided on either side of the road. Sidewalks are generally provided on both sides of the road.

Reed Street is classified as an urban minor arterial under the jurisdiction of the Town of Randolph. It runs east-west between North Main Street to the east and Canton Street to the west. It is a two-lane, two-lane road. On-street parking is not provided on either side of the road. Sidewalks are provided on both sides of the road.

High Street is classified as an urban minor arterial under the jurisdiction of the Town of Randolph and Norfolk County. It runs north-south between Scanlon Drive to the north and Vine Street to the south. It is a two-way, two-lane road. On-street parking is not provided on either side of the road. A sidewalk is provided on the east side of the road.

Billings Street is classified as a local road under the jurisdiction of the Town of Randolph. It runs east-west between High Street and High Street. It is a paper street within the existing site parking lot.

Intersection Descriptions

Scanlon Drive/North Main Street/Russ Street is a four-legged, signalized intersection with four approaches. The Scanlon Drive eastbound approach consists of a shared left-turn/through lane and a shared through/right-turn lane. The Russ Street westbound approach consists of an exclusive left-turn lane and a shared through/right-turn lane. The North Main Street northbound approach consists of an exclusive left-turn lane, a through lane, and a shared through/right-turn lane. The North Main Street southbound approach consists of an exclusive left-turn lane, two through lanes, and an exclusive right-turn lane. Crosswalks are provided at all approaches. Pedestrian ramps are provided at all crossings, but only the ramp at the northeast corner is currently ADA-accessible. On-street parking is not provided along any approach. Pedestrian signal equipment is provided at all crosswalks.

Reed Street/High Street is a four-legged, signalized intersection with four approaches. All four approaches consist of a shared left-turn/through/right-turn lane. Crosswalks with pedestrian ramps are provided at all approaches. On-street parking is not provided along any approach. Pedestrian signal equipment is provided at all crosswalks.

Scanlon Drive/High Street is a three-legged, unsignalized intersection with three approaches. The Scanlon Drive westbound approach consists of a shared left-turn/right-turn lane. The High Street northbound approach consists of a shared through/right-turn lane. The High Street southbound approach consists of a shared left-turn/through lane. Crosswalks are not provided at any of the approaches. On-street parking is not provided along any approach.

Scanlon Drive Driveways. Along Scanlon Drive, there are several driveways that lead to the existing Site as well as adjacent parcels. Starting from High Street and moving east, this includes four driveways for the closed Lantana venue, two driveways for Lombardo's, a shared driveway for Lombardo's and the Comfort Inn Hotel, and a driveway for the Shell gas station.

Traffic Data Collection

This section summarizes the traffic data that was collected within the study area.

AUTOMATIC TRAFFIC RECORDER COUNTS

An automatic traffic recorder (ATR) is a device that continuously records the number and class of vehicles on a roadway for a given period. ATR counts were conducted on Park Street for a 48-hour period from Wednesday, September 13, 2023, to Thursday, September 14, 2023. Complete ATR data is included in **Appendix A**. **Table 2** summarizes the existing ATR traffic data, including daily traffic, and peak-hour percentage (K factor). Average vehicular speeds and approximate 85th percentile vehicular speeds are included in **Appendix A.** Peak periods are also identified below. **Figure 2**, **Figure 3**, and **Figure 4** show the average daily traffic recorded at each ATR location.

- High Street
  - The a.m. peak was 6:15 a.m. – 7:15 a.m. (770 vehicles).
  - The p.m. peak was 4:30 p.m. – 5:30 p.m. (750 vehicles).
- Scanlon Drive
  - The a.m. peak was 8:15 a.m. – 9:15 a.m. (760 vehicles).
  - The p.m. peak was 4:30 p.m. – 5:30 p.m. (750 vehicles).
- North Main Street
  - The a.m. peak was 8:00 a.m. – 9:00 a.m. (2,400 vehicles).
  - The p.m. peak was 4:15 p.m. – 5:15 p.m. (2,500 vehicles).

Table 2. Average Weekday Traffic

Location	ADT	Heavy Vehicle %	K Factor
High Street			
Northbound	5,033	3.1%	12%
Southbound	4,793	2.8%	10%
TOTAL	**9,826**		
Scanlon Drive			
Eastbound	4,942	3.3%	11%
Westbound	4,762	2.9%	10%
TOTAL	**9,704**		
North Main Street			
Northbound	17,318	10.3%	9%
Southbound	19,172	4.5%	8%
TOTAL	**36,490**		

Figure 2. ***Average Daily Traffic: High Street, South of Scanlon Drive***

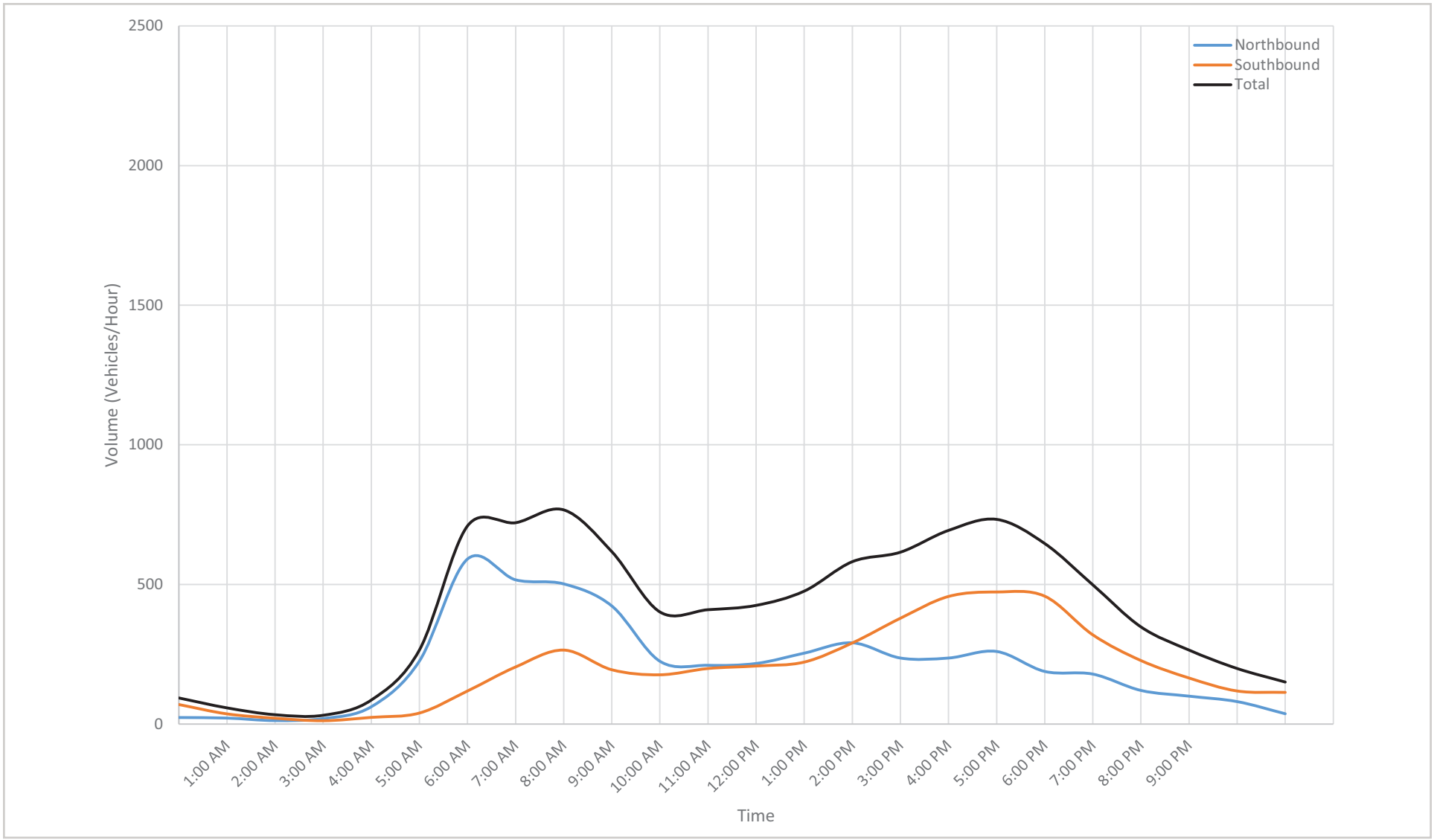


Figure 3. ***Average Daily Traffic: Scanlon Drive, East of High Street***

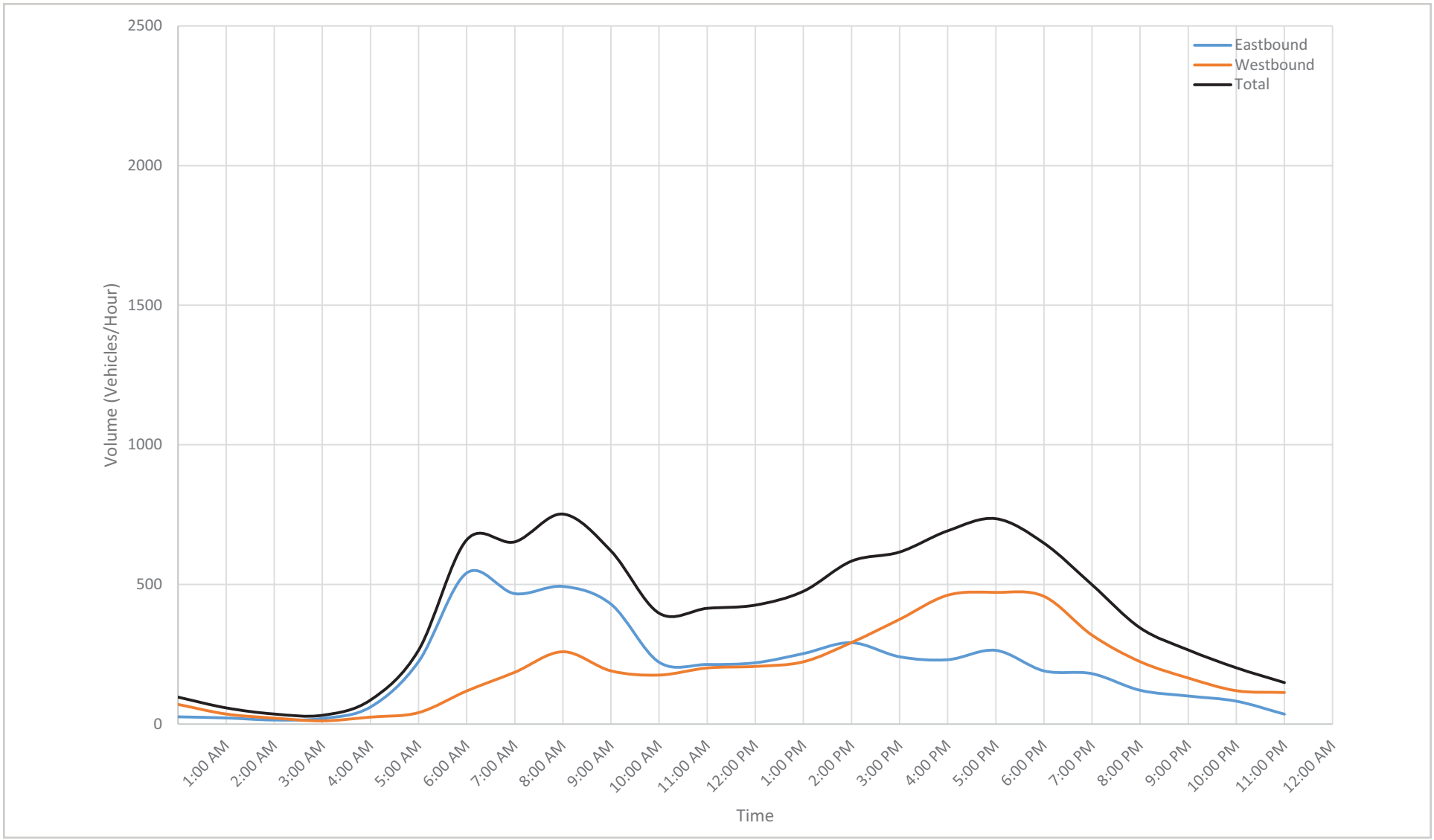
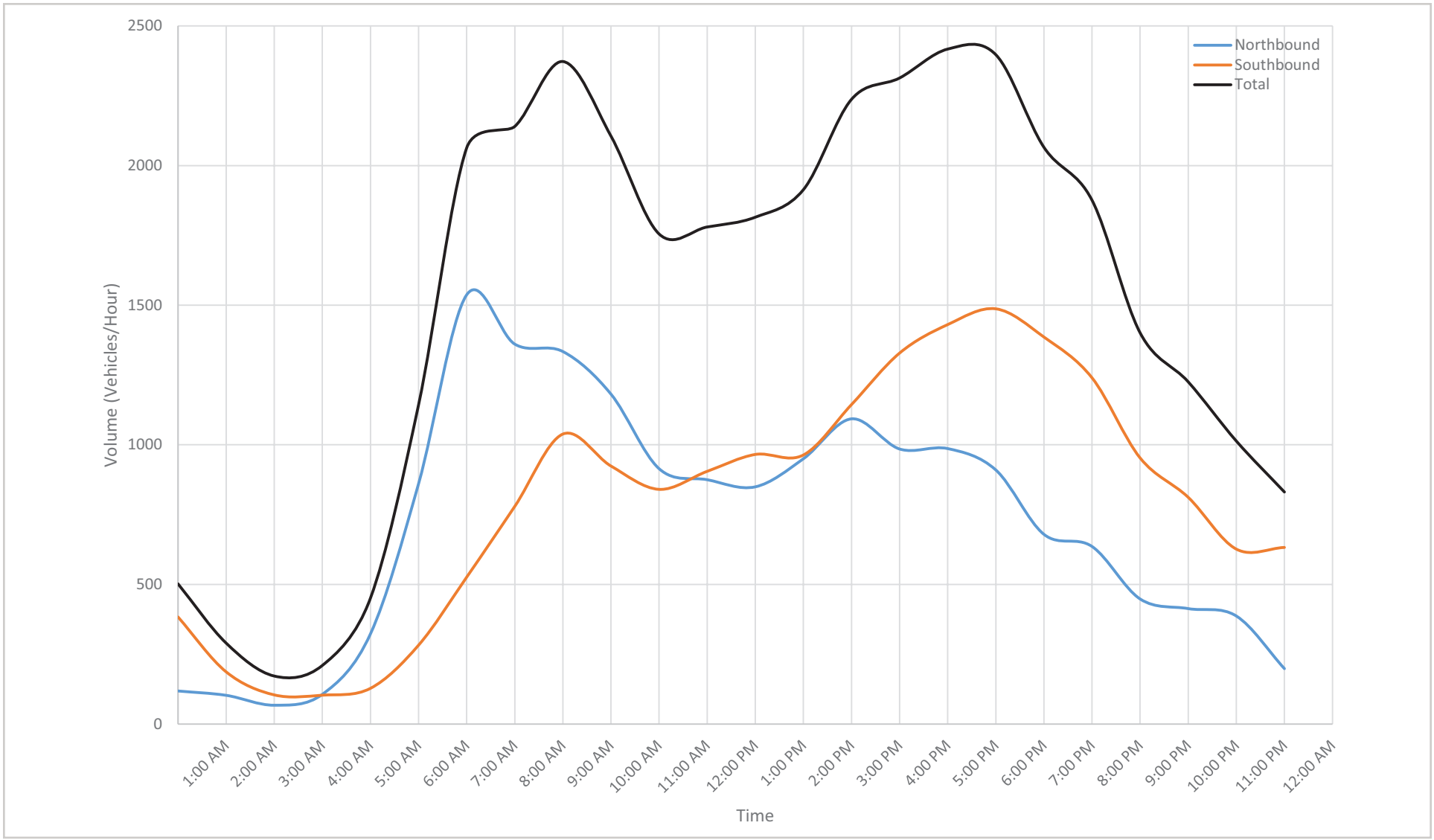


Figure 4. ***Average Daily Traffic: North Main Street, North of Scanlon Drive***



MANUAL TURNING MOVEMENT COUNTS

Manual Turning Movement Counts (TMCs) were recorded from 7:00 – 9:00 a.m. and 4:00 – 6:00 p.m. at the study area intersections and site driveway. The TMCs include vehicle, bicycle, and pedestrian counts. Counts were collected on Wednesday, September 13th, 2023, at the study area intersections. The count data indicates that the morning peak hour occurs between 8:00 – 9:00 a.m. and the evening peak hour occurs between 4:30 – 5:30 p.m. Complete traffic count data is provided in **Appendix A**.

SEASONAL ADJUSTMENT FACTORS

According to MassDOT's Weekday Seasonal Factors Report for urban arterials and collectors, traffic volumes in September are shown to be slightly above average with a seasonal adjustment factor of 0.92. This means that volumes are 8% higher during September than the average for the year. For a more conservative analysis, counts were not adjusted. Seasonal adjustment factors are included in **Appendix B**. **Figure 5** and **Figure 6** show the existing vehicular traffic volumes at the study area intersections and driveways along Scanlon Drive during the morning and evening peak hours. Volumes at adjacent intersections were balanced where appropriate.

Figure 5. ***Existing (2023) Condition Vehicle Volumes, Weekday a.m. Peak Hour***

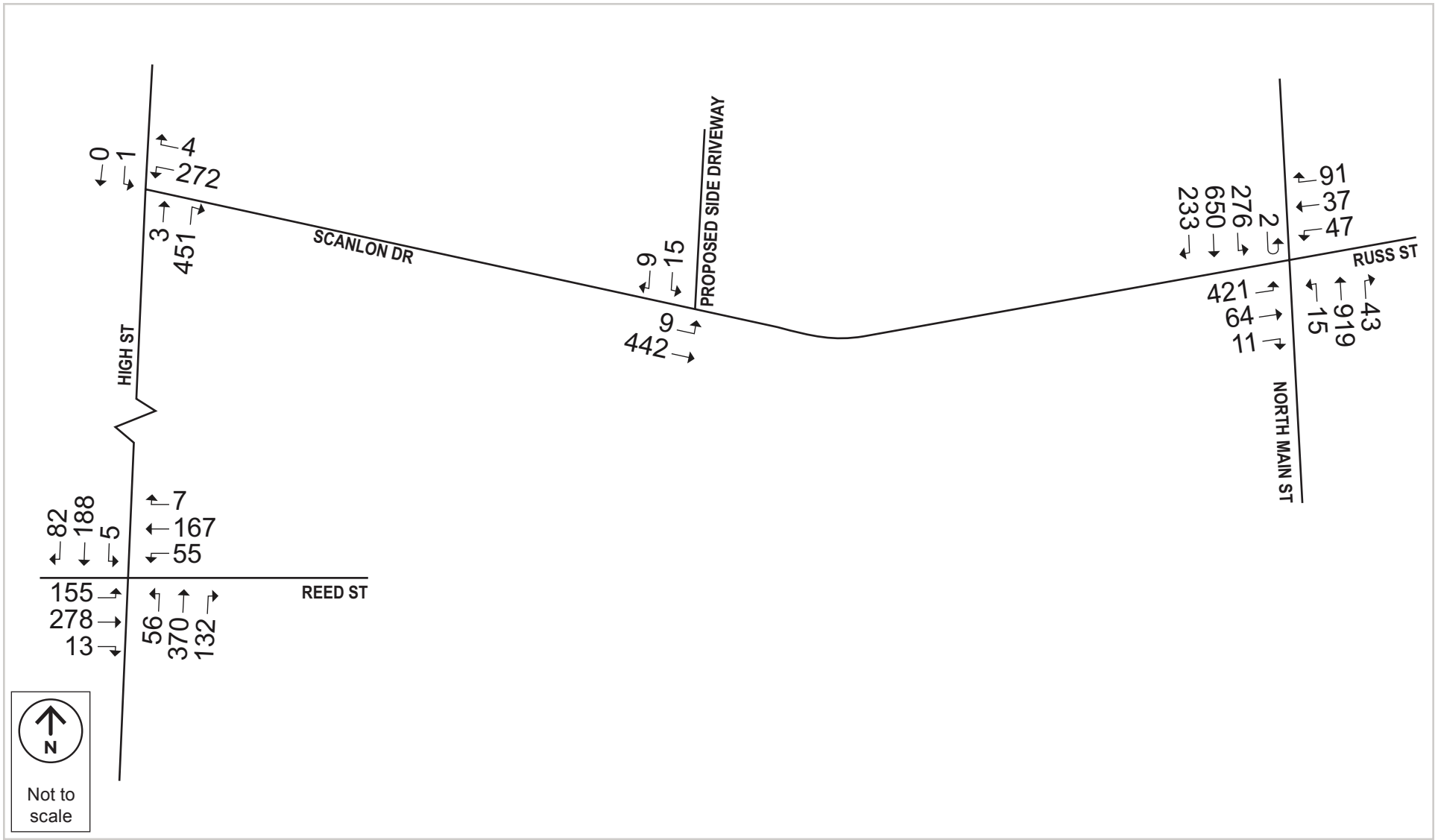
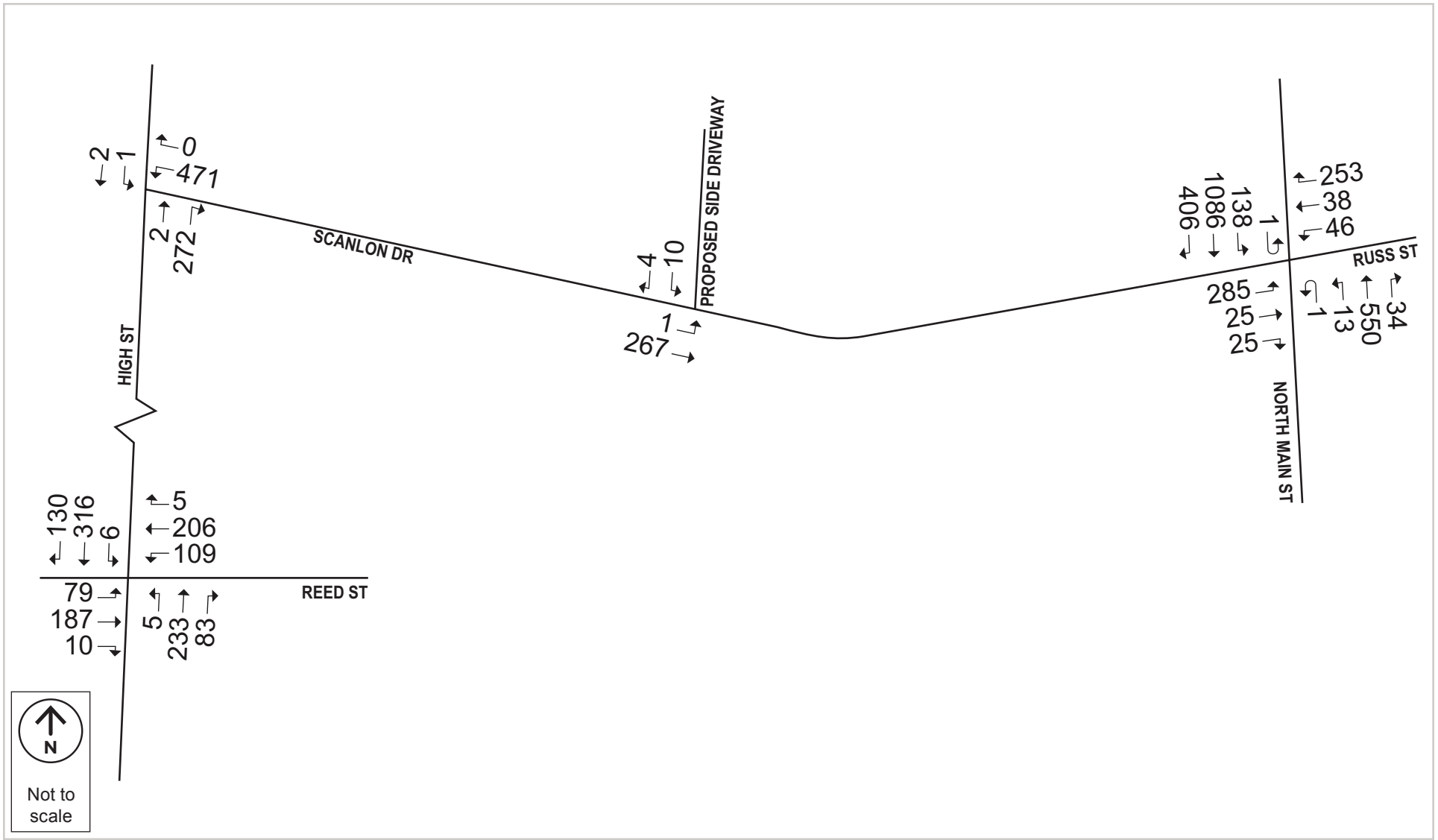


Figure 6. ***Existing (2023) Condition Vehicle Volumes, Weekday p.m. Peak Hour***



BICYCLE COUNT DATA

Bicycle counts were conducted concurrently with the vehicular traffic data collection. Bicycle activity within the study area was generally low, as shown in **Figure 7**. Cyclists share the road with vehicles on all study area roadways under current conditions.

PEDESTRIAN COUNT DATA

To determine the amount of pedestrian activity within the study area, pedestrian counts were conducted as part of the traffic data collection at the study area intersections. Counts occurred on a cloudy day with temperatures around 70˚F. Pedestrian volumes were highest along North Main Street. The weekday a.m. and p.m. peak hour pedestrian volumes are shown in **Figure 8**.

Existing Public Transportation

The Massachusetts Bay Transportation Authority (MBTA) and the Brockton Area Transit Authority (BAT) operate buses with stops at the North Main Street at Scanlon Drive bus stop. This bus stop is located an approximately 4-minute (0.2-mile) walk from the Project site. The bus stop is served by MTBA Bus Route 240, which operates between Ashmont and Avon Square; and BAT Bus Route 12, which operates between Ashmont Station and BAT Center hub in Brockton.

Approximately four miles to the south of the site is the Holbrook/Randolph MBTA Station, which is served by the Middleborough/Lakeville Commuter Rail Line. There is also a stop for MBTA Bus Route 240 at this station for potential regional connections.

Off-street Parking

The existing off-street parking supply was documented at the following parking facilities closest to the Site:

- Lantana - 23 Scanlon Drive Lot (115 spaces);
- Lombardo's Front Lot (approximately 265 spaces); and
- Lombardo's Back Lot (approximately 234 spaces).

Figure 7. ***Existing (2023) Condition Bicycle Volumes, Weekday a.m. and p.m. Peak Hours***

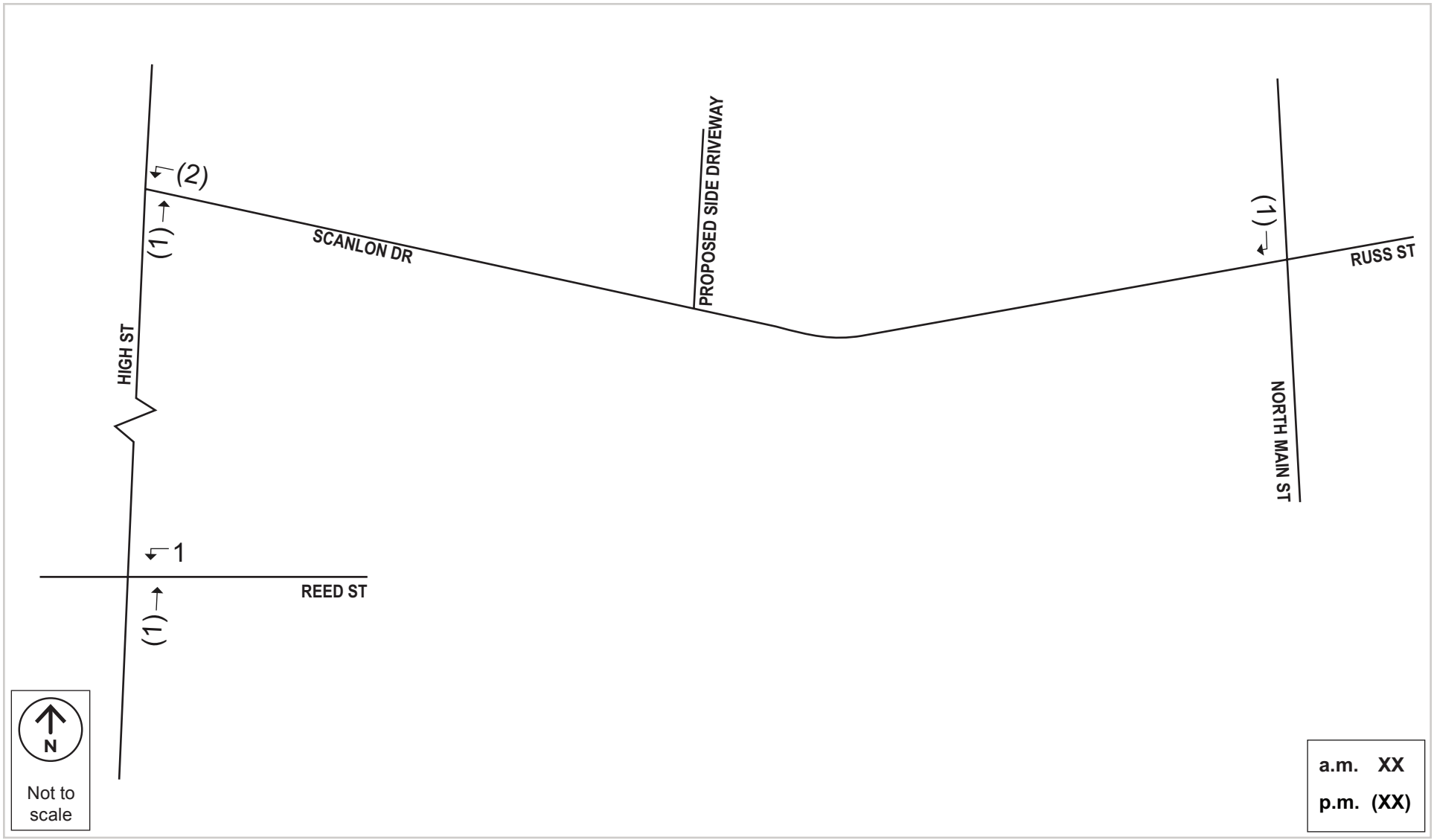
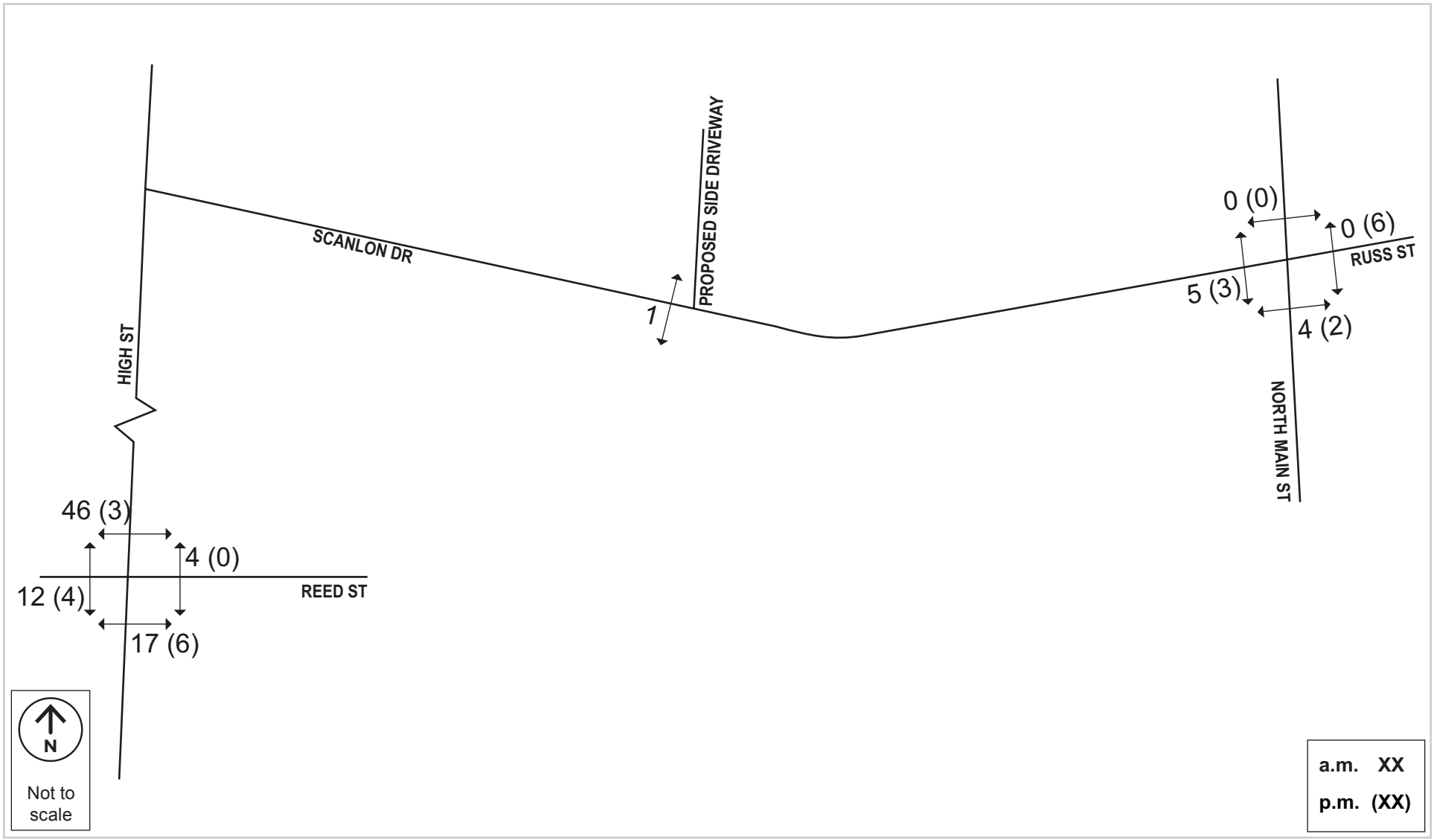


Figure 8. ***Existing (2023) Condition Pedestrian Volumes, Weekday a.m. and p.m. Peak Hours***



Safety Analysis

HSH performed a safety analysis at all study area intersections to identify and evaluate possible safety issues that exist. Crash data for this corridor was obtained from the MassDOT crash portal database for the most recent period available (2016-2020). **Table 3** summarizes the 86 crashes recorded between 2016 and 2020 at the study area intersections. Most of the crashes reported at the signalized intersection were rear-end crashes (38%) or angle crashes (35%). Two crashes occurred at the study area unsignalized intersections both of which were rear-end crashes. Most crashes were reported with clear weather conditions (62%) and occurred during daylight hours (56%). Most crashes (58%) did not result in any injuries and resulted in property damage only (PDO). No fatalities were recorded. One pedestrian crash was reported.

Crash rates are determined for an intersection based on the number of crashes per million entering vehicles (MEV). The MassDOT District 6 crash rate for signalized intersections is 0.71, and the District 6 crash rate for unsignalized intersections is 0.52. The average crash rates at the signalized intersections are both above the MassDOT District 6 average:

- ***Scanlon Drive/North Main Street.*** Between 2016 and 2020, 59 crashes occurred at this location. One crash involved a pedestrian. Most (61%) of the crashes occurred during daylight hours. The weather during most (83%) crashes was either clear or cloudy. Based on crash data, crashes often occurred when vehicles had to slow down during heavy traffic. No crashes were fatal.
- ***Reed Street/High Street.*** Between 2016 and 2020, 25 crashes occurred at this location. No crashes involved pedestrians. Half (48%) of crashes occurred during the night. Over half (56%) of crashes were angle crashes. Crashes were often caused by negligent driving. No crashes were fatal.

Crash data and the crash rate worksheets are provided in **Appendix C**.

Table 3. Crash Data Summary

Characteristic	Scanlon Dr/ N Main St	Reed St/ High St	Scanlon Dr/ High St
	Signalized	Signalized	Unsignalized
Total Crashes	59	25	1
Year			
2016	19	2	0
2017	17	7	1
2018	8	6	0
2019	10	3	0
2020	5	7	0
Severity			
PDO	38	10	1
Non-fatal Injury	19	15	0
Not Reported	2	0	0
Fatality	0	0	0
Crash Type			
Angle	15	14	0
Sideswipe, same direction	8	1	0
Rear-end	26	6	1
Single vehicle	7	0	0
Head-on	2	3	0
Sideswipe, opposite direction	1	0	0
Not Reported	0	1	0
Weather			
Clear	40	13	0
Cloudy	9	4	0
Rain	7	5	1
Snow	3	1	0
Sleet/Hail	0	1	0
Other	0	1	0
Not Reported	0	0	0

Characteristic	Scanlon Dr/ N Main St	Reed St/ High St	Scanlon Dr/ High St
	Signalized	Signalized	Unsignalized
Light Conditions			
Daylight	36	11	0
Dark w/ lighted roadway	17	12	1
Dark w/ unlighted roadway	0	1	0
Dark w/ unknown lighting	0	1	0
Dawn	4	0	0
Dusk	2	0	0
Not Reported	0	0	0
Hit and Run	0	0	0
Non-motorist			
Pedestrian	1	0	0
Bicyclist	0	0	0
Crash Rate per MEV	1.00	0.90	0.07
District 6 Average	0.71	0.71	0.52

No-build (2030) Condition

The methodology to account for future traffic growth, independent of the Project, consists of two components. The first part of the methodology accounts for general background traffic growth that may be affected by changes in demographics, automobile usage, and automobile ownership. The second part of the methodology identifies any specific planned developments that are expected to affect traffic patterns throughout the study area within the future analysis time horizon.

Background Growth

The baseline 2030 traffic volumes have been estimated by applying a 1% annual growth factor to the existing year volumes. The 1% growth rate was determined based on data from 2013 to 2022, collected from a MassDOT continuous count station located along Route 24 (the Fall River Expressway). This data can be found **in Appendix D**. A 1% growth rate is also consistent with the rate used for the adjacent and recently approved 34 Scanlon Drive project.

Future Development Projects

Within the study area, the following development projects were identified that could impact the traffic patterns throughout the study area:

- ***34 Scanlon Drive (Yankee Bus Line Headquarters).*** The development consists of a 54,700 square foot (sf) maintenance and repair facility as well as parking areas for approximately 75 buses and staff vehicles. This site is located across from the Project.
- ***Hotel Restaurant.*** Currently, adjacent to the Comfort Inn hotel there is a site that is not in use but used to operate as a restaurant. Per direction from the Randolph Town Planner, there could be the potential for it to be reopened given recent development in the area, therefore the study conservatively estimated trips for a 200-seat restaurant.
- ***Lyons Elementary.*** The development consists of a 497-student elementary school that will be built on the site of a different school that has been closed since 2008. This development was reviewed, but analysis showed that its trips did not overlap with the study area.

Project trips from the two background developments noted above that pass through the study area and the annual growth rate of 1% were added to the Existing (2023) Condition to develop the No-Build (2030) Condition. The No-Build (2030) Condition volumes for the morning and evening peak hours are presented in **Figure 9** and **Figure 10**, respectively.

Figure 9. ***No-build (2030) Condition Vehicle Volumes, Weekday a.m. Peak Hour***

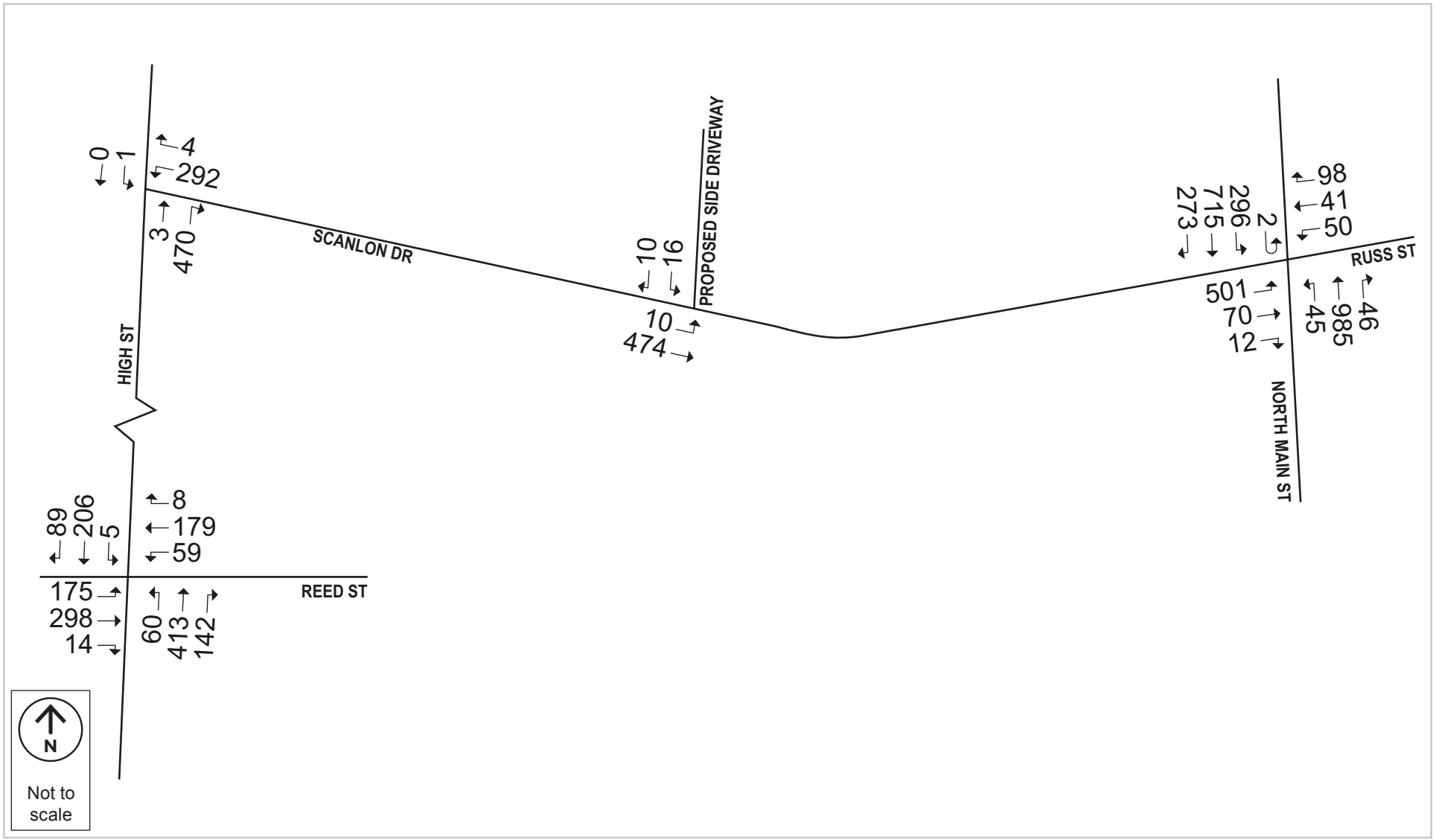
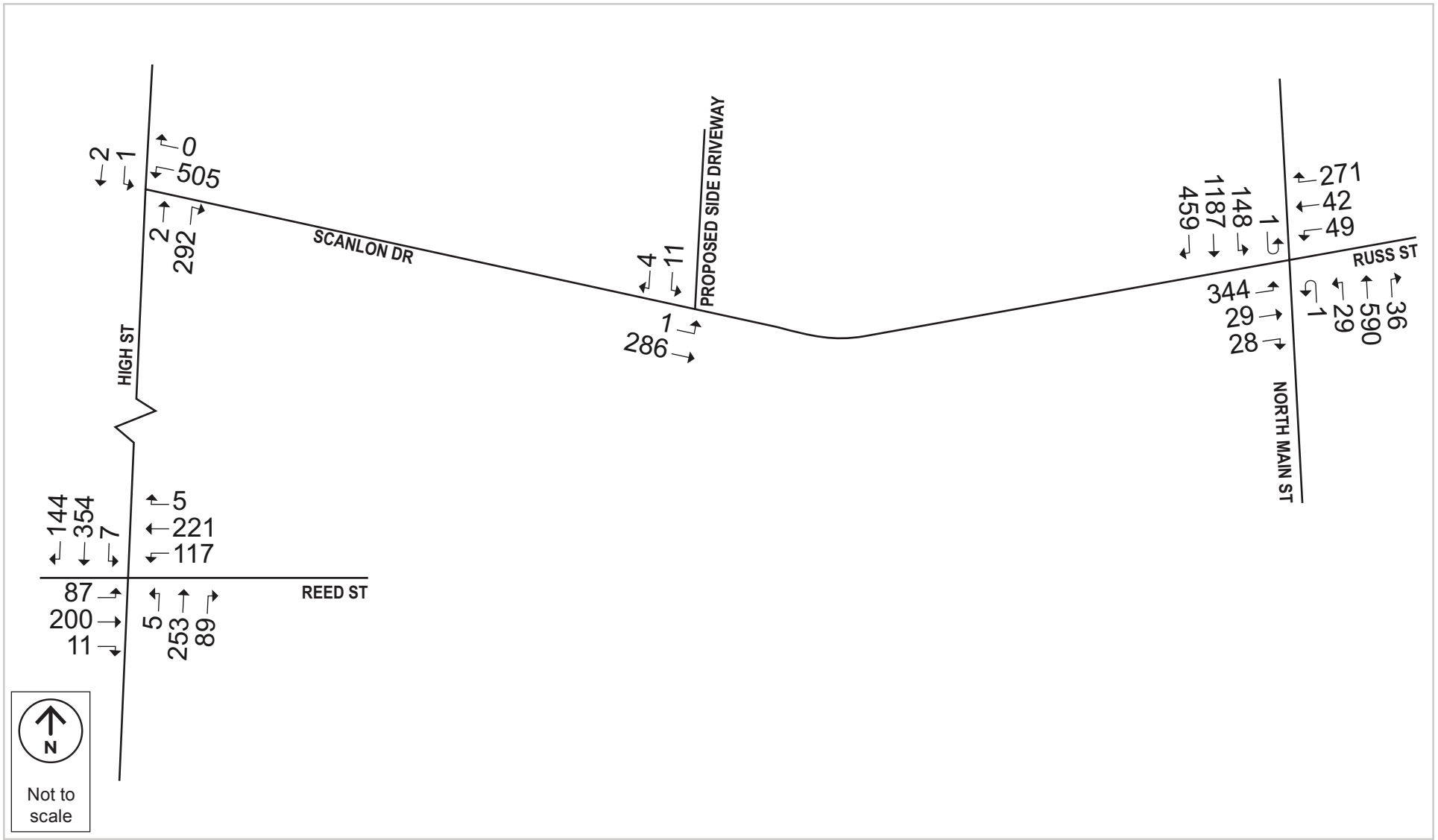


Figure 10. ***No-build (2030) Condition Vehicle Volumes, Weekday p.m. Peak Hour***



Build (2030) Condition

Project Description

The Project site, located in Randolph, is bounded by the I-93 interchange ramps to the north, Scanlon Drive to the south, a hotel to the east, and undeveloped land to the west. The existing site is occupied by an event space and an unoccupied second event venue. The Project consists of constructing two buildings, Building A and Building B, which total approximately 68,000 sf of general office space, 110,000 sf of manufacturing space, 75,000 sf of research and development space, and 22,000 sf of warehousing space with 324 parking spaces. The site's front parking lot, which is in front of Building B, consists of 104 spaces and will be accessible by two driveways off Scanlon Drive. Both driveways will be two-way. There will also be a two-way driveway to the west of the front parking lot leading to a parking lot behind Building B. This parking lot will consist of 136 spaces. There will be parking spaces along this driveway consisting of 29 more spaces. Trucks and other service vehicles will use a two-way driveway located to the east of the front parking lot to drive to the service/loading area. Building A will be served by a separate parking lot located to the west of Building A consisting of 35 spaces and features a crane laydown area with access opposite the intersection of High Street at Scanlon Drive. Site access is illustrated on the Site Plan shown in **Figure 11**.

Figure 11. ***Site Plan***

Vehicle Parking

The Town of Randolph Zoning By-Law establishes requirements for off-street parking spaces for new developments. For proposed warehouse/industrial developments, one space is required for every two employees, plus space for every company-owned and -operated vehicle, as well as spaces for customers as determined by the Building Commissioner or Site Plan Administrator. For commercial/business developments, one space is required for each 200 square feet of gross floor area on the first floor of a building, and one space is required for each 400 square feet of gross floor area for subsequent floors, excluding storage area. (Zoning Bylaws Section 200-22). **Table 4** summarizes the required parking spaces as provided by the Town of Randolph's standards.

Table 4. Parking Requirements

Development Type	Spaces per unit (per zoning)	Units Provided	Spaces Required
Warehouse/Industrial	One space per employee One space per company-owned vehicle	14 truck bays	-
Commercial/Business	One space per 200 sf first floor area One space per 400 sf above-first floor area.	19,355 sf first floor area 12,000 sf second floor area	127 spaces

LOADING/SERVICE

A maintenance bay is located on the southwest side of Building A. The facility will be handling the storage and maintenance of large pieces of construction equipment. A large lot is available to the west of the building for the storage of this equipment. This lot is accessible from an entrance/exit off the intersection of High Street and Scanlon Drive.

Designated loading/service areas are located on the east side of Building B. Loading and service operations such as deliveries, trash pickup, and recycling will occur in the designated loading/service areas. Service vehicles will enter and exit the site from Scanlon Drive on the east side of Building B.

Trip Generation Methodology

The traffic expected to be generated by the proposed Project was determined based on industry standards. The trip generation estimates were based on data published within the latest Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition. No direct land use code is

available for the proposed cGMP facility, based on expected building components a mix of manufacturing, general office and research and development center uses were utilized as interpreted by cGMP regulations[2]. No direct land use code is available for the proposed crane operation building, based on expected tenant use a mix of warehousing for crane equipment maintenance and general office for management were utilized in the estimates.

To estimate the number of vehicular trips that will be generated by the project, the following ITE land use codes (LUC) were used:

- ***Land Use Code 140 – Manufacturing.*** A manufacturing facility is an area where the primary activity is the conversion of raw materials or parts into finished products. Size and type of activity may vary substantially from one facility to another. In addition to the actual production of goods, a manufacturing facility typically has an office and may provide space for warehouse, research, and associated functions. The development is a Current Goods Manufacturing Practice (cGMP).
- ***Land Use Code 710 – General Office.*** A general office building is a location where affairs of businesses, commercial or industrial organizations, or professional persons or firms are conducted. An office building houses multiple tenants that can include, as examples, professional services, insurance companies, investment brokers, a banking institution, a restaurant, or other service retailers.
- ***Land Use Code 150 – Warehousing.*** A warehouse is primarily devoted to the storage of materials, but it may also include office and maintenance areas.
- ***Land Use Code 760 – Research and Development Center.*** A research and development center is a facility or group of facilities devoted almost exclusively to research and development activities. The range of specific types of businesses contained in this land use category varies significantly. Research and development centers may contain offices and light fabrication areas.

MODE SHARE

A mode share is the percentage of trips at a site using various modes of transportation such as vehicle, transit, walking, or biking. The Project mode share was determined using the 2021 American Community Survey (ACS) Means of Transportation to Work (data table B08301) for Census Tract 4202.02, published by the U.S. Census Bureau. Commuting census data includes a percentage of "work from home" responses (9.5%); mode share was adjusted based on commuting

2 Current Good Manufacturing Practice (CGMP) Regulations.https://www.fda.gov/drugs/pharmaceutical-quality-resources/current-good-manufacturing-practice-cgmp-regulations

travel choices and was proportionally assigned to all other modes. The mode shares are shown in **Table 5.**

Table 5. Mode Share

Mode Type	Mode Share
Vehicle	91%
Public Transportation	7%
Bicycle/Walk	2%
Total	**100%**

** Based on U.S. Census 2021: ACS 5-Year Estimates for Means of Transportation to Work for Census Tract 4202.02 (Table B08301).*

PROJECT-GENERATED VEHICLE TRIPS

The unadjusted vehicle trips calculated using the ITE rates described previously were converted to person trips by using vehicle occupancy rates of 1.18 for home-to-work based trips, as published by the Federal Highway Administration (FHWA).[3] **Table 6** presents a summary of the Project-generated person trips assigned to transit trips, bike/walk trips, and adjusted primary vehicle trips for the project based on the mode share distribution applied to the ITE LUCs, and includes daily, a.m. peak hour, and p.m. peak hour trips. Trip generation calculations are provided in **Appendix D**.

Table 6. Project-generated Person Trips by Mode

Time Period	Direction	Person Trips		Vehicle Trips
		Transit	Walk/Bike	Vehicle
Daily	In	100	30	977
	Out	100	30	977
	Total	200	60	1,954
Weekday a.m. Peak Hour	In	20	5	197
	Out	4	1	45
	Total	24	6	242
	In	5	1	54

3 Summary of Travel Trends: 2017 National Household Travel Survey; FHWA; Washington, D.C.; July 2018

Time Period	Direction	Person Trips		Vehicle Trips
		Transit	Walk/Bike	Vehicle
Weekday p.m. Peak Hour	Out	18	5	187
	Total	23	6	241

EXISTING TRIPS

The sites previous uses included two event venues called Lombardo's and Lantana, and their supporting parking lots. No ITE land use code is available for these style of event venues, so as to estimate existing trips, the land use code for a Hotel was used as it most closely represented the meeting and conference facilities of the previous event venues. Existing trips were estimated to be 948 daily trips with 58 trips during the a.m. peak hour and 70 vehicle trips during the p.m. peak hour. Count data at the site driveway was collected. As shown in **Table 7**, the proposed Project is expected to generate approximately 184 net new vehicle trips during the weekday a.m. peak hour (12 entering and 172 exiting), and 171 net new vehicle trips during the weekday p.m. peak hour (19 entering and 152 exiting). While the net new trip forecasts are presented, given at the time of traffic counts Lantana was closed and Lombardo's was winding down operations, the full Project trips in **Table 7** were used for all traffic analysis scenarios.

Table 7. Net New Vehicle Trips

Time Period	Direction	Existing	Proposed	Net New
Weekday Daily	In	474	977	503
	Out	474	977	503
	Total	**948**	**1,954**	**1,006**
Weekday a.m. Peak Hour	In	33	197	12
	Out	25	45	172
Weekday p.m. Peak Hour	In	35	54	19
	Out	35	187	152

TRIP DISTRIBUTION

The trips generated by the site are expected to be primarily work-based trips. The vehicle trip distribution is based on U.S. Census Journey-to-Work data. The trip distribution for entering and exiting vehicles is illustrated in **Figure 12**. The Project-generated trips were assigned to the parking lot driveways. The Project-generated trips at the study area intersections are shown in **Figure 13**. Project-generated vehicle trips were added to the No-build (2030) Condition vehicle volumes to produce the Build (2030) Condition a.m. and p.m. peak hour vehicle volumes as shown in **Figure 14** and **Figure 15** respectively.

Figure 12. ***Trip Distribution***

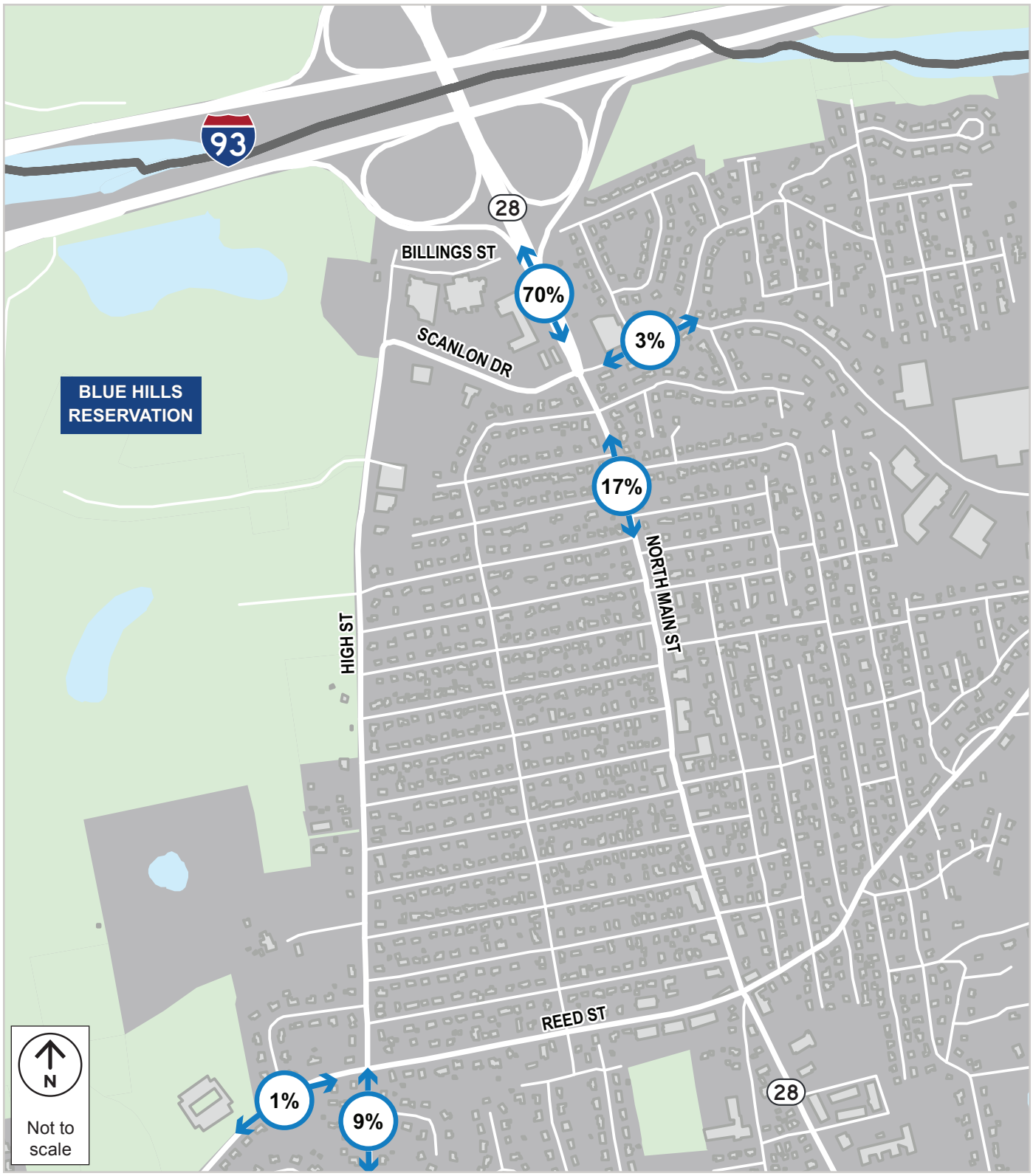


Figure 13. ***Project-generated Vehicle Trips, Weekday a.m. and p.m. Peak Hours***

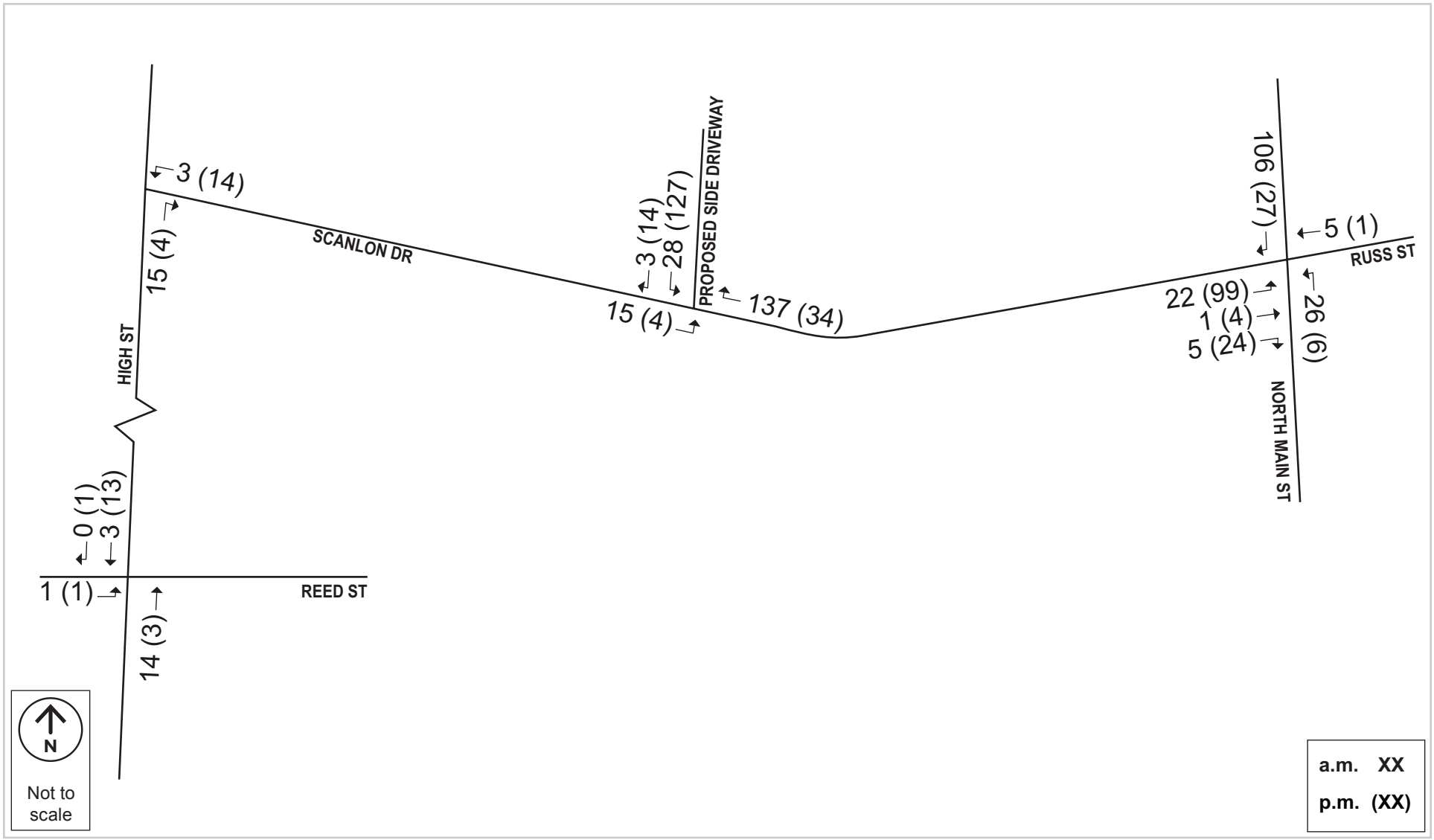


Figure 14. ***Build (2030) Condition Vehicle Volumes, Weekday a.m. Peak Hour***

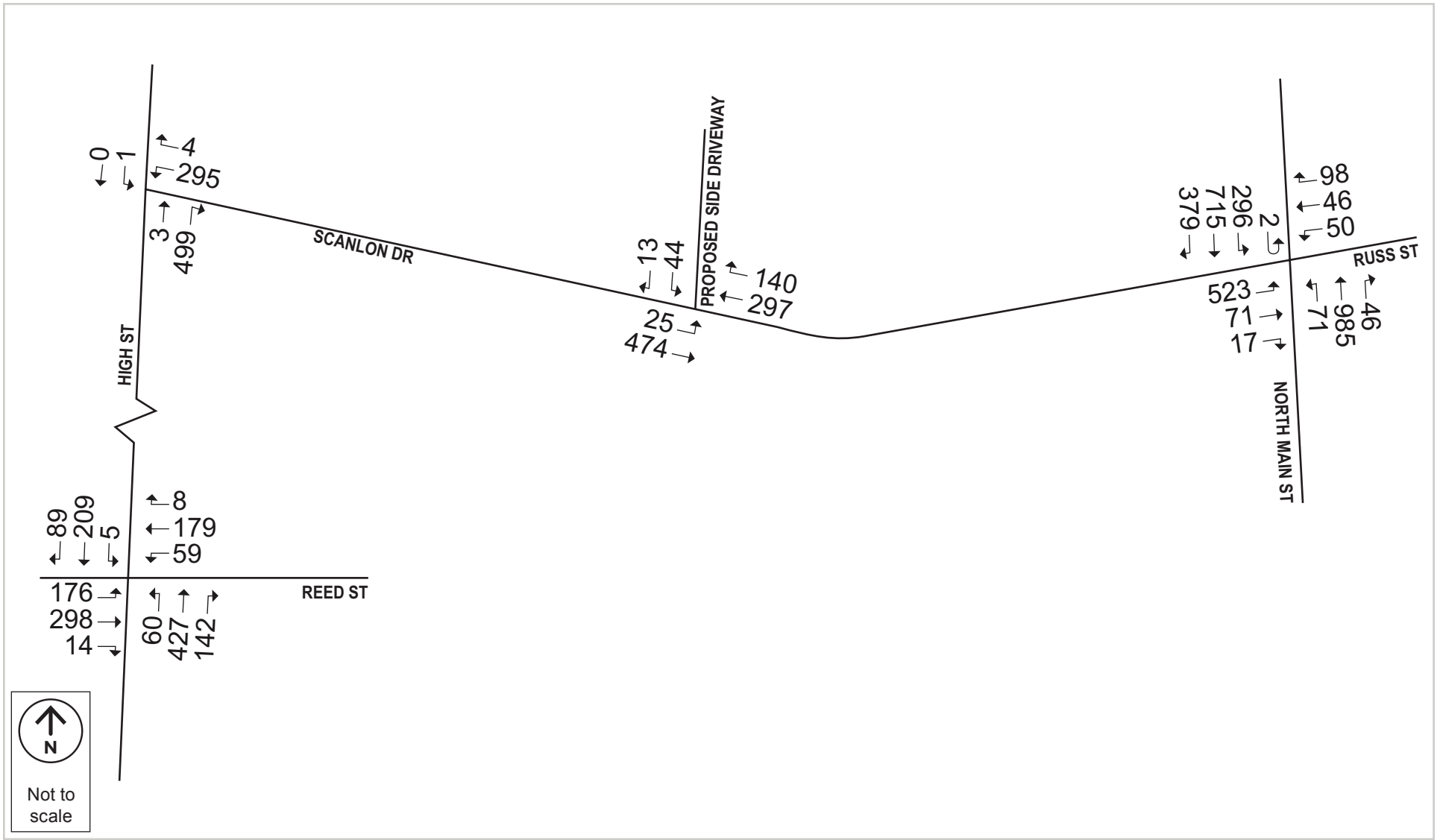
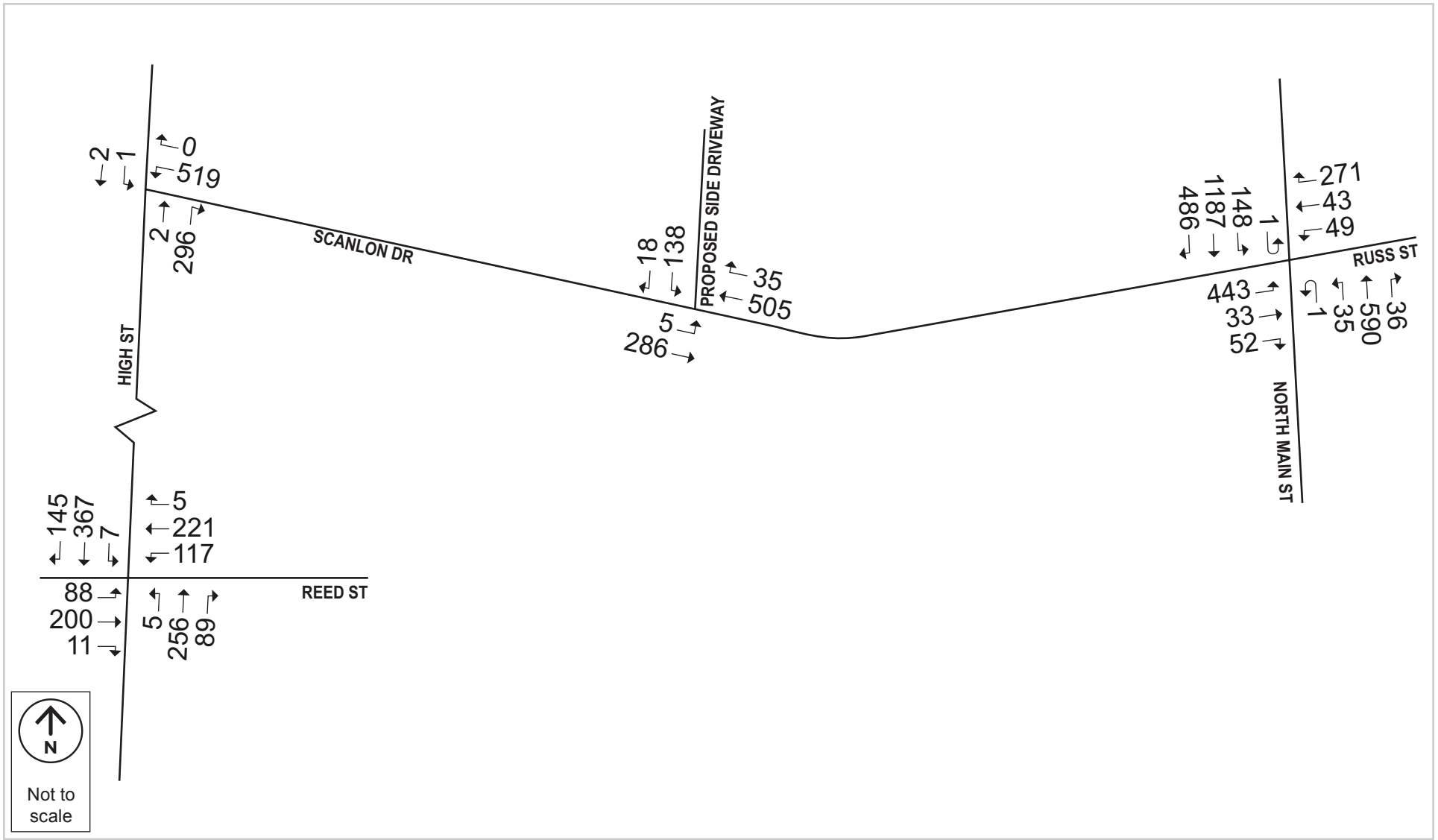


Figure 15. ***Build (2030) Condition Vehicle Volumes, Weekday p.m. Peak Hour***



Transportation Impact Analysis

This section discusses the analysis results for motor vehicle networks. Each section explains the analysis methodology used to evaluate the respective mode and then presents the results.

Motor Vehicle Operations Analysis

Traffic operations are determined through an analysis of intersection Level of Service (LOS) calculations. LOS at the intersection was calculated using Synchro 11.0, which is based on the traffic operational analysis methodology of the HCM. The LOS and delay (in seconds) are based on intersection geometry and traffic volumes. **Table 8**, an excerpt from the HCM, provides LOS criteria for both signalized and unsignalized intersections. LOS A defines the most favorable condition, with minimum traffic delay. LOS F represents the worst condition, with significant traffic delays. LOS D is generally considered acceptable. However, LOS E or F is often typical for a stop-controlled minor street that intersects a major roadway and does not necessarily indicate that the operations at the intersection are poor or failing.

Table 8. Level of Service Criteria

Level of Service	Average Stopped Delay (sec.)	
	Signalized Intersections	Unsignalized Intersections
A	0.0–10.0	0.0–10.0
B	10.1–20.0	10.1–15.0
C	20.1–35.0	15.1–25.0
D	35.1–55.0	25.1–35.0
E	55.1–80.0	35.1–50.0
F	>80.0	>50.0

In accordance with MassDOT guidelines, the peak 15 minutes of data collected during the peak hour were isolated to calculate the peak-hour factors (PHFs) for each approach. The percentage of heavy vehicles was calculated for each peak hour turning movement. PHFs for No-Build and Build scenarios were changed to 0.92 for all approaches per MassDOT guidelines. **Table 9** and **Table 10** summarize the Existing (2023) Condition, No-build (2030) Condition, and Build (2030) Condition LOS, delay, volume to capacity (v/c) ratio, and queue analysis during the a.m. and p.m. peak hours, respectively. Detailed analysis sheets are provided in **Appendix E**.

Table 9. Capacity Analysis Summary, a.m. Peak Hour

Intersection/Movement	Existing (2023) Condition					No-build (2030) Condition					Build (2030) Condition				
	LOS	Delay (s)	V/C Ratio	Queues (ft) 50th %	Queues (ft) 95th %	LOS	Delay (s)	V/C Ratio	Queues (ft) 50th %	Queues (ft) 95th %	LOS	Delay (s)	V/C Ratio	Queues (ft) 50th %	Queues (ft) 95th %
Signalized Intersections															
Reed Street/High Street	C	31.9				C	29.4				C	32.0			
Reed Street Eastbound Left/Through/Right	C	24.3	0.81	146	#264	C	22.4	0.78	141	#294	C	22.7	0.79	142	#295
Reed Street Westbound Left/Through/Right	B	14.4	0.50	69	100	B	13.3	0.43	58	111	B	13.3	0.43	58	111
Reed Street Northbound Left/Through/Right	D	54.0	1.01	~218	#358	D	48.7	0.99	207	#407	D	55.0	1.02	~223	#421
Reed Street Southbound Left/Through/Right	B	13.9	0.45	71	124	B	14.1	0.47	74	134	B	14.3	0.48	76	136
North Main Street/Scanlon Drive/Russ Street	D	43.5				D	47.7				D	51.0			
Scanlon Drive Eastbound Left	E	69.1	0.90	202	#357	E	75.1	0.94	229	#436	F	90.1	0.99	246	#471
Scanlon Drive Eastbound Left/Through/Right	E	61.7	0.86	197	#345	E	67.4	0.90	227	#431	F	84.1	0.98	249	#475
Russ Street Westbound Left	E	70.3	0.69	42	#91	E	61.5	0.61	37	#103	E	61.6	0.61	37	#103
Russ Street Westbound Through/Right	F	140.4	0.98	58	#149	F	102.4	0.86	51	#185	F	148.5	1.01	~62	#210
N Main Street Northbound U-Turn/Left	B	18.3	0.06	5	14	B	17.8	0.16	14	31	B	18.4	0.29	25	48
N Main Street Northbound Through | Through/Right	C	32.3	0.80	345	431	D	36.4	0.86	371	461	D	36.3	0.86	371	461
N Main Street Southbound U-Turn/Left	F	80.3	0.99	155	#353	F	123.5	1.12	~218	#414	F	123.6	1.12	~218	#414
N Main Street Southbound Through | Through	B	16.8	0.46	130	230	B	19.9	0.54	198	256	B	20.0	0.54	198	256
N Main Street Southbound Right	A	3.5	0.17	0	19	A	4.4	0.20	0	20	A	4.7	0.30	0	24
Unsignalized Intersections															
High Street/Scanlon Drive															
Scanlon Drive Eastbound Through/Right	-	-	-	-	-	-	-	-	-	-	A	8.9	0.02	-	0
Scanlon Drive Westbound Left/Right	C	16.8	0.70	-	150	B	13.3	0.60	-	103					
Scanlon Drive Westbound Left/Through	-	-	-	-	-	-	-	-	-	-	C	15.7	0.57	-	3.7
High Street Northbound Through/Right	B	14.0	0.50	-	70	B	13	0.47	-	63					
High Street Northbound Left/Right	-	-	-	-	-	-	-	-	-	-	C	16.1	0.68	-	5.3
High Street Southbound Left/Through	A	8.9	0.01	-	0	A	8.7	0.00	-	0					

~ = Volume exceeds capacity, queue is theoretically infinite.
 # = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.
Grey = Indicates a lane movement that decreased to LOS E or LOS F from the Existing Condition to the No-build Condition or decreased to LOS E or LOS F from the No-build Condition to the Build Condition.

Table 10. Capacity Analysis Summary, p.m. Peak Hour

Intersection/Movement	Existing (2023) Condition					No-build (2030) Condition					Build (2030) Condition				
	LOS	Delay (s)	V/C Ratio	Queues (ft) 50th %	Queues (ft) 95th %	LOS	Delay (s)	V/C Ratio	Queues (ft) 50th %	Queues (ft) 95th %	LOS	Delay (s)	V/C Ratio	Queues (ft) 50th %	Queues (ft) 95th %
Signalized Intersections															
Reed Street/High Street	B	14.5				B	16.2				B	16.8			
Reed Street Eastbound Left/Through/Right	B	11.9	0.44	55	106	B	12.4	0.48	58	112	B	12.	0.48	58	112
Reed Street Westbound Left/Through/Right	B	15.4	0.61	68	135	B	16.7	0.65	74	#156	B	16.7	0.65	74	#156
Reed Street Northbound Left/Through/Right	B	12.9	0.52	68	121	B	13.0	0.53	70	131	B	13.1	0.53	71	133
Reed Street Southbound Left/Through/Right	B	16.7	0.69	98	#194	C	20.3	0.78	117	#259	C	21.9	0.81	123	#272
North Main Street/Scanlon Drive/Russ Street	C	28.3				D	37.4				D	47.5			
Scanlon Drive Eastbound Left	D	39.3	0.67	107	185	D	41.5	0.69	138	224	E	58.7	0.88	211	#374
Scanlon Drive Eastbound Left/Through/Right	D	37.1	0.62	101	176	D	38.5	0.63	129	211	D	48.2	0.80	193	#341
Russ Street Westbound Left	D	36.6	0.25	25	67	D	37.4	0.24	31	68	D	38.2	0.23	31	68
Russ Street Westbound Through/Right	D	47.1	0.68	57	#197	E	55.7	0.77	88	#241	E	65.2	0.84	111	#275
N Main Street Northbound U-Turn/Left	C	21.4	0.13	5	17	C	23.8	0.25	11	29	C	27.1	0.34	15	35
N Main Street Northbound Through | Through/Right	C	26.2	0.58	167	258	C	28.3	0.63	200	281	C	31.5	0.67	201	281
N Main Street Southbound U-Turn/Left	B	14.4	0.42	50	96	B	15.9	0.48	61	103	B	18.4	0.52	61	103
N Main Street Southbound Through | Through	C	30.3	0.87	277	#556	D	51.2	0.99	~510	#646	E	69.8	1.05	~512	#646
N Main Street Southbound Right	A	6.4	0.29	0	34	A	7.3	0.33	0	36	A	7.8	0.36	0	37
Unsignalized Intersections															
High Street/Scanlon Drive															
Scanlon Drive Eastbound Through/Right	-	-	-	-	-	-	-	-	-	-	A	9.1	0.09	-	0.3
Scanlon Drive Westbound Left/Right	B	11	0.42	-	53	B	11.2	0.42	-	53					
Scanlon Drive Westbound Left/Through	-	-	-	-	-	-	-	-	-	-	D	26.5	0.81	-	8.6
High Street Northbound Through/Right	C	18.3	0.69	-	140	C	21.0	0.75	-	170					
High Street Northbound Left/Right	-	-	-	-	-	-	-	-	-	-	B	12.0	0.45	-	2.3
High Street Southbound Left/Through	A	8.9	0.02	-	3	A	8.9	0.01	-	0					

~ = Volume exceeds capacity, queue is theoretically infinite.
 # = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.
Grey = Indicates a lane movement that decreased to LOS E or LOS F from the Existing Condition to the No-build Condition or decreased to LOS E or LOS F from the No-build Condition to the Build Condition.

EXISTING OPERATIONS ANALYSIS SUMMARY

All study area intersections and approaches operate at acceptable levels of service (LOS D or better) during the a.m. and p.m. peak hours in the Existing (2023) Condition except:

- North Main Street/Scanlon Drive/Russ Street
  - The Scanlon Drive Eastbound movements operate at LOS E during the a.m. peak hour.
  - The Russ Street Westbound Left movement operates at LOS E during the a.m. peak hour.
  - The Russ Street Westbound Through/Right movement operates at LOS F during the a.m. peak hour.
  - The North Main Street Southbound U-Turn/Left movement operates at LOS F during the a.m. peak hour.

NO-BUILD OPERATIONS ANALYSIS SUMMARY

All study area intersections and approaches continue to operate at the same LOS in the No-build Condition as they do in the Existing (2023) Condition during the a.m. and p.m. peak hours except:

- Reed Street/High Street
  - The Reed Street Southbound movement changes from LOS B to LOS C during the p.m. peak hour.
- North Main Street/Scanlon Drive/Russ Street
  - The Russ Street Westbound Through/Right movement changes from LOS D to LOS E during the p.m. peak hour.
  - The North Main Street Northbound Through movement changes from LOS C to LOS D during the a.m. peak hour.
  - The North Main Street Southbound Through movement changes from LOS C to LOS D during the a.m. peak hour.
- Scanlon Drive/High Street
  - The Scanlon Drive westbound through/right changes from LOS C to LOS B during the a.m. peak hour.

BUILD OPERATIONS ANALYSIS SUMMARY

All study area intersections and approaches continue to operate at the same LOS in the Build Condition as they do in the No-build Condition during the a.m. and p.m. peak hours except:

- North Main Street/Scanlon Drive/Russ Street
  - The Scanlon Drive Eastbound Left movement changes from LOS E to the LOS F during the a.m. peak hour and from LOS D to LOS E during the p.m. peak hour.

- The Scanlon Drive Eastbound Left/Through/Right movement changes from LOS E to LOS F during the a.m. peak hour.
- The North Main Street Southbound Through movement changes from LOS D to LOS E during the p.m. peak hour.

Transportation Mitigation

The Proponent will work with the Town of Randolph to create a Project that provides safe access for vehicle trips, improves the pedestrian environment, and encourages carpooling to reduce single occupancy trips to the Project Site. As a means of supporting the extensive existing DCR trails/paths in the area, the project is proposing to construct a trailhead parking area off High Street with approximately 18 parking spaces. Currently there is no way to easily get access to the trails from this area of Randolph, so this improvement will not only create a formal entrance, but also make this nearby amenity more known and visible.

Adjusting the timings at the North Main Street/Scanlon Drive intersection can allow for the eastbound left movement at Scanlon Drive to remain below a forecasted LOS F during the a.m. peak hour. **Table 11** shows the improvements made by these new signal timings.

Table 11. Mitigation at North Main Street/Scanlon Drive

Movement	Unmitigated (a.m.)					Mitigated (a.m.)				
	LOS	Delay (s)	V/C Ratio	Queues (ft)		LOS	Delay (s)	V/C Ratio	Queues (ft)	
				50th %	95th %				50th %	95th %
North Main Street/Scanlon Drive	**D**	**51.0**				**D**	**49.2**			
Scanlon Drive Eastbound Left	F	90.1	0.99	246	#471	E	76.6	0.94	256	#449
Scanlon Drive Eastbound Left/Through/Right	F	84.1	0.98	249	#475	E	71.2	0.93	260	#451
Russ Street Westbound Left	E	61.6	0.61	37	#103	E	56.3	0.53	39	#92
Russ Street Westbound Through/Right	F	148.5	1.01	~62	#210	F	106.1	0.89	64	#198
N Main Street Northbound U-Turn/Left	B	18.4	0.29	25	48	B	19.7	0.30	27	51
N Main Street Northbound Through | Through Right	D	36.3	0.86	371	461	D	39.5	0.88	389	484
N Main Street Southbound U-Turn/Left	F	123.6	1.12	~218	#414	F	138.1	1.16	~238	#420
N Main Street Southbound Through | Through	B	20.0	0.54	198	256	C	21.6	0.55	210	271
N Main Street Southbound Right	A	4.7	0.30	0	24	A	5.1	0.30	0	25

Conclusion and Recommendations

A detailed traffic operations analysis was conducted for the nearby intersections. The Project is expected to have minimal impacts on traffic operations at the study area intersections.). The Project is expected to generate approximately 242 new vehicle trips, 24 new transit trips, and 6 new walk/bicycle trips during the weekday a.m. peak hour, and 241 new vehicle trips, 23 new transit trips, and 6 new walk/bicycle trips during the weekday p.m. peak hour. The Project is expected to see 184 net new trips for the a.m. peak hour and 171 net new trips during the p.m. peak hour compared to the existing conditions. Parking will be reduced to 324 spaces. Placement of loading operations at the back of the site will maintain a welcoming frontage along Scanlon Drive and the extensive landscaping will add much needed green elements to a street that today is overwhelmed by pavement. The Project's construction of a DCR trailhead will support more recreational use of park facilities in the area for residents and new employees of the site.

HOWARD STEIN HUDSON

Engineers + Planners

Appendix A

Traffic Count Data

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 1
Location:	Randolph, MA
Street 1:	High Street
Street 2:	Reed Street
Count Date:	9/13/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PASSENGER CARS & HEAVY VEHICLES COMBINED

	High Street Northbound				High Street Southbound				Reed Street Eastbound				Reed Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	1	88	19	0	1	41	12	0	54	46	1	0	6	35	4
7:15 AM	0	2	74	27	0	3	55	19	0	41	52	0	0	19	36	1
7:30 AM	0	4	93	32	0	4	46	19	0	51	76	1	0	9	43	2
7:45 AM	0	4	82	31	0	1	39	17	0	35	58	1	0	15	52	2
8:00 AM	0	17	93	35	0	4	50	22	0	34	57	0	0	11	48	2
8:15 AM	0	24	74	20	0	0	62	16	0	34	70	7	0	12	62	2
8:30 AM	0	11	83	31	0	1	39	25	0	49	81	4	0	13	27	1
8:45 AM	0	4	120	46	0	0	37	19	0	38	70	2	0	19	30	2

	High Street Northbound				High Street Southbound				Reed Street Eastbound				Reed Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	1	44	11	0	2	83	30	0	20	30	1	0	29	45	0
4:15 PM	0	4	49	18	0	0	97	32	0	15	43	2	0	26	41	1
4:30 PM	0	1	50	19	0	0	68	37	0	18	51	4	0	31	57	0
4:45 PM	0	2	51	21	0	2	81	29	0	21	48	2	0	21	50	2
5:00 PM	0	1	73	18	0	1	86	26	0	21	53	3	0	27	53	0
5:15 PM	0	1	59	25	0	3	81	38	0	19	35	1	0	30	46	3
5:30 PM	0	1	42	16	0	1	64	37	0	21	44	0	0	13	38	4
5:45 PM	0	3	39	15	0	1	77	26	0	15	39	2	0	25	24	3

AM PEAK HOUR 8:00 AM to 9:00 AM	High Street Northbound				High Street Southbound				Reed Street Eastbound				Reed Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**56**	**370**	**132**	**0**	**5**	**188**	**82**	**0**	**155**	**278**	**13**	**0**	**55**	**167**	**7**
PHF		**0.82**				**0.88**				**0.83**				**0.75**		
HV %	**0.0%**	**0.0%**	**4.6%**	**2.3%**	**0.0%**	**0.0%**	**6.9%**	**1.2%**	**0.0%**	**1.3%**	**1.4%**	**0.0%**	**0.0%**	**10.9%**	**3.0%**	**0.0%**

PM PEAK HOUR 4:30 PM to 5:30 PM	High Street Northbound				High Street Southbound				Reed Street Eastbound				Reed Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**5**	**233**	**83**	**0**	**6**	**316**	**130**	**0**	**79**	**187**	**10**	**0**	**109**	**206**	**5**
PHF		**0.87**				**0.93**				**0.90**				**0.91**		
HV %	**0.0%**	**0.0%**	**2.1%**	**1.2%**	**0.0%**	**0.0%**	**2.5%**	**1.5%**	**0.0%**	**0.0%**	**1.1%**	**0.0%**	**0.0%**	**3.7%**	**0.0%**	**0.0%**

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 1
Location:	Randolph, MA
Street 1:	High Street
Street 2:	Reed Street
Count Date:	13/09/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

HEAVY VEHICLES

	High Street Northbound				High Street Southbound				Reed Street Eastbound				Reed Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	3	3	0	0	0	0	0	2	1	0	0	1	1	0
7:15 AM	0	0	1	1	0	0	3	0	0	0	2	0	0	2	4	0
7:30 AM	0	0	4	4	0	0	1	0	0	2	2	0	0	0	0	0
7:45 AM	0	0	1	2	0	0	0	0	0	2	1	0	0	0	1	0
8:00 AM	0	0	3	0	0	0	2	1	0	1	1	0	0	1	2	0
8:15 AM	0	0	4	0	0	0	4	0	0	0	0	0	0	2	1	0
8:30 AM	0	0	5	2	0	0	4	0	0	1	2	0	0	1	1	0
8:45 AM	0	0	5	1	0	0	3	0	0	0	1	0	0	2	1	0

	High Street Northbound				High Street Southbound				Reed Street Eastbound				Reed Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	3	0
4:15 PM	0	0	1	0	0	0	6	0	0	0	2	0	0	0	2	0
4:30 PM	0	0	2	0	0	0	2	0	0	0	1	0	0	3	0	0
4:45 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0
5:00 PM	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
5:15 PM	0	0	1	1	0	0	3	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	1	0	0	1	1	0	1	0	0	0	0	2	0
5:45 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	1	4	0

AM PEAK HOUR 8:00 AM to 9:00 AM	High Street Northbound				High Street Southbound				Reed Street Eastbound				Reed Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**17**	**3**	**0**	**0**	**13**	**1**	**0**	**2**	**4**	**0**	**0**	**6**	**5**	**0**
PHF	**0.71**				**0.88**				**0.50**				**0.92**			

PM PEAK HOUR 4:00 PM to 5:00 PM	High Street Northbound				High Street Southbound				Reed Street Eastbound				Reed Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**3**	**0**	**0**	**0**	**13**	**0**	**0**	**0**	**4**	**0**	**0**	**4**	**5**	**0**
PHF	**0.38**				**0.54**				**0.50**				**0.75**			

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 1
Location:	Randolph, MA
Street 1:	High Street
Street 2:	Reed Street
Count Date:	13/09/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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PEDESTRIANS & BICYCLES

	High Street Northbound				High Street Southbound				Reed Street Eastbound				Reed Street Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	1	0	0	0	10	0	0	0	0	1	0	0	2
8:15 AM	0	0	0	6	0	0	0	31	0	0	0	5	0	0	0	0
8:30 AM	0	0	0	9	0	0	0	5	0	0	0	7	0	0	0	2
8:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

	High Street Northbound				High Street Southbound				Reed Street Eastbound				Reed Street Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	2	0	0	0	0	0	0	0	4	0	0	0	0
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR[1]	High Street Northbound				High Street Southbound				Reed Street Eastbound				Reed Street Westbound			
8:00 AM																
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
9:00 AM	0	0	0	17	0	0	0	46	0	0	0	12	1	0	0	4

PM PEAK HOUR[1]	High Street Northbound				High Street Southbound				Reed Street Eastbound				Reed Street Westbound			
4:30 PM																
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
5:30 PM	0	1	0	6	0	0	0	3	0	0	0	4	0	0	0	0

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 2
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	High Street
Count Date:	9/13/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	High Street Northbound				High Street Southbound				Eastbound				Scanlon Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	4	141	0	2	2	0	0	0	0	0	0	49	0	1
7:15 AM	0	0	0	115	0	0	0	0	0	0	0	0	0	52	0	1
7:30 AM	0	0	4	102	0	0	1	0	0	0	0	0	0	55	0	0
7:45 AM	0	0	1	117	0	0	1	0	0	0	0	0	0	54	0	0
8:00 AM	0	0	2	105	0	0	0	0	0	0	0	0	0	75	0	3
8:15 AM	0	0	1	89	0	0	0	0	0	0	0	0	0	80	0	1
8:30 AM	0	0	0	99	0	1	0	0	0	0	0	0	0	64	0	0
8:45 AM	0	0	0	145	0	0	0	0	0	0	0	0	0	53	0	0

	High Street Northbound				High Street Southbound				Eastbound				Scanlon Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	57	0	0	0	0	0	0	0	0	0	121	0	0
4:15 PM	0	0	0	65	0	0	0	0	0	0	0	0	0	125	0	0
4:30 PM	0	0	1	57	0	1	2	0	0	0	0	0	0	117	0	0
4:45 PM	0	0	1	58	0	0	0	0	0	0	0	0	0	115	0	0
5:00 PM	0	0	0	82	0	0	0	0	0	0	0	0	0	127	0	0
5:15 PM	0	0	0	75	0	0	0	0	0	0	0	0	0	112	0	0
5:30 PM	0	0	1	56	0	0	0	0	0	0	0	0	0	102	0	0
5:45 PM	0	0	0	49	0	0	0	0	0	0	0	0	0	127	0	0

AM PEAK HOUR 8:00 AM to 9:00 AM	High Street Northbound				High Street Southbound				Eastbound				Scanlon Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**3**	**438**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**272**	**0**	**4**
PHF	**0.76**				**0.25**				**0.00**				**0.85**			
HV %	**0.0%**	**0.0%**	**0.0%**	**3.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5.1%**	**0.0%**	**0.0%**

PM PEAK HOUR 4:15 PM to 5:15 PM	High Street Northbound				High Street Southbound				Eastbound				Scanlon Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**2**	**262**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**484**	**0**	**0**
PHF	**0.80**				**0.25**				**0.00**				**0.95**			
HV %	**0.0%**	**0.0%**	**0.0%**	**2.3%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.9%**	**0.0%**	**0.0%**

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 2
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	High Street
Count Date:	13/09/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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HEAVY VEHICLES

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

	High Street Northbound				High Street Southbound				Eastbound				Scanlon Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0
4:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	6	0	0
4:30 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	3	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:00 PM	0	0	0	3	0	0	0	0	0	0	0	0	0	4	0	0
5:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0	0
5:30 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	3	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0

AM PEAK HOUR	High Street Northbound				High Street Southbound				Eastbound				Scanlon Drive Westbound			
8:00 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
9:00 AM	**0**	**0**	**0**	**16**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**0**	**0**
PHF	**0.67**				**0.00**				**0.00**				**0.70**			

PM PEAK HOUR	High Street Northbound				High Street Southbound				Eastbound				Scanlon Drive Westbound			
4:00 PM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
5:00 PM	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	**0**	**0**
PHF	**0.38**				**0.00**				**0.00**				**0.61**			

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 2
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	High Street
Count Date:	13/09/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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PEDESTRIANS & BICYCLES

	High Street Northbound				High Street Southbound				Eastbound				Scanlon Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	High Street Northbound				High Street Southbound				Eastbound				Scanlon Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR[1]	High Street Northbound				High Street Southbound				Eastbound				Scanlon Drive Westbound			
8:00 AM to 9:00 AM	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOUR[1]	High Street Northbound				High Street Southbound				Eastbound				Scanlon Drive Westbound			
4:15 PM to 5:15 PM	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 3A
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	Driveway #1 combine 2 driveways
Count Date:	9/13/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Driveway #1 combine 2 driveways								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	0	0	0	0	0	0	0	1	142	0	0	0	50	0
7:15 AM	0	0	0	0	0	0	0	0	0	1	117	0	0	0	53	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	100	0	0	0	55	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	120	0	1	0	54	0
8:00 AM	0	0	0	0	0	0	0	0	1	0	104	0	0	0	78	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	90	0	1	0	81	0
8:30 AM	0	0	0	0	0	0	0	0	0	1	98	0	0	0	64	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	145	0	0	0	53	0

	Driveway #1 combine 2 driveways								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	0	0	0	0	0	56	0	0	0	122	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	65	0	0	0	125	1
4:30 PM	0	0	0	0	0	0	0	0	0	1	57	0	0	0	117	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	58	0	0	0	115	0
5:00 PM	0	0	0	0	0	1	0	0	0	0	82	0	0	0	127	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	74	0	0	0	113	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	57	0	0	0	102	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	50	0	0	0	124	0

AM PEAK HOUR	Driveway #1 combine 2 driveways								Scanlon Drive				Scanlon Drive			
8:00 AM	Northbound				Southbound				Eastbound				Westbound			
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
9:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**437**	**0**	**1**	**0**	**276**	**0**
PHF	**0.00**				**0.00**				**0.76**				**0.84**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**3.7%**	**0.0%**	**0.0%**	**0.0%**	**5.1%**	**0.0%**

PM PEAK HOUR	Driveway #1 combine 2 driveways								Scanlon Drive				Scanlon Drive			
4:15 PM	Northbound				Southbound				Eastbound				Westbound			
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
5:15 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**262**	**0**	**0**	**0**	**484**	**1**
PHF	**0.00**				**0.25**				**0.80**				**0.95**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.3%**	**0.0%**	**0.0%**	**0.0%**	**2.7%**	**0.0%**

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 3A
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	Driveway #1 combine 2 driveways
Count Date:	13/09/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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HEAVY VEHICLES

	Driveway #1 combine 2 driveways								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	5	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	3	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	3	0

	Driveway #1 combine 2 driveways								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0

AM PEAK HOUR	Driveway #1 combine 2 driveways								Scanlon Drive				Scanlon Drive			
8:00 AM	Northbound				Southbound				Eastbound				Westbound			
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
9:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**0**	**0**	**0**	**14**	**0**
PHF	**0.00**				**0.00**				**0.67**				**0.70**			

PM PEAK HOUR	Driveway #1 combine 2 driveways								Scanlon Drive				Scanlon Drive			
4:00 PM	Northbound				Southbound				Eastbound				Westbound			
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**16**	**0**
PHF	**0.00**				**0.00**				**0.38**				**0.57**			

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 3A
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	Driveway #1 combine 2 driveways
Count Date:	13/09/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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PEDESTRIANS & BICYCLES

	Northbound				Driveway #1 combine 2 driveways Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Northbound				Driveway #1 combine 2 driveways Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR[1]	Northbound				Driveway #1 combine 2 driveways Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
8:00 AM to 9:00 AM	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

PM PEAK HOUR[1]	Northbound				Driveway #1 combine 2 driveways Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
4:15 PM to 5:15 PM	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 3B
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	Driveway #1 combine 2 driveways
Count Date:	9/13/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Driveway #1 combine 2 driveways								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	0	0	0	0	0	0	0	0	142	0	0	0	50	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	118	0	0	0	54	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	99	0	0	0	56	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	122	0	0	0	55	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	104	0	1	0	78	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	92	0	0	0	82	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	97	0	0	0	63	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	145	0	0	0	54	0

	Driveway #1 combine 2 driveways								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	0	0	0	0	0	56	0	0	0	123	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	66	0	0	0	125	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	57	0	0	0	118	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	58	0	0	0	115	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	82	0	0	0	127	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	73	0	0	0	112	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	57	0	0	0	102	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	51	0	0	0	124	0

AM PEAK HOUR	Driveway #1 combine 2 driveways								Scanlon Drive				Scanlon Drive			
8:00 AM	Northbound				Southbound				Eastbound				Westbound			
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
9:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**438**	**0**	**1**	**0**	**277**	**0**
PHF	**0.00**				**0.00**				**0.76**				**0.85**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**3.7%**	**0.0%**	**0.0%**	**0.0%**	**5.1%**	**0.0%**

PM PEAK HOUR	Driveway #1 combine 2 driveways								Scanlon Drive				Scanlon Drive			
4:15 PM	Northbound				Southbound				Eastbound				Westbound			
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**263**	**0**	**0**	**0**	**485**	**0**
PHF	**0.00**				**0.00**				**0.80**				**0.95**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.3%**	**0.0%**	**0.0%**	**0.0%**	**2.7%**	**0.0%**

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 3B
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	Driveway #1 combine 2 driveways
Count Date:	13/09/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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HEAVY VEHICLES

	Driveway #1 combine 2 driveways								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	5	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	3	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	3	0

	Driveway #1 combine 2 driveways								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0

AM PEAK HOUR	Driveway #1 combine 2 driveways								Scanlon Drive				Scanlon Drive			
8:00 AM	Northbound				Southbound				Eastbound				Westbound			
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
9:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**0**	**0**	**0**	**14**	**0**
PHF	**0.00**				**0.00**				**0.67**				**0.70**			

PM PEAK HOUR	Driveway #1 combine 2 driveways								Scanlon Drive				Scanlon Drive			
5:00 PM	Northbound				Southbound				Eastbound				Westbound			
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
6:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**13**	**0**
PHF	**0.00**				**0.00**				**0.58**				**0.81**			

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 3B
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	Driveway #1 combine 2 driveways
Count Date:	13/09/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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PEDESTRIANS & BICYCLES

	Northbound				Driveway #1 combine 2 driveways Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	1	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
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Northbound				Driveway #1 combine 2 driveways Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR[1]	Northbound				Driveway #1 combine 2 driveways Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
8:00 AM to 9:00 AM	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOUR[1]	Northbound				Driveway #1 combine 2 driveways Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
4:15 PM to 5:15 PM	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 4
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	Driveway #2 combine 2 driveways
Count Date:	9/13/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Driveway #2 combine 2 driveways								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	0	0	0	2	0	0	0	1	142	0	0	0	50	2
7:15 AM	0	0	0	0	0	1	0	2	0	6	111	0	0	0	53	2
7:30 AM	0	0	0	0	0	5	0	0	0	2	99	0	0	0	53	2
7:45 AM	0	0	0	0	0	1	0	3	0	4	117	0	0	0	52	3
8:00 AM	0	0	0	0	0	4	0	5	0	4	96	0	0	0	75	1
8:15 AM	0	0	0	0	0	4	0	1	0	1	103	0	0	0	83	1
8:30 AM	0	0	0	0	0	3	0	1	0	3	95	0	0	0	63	0
8:45 AM	0	0	0	0	0	4	0	2	0	1	143	0	0	0	54	1

	Driveway #2 combine 2 driveways								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	1	0	2	0	0	57	0	0	0	123	1
4:15 PM	0	0	0	0	0	0	0	1	0	1	65	0	0	0	122	0
4:30 PM	0	0	0	0	0	1	0	3	0	0	57	0	0	0	117	0
4:45 PM	0	0	0	0	0	3	0	0	0	1	56	0	0	0	116	0
5:00 PM	0	0	0	0	0	2	0	1	0	0	81	0	0	0	126	1
5:15 PM	0	0	0	0	0	4	0	0	0	0	74	0	0	0	111	0
5:30 PM	0	0	0	0	0	2	0	5	0	0	58	0	0	0	97	3
5:45 PM	0	0	0	0	0	2	0	1	0	0	51	0	0	0	123	0

AM PEAK HOUR	Driveway #2 combine 2 driveways								Scanlon Drive				Scanlon Drive			
8:00 AM	Northbound				Southbound				Eastbound				Westbound			
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
9:00 AM	**0**	**0**	**0**	**0**	**0**	**15**	**0**	**9**	**0**	**9**	**437**	**0**	**0**	**0**	**275**	**3**
PHF	**0.00**				**0.67**				**0.77**				**0.83**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**3.9%**	**0.0%**	**0.0%**	**0.0%**	**5.1%**	**0.0%**

PM PEAK HOUR	Driveway #2 combine 2 driveways								Scanlon Drive				Scanlon Drive			
4:15 PM	Northbound				Southbound				Eastbound				Westbound			
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
5:15 PM	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**5**	**0**	**2**	**259**	**0**	**0**	**0**	**481**	**1**
PHF	**0.00**				**0.69**				**0.81**				**0.95**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.7%**	**0.0%**	**0.0%**	**0.0%**	**2.7%**	**0.0%**

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 4
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	Driveway #2 combine 2 driveways
Count Date:	13/09/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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HEAVY VEHICLES

	Driveway #2 combine 2 driveways								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	0	0	0	1	0	0	0	0	5	0	0	0	1	0
7:15 AM	0	0	0	0	0	1	0	0	0	1	1	0	0	0	3	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	3	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	5	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	3	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	3	0

	Driveway #2 combine 2 driveways								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	5	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0
5:45 PM	0	0	0	0	0	2	0	0	0	0	1	0	0	0	3	1

AM PEAK HOUR	Driveway #2 combine 2 driveways								Scanlon Drive				Scanlon Drive			
8:00 AM	Northbound				Southbound				Eastbound				Westbound			
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
9:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	**0**	**0**	**0**	**14**	**0**
PHF	**0.00**				**0.00**				**0.71**				**0.70**			

PM PEAK HOUR	Driveway #2 combine 2 driveways								Scanlon Drive				Scanlon Drive			
5:00 PM	Northbound				Southbound				Eastbound				Westbound			
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
6:00 PM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**13**	**1**
PHF	**0.00**				**0.25**				**0.58**				**0.88**			

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 4
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	Driveway #2 combine 2 driveways
Count Date:	13/09/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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PEDESTRIANS & BICYCLES

	Driveway #2 combine 2 driveways								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Driveway #2 combine 2 driveways								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1

AM PEAK HOUR[1]	Driveway #2 combine 2 driveways								Scanlon Drive				Scanlon Drive			
8:00 AM	Northbound				Southbound				Eastbound				Westbound			
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOUR[1]	Driveway #2 combine 2 driveways								Scanlon Drive				Scanlon Drive			
4:15 PM	Northbound				Southbound				Eastbound				Westbound			
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
5:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	1

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 5
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	Driveway #3
Count Date:	9/13/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Northbound				Driveway #3 Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	0	0	0	1	0	0	0	0	140	0	0	0	53	2
7:15 AM	0	0	0	0	0	2	0	1	0	1	112	0	0	0	55	3
7:30 AM	0	0	0	0	0	1	0	0	0	0	110	0	0	0	55	4
7:45 AM	0	0	0	0	0	4	0	0	0	0	119	0	1	0	55	3
8:00 AM	0	0	0	0	0	2	0	0	0	0	108	0	0	0	78	9
8:15 AM	0	0	0	0	0	3	0	0	0	0	106	0	0	0	83	4
8:30 AM	0	0	0	0	0	3	0	0	0	0	100	0	0	0	63	3
8:45 AM	0	0	0	0	0	1	0	1	0	1	145	0	0	0	54	1

	Northbound				Driveway #3 Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	1	0	3	0	1	57	0	0	0	121	5
4:15 PM	0	0	0	0	0	1	0	0	0	0	65	0	0	0	122	2
4:30 PM	0	0	0	0	0	3	0	1	0	1	56	0	0	0	116	2
4:45 PM	0	0	0	0	0	3	0	3	0	0	59	0	0	0	113	1
5:00 PM	0	0	0	0	0	7	0	3	0	0	82	0	0	0	124	2
5:15 PM	0	0	0	0	0	3	0	1	0	0	78	0	0	0	111	8
5:30 PM	0	0	0	0	0	3	0	1	0	1	59	0	0	0	99	3
5:45 PM	0	0	0	0	0	3	0	3	0	0	52	0	0	0	119	1

AM PEAK HOUR 8:00 AM to 9:00 AM	Northbound				Driveway #3 Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**9**	**0**	**1**	**0**	**1**	**459**	**0**	**0**	**0**	**278**	**17**
PHF	**0.00**				**0.83**				**0.79**				**0.85**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**33.3%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**3.7%**	**0.0%**	**0.0%**	**0.0%**	**5.0%**	**11.8%**

PM PEAK HOUR 4:30 PM to 5:30 PM	Northbound				Driveway #3 Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**16**	**0**	**8**	**0**	**1**	**275**	**0**	**0**	**0**	**464**	**13**
PHF	**0.00**				**0.60**				**0.84**				**0.95**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**12.5%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.2%**	**0.0%**	**0.0%**	**0.0%**	**2.4%**	**7.7%**

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 5
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	Driveway #3
Count Date:	13/09/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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HEAVY VEHICLES

	Northbound				Driveway #3 Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	1
7:45 AM	0	0	0	0	0	1	0	0	0	0	4	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	3	0
8:15 AM	0	0	0	0	0	2	0	0	0	0	3	0	0	0	5	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	3	0
8:45 AM	0	0	0	0	0	1	0	0	0	0	4	0	0	0	3	0

	Northbound				Driveway #3 Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	5	0
4:30 PM	0	0	0	0	0	2	0	0	0	0	2	0	0	0	3	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	1

AM PEAK HOUR 8:00 AM to 9:00 AM	Northbound				Driveway #3 Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**17**	**0**	**0**	**0**	**14**	**2**
PHF	**0.00**				**0.38**				**0.71**				**0.57**			

PM PEAK HOUR 5:00 PM to 6:00 PM	Northbound				Driveway #3 Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**15**	**1**
PHF	**0.00**				**0.00**				**0.75**				**0.80**			

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 5
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	Driveway #3
Count Date:	13/09/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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PEDESTRIANS & BICYCLES

	Northbound				Driveway #3 Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Northbound				Driveway #3 Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR[1]	Northbound				Driveway #3 Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
8:00 AM to 9:00 AM	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOUR[1]	Northbound				Driveway #3 Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
4:30 PM to 5:30 PM	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 6
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	Driveway #4 (Shell Gas Station)
Count Date:	9/13/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Driveway #4 (Shell Gas Station)								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	0	0	0	9	0	8	0	2	133	0	0	0	47	5
7:15 AM	0	0	0	0	0	10	0	7	0	3	110	0	0	0	51	1
7:30 AM	0	0	0	0	0	5	0	11	0	1	117	0	0	0	48	4
7:45 AM	0	0	0	0	0	5	0	6	0	3	119	0	0	0	53	3
8:00 AM	0	0	0	0	0	10	0	5	0	1	112	0	0	0	82	3
8:15 AM	0	0	0	0	0	13	0	7	0	6	91	0	0	0	80	4
8:30 AM	0	0	0	0	0	17	0	10	0	7	108	0	0	0	56	3
8:45 AM	0	0	0	0	0	13	0	5	0	8	132	0	0	0	51	6

	Driveway #4 (Shell Gas Station)								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	12	0	4	0	1	56	0	0	0	124	3
4:15 PM	0	0	0	0	0	12	0	2	0	2	68	0	1	0	121	6
4:30 PM	0	0	0	0	0	11	0	8	0	3	49	0	0	0	110	1
4:45 PM	0	0	0	0	0	13	0	12	0	1	67	0	0	0	103	5
5:00 PM	0	0	0	0	0	12	0	14	0	2	82	0	0	0	112	6
5:15 PM	0	0	0	0	0	16	0	6	0	3	85	0	0	0	113	8
5:30 PM	0	0	0	0	0	16	0	4	0	3	53	0	0	0	99	3
5:45 PM	0	0	0	0	0	12	0	7	0	3	58	0	0	0	112	5

AM PEAK HOUR	Driveway #4 (Shell Gas Station)								Scanlon Drive				Scanlon Drive			
8:00 AM	Northbound				Southbound				Eastbound				Westbound			
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
9:00 AM	**0**	**0**	**0**	**0**	**0**	**53**	**0**	**27**	**0**	**22**	**443**	**0**	**0**	**0**	**269**	**16**
PHF	**0.00**				**0.74**				**0.83**				**0.84**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.9%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**4.5%**	**0.0%**	**0.0%**	**0.0%**	**5.9%**	**0.0%**

PM PEAK HOUR	Driveway #4 (Shell Gas Station)								Scanlon Drive				Scanlon Drive			
4:30 PM	Northbound				Southbound				Eastbound				Westbound			
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
5:30 PM	**0**	**0**	**0**	**0**	**0**	**52**	**0**	**40**	**0**	**9**	**283**	**0**	**0**	**0**	**438**	**20**
PHF	**0.00**				**0.88**				**0.83**				**0.95**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**3.8%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.8%**	**0.0%**	**0.0%**	**0.0%**	**2.7%**	**0.0%**

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 6
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	Driveway #4 (Shell Gas Station)
Count Date:	13/09/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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HEAVY VEHICLES

	Driveway #4 (Shell Gas Station) Northbound				Driveway #4 (Shell Gas Station) Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	1
8:00 AM	0	0	0	0	0	1	0	0	0	0	4	0	0	0	3	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	7	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	3	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	3	0

	Driveway #4 (Shell Gas Station) Northbound				Driveway #4 (Shell Gas Station) Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	6	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	5	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
5:00 PM	0	0	0	0	0	1	0	0	0	0	3	0	0	0	4	0
5:15 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	3	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0

AM PEAK HOUR 8:00 AM to 9:00 AM	Driveway #4 (Shell Gas Station) Northbound				Driveway #4 (Shell Gas Station) Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**20**	**0**	**0**	**0**	**16**	**0**
PHF	**0.00**				**0.25**				**0.71**				**0.57**			

PM PEAK HOUR 5:00 PM to 6:00 PM	Driveway #4 (Shell Gas Station) Northbound				Driveway #4 (Shell Gas Station) Southbound				Scanlon Drive Eastbound				Scanlon Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**15**	**0**
PHF	**0.00**				**0.50**				**0.75**				**0.94**			

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 6
Location:	Randolph, MA
Street 1:	Scanlon Drive
Street 2:	Driveway #4 (Shell Gas Station)
Count Date:	13/09/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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PEDESTRIANS & BICYCLES

	Driveway #4 (Shell Gas Station)								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Driveway #4 (Shell Gas Station)								Scanlon Drive				Scanlon Drive			
	Northbound				Southbound				Eastbound				Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR[1]	Driveway #4 (Shell Gas Station)								Scanlon Drive				Scanlon Drive			
8:00 AM	Northbound				Southbound				Eastbound				Westbound			
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOUR[1]	Driveway #4 (Shell Gas Station)								Scanlon Drive				Scanlon Drive			
4:30 PM	Northbound				Southbound				Eastbound				Westbound			
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 7
Location:	Randolph, MA
Street 1:	North Main Street
Street 2:	Scanlon Drive & Russ Street
Count Date:	9/13/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	North Main Street Northbound				North Main Street Southbound				Scanlon Drive Eastbound				Russ Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	2	337	9	0	27	80	42	0	133	6	0	0	6	8	43
7:15 AM	0	1	285	7	0	29	115	44	0	110	8	2	0	13	7	18
7:30 AM	0	2	242	8	0	59	150	44	0	107	12	2	0	10	3	28
7:45 AM	0	5	214	18	1	62	120	43	0	107	14	1	0	4	8	16
8:00 AM	0	4	255	11	1	66	180	72	0	105	16	0	0	6	9	20
8:15 AM	0	4	238	12	0	63	187	70	0	88	13	3	0	14	10	20
8:30 AM	0	4	210	5	1	76	140	45	0	99	20	6	0	14	10	33
8:45 AM	0	3	216	15	0	71	143	46	0	128	15	2	0	13	8	18

	North Main Street Northbound				North Main Street Southbound				Scanlon Drive Eastbound				Russ Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	5	158	8	0	45	237	109	0	53	5	8	0	14	14	65
4:15 PM	1	4	168	6	0	24	235	105	0	70	10	3	0	11	17	75
4:30 PM	0	0	151	11	0	33	257	102	0	54	3	3	0	10	10	63
4:45 PM	0	2	116	7	0	47	296	96	0	72	3	6	0	13	8	65
5:00 PM	0	4	140	10	1	37	292	103	0	76	8	7	0	9	11	75
5:15 PM	1	7	143	6	0	21	241	105	0	83	11	9	0	14	9	50
5:30 PM	0	8	163	10	0	29	233	89	0	53	5	7	0	7	6	60
5:45 PM	0	6	99	12	0	28	237	99	0	57	10	6	0	10	11	34

AM PEAK HOUR 8:00 AM to 9:00 AM	North Main Street Northbound				North Main Street Southbound				Scanlon Drive Eastbound				Russ Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**15**	**919**	**43**	**2**	**276**	**650**	**233**	**0**	**420**	**64**	**11**	**0**	**47**	**37**	**91**
PHF		**0.90**				**0.91**				**0.85**				**0.77**		
HV %	**0.0%**	**6.7%**	**4.8%**	**7.0%**	**0.0%**	**2.5%**	**11.7%**	**6.4%**	**0.0%**	**4.0%**	**6.3%**	**9.1%**	**0.0%**	**4.3%**	**0.0%**	**4.4%**

PM PEAK HOUR 4:15 PM to 5:15 PM	North Main Street Northbound				North Main Street Southbound				Scanlon Drive Eastbound				Russ Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	1	**10**	**575**	**34**	**1**	**141**	**1080**	**406**	**0**	**272**	**24**	**19**	**0**	**43**	**46**	**278**
PHF		**0.87**				**0.93**				**0.87**				**0.89**		
HV %	**0.0%**	**0.0%**	**3.3%**	**0.0%**	**0.0%**	**0.0%**	**4.3%**	**3.7%**	**0.0%**	**3.7%**	**0.0%**	**0.0%**	**0.0%**	**2.3%**	**0.0%**	**1.1%**

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 7
Location:	Randolph, MA
Street 1:	North Main Street
Street 2:	Scanlon Drive & Russ Street
Count Date:	13/09/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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HEAVY VEHICLES

	North Main Street Northbound				North Main Street Southbound				Scanlon Drive Eastbound				Russ Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	10	1	0	0	6	1	0	5	0	0	0	0	0	0
7:15 AM	0	0	10	0	0	0	9	2	0	2	0	0	0	1	1	0
7:30 AM	0	1	14	0	0	0	1	1	0	2	0	0	0	1	0	0
7:45 AM	0	1	6	1	0	0	11	0	0	5	0	0	0	0	0	1
8:00 AM	0	1	15	1	0	1	16	2	0	4	1	0	0	0	0	1
8:15 AM	0	0	13	2	0	2	21	7	0	3	2	1	0	0	0	2
8:30 AM	0	0	8	0	0	1	23	3	0	7	0	0	0	2	0	0
8:45 AM	0	0	8	0	0	3	16	3	0	3	1	0	0	0	0	1

	North Main Street Northbound				North Main Street Southbound				Scanlon Drive Eastbound				Russ Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	6	0	0	0	6	7	0	1	0	0	0	0	0	1
4:15 PM	0	0	6	0	0	0	7	5	0	2	0	0	0	0	0	1
4:30 PM	0	0	3	0	0	0	11	4	0	4	0	0	0	0	0	0
4:45 PM	0	0	4	0	0	0	17	1	0	0	0	0	0	1	0	1
5:00 PM	0	0	6	0	0	0	11	5	0	4	0	0	0	0	0	1
5:15 PM	0	0	2	0	0	0	4	2	0	2	0	0	0	0	0	0
5:30 PM	0	1	2	0	0	0	3	3	0	2	0	0	0	0	0	1
5:45 PM	0	0	6	0	0	0	3	5	0	1	1	1	0	0	0	0

AM PEAK HOUR 8:00 AM to 9:00 AM	North Main Street Northbound				North Main Street Southbound				Scanlon Drive Eastbound				Russ Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**1**	**44**	**3**	**0**	**7**	**76**	**15**	**0**	**17**	**4**	**1**	**0**	**2**	**0**	**4**
PHF	**0.71**				**0.82**				**0.79**				**0.75**			

PM PEAK HOUR 4:15 PM to 5:15 PM	North Main Street Northbound				North Main Street Southbound				Scanlon Drive Eastbound				Russ Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**19**	**0**	**0**	**0**	**46**	**15**	**0**	**10**	**0**	**0**	**0**	**1**	**0**	**3**
PHF	**0.79**				**0.85**				**0.63**				**0.50**			

Client:	Vannesa Methoxha, EIT
Project #:	1329_1_HSH
BTD #:	Location 7
Location:	Randolph, MA
Street 1:	North Main Street
Street 2:	Scanlon Drive & Russ Street
Count Date:	13/09/2023
Day of Week:	Wednesday
Weather:	Mostly Cloudy, 70°F

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PEDESTRIANS & BICYCLES

	North Main Street Northbound				North Main Street Southbound				Scanlon Drive Eastbound				Russ Street Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0	1
7:45 AM	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	4	0	0	0	0	0	0	0	4	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	North Main Street Northbound				North Main Street Southbound				Scanlon Drive Eastbound				Russ Street Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	2	0	0	1	0	0	0	0	3	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	1	0	0	0	2	0	0	0	1	0	0	0	0
5:45 PM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0

AM PEAK HOUR[1] 8:00 AM to 9:00 AM	North Main Street Northbound				North Main Street Southbound				Scanlon Drive Eastbound				Russ Street Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	4	0	0	0	0	0	0	0	5	0	0	0	0

PM PEAK HOUR[1] 4:15 PM to 5:15 PM	North Main Street Northbound				North Main Street Southbound				Scanlon Drive Eastbound				Russ Street Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	3	0	0	1	0	0	0	0	3	0	0	0	4

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

HOWARD STEIN HUDSON

Engineers + Planners

Appendix B

MassDOT Seasonal Factors

Massachusetts Highway Department
Statewide Traffic Data Collection
2019 Weekday Seasonal Factors

Factor Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Axle Factor
R1	1.22	1.14	1.12	1.06	1.00	0.96	0.87	0.85	0.96	0.99	1.04	1.12	0.85
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	1.15	1.06	1.07	1.00	0.89	0.88	0.89	0.89	0.95	0.92	1.02	1.01	0.97
R4-R7	1.09	1.09	1.11	1.02	0.96	0.92	0.89	0.89	0.99	0.98	1.09	1.13	0.98
U1-Boston	1.03	1.01	0.98	0.94	0.94	0.92	0.95	0.93	0.94	0.94	0.97	1.04	0.96
U1-Essex	1.09	1.06	1.03	0.99	0.94	0.90	0.88	0.86	0.93	0.94	0.99	1.06	0.93
U1-Southeast	1.06	1.05	1.01	0.97	0.95	0.93	0.93	0.90	0.94	0.94	0.98	1.04	0.98
U1-West	1.19	1.14	1.09	0.95	0.92	0.89	0.89	0.86	0.91	0.95	0.97	1.07	0.84
U1-Worcester	1.02	1.04	0.97	0.94	0.93	0.91	0.95	0.91	0.93	0.92	0.95	1.10	0.88
U2	1.01	1.00	0.94	0.93	0.91	0.89	0.93	0.90	0.90	0.91	0.94	1.02	0.99
U3	1.06	1.03	0.98	0.94	0.93	0.91	0.95	0.91	0.92	0.93	0.97	1.00	0.98
U4-U7	1.01	1.00	0.95	0.92	0.88	0.86	0.92	0.91	0.92	0.94	0.99	1.04	0.99
Rec - East	1.04	1.16	1.12	0.98	0.92	0.88	0.77	0.81	0.94	1.02	1.08	1.12	0.99
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	0.98

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.

10/17/2023

HOWARD STEIN HUDSON

Engineers + Planners

Appendix C

Crash Data and Worksheets

City Town Name	Crash Date	Crash Severity	Crash Status	Crash Time	Crash Year	Max Injury Severity Reported	Number of Vehicles	First Harmful Event	Is Geocoded	Light Conditions	Manner of Collision	MassDOT District	Road Surface Condition	Total Fatalities	Total Non-Fatal Injuries	Traffic Control Device Type	Trafficway Description	Vehicle Actions Prior to Crash (All Vehicles)	Weather Conditions	Roadway
RANDOLPH	06/06/2016	Property damage only (none injured)	Closed	9:22 PM	2016	No injury	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Sideswipe, same direction	6	Dry	0	0	Traffic control signal	Two-way, divided, positive median barrier	V1: Turning left / V2: Turning left	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	01/20/2016	Non-fatal injury	Closed	12:30 PM	2016	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Dry	0	1	Traffic control signal	Two-way, divided, positive median barrier	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	02/04/2016	Non-fatal injury	Closed	4:00 PM	2016	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Dry	0	1	Traffic control signal	Two-way, divided, positive median barrier	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	02/23/2016	Non-fatal injury	Closed	6:00 AM	2016	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Dawn	Angle	6	Dry	0	1	Traffic control signal	Two-way, divided, unprotected median	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	03/31/2016	Property damage only (none injured)	Closed	8:40 PM	2016	No injury	1	Collision with motor vehicle in traffic	Yes	Dusk	Single vehicle crash	6	Dry	0	0	No controls	Unknown	V1: Slowing or stopped in traffic	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	04/04/2016	Non-fatal injury	Closed	11:00 AM	2016	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Daylight	Angle	6	Snow	0	3	Traffic control signal	Two-way, divided, positive median barrier	V1: Travelling straight ahead / V2: Travelling straight ahead	Snow	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	04/04/2016	Property damage only (none injured)	Closed	8:38 AM	2016	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Dry	0	0	Traffic control signal	Two-way, not divided	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	Cloudy	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	04/18/2016	Property damage only (none injured)	Closed	1:53 AM	2016	No injury	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	6	Dry	0	0	Traffic control signal	Two-way, divided, positive median barrier	V1: Travelling straight ahead / V2: Making U-turn	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	04/25/2016	Property damage only (none injured)	Closed	4:50 PM	2016	No injury	2	Collision with parked motor vehicle	Yes	Daylight	Sideswipe, same direction	6	Dry	0	0	No controls	Unknown	V1: Parked / V2: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	05/09/2016	Property damage only (none injured)	Closed	8:54 AM	2016	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Dry	0	0	No controls	Two-way, divided, positive median barrier	V1: Travelling straight ahead / V2: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	05/10/2016	Not Reported	Closed	4:48 PM	2016	Unknown	1	Collision with motor vehicle in traffic	Yes	Daylight	Single vehicle crash	6	Dry	0	0	No controls	Two-way, not divided	V1: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	06/24/2016	Property damage only (none injured)	Closed	7:32 AM	2016	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Angle	6	Dry	0	0	No controls	Two-way, not divided	V1: Turning right / V2: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	09/25/2016	Property damage only (none injured)	Closed	10:07 PM	2016	No injury	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Rear-end	6	Dry	0	0	No controls	Two-way, divided, positive median barrier	V1: Travelling straight ahead / V2: Travelling straight ahead	Cloudy	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	10/01/2016	Property damage only (none injured)	Closed	3:50 PM	2016	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Sideswipe, same direction	6	Wet	0	0	No controls	Two-way, not divided	V1: Turning right / V2: Travelling straight ahead	Rain	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	11/09/2016	Property damage only (none injured)	Closed	7:30 PM	2016	No injury	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Sideswipe, same direction	6	Dry	0	0	No controls	Two-way, divided, positive median barrier	V1: Travelling straight ahead / V2: Entering traffic lane	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	01/15/2016	Non-fatal injury	Closed	7:26 AM	2016	Non-fatal injury - Possible	2	Collision with other	Yes	Daylight	Rear-end	6	Dry	0	1	Traffic control signal	Two-way, divided, positive median barrier	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	12/01/2016	Non-fatal injury	Closed	6:21 AM	2016	Non-fatal injury - Incapacitating	3	Collision with motor vehicle in traffic	Yes	Dawn	Rear-end	6	Wet	0	2	Traffic control signal	Two-way, not divided	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Travelling straight ahead	Rain	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	12/01/2016	Non-fatal injury	Closed	4:29 PM	2016	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Rear-end	6	Dry	0	1	No controls	Two-way, divided, positive median barrier	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	12/11/2016	Property damage only (none injured)	Closed	11:12 AM	2016	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Sideswipe, same direction	6	Dry	0	0	No controls	Two-way, divided, positive median barrier	V1: Travelling straight ahead / V2: Changing lanes	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	01/06/2017	Property damage only (none injured)	Closed	8:40 AM	2017	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Sideswipe, same direction	6	Wet	0	0	No controls	Two-way, not divided	V1: Turning right / V2: Travelling straight ahead	Snow	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	04/16/2018	Non-fatal injury	Closed	3:38 PM	2018	Non-fatal injury - Possible	1	Collision with pedestrian	Yes	Daylight	Single vehicle crash	6	Wet	0	1	Traffic control signal	Two-way, divided, unprotected median	V1: Travelling straight ahead	Rain	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	04/19/2018	Property damage only (none injured)	Closed	6:28 AM	2018	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Angle	6	Dry	0	0	Traffic control signal	Two-way, divided, positive median barrier	V1: Turning right / V2: Turning right	Cloudy	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	01/31/2017	Property damage only (none injured)	Closed	8:41 AM	2017	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Dry	0	0	No controls	Two-way, divided, positive median barrier	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	02/12/2017	Property damage only (none injured)	Closed	2:35 PM	2017	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Snow	0	0	Traffic control signal	Two-way, divided, unprotected median	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	Snow	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	04/03/2017	Non-fatal injury	Closed	9:52 AM	2017	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Daylight	Angle	6	Dry	0	1	No controls	Two-way, divided, unprotected median	V1: Turning left / V2: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	03/17/2017	Property damage only (none injured)	Closed	11:43 PM	2017	No injury	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Rear-end	6	Dry	0	0	Traffic control signal	Two-way, not divided	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	05/20/2017	Property damage only (none injured)	Closed	7:00 PM	2017	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Sideswipe, same direction	6	Dry	0	0	No controls	Two-way, divided, positive median barrier	V1: Overtaking/passing / V2: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	12/08/2017	Non-fatal injury	Closed	6:37 AM	2017	Non-fatal injury - Possible	1	Collision with utility pole	Yes	Dawn	Single vehicle crash	6	Dry	0	1	No controls	Two-way, not divided	V1: Other	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	06/19/2018	Non-fatal injury	Closed	11:45 AM	2018	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Dry	0	1	Traffic control signal	Two-way, divided, positive median barrier	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	06/30/2018	Property damage only (none injured)	Closed	12:00 AM	2018	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Dry	0	0	Traffic control signal	Two-way, not divided	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	04/08/2017	Non-fatal injury	Closed	10:35 PM	2017	Non-fatal injury - Non-incapacitating	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Head-on	6	Dry	0	1	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Entering traffic lane	Cloudy	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	04/09/2017	Non-fatal injury	Closed	11:25 AM	2017	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Dry	0	1	Traffic control signal	Two-way, divided, positive median barrier	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	06/04/2017	Property damage only (none injured)	Closed	8:38 PM	2017	No injury	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Rear-end	6	Wet	0	0	Traffic control signal	Two-way, divided, unprotected median	V1: Travelling straight ahead / V2: Travelling straight ahead	Rain	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	08/09/2017	Property damage only (none injured)	Closed	6:16 AM	2017	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Dry	0	0	Traffic control signal	Two-way, divided, positive median barrier	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	08/07/2017	Non-fatal injury	Closed	5:25 PM	2017	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Dry	0	2	Traffic control signal	Two-way, not divided	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	Cloudy	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	08/19/2017	Property damage only (none injured)	Closed	8:38 PM	2017	No injury	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	6	Dry	0	0	Traffic control signal	Two-way, divided, positive median barrier	V1: Travelling straight ahead / V2: Travelling straight ahead	Cloudy	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	10/09/2017	Property damage only (none injured)	Closed	9:26 PM	2017	No injury	1	Collision with utility pole	Yes	Dark - lighted roadway	Single vehicle crash	6	Dry	0	0	Traffic control signal	Two-way, divided, unprotected median	V1: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	10/17/2017	Property damage only (none injured)	Closed	5:00 PM	2017	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Angle	6	Dry	0	0	No controls	Two-way, not divided	V1: Travelling straight ahead / V2: Turning left	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	11/05/2017	Property damage only (none injured)	Closed	3:07 PM	2017	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Angle	6	Dry	0	0	Traffic control signal	Two-way, divided, unprotected median	V1: Slowing or stopped in traffic / V2: Turning right	Cloudy	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	11/20/2017	Property damage only (none injured)	Closed	7:30 AM	2017	No injury	2	Collision with parked motor vehicle	Yes	Daylight	Angle	6	Dry	0	0	Traffic control signal	Two-way, not divided	V1: Slowing or stopped in traffic / V2: Turning right	Cloudy	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	01/18/2018	Property damage only (none injured)	Closed	9:20 AM	2018	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Angle	6	Dry	0	0	Traffic control signal	Two-way, divided, positive median barrier	V1: Turning left / V2: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	01/03/2018	Property damage only (none injured)	Closed	6:19 AM	2018	No injury	2	Collision with motor vehicle in traffic	Yes	Dawn	Rear-end	6	Dry	0	0	Traffic control signal	Two-way, divided, unprotected median	V1: Travelling straight ahead / V2: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	10/18/2018	Property damage only (none injured)	Closed	7:40 AM	2018	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Angle	6	Dry	0	0	Traffic control signal	Two-way, divided, positive median barrier	V1: Travelling straight ahead / V2: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	11/22/2018	Non-fatal injury	Closed	10:52 PM	2018	Non-fatal injury - Non-incapacitating	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Rear-end	6	Dry	0	1	Traffic control signal	Two-way, divided, unprotected median	V1: Travelling straight ahead / V2: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	03/15/2019	Property damage only (none injured)	Closed	5:07 AM	2019	No injury	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Rear-end	6	Wet	0	0	Traffic control signal	Two-way, divided, unprotected median	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	04/15/2019	Property damage only (none injured)	Closed	2:52 AM	2019	No injury	3	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Rear-end	6	Dry	0	0	Traffic control signal	Two-way, not divided	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	05/11/2019	Property damage only (none injured)	Closed	7:56 PM	2019	No injury	2	Collision with motor vehicle in traffic	Yes	Dusk	Angle	6	Dry	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Turning left	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	07/21/2019	Property damage only (none injured)	Closed	9:48 AM	2019	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Angle	6	Dry	0	0	No controls	Two-way, divided, unprotected median	V1: Turning left / V2: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	07/24/2019	Non-fatal injury	Closed	9:20 AM	2019	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Daylight	Angle	6	Dry	0	2	Traffic control signal	Two-way, divided, positive median barrier	V1: Turning left / V2: Turning left	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	07/29/2019	Property damage only (none injured)	Closed	3:15 PM	2019	No injury	3	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Dry	0	0	Traffic control signal	Two-way, divided, positive median barrier	V1: Travelling straight ahead / V2: Slowing or stopped in traffic / V3: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	08/05/2019	Not Reported	Closed	1:29 AM	2019	Not reported	1	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Single vehicle crash	6	Dry	0	0	Traffic control signal	Two-way, divided, positive median barrier	V1: Turning left	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	10/30/2019	Property damage only (none injured)	Closed	7:33 AM	2019	No injury	4	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Dry	0	0	No controls	Two-way, divided, positive median barrier	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic / V4	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	12/08/2019	Property damage only (none injured)	Closed	11:30 AM	2019	No Apparent Injury (O)	2	Collision with motor vehicle in traffic	Yes	Daylight	Sideswipe, same direction	6	Dry	0	0	Traffic control signal	Two-way, divided, positive median barrier	V1: Turning left / V2: Turning left	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	12/12/2019	Property damage only (none injured)	Closed	8:50 AM	2019	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Sideswipe, opposite direction	6	Dry	0	0	No controls	Two-way, divided, unprotected median	V1: Entering traffic lane / V2: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	01/22/2020	Property damage only (none injured)	Closed	5:38 PM	2020	No injury	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Rear-end	6	Dry	0	0	Traffic control signal	Two-way, divided, unprotected median	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	Cloudy	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	02/22/2020	Non-fatal injury	Closed	7:05 AM	2020	Possible Injury (C)	1	Collision with motor vehicle in traffic	Yes	Daylight	Single vehicle crash	6	Dry	0	1	No controls	Two-way, not divided	V1: Travelling straight ahead	Clear	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	08/16/2020	Property damage only (none injured)	Closed	8:30 PM	2020	No injury	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Rear-end	6	Wet	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Travelling straight ahead	Rain	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	08/27/2020	Non-fatal injury	Closed	4:20 PM	2020	Non-fatal injury - Non-incapacitating	2	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Wet	0	1	No controls	Two-way, divided, unprotected median	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	Rain	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	11/01/2020	Non-fatal injury	Closed	6:08 PM	2020	Non-fatal injury - Possible	1	Collision with other light pole or other post/support	Yes	Dark - lighted roadway	Head-on	6	Wet	0	1	Traffic control signal	Two-way, divided, unprotected median	V1: Changing lanes	Rain	SCANLON DRIVE/NORTH MAIN STREET
RANDOLPH	05/19/2017	Property damage only (none injured)	Closed	3:30 AM	2017	No injury	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Rear-end	6	Wet	0	0	Stop signs	Two-way, not divided	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	Rain	SCANLON DRIVE/HIGH STREET
RANDOLPH	08/06/2016	Property damage only (none injured)	Closed	3:30 PM	2016	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Dry	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	Clear	HIGH STREET / REED STREET
RANDOLPH	11/29/2016	Non-fatal injury	Closed	8:14 PM	2016	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Head-on	6	Wet	0	2	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Turning left	Rain	REED STREET/ HIGH STREET
RANDOLPH	12/12/2016	Property damage only (none injured)	Closed	2:20 AM	2016	No injury	3	Collision with parked motor vehicle	Yes	Dark - lighted roadway	Angle	6	Dry	0	0	Traffic control signal	Two-way, not divided	V1: Turning right / V2: Parked / V3: Parked	Clear	REED STREET/ HIGH STREET
RANDOLPH	05/15/2018	Property damage only (none injured)	Closed	8:13 AM	2018	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Sideswipe, same direction	6	Dry	0	0	Traffic control signal	Two-way, not divided	V1: Turning right / V2: Turning right	Cloudy	REED STREET/ HIGH STREET
RANDOLPH	01/17/2017	Property damage only (none injured)	Closed	2:28 PM	2017	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Dry	0	0	Traffic control signal	Two-way, not divided	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	Cloudy	REED STREET/ HIGH STREET
RANDOLPH	01/20/2017	Non-fatal injury	Closed	8:45 PM	2017	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	6	Dry	0	1	Traffic control signal	Two-way, not divided	V1: Turning left / V2: Travelling straight ahead	Clear	REED STREET/ HIGH STREET
RANDOLPH	02/01/2017	Non-fatal injury	Closed	5:11 AM	2017	Non-fatal injury - Non-incapacitating	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	6	Snow	0	1	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	Snow	REED STREET/ HIGH STREET
RANDOLPH	05/24/2017	Non-fatal injury	Closed	11:33 AM	2017	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Daylight	Head-on	6	Dry	0	1	Traffic control signal	Two-way, divided, unprotected median	V1: Turning left / V2: Travelling straight ahead	Cloudy	REED STREET/ HIGH STREET
RANDOLPH	07/22/2018	Non-fatal injury	Closed	12:15 AM	2018	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	6	Dry	0	1	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Turning left	Other	REED STREET/ HIGH STREET
RANDOLPH	07/24/2017	Non-fatal injury	Closed	11:04 PM	2017	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	6	Wet	0	1	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Unknown	Cloudy	REED STREET/ HIGH STREET
RANDOLPH	11/17/2017	Property damage only (none injured)	Closed	10:45 PM	2017	No injury	2	Collision with parked motor vehicle	Yes	Dark - lighted roadway	Rear-end	6	Dry	0	0	No controls	Two-way, not divided	V1: Travelling straight ahead / V2: Parked	Clear	REED STREET/ HIGH STREET
RANDOLPH	12/04/2017	Property damage only (none injured)	Closed	7:52 PM	2017	No injury	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Head-on	6	Dry	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Turning left	Clear	REED STREET/ HIGH STREET
RANDOLPH	03/02/2018	Non-fatal injury	Closed	7:27 PM	2018	Non-fatal injury - Possible	3	Collision with motor vehicle in traffic	Yes	Dark - unknown roadwa	Angle	6	Wet	0	1	Flashing traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Travelling straight ahead / V3: Slowing or stopped in traffic	Sleet/Hail	REED STREET/ HIGH STREET
RANDOLPH	03/07/2018	Non-fatal injury	Closed	10:16 PM	2018	Non-fatal injury - Non-incapacitating	2	Collision with motor vehicle in traffic	Yes	Dark - roadway not ligh	Angle	6	Wet	0	1	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Travelling straight ahead	Rain	REED STREET/ HIGH STREET
RANDOLPH	09/26/2018	Property damage only (none injured)	Closed	10:44 PM	2018	No injury	3	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Not Reported	6	Wet	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Travelling straight ahead / V3: Travelling straight ahead	Rain	REED STREET/ HIGH STREET
RANDOLPH	10/27/2018	Non-fatal injury	Closed	11:20 AM	2018	Non-fatal injury - Non-incapacitating	2	Collision with motor vehicle in traffic	Yes	Daylight	Angle	6	Wet	0	3	Traffic control signal	Two-way, divided, unprotected median	V1: Turning left / V2: Travelling straight ahead	Rain	REED STREET/ HIGH STREET
RANDOLPH	02/20/2019	Non-fatal injury	Closed	2:57 PM	2019	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Daylight	Angle	6	Dry	0	1	Traffic control signal	Two-way, divided, unprotected median	V1: Travelling straight ahead / V2: Travelling straight ahead	Clear	REED STREET/ HIGH STREET
RANDOLPH	06/06/2019	Non-fatal injury	Closed	4:39 AM	2019	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	6	Wet	0	2	Traffic control signal	Two-way, divided, unprotected median	V1: Travelling straight ahead / V2: Travelling straight ahead	Rain	REED STREET/ HIGH STREET
RANDOLPH	08/18/2019	Property damage only (none injured)	Closed	11:30 AM	2019	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Angle	6	Dry	0	0	Traffic control signal	Two-way, divided, unprotected median	V1: Travelling straight ahead / V2: Travelling straight ahead	Clear	REED STREET/ HIGH STREET
RANDOLPH	03/17/2020	Non-fatal injury	Closed	3:16 PM	2020	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Daylight	Angle	6	Dry	0	2	Traffic control signal	Two-way, divided, unprotected median	V1: Travelling straight ahead / V2: Travelling straight ahead	Clear	REED STREET/ HIGH STREET
RANDOLPH	05/02/2020	Property damage only (none injured)	Closed	4:21 PM	2020	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Dry	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	Clear	REED STREET/ HIGH STREET
RANDOLPH	03/08/2020	Non-fatal injury	Closed	12:02 AM	2020	Non-fatal injury - Non-incapacitating	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	6	Dry	0	1	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Travelling straight ahead	Clear	REED STREET/ HIGH STREET
RANDOLPH	08/05/2020	Property damage only (none injured)	Closed	9:54 PM	2020	No injury	2	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Rear-end	6	Dry	0	0	Traffic control signal	Two-way, divided, unprotected median	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	Clear	REED STREET/ HIGH STREET
RANDOLPH	09/15/2020	Property damage only (none injured)	Closed	2:17 PM	2020	No injury	3	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Dry	0	0	Traffic control signal	Two-way, not divided	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	Clear	REED STREET/ HIGH STREET
RANDOLPH	11/25/2020	Non-fatal injury	Closed	7:12 AM	2020	Non-fatal injury - Possible	2	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Dry	0	1	Traffic control signal	Two-way, divided, unprotected median	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	Clear	REED STREET/ HIGH STREET
RANDOLPH	07/19/2020	Non-fatal injury	Closed	7:22 PM	2020	Non-fatal injury - Incapacitating	2	Collision with motor vehicle in traffic	Yes	Daylight	Angle	6	Dry	0	1	Traffic control signal	Two-way, not divided	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	Clear	REED STREET/ HIGH STREET
RANDOLPH	10/02/2016	Property damage only (none injured)	Closed	9:00 AM	2016	No injury	2	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	6	Wet	0	0	No controls	Two-way, not divided	V1: Travelling straight ahead / V2: Turning left	Rain	SCANLON DRIVE/DRIVEWAY

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Randolph COUNT DATE : 9/13/2023

DISTRICT : 6 UNSIGNALIZED : SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : North Main Street

MINOR STREET(S) : Scanlon Drive

Russ Street

INTERSECTION DIAGRAM (Label Approaches)

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/**PM**) :	335	337	598	1,631		**2,901**

" K " FACTOR : **0.090** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **32,233**

TOTAL # OF CRASHES : 59 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (**A**) : **11.80**

CRASH RATE CALCULATION : **1.00** RATE = $\frac{(A * 1{,}000{,}000)}{(ADT * 365)}$

Comments :

Project Title & Date: Randolph North Redevelopment

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Randolph COUNT DATE : 9/13/2023

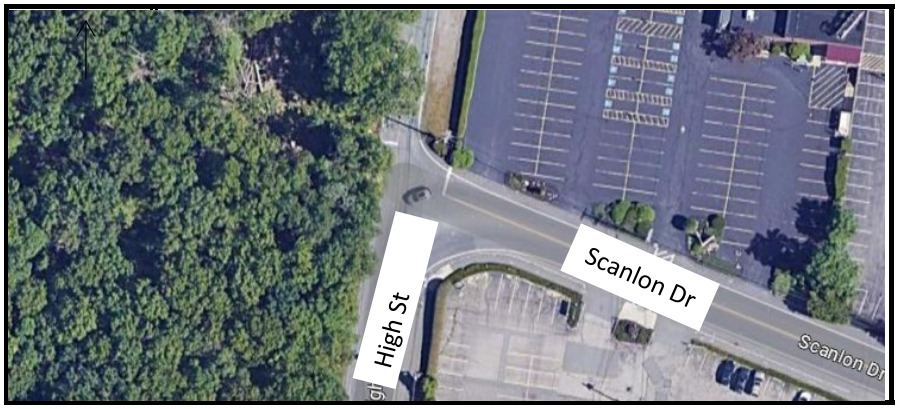
DISTRICT : 6 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Scanlon Drive

MINOR STREET(S) : High Street

INTERSECTION DIAGRAM (Label Approaches)



Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/**PM**) :		471	274	3		**748**

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **8,311**

TOTAL # OF CRASHES : 1

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.20**

CRASH RATE CALCULATION : **0.07**

RATE = $\frac{(A * 1{,}000{,}000)}{(ADT * 365)}$

Comments :

Project Title & Date: Randolph North Redevelopment

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Randolph COUNT DATE : 9/13/2023

DISTRICT : 6 UNSIGNALIZED : SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Reed Street

MINOR STREET(S) : High Street

INTERSECTION DIAGRAM (Label Approaches)

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/**PM**) :	276	320	321	452		**1,369**

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **15,211**

TOTAL # OF CRASHES : 25

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **5.00**

CRASH RATE CALCULATION : **0.90**

RATE = $\frac{(A * 1{,}000{,}000)}{(ADT * 365)}$

Comments :

Project Title & Date: Randolph North Redevelopment

HOWARD STEIN HUDSON

Engineers + Planners

Appendix D

Trip Generation

Randolph North
Trip Generation Assessment

HOWARD STEIN HUDSON
14-Dec-2023

XXX Means Columns U, X, and AA do not sum to Column R; hard code adjustements are needed
XX HARD CODED TO BALANCE (Manually change formatting)

Land Use	Size	Category	Directional Split	Average Trip Rate	Unadjusted Vehicle Trips	Assumed National Vehicle Occupancy Rate[1]	Unadjusted Person-Trips	Primary Person Trips	Transit Share[2]	Transit Person-Trips	Walk/Bike/ Other Share[2]	Walk/ Bike/ Other Trips	Auto Share[2]	Auto Person-Trips	% Taxi/ TNC[3]	Taxi/TNC Person-Trips	Assumed Local Auto Occupancy Rate for Taxis[5]	Assumed Local Auto Occupancy Rate[4]	Taxi/TNC Auto Trips	Primary Non-Taxi Auto Trips	Primary AutoTrips
Daily																					
Hotel[6]	130.468	Total		7.990	1,042	2.10	**2,188**	**2,188**	7%	**154**	2%	**44**	91%	**1,990**		0	2.10	2.10	**0**	**948**	**948**
	KSF	In	50%	3.995	521	2.10	**1,094**	**1,094**	7%	**77**	2%	**22**	91%	**995**	0%	0	2.10	2.10	**0**	**474**	**474**
		Out	50%	3.995	521	2.10	**1,094**	**1,094**	7%	**77**	2%	**22**	91%	**995**	0%	0	2.10	2.10	**0**	**474**	**474**
Total		Total			**1,042**		**2,188**	**2,188**		**154**		**44**		**1,990**					**0**		**948**
		In			**521**		**1,094**	**1,094**		**77**		**22**		**995**					**0**		**474**
		Out			**521**		**1,094**	**1,094**		**77**		**22**		**995**					**0**		**474**
AM Peak Hour																					
Hotel[6]	130.468	Total		0.46	60	2.10	**126**	**126**		**9**		**2**		**115**		0	2.10	2.10	**0**	**55**	**55**
	KSF	In	56%	0.258	34	2.10	**71**	**71**	7%	**5**	2%	**1**	91%	**65**	0%	0	2.10	2.10	**0**	**31**	**31**
		Out	44%	0.202	26	2.10	**55**	**55**	7%	**4**	2%	**1**	91%	**50**	0%	0	2.10	2.10	**0**	**24**	**24**
Total		Total			**60**		**126**	**126**		**9**		**2**		**118**					**0**		**58**
		In			**34**		**71**	**71**		**5**		**1**		**67**					**0**		**33**
		Out			**26**		**55**	**55**		**4**		**1**		**51**					**0**		**25**
PM Peak Hour																					
Hotel[6]	130.468	Total		0.59	77	2.10	**162**	**162**		**12**		**4**		**146**		0	2.10	2.10	**0**	**69**	**69**
	KSF	In	51%	0.301	39	2.10	**82**	**82**	7%	**6**	2%	**2**	91%	**74**	0%	0	2.10	2.10	**0**	**35**	**35**
		Out	49%	0.289	38	2.10	**80**	**80**	7%	**6**	2%	**2**	91%	**72**	0%	0	2.10	2.10	**0**	**34**	**34**
Total		Total			**77**		**162**	**162**		**12**		**4**		**147**					**0**		**70**
		In			**39**		**82**	**82**		**6**		**2**		**74**					**0**		**35**
		Out			**38**		**80**	**80**		**6**		**2**		**73**					**0**		**35**

1. 2017 National vehicle occupancy rates - 1.18:home to work; 1.82: family/personal business; 1.82: shopping; 2.1 social/recreational
2. Mode shares based on Census Data for Tract 4202.02 (2021 ACS 5 Year Tables)
3. Taxi/TNC Percentage based on Census Data for Tract 4202.02
4. Local vehicle occupancy rates based on 2017 National vehicle occupancy rates
5. For taxi cabs, 1.2 passengers per cab. (2.2 minus 1 driver equals 1.2)
6. ITE Trip Generation Manual, 11th Edition, LUC 310 (Hotel), average rate

Randolph North
Trip Generation Assessment

HOWARD STEIN HUDSON
25-Oct-2023

XXX Means Columns U, X, and AA do not sum to Column R; hard code adjustements are needed
XX HARD CODED TO BALANCE (Manually change formatting)

Land Use	Size	Category	Directional Split	Average Trip Rate	Unadjusted Vehicle Trips	Assumed National Vehicle Occupancy Rate[1]	Unadjusted Person-Trips	Primary Person Trips	Transit Share[2]	Transit Person-Trips	Walk/Bike/ Other Share[2]	Walk/ Bike/ Other Trips	Auto Share[2]	Auto Person-Trips	% Taxi/ TNC[3]	Taxi/TNC Person-Trips	Assumed Local Auto Occupancy Rate for Taxis[5]	Assumed Local Auto Occupancy Rate[4]	Taxi/TNC Auto Trips	Primary Non-Taxi Auto Trips	Primary AutoTrips
Daily																					
Manufacturing[6]	110	Total		4.750	522	1.82	**950**	**950**	7%	**66**	2%	**20**	91%	**864**	1%	8	1.82	1.82	**8**	**470**	**478**
	KSF	In	50%	2.375	261	1.82	**475**	**475**	7%	**33**	2%	**10**	91%	**432**	1%	4	1.82	1.82	**4**	**235**	**239**
		Out	50%	2.375	261	1.82	**475**	**475**	7%	**33**	2%	**10**	91%	**432**	1%	4	1.82	1.82	**4**	**235**	**239**
General Office[7]	68	Total		10.840	738	1.18	**870**	**870**	7%	**60**	2%	**18**	91%	**792**	1%	8	1.18	1.18	**12**	**664**	**676**
	KSF	In	50%	5.420	369	1.18	**435**	**435**	7%	**30**	2%	**9**	91%	**396**	1%	4	1.18	1.18	**6**	**332**	**338**
		Out	50%	5.420	369	1.18	**435**	**435**	7%	**30**	2%	**9**	91%	**396**	1%	4	1.18	1.18	**6**	**332**	**338**
Research & Development Center[9]	75	Total		11.080	832	1.18	**982**	**982**	7%	**68**	2%	**20**	91%	**894**	1%	8	1.18	1.18	**12**	**750**	**762**
	KSF	In	50%	5.540	416	1.18	**491**	**491**	7%	**34**	2%	**10**	91%	**447**	1%	4	1.18	1.18	**6**	**375**	**381**
		Out	50%	5.540	416	1.18	**491**	**491**	7%	**34**	2%	**10**	91%	**447**	1%	4	1.18	1.18	**6**	**375**	**381**
Warehousing[8]	22	Total		1.710	38	1.82	**70**	**70**	7%	**4**	2%	**2**	91%	**64**	0%	0	1.82	1.82	**0**	**36**	**36**
	KSF	In	50%	0.855	19	1.82	**35**	**35**	7%	**2**	2%	**1**	91%	**32**	0%	0	1.82	1.82	**0**	**18**	**18**
		Out	50%	0.855	19	1.82	**35**	**35**	7%	**2**	2%	**1**	91%	**32**	0%	0	1.82	1.82	**0**	**18**	**18**
Total		Total			**2,130**		**2,872**	**2,872**		**198**		**60**		**2,614**					**32**		**1,952**
		In			**1,065**		**1,436**	**1,436**		**99**		**30**		**1,307**					**16**		**976**
		Out			**1,065**		**1,436**	**1,436**		**99**		**30**		**1,307**					**16**		**976**
AM Peak Hour																					
Manufacturing[6]	110	Total		0.68	75	1.82	**137**	**137**		**9**		**3**		**125**	1%	1	1.82	1.82	**2**	**68**	**70**
	KSF	In	76%	0.517	57	1.82	**104**	**104**	7%	**7**	2%	**2**	91%	**95**	1%	1	1.82	1.82	**1**	**52**	**53**
		Out	24%	0.163	18	1.82	**33**	**33**	7%	**2**	2%	**1**	91%	**30**	1%	0	1.82	1.82	**1**	**16**	**17**
General Office[7]	68	Total		1.52	103	1.18	**121**	**121**		**8**		**2**		**111**	1%	1	1.18	1.18	**2**	**93**	**95**
	KSF	In	88%	1.338	91	1.18	**107**	**107**	7%	**7**	2%	**2**	91%	**98**	1%	1	1.18	1.18	**1**	**82**	**83**
		Out	12%	0.182	12	1.18	**14**	**14**	7%	**1**	2%	**0**	91%	**13**	1%	0	1.18	1.18	**1**	**11**	**12**
Research & Development Center[9]	75	Total		1.030	77	1.18	**91**	**91**		**6**		**1**		**84**	1%	1	1.18	1.18	**2**	**71**	**73**
	KSF	In	82%	0.845	63	1.18	**74**	**74**	7%	**5**	2%	**1**	91%	**68**	1%	1	1.18	1.18	**1**	**57**	**58**
		Out	18%	0.185	14	1.18	**17**	**17**	7%	**1**	2%	**0**	91%	**16**	1%	0	1.18	1.18	**1**	**14**	**15**
Warehousing[8]	22	Total		0.17	4	1.82	**7**	**7**		**0**		**0**		**7**	0%	0	1.82	1.82	**0**	**4**	**4**
	KSF	In	77%	0.131	3	1.82	**5**	**5**	7%	**0**	2%	**0**	91%	**5**	0%	0	1.82	1.82	**0**	**3**	**3**
		Out	23%	0.039	1	1.82	**2**	**2**	7%	**0**	2%	**0**	91%	**2**	0%	0	1.82	1.82	**0**	**1**	**1**
Total		Total			**259**		**356**	**356**		**23**		**6**		**327**					**6**		**242**
		In			**214**		**290**	**290**		**19**		**5**		**266**					**3**		**197**
		Out			**45**		**66**	**66**		**4**		**1**		**61**					**3**		**45**
PM Peak Hour																					
Manufacturing[6]	110	Total		0.74	81	1.82	**148**	**148**		**10**		**3**		**135**	1%	1	1.82	1.82	**2**	**74**	**76**
	KSF	In	31%	0.229	25	1.82	**46**	**46**	7%	**3**	2%	**1**	91%	**42**	1%	0	1.82	1.82	**1**	**23**	**24**
		Out	69%	0.511	56	1.82	**102**	**102**	7%	**7**	2%	**2**	91%	**93**	1%	1	1.82	1.82	**1**	**51**	**52**
General Office[7]	68	Total		1.44	98	1.18	**116**	**116**		**8**		**2**		**106**	1%	1	1.18	1.18	**2**	**89**	**91**
	KSF	In	17%	0.245	17	1.18	**20**	**20**	7%	**1**	2%	**0**	91%	**19**	1%	0	1.18	1.18	**1**	**16**	**17**
		Out	83%	1.195	81	1.18	**96**	**96**	7%	**7**	2%	**2**	91%	**87**	1%	1	1.18	1.18	**1**	**73**	**74**
Research & Development Center[9]	75	Total		0.980	74	1.18	**87**	**87**		**6**		**1**		**80**	1%	1	1.18	1.18	**2**	**67**	**69**
	KSF	In	16%	0.157	12	1.18	**14**	**14**	7%	**1**	2%	**0**	91%	**13**	1%	0	1.18	1.18	**1**	**11**	**12**
		Out	84%	0.823	62	1.18	**73**	**73**	7%	**5**	2%	**1**	91%	**67**	1%	1	1.18	1.18	**1**	**56**	**57**
Warehousing[8]	22	Total		0.18	4	1.82	**7**	**7**		**0**		**0**		**7**	0%	0	1.82	1.82	**0**	**4**	**4**
	KSF	In	28%	0.050	1	1.82	**2**	**2**	7%	**0**	2%	**0**	91%	**2**	0%	0	1.82	1.82	**0**	**1**	**1**
		Out	72%	0.130	3	1.82	**5**	**5**	7%	**0**	2%	**0**	91%	**5**	0%	0	1.82	1.82	**0**	**3**	**3**
Total		Total			**257**		**358**	**358**		**24**		**6**		**328**					**6**		**240**
		In			**55**		**82**	**82**		**5**		**1**		**76**					**3**		**54**
		Out			**202**		**276**	**276**		**19**		**5**		**252**					**3**		**186**

1. 2017 National vehicle occupancy rates - 1.18:home to work; 1.82: family/personal business; 1.82: shopping; 2.1 social/recreational
2. Mode shares based on Census Data for Tract 4202.02 (2021 ACS 5 Year Tables)
3. Taxi/TNC Percentage based on Census Data for Tract 4202.02
4. Local vehicle occupancy rates based on 2017 National vehicle occupancy rates
5. For taxi cabs, 1.2 passengers per cab. (2.2 minus 1 driver equals 1.2)
6. ITE Trip Generation Manual, 11th Edition, LUC 140 (Manufacturing), average rate
7. ITE Trip Generation Manual, 11th Edition, LUC 710 (General Office), average rate
8. ITE Trip Generation Manual, 11th Edition, LUC 150 (Warehousing), average rate
9. ITE Trip Generation Manual, 11th Edition, LUC 760 (Research & Development Center), average rate

HOWARD STEIN HUDSON

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Appendix E

Synchro Reports

Intersection	
Intersection Delay, s/veh	15.8
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	272	4	3	451	1	0
Future Vol, veh/h	272	4	3	451	1	0
Peak Hour Factor	0.85	0.85	0.76	0.76	0.25	0.25
Heavy Vehicles, %	5	0	0	4	0	0
Mvmt Flow	320	5	4	593	4	0
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	14	16.8	8.9
HCM LOS	B	C	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	99%	100%
Vol Thru, %	1%	0%	0%
Vol Right, %	99%	1%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	454	276	1
LT Vol	0	272	1
Through Vol	3	0	0
RT Vol	451	4	0
Lane Flow Rate	597	325	4
Geometry Grp	1	1	1
Degree of Util (X)	0.703	0.501	0.006
Departure Headway (Hd)	4.234	5.558	5.804
Convergence, Y/N	Yes	Yes	Yes
Cap	848	653	618
Service Time	2.293	3.558	3.827
HCM Lane V/C Ratio	0.704	0.498	0.006
HCM Control Delay	16.8	14	8.9
HCM Lane LOS	C	B	A
HCM 95th-tile Q	6	2.8	0

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	538	305	680	313
v/c Ratio	0.81	0.50	1.01	0.45
Control Delay	26.6	15.1	58.2	14.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.6	15.1	58.2	14.4
Queue Length 50th (ft)	146	69	~218	71
Queue Length 95th (ft)	#264	100	#358	124
Internal Link Dist (ft)	410	2031	474	3954
Turn Bay Length (ft)				
Base Capacity (vph)	662	609	672	693
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.81	0.50	1.01	0.45

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	155	278	13	55	167	7	56	370	132	5	188	82
Future Volume (vph)	155	278	13	55	167	7	56	370	132	5	188	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	12	11	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			0.99			0.99	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		1.00			1.00			0.97			0.96	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1995			1716			1751			1714	
Flt Permitted		0.76			0.82			0.93			0.99	
Satd. Flow (perm)		1551			1425			1645			1695	
Peak-hour factor, PHF	0.83	0.83	0.83	0.75	0.75	0.75	0.82	0.82	0.82	0.88	0.88	0.88
Adj. Flow (vph)	187	335	16	73	223	9	68	451	161	6	214	93
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	538	0	0	305	0	0	680	0	0	313	0
Confl. Peds. (#/hr)	46		17	17		46	12		4	4		12
Heavy Vehicles (%)	1%	1%	0%	11%	3%	0%	0%	5%	2%	0%	7%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		23.5			23.5			22.5			22.5	
Effective Green, g (s)		23.5			23.5			22.5			22.5	
Actuated g/C Ratio		0.43			0.43			0.41			0.41	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Lane Grp Cap (vph)		662			608			672			693	
v/s Ratio Prot												
v/s Ratio Perm		c0.35			0.21			c0.41			0.18	
v/c Ratio		0.81			0.50			1.01			0.45	
Uniform Delay, d1		13.8			11.5			16.2			11.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		10.5			2.9			37.7			2.1	
Delay (s)		24.3			14.4			54.0			13.9	
Level of Service		C			B			D			B	
Approach Delay (s)		24.3			14.4			54.0			13.9	
Approach LOS		C			B			D			B	

Intersection Summary			
HCM 2000 Control Delay	31.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	292	291	61	166	17	1069	305	714	256
v/c Ratio	0.87	0.83	0.66	0.97	0.05	0.86	0.99	0.44	0.21
Control Delay	66.8	61.3	83.1	88.6	11.2	38.0	77.0	16.7	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.8	61.3	83.1	88.6	11.2	38.0	77.0	16.7	0.9
Queue Length 50th (ft)	202	197	42	58	5	345	155	130	0
Queue Length 95th (ft)	#357	#345	#91	#149	14	431	#353	230	19
Internal Link Dist (ft)		42		451		3510		583	
Turn Bay Length (ft)	50		60		200		180		
Base Capacity (vph)	351	366	93	172	328	1521	309	1664	1231
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.80	0.66	0.97	0.05	0.70	0.99	0.43	0.21

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (vph)	421	64	11	47	37	91	15	919	43	2	276	650	233
Future Volume (vph)	421	64	11	47	37	91	15	919	43	2	276	650	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	10	12	12	10	11	11	12	10	10	11
Total Lost time (s)	5.0	5.0		5.0	5.0		7.0	5.0			7.0	5.0	5.0
Lane Util. Factor	0.95	0.95		1.00	1.00		1.00	0.95			1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.89		1.00	0.99			1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)	1594	1653		1620	1650		1572	3298			1636	3008	1473
Flt Permitted	0.95	0.97		0.95	1.00		0.38	1.00			0.10	1.00	1.00
Satd. Flow (perm)	1594	1653		1620	1650		629	3298			174	3008	1473
Peak-hour factor, PHF	0.85	0.85	0.85	0.77	0.77	0.77	0.90	0.90	0.90	0.91	0.91	0.91	0.91
Adj. Flow (vph)	495	75	13	61	48	118	17	1021	48	2	303	714	256
RTOR Reduction (vph)	0	2	0	0	77	0	0	3	0	0	0	0	60
Lane Group Flow (vph)	292	289	0	61	89	0	17	1066	0	0	305	714	196
Confl. Peds. (#/hr)			4	4			5						5
Heavy Vehicles (%)	4%	6%	9%	4%	0%	4%	7%	5%	7%	2%	3%	12%	6%
Turn Type	Split	NA		Split	NA		pm+pt	NA		custom	pm+pt	NA	pt+ov
Protected Phases	3	3		4	4		5	2			1	6	6 3
Permitted Phases							2			1	6		
Actuated Green, G (s)	22.2	22.2		6.0	6.0		46.4	43.9			66.0	56.5	83.7
Effective Green, g (s)	22.2	22.2		6.0	6.0		46.4	43.9			66.0	56.5	83.7
Actuated g/C Ratio	0.20	0.20		0.05	0.05		0.42	0.40			0.60	0.52	0.77
Clearance Time (s)	5.0	5.0		5.0	5.0		7.0	5.0			7.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	2.0			3.0	2.0	
Lane Grp Cap (vph)	324	336		89	90		288	1325			307	1556	1129
v/s Ratio Prot	c0.18	0.18		0.04	c0.05		0.00	0.32			c0.14	0.24	0.13
v/s Ratio Perm							0.02				c0.46		
v/c Ratio	0.90	0.86		0.69	0.98		0.06	0.80			0.99	0.46	0.17
Uniform Delay, d1	42.4	42.0		50.7	51.6		18.3	28.9			31.0	16.7	3.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00	1.00
Incremental Delay, d2	26.6	19.6		19.7	88.9		0.1	3.4			49.3	0.1	0.0
Delay (s)	69.1	61.7		70.3	140.4		18.3	32.3			80.3	16.8	3.5
Level of Service	E	E		E	F		B	C			F	B	A
Approach Delay (s)		65.4			121.6			32.1				29.3	
Approach LOS		E			F			C				C	

Intersection Summary			
HCM 2000 Control Delay	43.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	109.2	Sum of lost time (s)	22.0
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	15.3
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	471	0	2	272	1	2
Future Vol, veh/h	471	0	2	272	1	2
Peak Hour Factor	0.93	0.93	0.84	0.84	0.25	0.25
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	506	0	2	324	4	8
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	18.3	11	8.9
HCM LOS	C	B	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	100%	33%
Vol Thru, %	1%	0%	67%
Vol Right, %	99%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	274	471	3
LT Vol	0	471	1
Through Vol	2	0	2
RT Vol	272	0	0
Lane Flow Rate	326	506	12
Geometry Grp	1	1	1
Degree of Util (X)	0.419	0.69	0.019
Departure Headway (Hd)	4.625	4.906	5.801
Convergence, Y/N	Yes	Yes	Yes
Cap	773	729	621
Service Time	2.679	2.986	3.801
HCM Lane V/C Ratio	0.422	0.694	0.019
HCM Control Delay	11	18.3	8.9
HCM Lane LOS	B	C	A
HCM 95th-tile Q	2.1	5.6	0.1

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	307	351	369	486
v/c Ratio	0.44	0.61	0.52	0.69
Control Delay	12.4	16.2	13.4	18.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.4	16.2	13.4	18.1
Queue Length 50th (ft)	55	68	68	98
Queue Length 95th (ft)	106	135	121	#194
Internal Link Dist (ft)	410	2031	474	3954
Turn Bay Length (ft)				
Base Capacity (vph)	691	578	715	702
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	0.61	0.52	0.69

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	187	10	109	206	5	5	233	83	6	316	130
Future Volume (vph)	79	187	10	109	206	5	5	233	83	6	316	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	12	11	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			0.99	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		1.00			1.00			0.97			0.96	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		2034			1754			1802			1765	
Flt Permitted		0.84			0.81			0.99			0.99	
Satd. Flow (perm)		1728			1445			1788			1757	
Peak-hour factor, PHF	0.90	0.90	0.90	0.91	0.91	0.91	0.87	0.87	0.87	0.93	0.93	0.93
Adj. Flow (vph)	88	208	11	120	226	5	6	268	95	6	340	140
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	307	0	0	351	0	0	369	0	0	486	0
Confl. Peds. (#/hr)	3		6	6		3	4					4
Heavy Vehicles (%)	0%	1%	0%	0%	4%	0%	0%	2%	1%	0%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			18.0			18.0	
Effective Green, g (s)		18.0			18.0			18.0			18.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Lane Grp Cap (vph)		691			578			715			702	
v/s Ratio Prot												
v/s Ratio Perm		0.18			c0.24			0.21			c0.28	
v/c Ratio		0.44			0.61			0.52			0.69	
Uniform Delay, d1		9.9			10.7			10.2			11.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.1			4.7			2.7			5.5	
Delay (s)		11.9			15.4			12.9			16.7	
Level of Service		B			B			B			B	
Approach Delay (s)		11.9			15.4			12.9			16.7	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	208	206	52	327	15	635	149	1168	437
v/c Ratio	0.64	0.60	0.24	0.82	0.08	0.66	0.44	0.83	0.37
Control Delay	43.0	39.6	39.8	31.9	17.0	32.7	19.5	31.3	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	39.6	39.8	31.9	17.0	32.7	19.5	31.3	1.7
Queue Length 50th (ft)	107	101	25	57	5	167	50	277	0
Queue Length 95th (ft)	185	176	67	#197	17	258	96	#556	34
Internal Link Dist (ft)		42		451		3510		583	
Turn Bay Length (ft)	50		60		200		180		
Base Capacity (vph)	433	455	292	463	182	1134	415	1433	1255
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.45	0.18	0.71	0.08	0.56	0.36	0.82	0.35

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (vph)	285	25	25	46	38	253	1	13	550	34	1	138	1086	406
Future Volume (vph)	285	25	25	46	38	253	1	13	550	34	1	138	1086	406
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	10	12	12	12	10	11	11	12	10	10	11
Total Lost time (s)	5.0	5.0		5.0	5.0			7.0	5.0			7.0	5.0	5.0
Lane Util. Factor	0.95	0.95		1.00	1.00			1.00	0.95			1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00			1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.87			1.00	0.99			1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	1.00			0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)	1594	1655		1652	1619			1685	3357			1685	3240	1516
Flt Permitted	0.95	0.97		0.95	1.00			0.14	1.00			0.23	1.00	1.00
Satd. Flow (perm)	1594	1655		1652	1619			240	3357			408	3240	1516
Peak-hour factor, PHF	0.81	0.81	0.81	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.93	0.93	0.93	0.93
Adj. Flow (vph)	352	31	31	52	43	284	1	14	598	37	1	148	1168	437
RTOR Reduction (vph)	0	6	0	0	188	0	0	0	4	0	0	0	0	146
Lane Group Flow (vph)	208	200	0	52	139	0	0	15	631	0	0	149	1168	291
Confl. Peds. (#/hr)			2	2				3		6		6		3
Confl. Bikes (#/hr)						1								
Heavy Vehicles (%)	4%	0%	0%	2%	0%	1%	0%	0%	3%	0%	0%	0%	4%	3%
Turn Type	Split	NA		Split	NA		custom	pm+pt	NA		custom	pm+pt	NA	pt+ov
Protected Phases	3	3		4	4			5	2			1	6	6 3
Permitted Phases							5	2			1	6		
Actuated Green, G (s)	17.8	17.8		11.5	11.5			31.5	29.5			46.9	37.9	60.7
Effective Green, g (s)	17.8	17.8		11.5	11.5			31.5	29.5			46.9	37.9	60.7
Actuated g/C Ratio	0.20	0.20		0.13	0.13			0.35	0.32			0.51	0.42	0.67
Clearance Time (s)	5.0	5.0		5.0	5.0			7.0	5.0			7.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	2.0			3.0	2.0	
Lane Grp Cap (vph)	311	323		208	204			114	1085			355	1346	1009
v/s Ratio Prot	c0.13	0.12		0.03	c0.09			0.00	0.19			c0.05	c0.36	0.19
v/s Ratio Perm								0.04				0.17		
v/c Ratio	0.67	0.62		0.25	0.68			0.13	0.58			0.42	0.87	0.29
Uniform Delay, d1	34.0	33.6		36.0	38.1			20.9	25.7			13.6	24.4	6.3
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			1.00	1.00	1.00
Incremental Delay, d2	5.4	3.5		0.6	9.0			0.5	0.5			0.8	6.0	0.1
Delay (s)	39.3	37.1		36.6	47.1			21.4	26.2			14.4	30.3	6.4
Level of Service	D	D		D	D			C	C			B	C	A
Approach Delay (s)		38.2			45.7				26.1				23.0	
Approach LOS		D			D				C				C	

Intersection Summary			
HCM 2000 Control Delay	28.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	91.2	Sum of lost time (s)	22.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	13.2
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	292	4	3	470	1	0
Future Vol, veh/h	292	4	3	470	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	5	0	0	4	0	0
Mvmt Flow	317	4	3	511	1	0
Number of Lanes	1	0	1	0	0	1

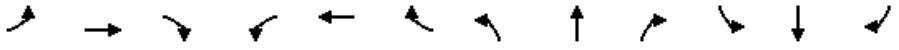
Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	13	13.3	8.7
HCM LOS	B	B	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	99%	100%
Vol Thru, %	1%	0%	0%
Vol Right, %	99%	1%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	473	296	1
LT Vol	0	292	1
Through Vol	3	0	0
RT Vol	470	4	0
Lane Flow Rate	514	322	1
Geometry Grp	1	1	1
Degree of Util (X)	0.599	0.47	0.002
Departure Headway (Hd)	4.194	5.258	5.563
Convergence, Y/N	Yes	Yes	Yes
Cap	859	679	637
Service Time	2.227	3.35	3.649
HCM Lane V/C Ratio	0.598	0.474	0.002
HCM Control Delay	13.3	13	8.7
HCM Lane LOS	B	B	A
HCM 95th-tile Q	4.1	2.5	0

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	529	268	668	326
v/c Ratio	0.78	0.43	0.99	0.47
Control Delay	24.5	13.9	52.9	14.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.5	13.9	52.9	14.7
Queue Length 50th (ft)	141	58	207	74
Queue Length 95th (ft)	#294	111	#407	134
Internal Link Dist (ft)	410	2031	474	3954
Turn Bay Length (ft)				
Base Capacity (vph)	675	617	674	695
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.78	0.43	0.99	0.47

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	298	14	59	179	8	60	413	142	5	206	89
Future Volume (vph)	175	298	14	59	179	8	60	413	142	5	206	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	12	11	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			0.99			0.99	
Flpb, ped/bikes		0.98			1.00			1.00			1.00	
Frt		1.00			1.00			0.97			0.96	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1991			1715			1752			1714	
Flt Permitted		0.78			0.83			0.94			0.99	
Satd. Flow (perm)		1581			1446			1648			1700	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	190	324	15	64	195	9	65	449	154	5	224	97
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	529	0	0	268	0	0	668	0	0	326	0
Confl. Peds. (#/hr)	46		17	17		46	12		4	4		12
Heavy Vehicles (%)	1%	1%	0%	11%	3%	0%	0%	5%	2%	0%	7%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		23.5			23.5			22.5			22.5	
Effective Green, g (s)		23.5			23.5			22.5			22.5	
Actuated g/C Ratio		0.43			0.43			0.41			0.41	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Lane Grp Cap (vph)		675			617			674			695	
v/s Ratio Prot												
v/s Ratio Perm		c0.33			0.19			c0.41			0.19	
v/c Ratio		0.78			0.43			0.99			0.47	
Uniform Delay, d1		13.6			11.1			16.2			11.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		8.9			2.2			32.6			2.3	
Delay (s)		22.4			13.3			48.7			14.1	
Level of Service		C			B			D			B	
Approach Delay (s)		22.4			13.3			48.7			14.1	
Approach LOS		C			B			D			B	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	103.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	316	318	54	152	49	1121	324	777	297
v/c Ratio	0.92	0.89	0.60	0.92	0.16	0.88	1.12	0.53	0.25
Control Delay	76.4	70.1	78.7	77.5	12.2	39.8	122.1	21.1	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.4	70.1	78.7	77.5	12.2	39.8	122.1	21.1	1.0
Queue Length 50th (ft)	229	227	37	51	14	371	~218	198	0
Queue Length 95th (ft)	#436	#431	#103	#185	31	461	#414	256	20
Internal Link Dist (ft)		42		451		3510		583	
Turn Bay Length (ft)	50		60		200		180		
Base Capacity (vph)	342	356	90	166	309	1479	288	1571	1174
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.89	0.60	0.92	0.16	0.76	1.13	0.49	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (vph)	501	70	12	50	41	98	45	985	46	2	296	715	273
Future Volume (vph)	501	70	12	50	41	98	45	985	46	2	296	715	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	10	12	12	10	11	11	12	10	10	11
Total Lost time (s)	5.0	5.0		5.0	5.0		7.0	5.0			7.0	5.0	5.0
Lane Util. Factor	0.95	0.95		1.00	1.00		1.00	0.95			1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.89		1.00	0.99			1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)	1594	1653		1620	1653		1572	3298			1636	3008	1473
Flt Permitted	0.95	0.97		0.95	1.00		0.34	1.00			0.08	1.00	1.00
Satd. Flow (perm)	1594	1653		1620	1653		567	3298			138	3008	1473
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	545	76	13	54	45	107	49	1071	50	2	322	777	297
RTOR Reduction (vph)	0	2	0	0	75	0	0	3	0	0	0	0	77
Lane Group Flow (vph)	316	316	0	54	77	0	49	1118	0	0	324	777	220
Confl. Peds. (#/hr)			4	4			5						5
Heavy Vehicles (%)	4%	6%	9%	4%	0%	4%	7%	5%	7%	2%	3%	12%	6%
Turn Type	Split	NA		Split	NA		pm+pt	NA		custom	pm+pt	NA	pt+ov
Protected Phases	3	3		4	4		5	2			1	6	6 3
Permitted Phases							2			1	6		
Actuated Green, G (s)	23.1	23.1		6.0	6.0		48.1	42.8			64.9	52.6	80.7
Effective Green, g (s)	23.1	23.1		6.0	6.0		48.1	42.8			64.9	52.6	80.7
Actuated g/C Ratio	0.21	0.21		0.06	0.06		0.44	0.39			0.60	0.48	0.74
Clearance Time (s)	5.0	5.0		5.0	5.0		7.0	5.0			7.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	2.0			3.0	2.0	
Lane Grp Cap (vph)	337	350		89	90		299	1294			289	1451	1090
v/s Ratio Prot	c0.20	0.19		0.03	c0.05		0.01	0.34			c0.15	0.26	0.15
v/s Ratio Perm							0.06				c0.51		
v/c Ratio	0.94	0.90		0.61	0.86		0.16	0.86			1.12	0.54	0.20
Uniform Delay, d1	42.2	41.9		50.3	51.1		17.6	30.4			33.9	19.7	4.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00	1.00
Incremental Delay, d2	32.9	25.6		11.2	51.3		0.3	6.0			89.6	0.2	0.0
Delay (s)	75.1	67.4		61.5	102.4		17.8	36.4			123.5	19.9	4.4
Level of Service	E	E		E	F		B	D			F	B	A
Approach Delay (s)		71.3			91.7			35.7				40.6	
Approach LOS		E			F			D				D	

Intersection Summary			
HCM 2000 Control Delay	47.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	109.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	17.4
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	505	0	2	292	1	2
Future Vol, veh/h	505	0	2	292	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	549	0	2	317	1	2
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	21	11.2	8.9
HCM LOS	C	B	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	100%	33%
Vol Thru, %	1%	0%	67%
Vol Right, %	99%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	294	505	3
LT Vol	0	505	1
Through Vol	2	0	2
RT Vol	292	0	0
Lane Flow Rate	320	549	3
Geometry Grp	1	1	1
Degree of Util (X)	0.418	0.745	0.005
Departure Headway (Hd)	4.714	4.884	5.918
Convergence, Y/N	Yes	Yes	Yes
Cap	761	736	608
Service Time	2.771	2.96	3.918
HCM Lane V/C Ratio	0.42	0.746	0.005
HCM Control Delay	11.2	21	8.9
HCM Lane LOS	B	C	A
HCM 95th-tile Q	2.1	6.8	0

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	324	372	377	550
v/c Ratio	0.48	0.65	0.53	0.78
Control Delay	12.9	18.0	13.6	22.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.9	18.0	13.6	22.7
Queue Length 50th (ft)	58	74	70	117
Queue Length 95th (ft)	112	#156	131	#259
Internal Link Dist (ft)	410	2031	474	3954
Turn Bay Length (ft)				
Base Capacity (vph)	680	570	716	702
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.48	0.65	0.53	0.78

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	200	11	117	221	5	5	253	89	7	354	144
Future Volume (vph)	87	200	11	117	221	5	5	253	89	7	354	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	12	11	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			0.99	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			1.00			0.97			0.96	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		2033			1754			1802			1765	
Flt Permitted		0.83			0.80			0.99			0.99	
Satd. Flow (perm)		1702			1425			1790			1755	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	217	12	127	240	5	5	275	97	8	385	157
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	324	0	0	372	0	0	377	0	0	550	0
Confl. Peds. (#/hr)	3		6	6		3	4					4
Heavy Vehicles (%)	0%	1%	0%	0%	4%	0%	0%	2%	1%	0%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			18.0			18.0	
Effective Green, g (s)		18.0			18.0			18.0			18.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Lane Grp Cap (vph)		680			570			716			702	
v/s Ratio Prot												
v/s Ratio Perm		0.19			c0.26			0.21			c0.31	
v/c Ratio		0.48			0.65			0.53			0.78	
Uniform Delay, d1		10.0			11.0			10.3			11.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.4			5.7			2.8			8.5	
Delay (s)		12.4			16.7			13.0			20.3	
Level of Service		B			B			B			C	
Approach Delay (s)		12.4			16.7			13.0			20.3	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	221	215	53	341	33	680	162	1290	499
v/c Ratio	0.67	0.62	0.24	0.86	0.19	0.69	0.50	0.96	0.42
Control Delay	45.8	41.7	41.1	39.2	18.8	34.3	21.3	47.3	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.8	41.7	41.1	39.2	18.8	34.3	21.3	47.3	1.9
Queue Length 50th (ft)	138	129	31	88	11	200	61	~510	0
Queue Length 95th (ft)	224	211	68	#241	29	281	103	#646	36
Internal Link Dist (ft)		42		451		3510		583	
Turn Bay Length (ft)	50		60		200		180		
Base Capacity (vph)	409	431	277	440	176	1092	390	1340	1238
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.50	0.19	0.78	0.19	0.62	0.42	0.96	0.40

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (vph)	344	29	28	49	42	271	1	29	590	36	1	148	1187	459
Future Volume (vph)	344	29	28	49	42	271	1	29	590	36	1	148	1187	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	10	12	12	12	10	11	11	12	10	10	11
Total Lost time (s)	5.0	5.0		5.0	5.0			7.0	5.0			7.0	5.0	5.0
Lane Util. Factor	0.95	0.95		1.00	1.00			1.00	0.95			1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00			1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.87			1.00	0.99			1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	1.00			0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)	1594	1656		1652	1620			1685	3357			1685	3240	1516
Flt Permitted	0.95	0.97		0.95	1.00			0.13	1.00			0.20	1.00	1.00
Satd. Flow (perm)	1594	1656		1652	1620			234	3357			361	3240	1516
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	374	32	30	53	46	295	1	32	641	39	1	161	1290	499
RTOR Reduction (vph)	0	6	0	0	176	0	0	0	4	0	0	0	0	172
Lane Group Flow (vph)	221	209	0	53	165	0	0	33	676	0	0	162	1290	327
Confl. Peds. (#/hr)			2	2				3		6		6		3
Confl. Bikes (#/hr)						1								
Heavy Vehicles (%)	4%	0%	0%	2%	0%	1%	0%	0%	3%	0%	0%	0%	4%	3%
Turn Type	Split	NA		Split	NA		custom	pm+pt	NA		custom	pm+pt	NA	pt+ov
Protected Phases	3	3		4	4			5	2			1	6	6 3
Permitted Phases							5	2			1	6		
Actuated Green, G (s)	19.0	19.0		12.5	12.5			33.5	30.3			48.2	38.0	62.0
Effective Green, g (s)	19.0	19.0		12.5	12.5			33.5	30.3			48.2	38.0	62.0
Actuated g/C Ratio	0.20	0.20		0.13	0.13			0.35	0.32			0.51	0.40	0.65
Clearance Time (s)	5.0	5.0		5.0	5.0			7.0	5.0			7.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	2.0			3.0	2.0	
Lane Grp Cap (vph)	319	332		218	213			131	1074			336	1300	992
v/s Ratio Prot	c0.14	0.13		0.03	c0.10			0.01	0.20			c0.06	c0.40	0.22
v/s Ratio Perm								0.08				0.19		
v/c Ratio	0.69	0.63		0.24	0.77			0.25	0.63			0.48	0.99	0.33
Uniform Delay, d1	35.1	34.6		36.9	39.7			22.7	27.4			14.9	28.2	7.2
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			1.00	1.00	1.00
Incremental Delay, d2	6.4	3.9		0.6	15.9			1.0	0.8			1.1	23.0	0.1
Delay (s)	41.5	38.5		37.4	55.7			23.8	28.3			15.9	51.2	7.3
Level of Service	D	D		D	E			C	C			B	D	A
Approach Delay (s)		40.0			53.2				28.0				37.0	
Approach LOS		D			D				C				D	

Intersection Summary			
HCM 2000 Control Delay	37.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	94.7	Sum of lost time (s)	22.0
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	14.3
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	297	4	3	504	1	0
Future Vol, veh/h	297	4	3	504	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	5	0	0	4	0	0
Mvmt Flow	323	4	3	548	1	0
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	13.7	14.7	8.8
HCM LOS	B	B	A

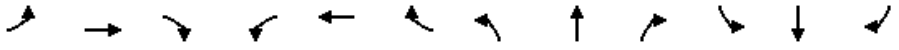
Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	99%	100%
Vol Thru, %	1%	0%	0%
Vol Right, %	99%	1%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	507	301	1
LT Vol	0	297	1
Through Vol	3	0	0
RT Vol	504	4	0
Lane Flow Rate	551	327	1
Geometry Grp	1	1	1
Degree of Util (X)	0.646	0.495	0.002
Departure Headway (Hd)	4.221	5.442	5.754
Convergence, Y/N	Yes	Yes	Yes
Cap	849	667	626
Service Time	2.276	3.442	3.754
HCM Lane V/C Ratio	0.649	0.49	0.002
HCM Control Delay	14.7	13.7	8.8
HCM Lane LOS	B	B	A
HCM 95th-tile Q	4.8	2.8	0

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	531	268	687	331
v/c Ratio	0.79	0.43	1.02	0.48
Control Delay	24.7	13.9	59.3	14.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.7	13.9	59.3	14.8
Queue Length 50th (ft)	142	58	~223	76
Queue Length 95th (ft)	#295	111	#421	136
Internal Link Dist (ft)	410	2031	474	3954
Turn Bay Length (ft)				
Base Capacity (vph)	674	617	676	695
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.79	0.43	1.02	0.48

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	177	298	14	59	179	8	60	431	142	5	211	89
Future Volume (vph)	177	298	14	59	179	8	60	431	142	5	211	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	12	11	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			0.99			0.99	
Flpb, ped/bikes		0.98			1.00			1.00			1.00	
Frt		1.00			1.00			0.97			0.96	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1991			1715			1754			1715	
Flt Permitted		0.78			0.83			0.94			0.99	
Satd. Flow (perm)		1579			1445			1653			1700	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	192	324	15	64	195	9	65	468	154	5	229	97
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	531	0	0	268	0	0	687	0	0	331	0
Confl. Peds. (#/hr)	46		17	17		46	12		4	4		12
Heavy Vehicles (%)	1%	1%	0%	11%	3%	0%	0%	5%	2%	0%	7%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		23.5			23.5			22.5			22.5	
Effective Green, g (s)		23.5			23.5			22.5			22.5	
Actuated g/C Ratio		0.43			0.43			0.41			0.41	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Lane Grp Cap (vph)		674			617			676			695	
v/s Ratio Prot												
v/s Ratio Perm		c0.34			0.19			c0.42			0.19	
v/c Ratio		0.79			0.43			1.02			0.48	
Uniform Delay, d1		13.6			11.1			16.2			11.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		9.1			2.2			38.7			2.3	
Delay (s)		22.7			13.3			55.0			14.3	
Level of Service		C			B			D			B	
Approach Delay (s)		22.7			13.3			55.0			14.3	
Approach LOS		C			B			D			B	

Intersection Summary			
HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	105.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	336	342	54	158	85	1121	324	777	447
v/c Ratio	0.98	0.96	0.60	1.00	0.28	0.88	1.12	0.53	0.37
Control Delay	88.8	82.8	78.7	101.7	13.8	39.8	122.1	21.2	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.8	82.8	78.7	101.7	13.8	39.8	122.1	21.2	1.3
Queue Length 50th (ft)	247	249	37	~62	25	371	~218	198	0
Queue Length 95th (ft)	#473	#475	#103	#210	47	461	#414	256	24
Internal Link Dist (ft)		42		451		3510		583	
Turn Bay Length (ft)	50		60		200		180		
Base Capacity (vph)	342	355	90	158	308	1479	288	1571	1210
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.96	0.60	1.00	0.28	0.76	1.13	0.49	0.37

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (vph)	533	71	20	50	47	98	78	985	46	2	296	715	411
Future Volume (vph)	533	71	20	50	47	98	78	985	46	2	296	715	411
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	10	12	12	10	11	11	12	10	10	11
Total Lost time (s)	5.0	5.0		5.0	5.0		7.0	5.0			7.0	5.0	5.0
Lane Util. Factor	0.95	0.95		1.00	1.00		1.00	0.95			1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.90		1.00	0.99			1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)	1594	1646		1620	1662		1572	3298			1636	3008	1473
Flt Permitted	0.95	0.97		0.95	1.00		0.34	1.00			0.08	1.00	1.00
Satd. Flow (perm)	1594	1646		1620	1662		563	3298			138	3008	1473
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	579	77	22	54	51	107	85	1071	50	2	322	777	447
RTOR Reduction (vph)	0	2	0	0	66	0	0	3	0	0	0	0	117
Lane Group Flow (vph)	336	340	0	54	92	0	85	1118	0	0	324	777	330
Confl. Peds. (#/hr)			4	4			5						5
Heavy Vehicles (%)	4%	6%	9%	4%	0%	4%	7%	5%	7%	2%	3%	12%	6%
Turn Type	Split	NA		Split	NA		pm+pt	NA		custom	pm+pt	NA	pt+ov
Protected Phases	3	3		4	4		5	2			1	6	6 3
Permitted Phases							2			1	6		
Actuated Green, G (s)	23.1	23.1		6.0	6.0		48.4	42.9			65.0	52.5	80.6
Effective Green, g (s)	23.1	23.1		6.0	6.0		48.4	42.9			65.0	52.5	80.6
Actuated g/C Ratio	0.21	0.21		0.05	0.05		0.44	0.39			0.60	0.48	0.74
Clearance Time (s)	5.0	5.0		5.0	5.0		7.0	5.0			7.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	2.0			3.0	2.0	
Lane Grp Cap (vph)	337	348		89	91		300	1296			289	1447	1088
v/s Ratio Prot	c0.21	0.21		0.03	c0.06		0.01	0.34			c0.15	0.26	0.22
v/s Ratio Perm							0.11				c0.51		
v/c Ratio	1.00	0.98		0.61	1.01		0.28	0.86			1.12	0.54	0.30
Uniform Delay, d1	43.0	42.7		50.4	51.5		17.9	30.4			34.0	19.8	4.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00	1.00
Incremental Delay, d2	47.9	41.4		11.2	96.9		0.5	6.0			89.6	0.2	0.1
Delay (s)	90.9	84.1		61.6	148.5		18.4	36.3			123.6	20.0	4.9
Level of Service	F	F		E	F		B	D			F	B	A
Approach Delay (s)		87.5			126.3			35.1				37.3	
Approach LOS		F			F			D				D	

Intersection Summary			
HCM 2000 Control Delay	51.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	109.1	Sum of lost time (s)	22.0
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	18.8
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	524	0	2	297	1	2
Future Vol, veh/h	524	0	2	297	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	570	0	2	323	1	2
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	23	11.4	9
HCM LOS	C	B	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	100%	33%
Vol Thru, %	1%	0%	67%
Vol Right, %	99%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	299	524	3
LT Vol	0	524	1
Through Vol	2	0	2
RT Vol	297	0	0
Lane Flow Rate	325	570	3
Geometry Grp	1	1	1
Degree of Util (X)	0.431	0.776	0.005
Departure Headway (Hd)	4.769	4.902	6
Convergence, Y/N	Yes	Yes	Yes
Cap	751	729	600
Service Time	2.831	2.986	4
HCM Lane V/C Ratio	0.433	0.782	0.005
HCM Control Delay	11.4	23	9
HCM Lane LOS	B	C	A
HCM 95th-tile Q	2.2	7.6	0

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	324	372	382	570
v/c Ratio	0.48	0.65	0.53	0.81
Control Delay	12.9	18.0	13.7	24.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.9	18.0	13.7	24.5
Queue Length 50th (ft)	58	74	71	123
Queue Length 95th (ft)	112	#156	133	#272
Internal Link Dist (ft)	410	2031	474	3954
Turn Bay Length (ft)				
Base Capacity (vph)	680	570	716	702
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.48	0.65	0.53	0.81

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	200	11	117	221	5	5	258	89	7	371	146
Future Volume (vph)	87	200	11	117	221	5	5	258	89	7	371	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	12	11	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			0.99	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			1.00			0.97			0.96	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		2033			1754			1803			1767	
Flt Permitted		0.83			0.80			0.99			0.99	
Satd. Flow (perm)		1702			1425			1791			1757	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	217	12	127	240	5	5	280	97	8	403	159
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	324	0	0	372	0	0	382	0	0	570	0
Confl. Peds. (#/hr)	3		6	6		3	4					4
Heavy Vehicles (%)	0%	1%	0%	0%	4%	0%	0%	2%	1%	0%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			18.0			18.0	
Effective Green, g (s)		18.0			18.0			18.0			18.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Lane Grp Cap (vph)		680			570			716			702	
v/s Ratio Prot												
v/s Ratio Perm		0.19			c0.26			0.21			c0.32	
v/c Ratio		0.48			0.65			0.53			0.81	
Uniform Delay, d1		10.0			11.0			10.3			12.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.4			5.7			2.8			9.9	
Delay (s)		12.4			16.7			13.1			21.9	
Level of Service		B			B			B			C	
Approach Delay (s)		12.4			16.7			13.1			21.9	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	314	303	53	343	42	680	162	1290	540
v/c Ratio	0.86	0.78	0.22	0.89	0.25	0.73	0.53	1.02	0.45
Control Delay	59.9	50.1	41.0	47.0	20.6	37.0	23.3	61.2	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	50.1	41.0	47.0	20.6	37.0	23.3	61.2	2.0
Queue Length 50th (ft)	211	192	31	111	15	201	61	~512	0
Queue Length 95th (ft)	#374	#337	68	#277	34	281	103	#646	37
Internal Link Dist (ft)		42		451		3510		583	
Turn Bay Length (ft)	50		60		200		180		
Base Capacity (vph)	386	407	261	404	167	1032	362	1268	1209
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.74	0.20	0.85	0.25	0.66	0.45	1.02	0.45

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (vph)	473	35	60	49	44	271	1	38	590	36	1	148	1187	497
Future Volume (vph)	473	35	60	49	44	271	1	38	590	36	1	148	1187	497
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	10	12	12	12	10	11	11	12	10	10	11
Total Lost time (s)	5.0	5.0		5.0	5.0			7.0	5.0			7.0	5.0	5.0
Lane Util. Factor	0.95	0.95		1.00	1.00			1.00	0.95			1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00			1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.87			1.00	0.99			1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	1.00			0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)	1594	1642		1652	1622			1685	3357			1685	3240	1516
Flt Permitted	0.95	0.97		0.95	1.00			0.13	1.00			0.19	1.00	1.00
Satd. Flow (perm)	1594	1642		1652	1622			238	3357			335	3240	1516
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	514	38	65	53	48	295	1	41	641	39	1	161	1290	540
RTOR Reduction (vph)	0	9	0	0	151	0	0	0	4	0	0	0	0	187
Lane Group Flow (vph)	314	294	0	53	192	0	0	42	676	0	0	162	1290	353
Confl. Peds. (#/hr)			2	2				3		6		6		3
Confl. Bikes (#/hr)						1								
Heavy Vehicles (%)	4%	0%	0%	2%	0%	1%	0%	0%	3%	0%	0%	0%	4%	3%
Turn Type	Split	NA		Split	NA		custom	pm+pt	NA		custom	pm+pt	NA	pt+ov
Protected Phases	3	3		4	4			5	2			1	6	6 3
Permitted Phases							5	2			1	6		
Actuated Green, G (s)	22.1	22.1		13.8	13.8			33.2	29.8			47.9	37.5	64.6
Effective Green, g (s)	22.1	22.1		13.8	13.8			33.2	29.8			47.9	37.5	64.6
Actuated g/C Ratio	0.22	0.22		0.14	0.14			0.34	0.30			0.48	0.38	0.65
Clearance Time (s)	5.0	5.0		5.0	5.0			7.0	5.0			7.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	2.0			3.0	2.0	
Lane Grp Cap (vph)	356	367		230	226			129	1012			314	1229	991
v/s Ratio Prot	c0.20	0.18		0.03	c0.12			0.01	0.20			c0.06	c0.40	0.23
v/s Ratio Perm								0.10				0.19		
v/c Ratio	0.88	0.80		0.23	0.85			0.33	0.67			0.52	1.05	0.36
Uniform Delay, d1	37.1	36.3		37.8	41.5			25.5	30.2			16.9	30.6	7.7
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			1.00	1.00	1.00
Incremental Delay, d2	21.7	11.8		0.5	24.3			1.5	1.3			1.4	39.7	0.1
Delay (s)	58.8	48.1		38.3	65.8			26.9	31.5			18.3	70.4	7.8
Level of Service	E	D		D	E			C	C			B	E	A
Approach Delay (s)		53.5			62.1				31.2				49.2	
Approach LOS		D			E				C				D	

Intersection Summary			
HCM 2000 Control Delay	47.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	22.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	336	342	54	158	85	1121	324	777	447
v/c Ratio	0.93	0.91	0.53	0.92	0.29	0.90	1.16	0.54	0.37
Control Delay	76.7	72.0	70.7	81.2	15.2	43.7	134.7	23.0	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.7	72.0	70.7	81.2	15.2	43.7	134.7	23.0	1.3
Queue Length 50th (ft)	257	260	39	64	27	389	~238	210	0
Queue Length 95th (ft)	#450	#451	#92	#198	51	484	#420	271	25
Internal Link Dist (ft)		42		451		3510		583	
Turn Bay Length (ft)	50		60		200		180		
Base Capacity (vph)	360	375	102	171	295	1346	280	1455	1204
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.91	0.53	0.92	0.29	0.83	1.16	0.53	0.37

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (vph)	533	71	20	50	47	98	78	985	46	2	296	715	411
Future Volume (vph)	533	71	20	50	47	98	78	985	46	2	296	715	411
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	10	12	12	10	11	11	12	10	10	11
Total Lost time (s)	5.0	5.0		5.0	5.0		7.0	5.0			7.0	5.0	5.0
Lane Util. Factor	0.95	0.95		1.00	1.00		1.00	0.95			1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.90		1.00	0.99			1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)	1594	1646		1620	1662		1572	3298			1636	3008	1473
Flt Permitted	0.95	0.97		0.95	1.00		0.33	1.00			0.08	1.00	1.00
Satd. Flow (perm)	1594	1646		1620	1662		550	3298			138	3008	1473
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	579	77	22	54	51	107	85	1071	50	2	322	777	447
RTOR Reduction (vph)	0	2	0	0	67	0	0	3	0	0	0	0	118
Lane Group Flow (vph)	336	340	0	54	91	0	85	1118	0	0	324	777	329
Confl. Peds. (#/hr)			4	4			5						5
Heavy Vehicles (%)	4%	6%	9%	4%	0%	4%	7%	5%	7%	2%	3%	12%	6%
Turn Type	Split	NA		Split	NA		pm+pt	NA		custom	pm+pt	NA	pt+ov
Protected Phases	3	3		4	4		5	2			1	6	6 3
Permitted Phases							2			1	6		
Actuated Green, G (s)	25.0	25.0		7.0	7.0		48.5	43.0			65.0	52.5	82.5
Effective Green, g (s)	25.0	25.0		7.0	7.0		48.5	43.0			65.0	52.5	82.5
Actuated g/C Ratio	0.22	0.22		0.06	0.06		0.43	0.38			0.58	0.47	0.74
Clearance Time (s)	5.0	5.0		5.0	5.0		7.0	5.0			7.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	2.0			3.0	2.0	
Lane Grp Cap (vph)	355	367		101	103		288	1266			280	1410	1085
v/s Ratio Prot	c0.21	0.21		0.03	c0.06		0.01	0.34			c0.15	0.26	0.22
v/s Ratio Perm							0.11				c0.52		
v/c Ratio	0.95	0.93		0.53	0.89		0.30	0.88			1.16	0.55	0.30
Uniform Delay, d1	42.8	42.6		50.9	52.1		19.1	32.2			34.9	21.3	5.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00	1.00
Incremental Delay, d2	33.8	28.7		5.4	54.0		0.6	7.4			103.2	0.3	0.1
Delay (s)	76.6	71.2		56.3	106.1		19.7	39.5			138.1	21.6	5.1
Level of Service	E	E		E	F		B	D			F	C	A
Approach Delay (s)		73.9			93.4			38.1				41.2	
Approach LOS		E			F			D				D	

Intersection Summary				
HCM 2000 Control Delay	49.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	1.11			
Actuated Cycle Length (s)	112.0	Sum of lost time (s)	22.0	
Intersection Capacity Utilization	89.3%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

HOWARD STEIN HUDSON

11 Beacon Street, Suite 1010
Boston, Massachusetts 02108
617.482.7080

www.hshassoc.com