RANDOLPH, MASSCHUSETTS

# Randolph North Redevelopment Traffic Impact Study

Prepared for Town of Randolph

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# **Table of Contents**

Executive Summary1
Introduction
Study Area2
Methodology4
Existing (2023) Condition
Roadway Descriptions5
Intersection Descriptions
Traffic Data Collection
Existing Public Transportation14
Off-street Parking14
Safety Analysis17
No-build (2030) Condition19
Background Growth
Future Development Projects
Build (2030) Condition
Project Description
Vehicle Parking25
Trip Generation Methodology25
Transportation Impact Analysis
Motor Vehicle Operations Analysis
Transportation Mitigation
Conclusion and Recommendations



# List of Figures

Figure 1.	Study Area
Figure 2.	Average Daily Traffic: High Street, South of Scanlon Drive
Figure 3.	Average Daily Traffic: Scanlon Drive, East of High Street9
Figure 4.	Average Daily Traffic: North Main Street, North of Scanlon Drive
Figure 5.	Existing (2023) Condition Vehicle Volumes, Weekday a.m. Peak Hour
Figure 6.	Existing (2023) Condition Vehicle Volumes, Weekday p.m. Peak Hour13
Figure 7.	Existing (2023) Condition Bicycle Volumes, Weekday a.m. and p.m. Peak Hours 15
Figure 8.	Existing (2023) Condition Pedestrian Volumes, Weekday a.m. and p.m. Peak Hours .16
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
Figure 11.	Site Plan24
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

# **List of Tables**

Table 1.	Existing Site and Proposed Building Program2
Table 2.	Average Weekday Traffic
Table 3.	Crash Data Summary18



Table 4.	Parking Requirements25
Table 5.	Mode Share
Table 6.	Project-generated Person Trips by Mode27
Table 7.	Net New Vehicle Trips
Table 8.	Level of Service Criteria
Table 9.	Capacity Analysis Summary, a.m. Peak Hour35
Table 10.	Capacity Analysis Summary, p.m. Peak Hour
Table 11.	Mitigation at North Main Street/Scanlon Drive

# Appendices

- Appendix A Traffic Count Data
- Appendix B MassDOT Seasonal Factors
- Appendix C Crash Data and Worksheets
- Appendix D Trip Generation
- Appendix E Synchro Reports



# **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.

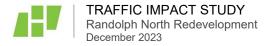
Designated loading/service areas for the cGMP building are located at the north edge of the site with parking located at the frontage along Scanlon Drive. The site will also construct a new trailhead and parking lot for the Department of Conservation and Recreation's (DCR's) Blue Hills Reservation near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

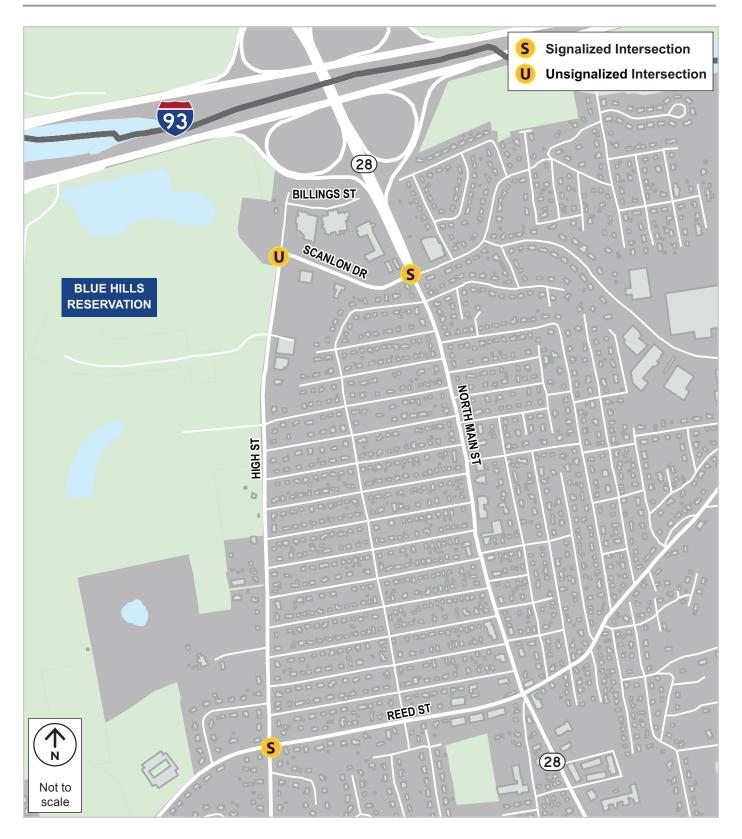
Based on the project traffic demands, proposed site circulation, traffic circulation in this area of the Town, and discussions with the Town of Randolph, the study area includes the following intersection locations:

- 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.

/ 7

#### 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) 6<sup>th</sup> edition.<sup>1</sup>
- 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.

<sup>1</sup> 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. Onstreet 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 twolane, 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. The North Main Street southbound approach consists of an exclusive left-turn lane. The North Main Street southbound 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. Onstreet parking is not provided along any approach. Pedestrian signal equipment is provided at all crosswalks.



TRAFFIC IMPACT STUDY Randolph North Redevelopment December 2023

*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 85<sup>th</sup> 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.

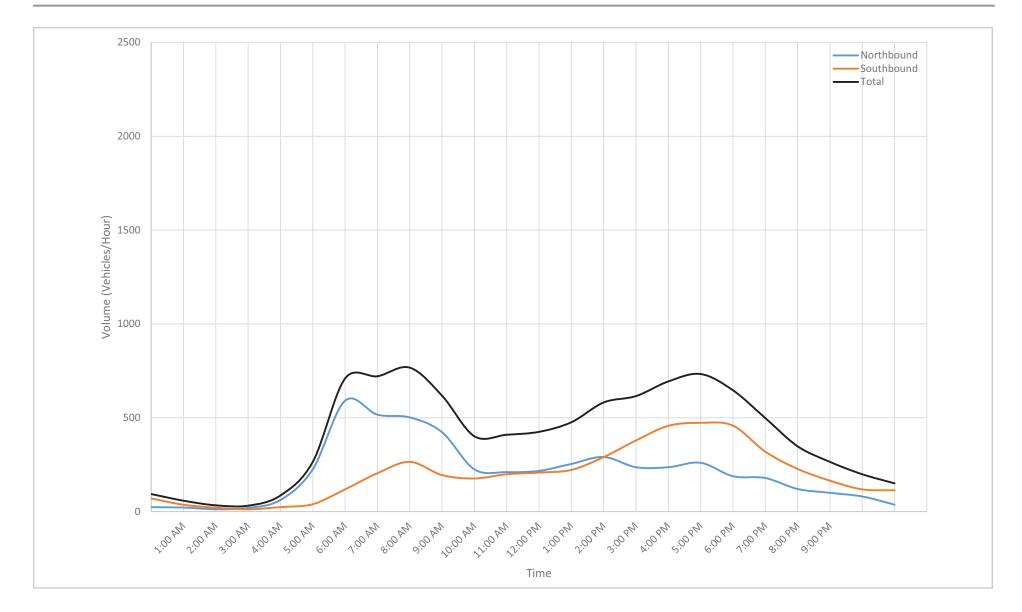
- High Street
  - The a.m. peak was 6:15 a.m. 7:15 a.m. (770 vehicles).
  - The p.m. peak was 4:30 p.m. 5:30 p.m. (750 vehicles).
- Scanlon Drive
  - The a.m. peak was 8:15 a.m. 9:15 a.m. (760 vehicles).
  - The p.m. peak was 4:30 p.m. 5:30 p.m. (750 vehicles).
- North Main Street
  - The a.m. peak was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



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					
<b>Eastbound</b> 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				

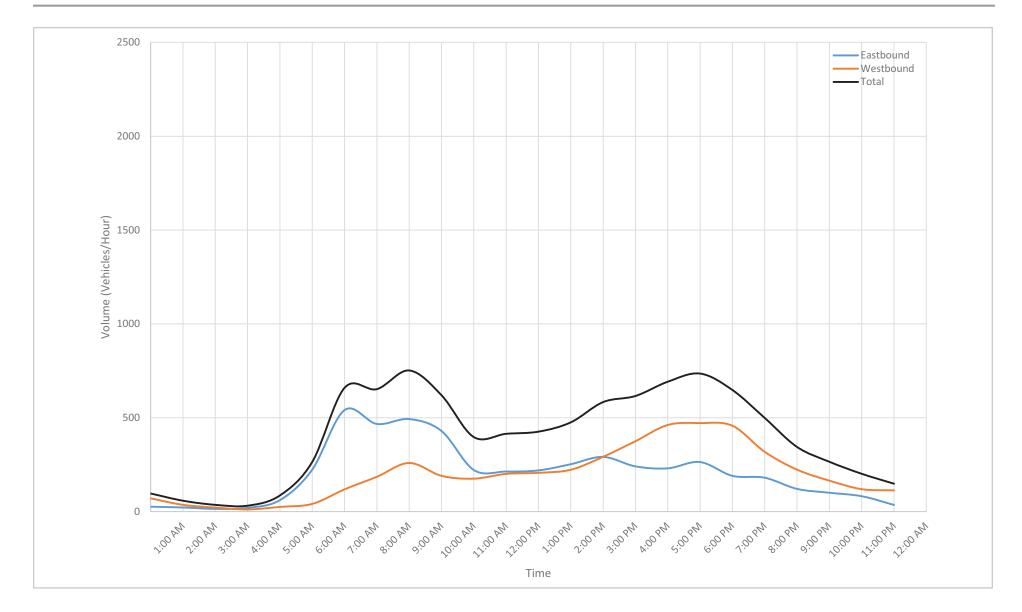
#### Table 2.Average Weekday Traffic





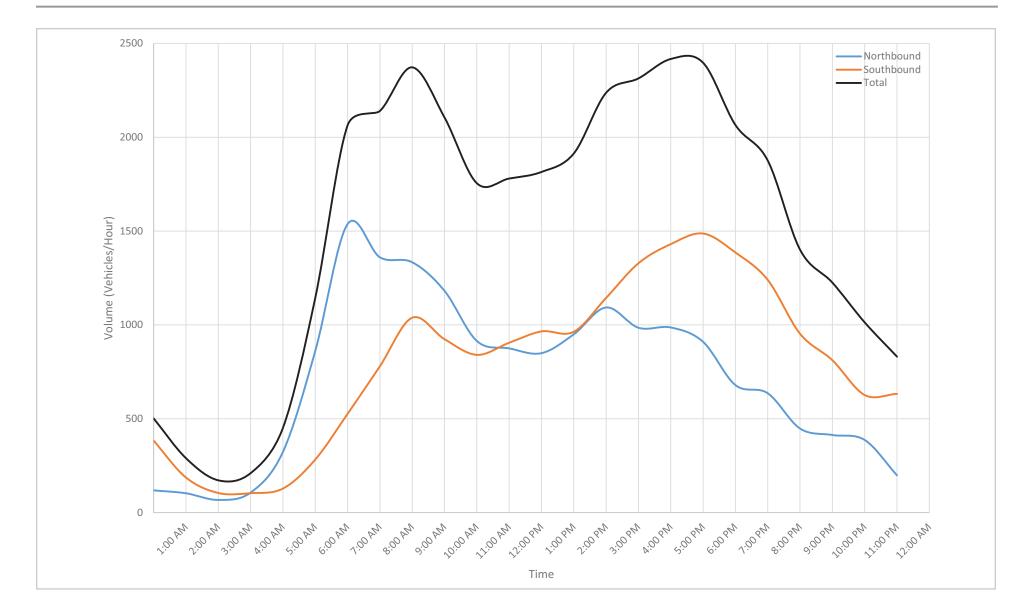
#### Figure 2. Average Daily Traffic: High Street, South of Scanlon Drive





### 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

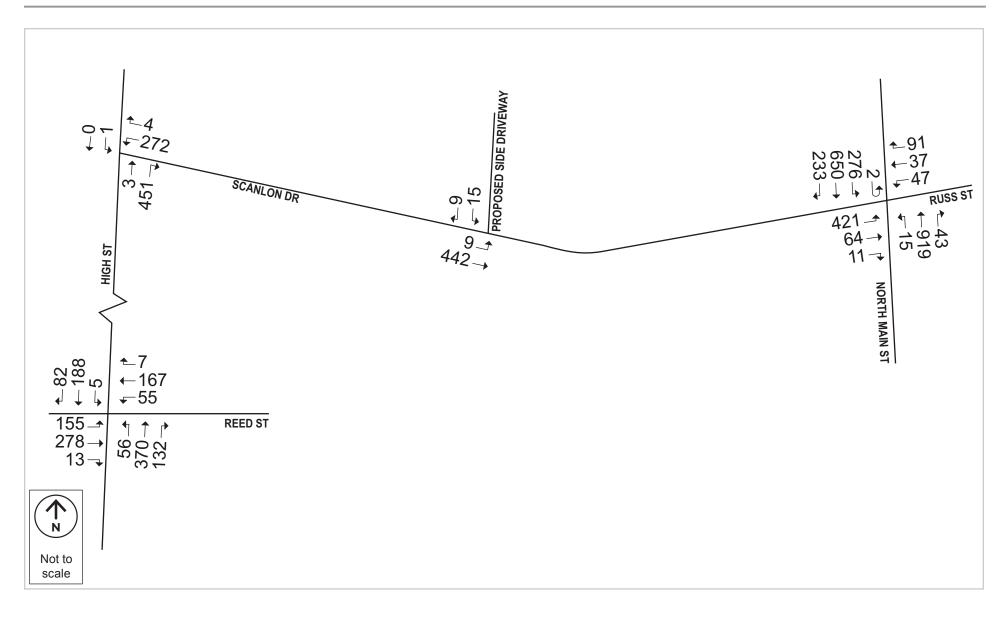
Manual Turning Movement Counts (TMCs) were recorded from 7:00 - 9:00 a.m. and 4:00 - 6:00 p.m. at the study area intersections and site driveway. The TMCs include vehicle, bicycle, and pedestrian counts. Counts were collected on Wednesday, September  $13^{\text{th}}$ , 2023, at the study area intersections. 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.

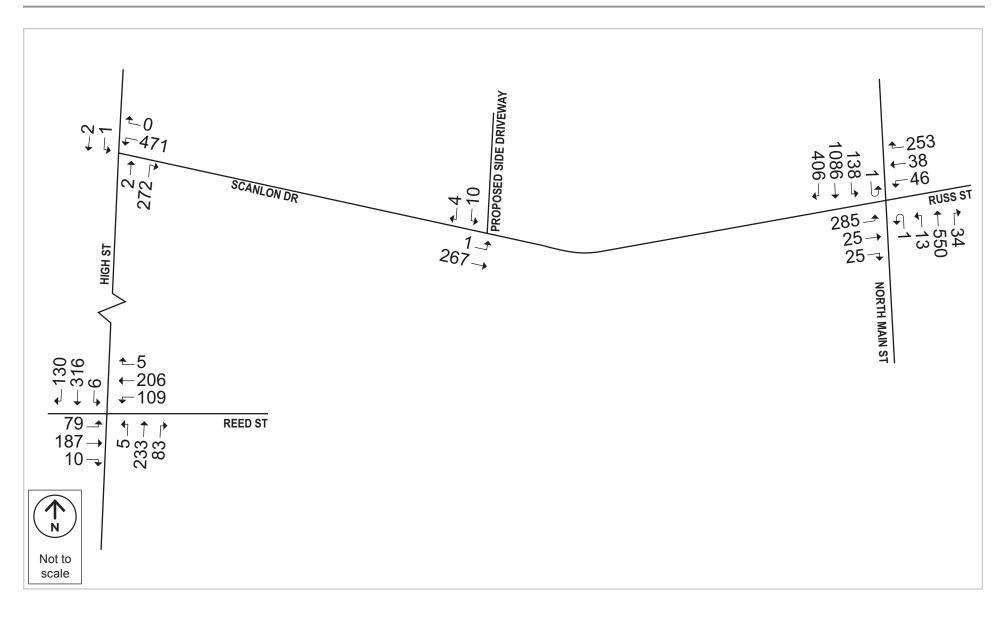














### **BICYCLE COUNT DATA**

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.

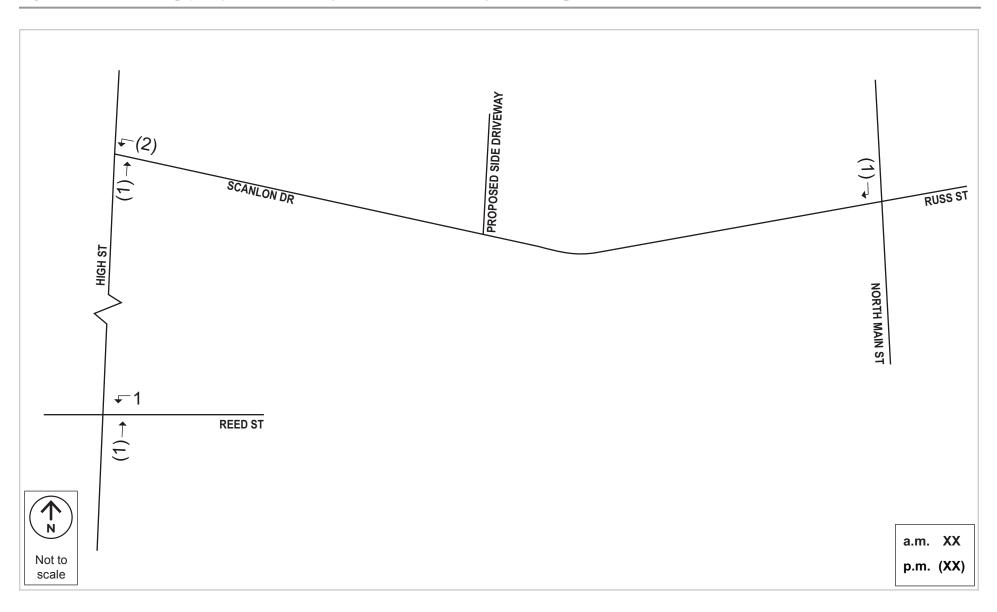
## **Off-street Parking**

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

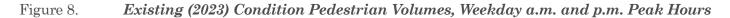
- Lantana 23 Scanlon Drive Lot (115 spaces);
- Lombardo's Front Lot (approximately 265 spaces); and
- Lombardo's Back Lot (approximately 234 spaces).

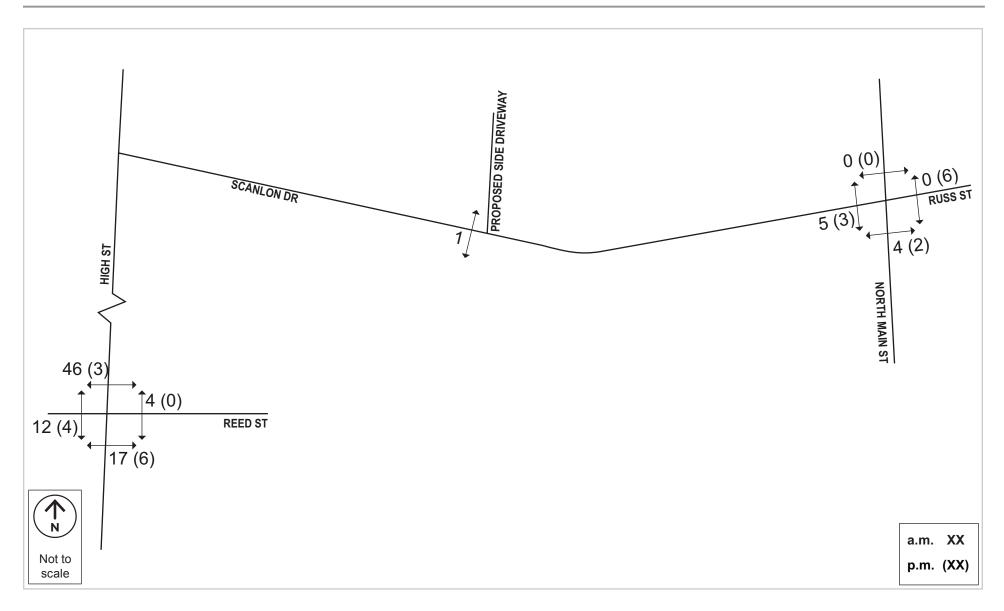


### Figure 7. Existing (2023) Condition Bicycle Volumes, Weekday a.m. and p.m. Peak Hours











## **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/ Reed St/ N Main 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**

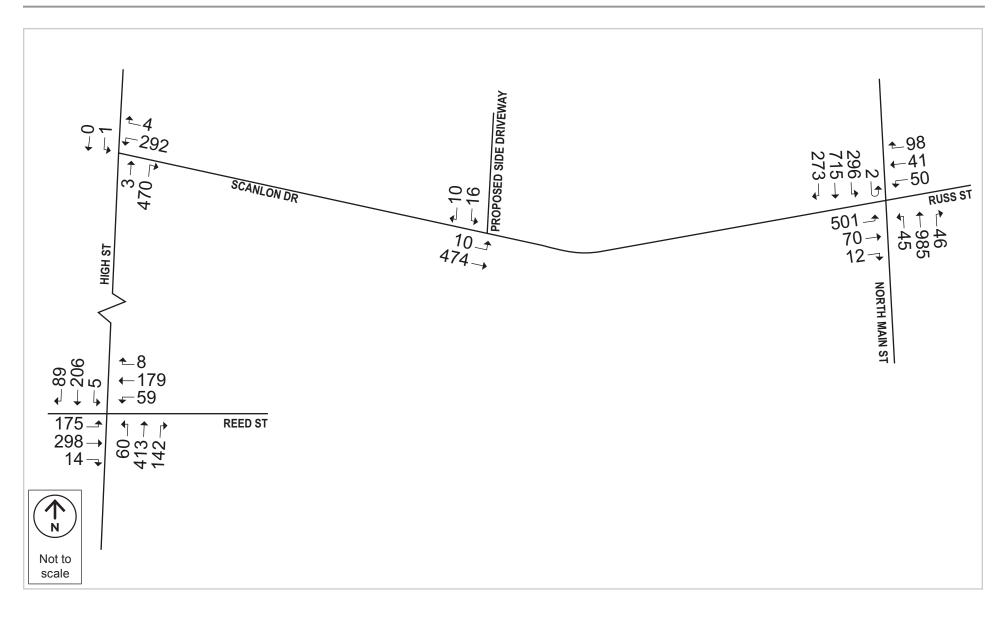
Within the study area, the following development projects were identified that could impact the traffic patterns throughout the study area:

- 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.

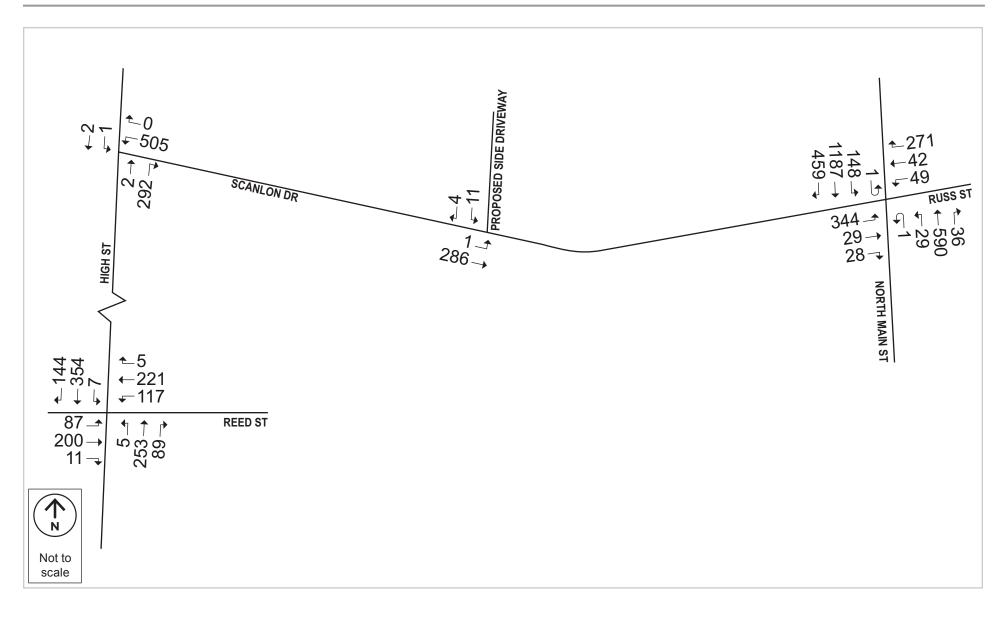














# **Build (2030) Condition**

## **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.

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

#### Table 4.Parking Requirements

### 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*, 11<sup>th</sup> Edition. No direct land use code is



TRAFFIC IMPACT STUDY Randolph North Redevelopment December 2023

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<sup>2</sup>. 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

<sup>2</sup> 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.** 

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

#### Table 5.Mode Share

\* 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).<sup>3</sup> **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

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

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



Time Deried	Direction	Person Trips		Vehicle Trips
Time Period	Direction	Transit	Walk/Bike	Vehicle
Weekday p.m.	<u>Out</u>	<u>18</u>	<u>5</u>	<u>187</u>
Peak Hour	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.

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

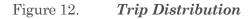
#### Table 7.Net New Vehicle Trips

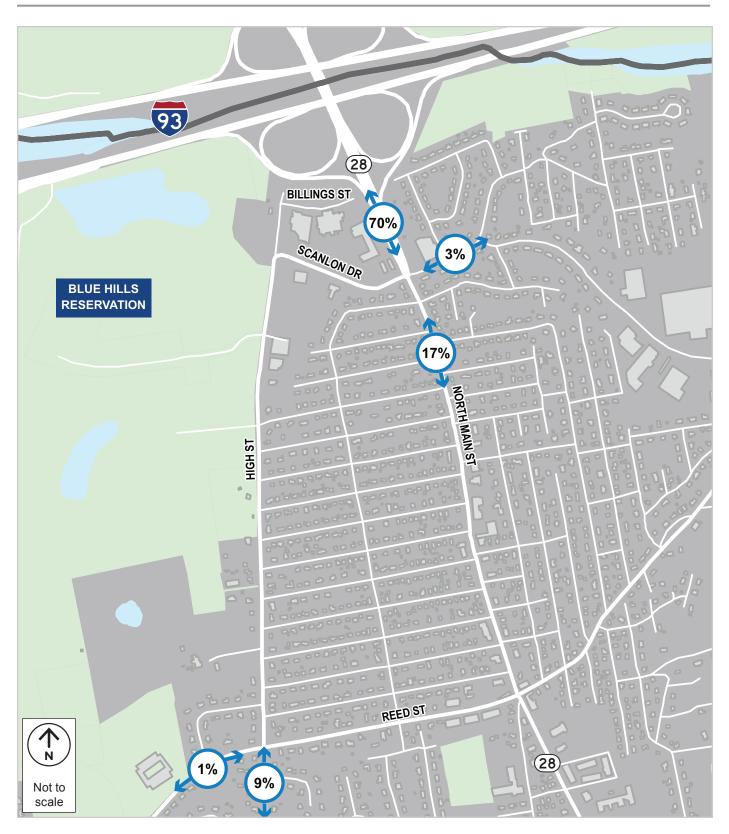


### **TRIP DISTRIBUTION**

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.

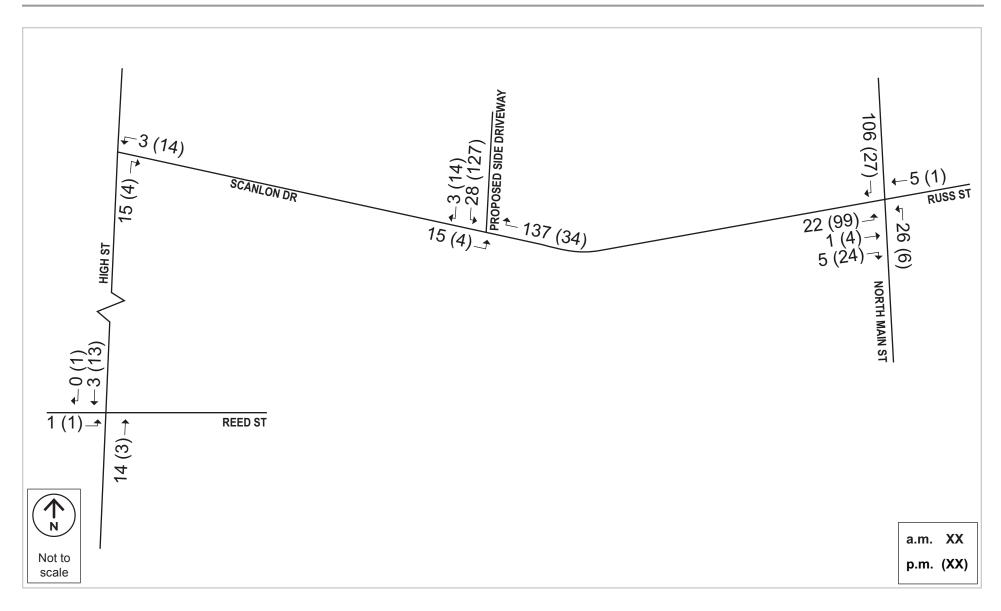












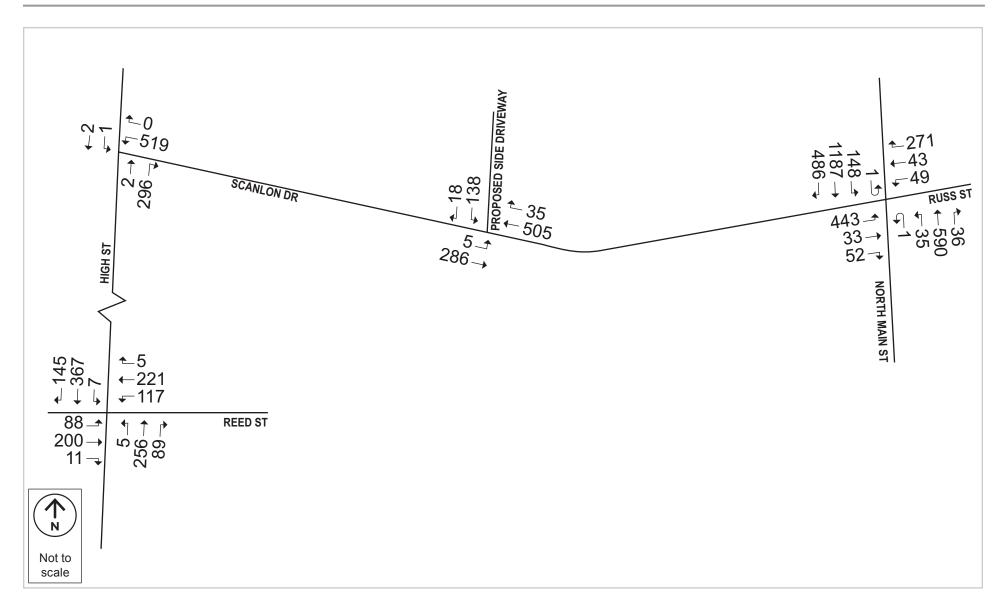














# **Transportation Impact Analysis**

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.

	Average Stopp	ed Delay (sec.)
Level of Service	Signalized Intersections	Unsignalized Intersections
A	0.0–10.0	0.0–10.0
В	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

### Table 8.Level of Service Criteria

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**.

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

		Existi	ng (2023)	Condition	า		No-bı	uild (2030	0) Conditio	on		Buil	d (2030)	Condition	
Intersection/Movement		Delay	V/C	Quei	ies (ft)		Delay	V/C	Quer	ues (ft)		Delay	V/C	Queu	es (ft)
	LOS	(s)	Ratio	50th %	95th %	LOS	(s)	Ratio	50th %	95th %	LOS	(s)	Ratio	50th %	95th %
				Signa	alized Inter	section	S								
Reed Street/High Street	С	31.9				С	29.4				С	32.0			
Reed Street Eastbound Left/Through/Right	С	24.3	0.81	146	#264	С	22.4	0.78	141	#294	С	22.7	0.79	142	#295
Reed Street Westbound Left/Through/Right	В	14.4	0.50	69	100	В	13.3	0.43	58	111	В	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	В	13.9	0.45	71	124	В	14.1	0.47	74	134	В	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	Е	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	Е	61.7	0.86	197	#345	E	67.4	0.90	227	#431	F	84.1	0.98	249	#475
Russ Street Westbound Left	Е	70.3	0.69	42	#91	E	61.5	0.61	37	#103	Е	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	В	18.3	0.06	5	14	В	17.8	0.16	14	31	В	18.4	0.29	25	48
N Main Street Northbound Through   Through/Right	С	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	В	16.8	0.46	130	230	В	19.9	0.54	198	256	В	20.0	0.54	198	256
N Main Street Southbound Right	Α	3.5	0.17	0	19	А	4.4	0.20	0	20	Α	4.7	0.30	0	24
				Unsig	nalized Inte	ersectio	ons								
ligh Street/Scanlon Drive															
Scanlon Drive Eastbound Through/Right	-	-	-	-	-	-	-	-	-	-	Α	8.9	0.02	-	0
Scanlon Drive Westbound Left/Right	С	16.8	0.70	-	150	В	13.3	0.60	-	103					
Scanlon Drive Westbound Left/Through	-	-	-	-	-	-	-	-	-	-	С	15.7	0.57	-	3.7
High Street Northbound Through/Right	В	14.0	0.50	-	70	В	13	0.47	-	63					
High Street Northbound Left/Right	-	-	-	-	-	-	-	-	-	-	С	16.1	0.68	-	5.3
High Street Southbound Left/Through	Α	8.9	0.01	-	0	Α	8.7	0.00	-	0					

 $\sim$  = 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.

TRAFFIC IMPACT STUDY Randolph North Redevelopment December 2023





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

		Existi	ng (2023)	) Conditior			No-bi	uild (203	0) Conditio	n		Βι	uild (2030	) Condition	
Intersection/Movement	LOS	Delay	V/C	Quei	ues (ft)	LOS	Delay	V/C	Queu	es (ft)	LOS	Delay	V/C	Que	ues (ft)
	LUS	(s)	Ratio	50th %	95th %	105	(s)	Ratio	50th %	95th %	105	(s)	Ratio	50th %	95th %
	_		-	Sig	nalized Inte	rsectio	ns		•				-	<del>.</del>	
Reed Street/High Street	В	14.5				В	16.2				В	16.8			
Reed Street Eastbound Left/Through/Right	В	11.9	0.44	55	106	В	12.4	0.48	58	112	В	12.	0.48	58	112
Reed Street Westbound Left/Through/Right	В	15.4	0.61	68	135	В	16.7	0.65	74	#156	В	16.7	0.65	74	#156
Reed Street Northbound Left/Through/Right	В	12.9	0.52	68	121	В	13.0	0.53	70	131	В	13.1	0.53	71	133
Reed Street Southbound Left/Through/Right	В	16.7	0.69	98	#194	С	20.3	0.78	117	#259	С	21.9	0.81	123	#272
North Main Street/Scanlon Drive/Russ Street	С	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	Е	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	Е	55.7	0.77	88	#241	E	65.2	0.84	111	#275
N Main Street Northbound U-Turn/Left	С	21.4	0.13	5	17	С	23.8	0.25	11	29	С	27.1	0.34	15	35
N Main Street Northbound Through   Through/Right	С	26.2	0.58	167	258	С	28.3	0.63	200	281	С	31.5	0.67	201	281
N Main Street Southbound U-Turn/Left	В	14.4	0.42	50	96	В	15.9	0.48	61	103	В	18.4	0.52	61	103
N Main Street Southbound Through   Through	С	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	Α	6.4	0.29	0	34	Α	7.3	0.33	0	36	А	7.8	0.36	0	37
				Unsi	gnalized Int	tersecti	ons								
High Street/Scanlon Drive															
Scanlon Drive Eastbound Through/Right	-	-	-	-	-	-	-	-	-	-	А	9.1	0.09	-	0.3
Scanlon Drive Westbound Left/Right	В	11	0.42	-	53	В	11.2	0.42	-	53					
Scanlon Drive Westbound Left/Through	-	-	-	-	-	-	-	-	-	-	D	26.5	0.81	-	8.6
High Street Northbound Through/Right	С	18.3	0.69	-	140	С	21.0	0.75	-	170					
High Street Northbound Left/Right	-	-	-	-	-	-	-	-	-	-	В	12.0	0.45	-	2.3
High Street Southbound Left/Through	Α	8.9	0.02	-	3	Α	8.9	0.01	-	0					

 $\sim$  = 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.

### **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.



127

		Unmi	tigated (a	a.m.)			Mitigat	ed (a.m.)		
Movement			V/C	Queu	es (ft)			V/C	Queu	es (ft)
	LOS	Delay (s)	Ratio	50th %	95th %	LOS	Delay (s)	Ratio	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	Е	71.2	0.93	260	#451
Russ Street Westbound Left	Е	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	В	18.4	0.29	25	48	В	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	В	20.0	0.54	198	256	С	21.6	0.55	210	271
N Main Street Southbound Right	А	4.7	0.30	0	24	А	5.1	0.30	0	25

### Table 11.Mitigation at North Main Street/Scanlon Drive



# **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.



Engineers + Planners



Traffic Count Data

RANDOLPH NORTH REDEVELOPMENT | TRAFFIC IMPACT STUDY

Client: Vannesa Methoxha, EIT Project #: 1329\_1\_HSH Location 1 BTD #: Randolph, MA Location: High Street Street 1: Street 2: Reed Street Count Date: 9/13/2023 Day of Week: Wednesday Weather: Mostly Cloudy, 70°F



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

						PASSEN	GER CAI	rs & Hea	VY VEHI	CLES CO	OMBINED	)				
		High	Street			High	Street			Reed	Street			Reed	Street	
		North	bound			South	bound			East	oound			West	bound	
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
			o				o				<u>.</u>				<u>.</u>	

		High	Street			High	Street			Reed	Street			Reed	Street	
		North	bound			South	bound			East	oound			West	bound	
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	]	High	Street			High	Street			Reed	Street			Reed	Street	
8:00 AM		North	bound			South	bound			Eastb	ound			West	bound	
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
		1 Left Thru Right 56 370 132			-	_							-			
9:00 AM	0	0 56 370 132 0.82				5	188	82	0	155	278	13	0	55	167	7
9:00 AM PHF	0			132	0	5	188 88	82	0		278 83	13	0	55 0.	-	7

PM PEAK HOUR		High ?	Street			High \$	Street			Reed	Street			Reed	Street	
4:30 PM		North	bound			South	bound			Eastb	bound			West	bound	
to	U-Turn	Turn Left Thru Right			U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
5:30 PM	0	5	233	83	0	6	316	130	0	79	187	10	0	109	206	5
PHF		0.	87			0.	93			0.	90			0.9	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 Location 1 BTD #: Randolph, MA Location: High Street Street 1: Street 2: Reed Street Count Date: 13/09/2023 Day of Week: Wednesday Weather: Mostly Cloudy, 70°F

## BOSTON TRAFFIC DATA PO BOX 1723, Framingham, MA 01701 Office: 978-746-1259

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

								HEAVY V	EHICLES	5						
		High	Street			High	Street			Reed	Street			Reed	Street	
		North	oound			South	bound			Eastb	ound			West	bound	
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 Northl				High South	Street bound				Street oound			Reed Westl		
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

ĺ	AM PEAK HOUR		High \$	Street			High \$	Street			Reed	Street			Reed	Street	
	8:00 AM		North	oound			South	bound			Eastb	ound			Westb	ound	
	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	17	3	0	0	13	1	0	2	4	0	0	6	5	0
	PHF		0.1	71			0.8	38			0.	50			0.9	92	

ľ	PM PEAK HOUR		High	Street			High	Street			Reed	Street			Reed	Street	
	4:00 PM		North	bound			South	bound			Eastb	ound			West	ound	
	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	3	0	0	0	13	0	0	0	4	0	0	4	5	0
	PHF		0.	38			0.	54			0.	50			0.1	75	

Client: Vannesa Methoxha, EIT Project #: 1329\_1\_HSH BTD #: Location 1 Randolph, MA Location: Street 1: High Street Street 2: Reed Street Count Date: 13/09/2023 Day of Week: Wednesday Mostly Cloudy, 70°F Weather:

## BOSTON TRAFFIC DATA PO BOX 1723, Framingham, MA 01701 Office: 978-746-1059

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

#### **PEDESTRIANS & BICYCLES**

								•••••••••••••••••••••••••••••••••••••••								
		High	Street			High	Street			Reed	Street			Reed	Street	
		North	bound			South	bound			East	oound			West	bound	
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			High	Street			Reed	Street			Reed	Street	
		North	bound			South	bound			Eastb	ound			West	oound	
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

A	M PEAK HOUR <sup>1</sup>		High	Street			High	Street			Reed	Street			Reed	Street	
	8:00 AM		North	bound			South	bound			Eastb	bound			West	bound	
	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
-																	
	1			-				-				-				-	

PM PEAK HOUR <sup>1</sup>		High	Street			High	Street			Reed	Street			Reed	Street	
4:30 PM		North	bound			South	bound			Eastb	oound			West	oound	
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

<sup>1</sup>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 Scanlon Drive Street 1: High Street Street 2: 9/13/2023 Count Date: Day of Week: Wednesday Mostly Cloudy, 70°F Weather:

# **BOSTON TRAFFIC DATA** PO BOX 1723, Framingham, MA 01701

PO BOX 17/23, Framingham, MA 017/01 Office: 978-746-1259 DataRequest@BostonTrafficData.com www.BostonTrafficData.com

#### PASSENGER CARS & HEAVY VEHICLES COMBINED

					•							-				
		High	Street			High	Street							Scanlo	n Drive	
		North	bound			South	bound			East	bound			West	bound	
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			High	Street							Scanlo	n Drive	
		North	bound			South	bound			East	bound			West	bound	
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		High \$	Street			High	Street							Scanlo	n Drive	
8:00 AM		North	bound			South	bound			Eastb	ound			West	bound	
to	U-Turn					Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
9:00 AM	0	O         O         3         438				-	0	0	0	0	0	0	•	270	0	4
9.00 AN	U	U	3	430	0		U	U	U	U	U	U	U	272	U	4
9.00 AM PHF	U	•	76	430	0	0.	25	U	U	0.	00	U	U	0.	85	4

1	PM PEAK HOUR		High \$	Street			High	Street							Scanlo	n Drive	
	4:15 PM		North	bound			South	bound			Eastb	bound			West	bound	
	to	U-Turn					Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	5:15 PM	0	0 0 2 262				1	2	0	0	0	0	0	0	484	0	0
	PHF		0.	80			0.	25			0.	00			0.	95	
	HV %	0.0%	0.80 % 0.0% 0.0% 2.3%				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 1329\_1\_HSH Project #: BTD #: Location 2 Randolph, MA Location: Street 1: Scanlon Drive Street 2: High Street 13/09/2023 Count Date: Day of Week: Wednesday Mostly Cloudy, 70°F Weather:

# **BOSTON** TRAFFIC DATA

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

#### HEAVY VEHICLES

High Street Northbound         High Street Southbound         High Street Southbound         Scanlon Drive 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         U-Turn         Left         Thru         No         0         0         0         0         0         1         0	
Northbound         Southbound         Eastbound         Westbound           Start Time         U-Turn         Left         Thru         Right         U-Turn         Left	
7:00 AM 0 0 0 5 0 0 0 0 0 0 0 0 0 0 1 0	u Right
	0
7:15 AM 0 0 0 2 0 0 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 0 0 1 0	0
7:45 AM 0 0 0 4 0 0 0 0 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 0 0 3 0	0
8:15 AM 0 0 0 3 0 0 0 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 0 0 3 0	0
8:45 AM 0 0 0 4 0 0 0 0 0 0 0 0 0 0 0 0 3 0	0

		High \$	Street			High	Street							Scanlo	n Drive	
		North	bound			South	bound			Eastb	ound			Westb	bound	
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			High S	Street							Scanlo	n Drive	
8:00 AM		North	bound			South	bound			Eastb	ound			Westb	bound	
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 0 0 16 0.67				0.0	00			0.0	00			0.7	70	

PM PEAK HOUR		High S	Street			High \$	Street							Scanlo	n Drive	
4:00 PM		North	bound			South	bound			Eastb	ound			West	oound	
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 0 0 3 0.38				0.	00			0.0	00			0.	61	

Client: Vannesa Methoxha, EIT Project #: 1329\_1\_HSH BTD #: Location 2 Randolph, MA Location: Street 1: Scanlon Drive High Street Street 2: 13/09/2023 Count Date: Day of Week: Wednesday Mostly Cloudy, 70°F Weather:

### BOSTON BOSTON TRAFFIC DATA PO BOX 1723, Framingham, MA 01701 Office: 978-746-1259 DataRequest@BostonTrafficData.com

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**PEDESTRIANS & BICYCLES** 

		High : North	Street bound				Street bound			East	ound				n Drive bound	
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			High	Street							Scanlo	n Drive	
		North	bound			South	bound			Eastb	bound			West	bound	
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 <sup>1</sup>		High	Street			High	Street							Scanlo	n Drive	
8:00 AM		North	bound			South	bound			Eastb	bound			West	bound	
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	0	0	0	0	0	0

PM PEAK HOUR <sup>1</sup>		High	Street			High	Street							Scanlo	n Drive	
4:15 PM		North	oound			South	bound			Eastb	ound			West	bound	
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	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0

<sup>1</sup>NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.

Client: Vannesa Methoxha, EIT 1329\_1\_HSH Project #: Location 3A BTD #: Randolph, MA Location: Scanlon Drive Street 1: Driveway #1 combine 2 driveways Street 2: Count Date: 9/13/2023 Day of Week: Wednesday Mostly Cloudy, 70°F Weather:

# BOSTON TRAFFIC DATA PO BOX 1723, Framingham, MA 01701

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

									AVY VEH			D				
					Drivev	vay #1 com		eways			n Drive				n Drive	
		North		1		South					pound				bound	
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
										- ·				- ·		
					Drivev	vay #1 com		eways			n Drive				n Drive	
0: · · <b>T</b>		North		D: 14		South		D: 1 /			bound	D: 14			bound	<b>D:</b> 14
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	115 127	0
5:00 PM 5:15 PM	0	0	0	0	0	0	0	0	0	0	82 74	0	0	0	127	0
5:30 PM	0	0	0	0	0	0	-	ů	•	0	57	0	0	-	113	•
5:45 PM	0	0	0	0	0	0	0	0	0	0	57	0	0	0	102	0
0.40 PIVI	0	0	0	0	0	0	0	0	0	0	50	0	0	0	124	0
AM PEAK HOUR	1				Drivev	vay #1 com	bine 2 driv	eways		Scanlo	n Drive			Scanlo	n Drive	
8:00 AM		North	bound		Billion	South		onayo			bound				bound	
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	Ő	0	0	0	Ő	1	1	437	Ő	1	0	276	Ŏ
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%
																<u>.</u>
PM PEAK HOUR					Drivev	vay #1 com	bine 2 driv	eways		Scanlo	n Drive			Scanlo	n Drive	
4:15 PM		North	bound			South	bound			East	pound				bound	
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		-	00	-		-	25				80				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 1329\_1\_HSH Project #: BTD #: Location 3A Randolph, MA Location: Street 1: Scanlon Drive Street 2: Driveway #1 combine 2 driveways 13/09/2023 Count Date: Day of Week: Wednesday Mostly Cloudy, 70°F Weather:

PHF

0.00

# **BOSTON** TRAFFIC DATA

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

#### HEAVY VEHICLES

								ILAVIV	LINCLLS	•						
					Drivew	/ay #1 com	bine 2 driv	eways		Scanlo	n Drive			Scanlo	n Drive	
		North	bound			South	bound			Eastb	ound			West	bound	
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

		North	ound		Drivew	ay #1 com/ South		eways			n Drive oound			Scanlo Westt		
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	Ő	0	0	0	0	0	0	0	Ő	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					Drivew	ay #1 com	bine 2 driv	eways		Scanlo	n Drive			Scanlo	n Drive	
8:00 AM		North	oound			South	bound			Eastb	ound			West	bound	
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			0.1	70	
PM PEAK HOUR					Drivew	ay #1 com	bine 2 driv	eways		Scanlo	n Drive			Scanlo	n Drive	
4:00 PM		North	oound			South	bound			Eastb	ound			West	ound	
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

0.38

0.00

0.57

Client: Vannesa Methoxha, EIT Project #: 1329\_1\_HSH BTD #: Location 3A Randolph, MA Location: Street 1: Scanlon Drive Driveway #1 combine 2 driveways Street 2: Count Date: 13/09/2023 Day of Week: Wednesday Mostly Cloudy, 70°F Weather:

#### **PEDESTRIANS & BICYCLES**

										0220						
					Drivev	vay #1 com	nbine 2 driv	reways		Scanlo	n Drive			Scanlo	on Drive	
		North	bound			South	bound			East	bound			West	bound	
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

					Drivev	vay #1 com	nbine 2 driv	eways		Scanlo	n Drive			Scanlo	n Drive	
		North	bound			South	bound			Eastb	bound			West	oound	
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 <sup>1</sup>					Drivev	vay #1 com	bine 2 driv	eways		Scanlo	n Drive			Scanlo	n Drive	
8:00 AM		North	bound			South	bound			Eastb	bound			West	bound	
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	1

Р	M PEAK HOUR <sup>1</sup>					Drivev	vay #1 com	nbine 2 driv	eways		Scanlo	n Drive			Scanlo	on Drive	
	4:15 PM		North	bound			South	bound			Eastb	bound			West	bound	
	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	0	0	0	0	0	0	2	0	0

<sup>1</sup>NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.

BOSTON

**TRAFFIC DATA** 

PO BOX 1723, Framingham, MA 01701 Office: 978-746-1259

DataRequest@BostonTrafficData.com

www.BostonTrafficData.com

Client: Vannesa Methoxha, EIT 1329\_1\_HSH Project #: BTD #: Location 3B Location: Randolph, MA Scanlon Drive Street 1: Driveway #1 combine 2 driveways Street 2: 9/13/2023 Count Date: Day of Week: Wednesday Weather: Mostly Cloudy, 70°F

# **BOSTON TRAFFIC DATA** PO BOX 1723, Framingham, MA 01701

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

					=				AVY VEH			D				
					Drivev	vay #1 com		/eways			on Drive				on Drive	
			bound				bound				ound				bound	
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
										- ·						
					Drivev	vay #1 com		veways			on Drive				on Drive	
			bound				bound				bound				bound	
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
	1															
AM PEAK HOUR					Drive	vay #1 com		veways			on Drive				on Drive	
8:00 AM			bound				bound				bound				bound	
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			00	•			00				76	•		-	.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	1				Driven		hina O driv			Coople	n Drive			Coordo	on Drive	
4:15 PM	Driveway #1 combine 2 drive     Northbound     Southbound										on Drive				bound	
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
to 5:15 PM	0-1um 0	0	0 Thiu	Right 0	0-1um 0	0	0	Right 0	0-1um 0	0	263	Right 0	0-1um 0	0	485	Rigni 0
<u>5:15 PM</u> PHF	U	•	00	U	U	•	00	U	U	-	263 80	U	U	•	485 .95	U
	0.00/	-		0.00/	0.00/	-		0.00/	0.00/	-		0.00/	0.00/	-		0.00/
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 1329\_1\_HSH Project #: BTD #: Location 3B Randolph, MA Location: Street 1: Scanlon Drive Street 2: Driveway #1 combine 2 driveways 13/09/2023 Count Date: Day of Week: Wednesday Mostly Cloudy, 70°F Weather:

PHF

0.00

# **BOSTON** TRAFFIC DATA

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

#### HEAVY VEHICLES

									LINCLLG	,						
					Drivew	/ay #1 com	bine 2 driv	eways		Scanlo	n Drive			Scanlo	n Drive	
		North	bound			South	bound			Eastb	ound			Westb	ound	
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

		North	haund		Drivew		bine 2 driv bound	eways		Scanlo Eastb				Scanlo Westł	n Drive	
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	l				Drivew	/ay #1 com	bine 2 driv	eways		Scanlor	n Drive			Scanlo	n Drive	
8:00 AM	1	North	bound			South	bound			Eastb	ound			Westb	bound	
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	1	0.	00			0.	00			0.6	67			0.7	70	
PM PEAK HOUR	ł				Drivow	/ay #1 com	hine 2 driv			Coopley	- Duiter			0	- Duit -	
					DIIVEW	ay #1 0011		eways		Scanlor	1 Drive			Scanlo	n Drive	
5:00 PM	ļ	North	bound		DINCW	Southl		eways		Eastb				Scanio Westb		
5:00 PM to	U-Turn	Northl Left	oound Thru	Right	U-Turn			Right	U-Turn			Right	U-Turn			Right

0.58

0.00

0.81

Client: Vannesa Methoxha, EIT Project #: 1329\_1\_HSH BTD #: Location 3B Randolph, MA Location: Street 1: Scanlon Drive Driveway #1 combine 2 driveways Street 2: 13/09/2023 Count Date: Day of Week: Wednesday Mostly Cloudy, 70°F Weather:

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

**PEDESTRIANS & BICYCLES** 

					Drivo	vav #1 com	bine 2 driv			Scanlo	n Drive			Scanlo	n Drive	
		North	bound		Diver		nbine 2 driv bound	eways			bound				bound	
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

					Drivev	vay #1 com	nbine 2 driv	eways		Scanlo	n Drive			Scanlo	n Drive	
		North	bound			South	bound			East	ound			West	bound	
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

Α	M PEAK HOUR <sup>1</sup>					Drivev	vay #1 com	bine 2 driv	eways		Scanlo	n Drive			Scanlo	n Drive	
	8:00 AM		North	bound			South	bound			Eastb	ound			West	bound	
	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 <sup>1</sup>					Drivev	vay #1 com	bine 2 driv	eways		Scanlo	n Drive			Scanlo	n Drive	
4:15 PM		North	bound			South	bound			East	bound			West	bound	
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	0	0	0	0	0	0	2	0	0

<sup>1</sup>NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.

Client: Vannesa Methoxha, EIT 1329\_1\_HSH Project #: BTD #: Location 4 Location: Randolph, MA Scanlon Drive Street 1: Driveway #2 combine 2 driveways Street 2: Count Date: 9/13/2023 Day of Week: Wednesday Mostly Cloudy, 70°F Weather:

# BOSTON **TRAFFIC DATA** PO BOX 1723, Framingham, MA 01701

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

									AVY VEH			D				
					Drivew	,	nbine 2 driv	eways			n Drive				on Drive	
			bound				bound			East	bound				bound	
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
										- ·				- ·		
					Drivew		bine 2 driv	eways			n Drive				n Drive	
			bound				bound				bound				bound	
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	1				Di					0				0	D.	
		N a utila	bound		Drivew		nbine 2 driv bound	eways			n Drive oound			West	on Drive	
8:00 AM	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Diaht	U-Turn	Left	Thru	Diaht
to 9:00 AM	0-1011	0	0	<b>0</b>	0-1011	15	0	9	0-1011	<u>9</u>	437	Right 0	0-1011	0	275	Right 3
9:00 AM PHF	U	•	00	U	U	-	67	9	U	-	437 77	U	U	•	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%
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%	<b>J.1%</b>	0.0%
PM PEAK HOUR	1				Drivov	12V #2 com	nbine 2 driv	01/21/6		Scanlo	n Drive			Scanlo	n Drive	
4:15 PM		North	bound		Divew		bound	eways			bound			West		
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	Ő	0	6	0	5	0	2	259	Ő	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%

#### 9/16/2023, 3:54 PM, 1329\_TMC\_4

Client: Vannesa Methoxha, EIT 1329\_1\_HSH Project #: BTD #: Location 4 Randolph, MA Location: Street 1: Scanlon Drive Street 2: Driveway #2 combine 2 driveways 13/09/2023 Count Date: Day of Week: Wednesday Mostly Cloudy, 70°F Weather:

# **BOSTON** TRAFFIC DATA

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

#### HEAVY VEHICLES

								ILAVIV	LINCLES	)						
					Drivew	/ay #2 com	bine 2 driv	eways		Scanlo	n Drive			Scanlo	n Drive	
		North	bound			South	bound			Eastb	ound			West	bound	
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

		North	bound		Drivew	ay #2 com/ South		eways			n Drive oound			Scanlo Westl	n Drive bound	
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					Drivew		bine 2 drive	eways		Scanlo				Scanlo		
8:00 AM		North	ouna			South	bound			Eastb	ouna			West	ouna	
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			0.1	71			0.7	70	
PM PEAK HOUR					Drivew	ay #2 com	bine 2 drive	eways		Scanlo	n Drive			Scanlo	n Drive	
5:00 PM		North	bound			South	bound			Eastb	ound			Westb	bound	
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			0.8	88	

Client: Vannesa Methoxha, EIT Project #: 1329\_1\_HSH BTD #: Location 4 Randolph, MA Location: Street 1: Scanlon Drive Driveway #2 combine 2 driveways Street 2: Count Date: 13/09/2023 Day of Week: Wednesday Mostly Cloudy, 70°F Weather:

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

**PEDESTRIANS & BICYCLES** 

		North	bound		Drive		nbine 2 driv Ibound	reways			n Drive oound				on Drive bound	
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

					Drivev	vay #2 com	nbine 2 driv	eways		Scanlo	n Drive			Scanlo	n Drive	
		North	bound			South	bound			East	bound			West	bound	
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

Al	M PEAK HOUR <sup>1</sup>					Drivev	vay #2 com	bine 2 driv	eways		Scanlo	n Drive			Scanlo	n Drive	
	8:00 AM		North	bound			South	bound			Eastb	ound			West	bound	
	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 <sup>1</sup>					Drivev	vay #2 com	bine 2 driv	eways		Scanlo	n Drive			Scanlo	n Drive	
4:15 PM		North	bound			South	bound			East	bound			West	bound	
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

<sup>1</sup>NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.

Client: Vannesa Methoxha, EIT 1329\_1\_HSH Project #: BTD #: Location 5 Location: Randolph, MA Scanlon Drive Street 1: Driveway #3 Street 2: 9/13/2023 Count Date: Day of Week: Wednesday Mostly Cloudy, 70°F Weather:

# **BOSTON TRAFFIC DATA** PO BOX 1723, Framingham, MA 01701

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					P	ASSEN	GER CAF	RS & HEA	AVY VEH	ICLES C	OMBINE	D				
						Drivev	vay #3			Scanlo	n Drive			Scanlo	on Drive	
		North	bound			South	bound			Eastb	ound			West	bound	
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
		North	bound				vay #3 bound			Scanlo Eastt	n Drive oound				on Drive bound	
Start Time	11 Turn	Loft	Thru	Dight	11 Turn	Loft	Thru	Diaht	11 Turn	Loft	Thru	Diabt	11 Turn	Loft	Thru	Diah

		North	bound			South	bound			Eastb	bound			West	bound	
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						Drivev	vay #3			Scanlo	n Drive			Scanlo	n Drive	
	8:00 AM		North	bound			South	bound			Eastb	ound			West	bound	
	to	U-Turn					Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	9:00 AM	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%	0.00 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	]					Drivev	vay #3			Scanlo	n Drive			Scanlo	n Drive	
4:30 PM		North	bound			South	bound			Eastb	ound			West	bound	
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	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 1329\_1\_HSH Project #: BTD #: Location 5 Randolph, MA Location: Street 1: Scanlon Drive Street 2: Driveway #3 13/09/2023 Count Date: Day of Week: Wednesday Mostly Cloudy, 70°F Weather:

# **BOSTON** TRAFFIC DATA

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#### HEAVY VEHICLES

									LINOLLO	,						
						Drivev	vay #3			Scanlo	n Drive			Scanlo	n Drive	
		North	bound			South	bound			Eastb	ound			West	bound	
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

						Drivev	vay #3			Scanlo	n Drive			Scanlo	n Drive	
		Northb	bound			South	bound			Eastb	ound			West	bound	
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						Drivev	vay #3			Scanlo	n Drive			Scanlo	n Drive	
8:00 AM		North	bound			South	bound			Eastb	ound			West	bound	
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	3	0	0	0	0	17	0	0	0	14	2
PHF		0.	00			0.	38			0.	71			0.	57	

1	PM PEAK HOUR						Drivew	vay #3			Scanlo	n Drive			Scanlo	n Drive	
	5:00 PM		North	bound			South	bound			Eastb	ound			Westb	bound	
	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	9	0	0	0	15	1
	PHF		0.	00			0.0	00			0.	75			0.8	80	

Client: Vannesa Methoxha, EIT Project #: 1329\_1\_HSH BTD #: Location 5 Randolph, MA Location: 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** 

								•••••••••••••••••••••••••••••••••••••••		0110						
						Drive	way #3			Scanlo	n Drive			Scanlo	n Drive	
		North	bound			South	bound			Eastb	bound			West	bound	
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

						Drive	way #3			Scanlo	n Drive			Scanlo	n Drive	
		North	bound			South	bound			East	bound			West	bound	
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 <sup>1</sup>						Drivev	vay #3			Scanlo	n Drive			Scanlo	n Drive	
8:00 AM		North	bound			South	bound			Eastb	ound			West	bound	
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 <sup>1</sup>						Drive	vay #3			Scanlo	n Drive			Scanlo	n Drive	
4:30 PM		North	bound			South	bound			East	ound			West	bound	
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

<sup>1</sup> NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.

Client: Vannesa Methoxha, EIT 1329\_1\_HSH Project #: BTD #: Location 6 Location: Randolph, MA Scanlon Drive Street 1: Driveway #4 (Shell Gas Station) Street 2: Count Date: 9/13/2023 Day of Week: Wednesday Mostly Cloudy, 70°F Weather:

# **BOSTON TRAFFIC DATA** PO BOX 1723, Framingham, MA 01701

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					-				VY VEH			D				
					Drive		nell Gas Sta	ation)		Scanlo				Scanlo		
		North		1		South					pound		•	West		
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
					<b>D</b> :	"				<b>.</b> .	<b>D</b> :			<u> </u>	<b>D</b> :	
		N La setta	han an a		Drive		nell Gas Sta	ation)		Scanlo				Scanlo		
Chart Times	11.7	North		Dialet	LI Turra	South		Dialet	11		bound	District	11 7	West		Dist
Start Time 4:00 PM	U-Turn	Left	Thru	Right	U-Turn	Left 12	Thru	Right	U-Turn	Left	Thru 56	Right	U-Turn 0	Left 0	Thru 124	Right
	0	0	0	0	0		0	4	0	1		0	0	-		3
4:15 PM 4:30 PM	0	0	0	0	0	12 11	0	2	0	2	68 49	0		0	121 110	6
4:30 PM 4:45 PM	0	0	0	0	0	11	0	12	0	3	49 67	0	0	0	103	5
4.45 PM 5:00 PM	0	0	0	0	0	13	0	12	0	2	82	0	0	0	103	5 6
5:15 PM	0	0	0	0	0	12	0	6	0	3	85	0	0	0	112	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	10	0	4	0	3	58	0	0	0	112	5
5.45 T W	U	0	U	0	0	12	0	1	U	5	50	0	0	0	112	5
AM PEAK HOUR	1				Drive	wav #4 (Sł	nell Gas Sta	ation)		Scanlo	n Drive			Scanlo	n Drive	
8:00 AM		North	bound			South		,		East	bound			West	ound	
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	Ŏ	0	53	0	27	0	22	443	Ŏ	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					Drive	way #4 (Sł	nell Gas Sta	ation)		Scanlo	n Drive			Scanlo	n Drive	
4:30 PM		North				South					bound			West		·
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		-	00				88			-	83			0.		
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) 13/09/2023 Count Date: Dav of Week: Wednesday Mostly Cloudy, 70°F Weather:

# **BOSTON** TRAFFIC DATA

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

#### HEAVY VEHICLES Driveway #4 (Shell Gas Station) Scanlon Drive Scanlon Drive Southbound Westbound Northbound Eastbound Start Time U-Turn U-Turn Left Thru U-Turn Thru U-Turn Left Right Left Thru Right Right Left Right Thru 7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM 8:45 AM Driveway #4 (Shell Gas Station) Scanlon Drive Scanlon Drive Southbound Westbound Northbound Eastbound 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 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM Driveway #4 (Shell Gas Station) AM PEAK HOUR Scanlon Drive Scanlon Drive 8:00 AM Northbound Southbound Eastbound Westbound Right Right U-Turn Left Thru U-Turn Left Thru Right U-Turn Left Thru U-Turn Left Thru Right to 9:00 AM PHF 0.00 0.25 0.71 0.57 - . . \_ **.**.... \_ . - . -

PM PEAK HOUR					Drive	way #4 (Sr	nell Gas Sta	ation)		Scanlo	n Drive			Scanlor	n Drive	
5:00 PM		North	bound			South	bound			Eastb	ound			Westb	ound	
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	9	0	0	0	15	0
PHF		0.	00			0.	50			0.1	75			0.9	94	

Client: Vannesa Methoxha, EIT Project #: 1329\_1\_HSH BTD #: Location 6 Randolph, MA Location: Street 1: Scanlon Drive Driveway #4 (Shell Gas Station) Street 2: 13/09/2023 Count Date: Day of Week: Wednesday Mostly Cloudy, 70°F Weather:

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

**PEDESTRIANS & BICYCLES** 

								• • • • • • • • •								
					Drive	way #4 (Sl	nell Gas St	ation)		Scanlo	n Drive			Scanlo	n Drive	
		North	bound				bound			East	bound			West	bound	
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

		North	bound		Drive	way #4 (Sł South	nell Gas St bound	ation)			n Drive oound				n Drive bound	
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 <sup>1</sup>					Drive	way #4 (Sh	nell Gas Sta	ation)		Scanlo	n Drive			Scanlo	n Drive	
8:00 AM		North	bound			South	bound			Eastb	ound			West	bound	
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 <sup>1</sup>					Drive	way #4 (Sł	nell Gas Sta	ation)		Scanlo	n Drive			Scanlo	n Drive	
4:30 PM		North	bound			South	bound			Eastb	ound			West	oound	
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

<sup>1</sup>NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.

Vannesa Methoxha, EIT Client: 1329\_1\_HSH Project #: 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 Mostly Cloudy, 70°F Weather:

5:15 PM

PHF

HV %

0.0%

0.0%

3.3%

0.0%

0.0%

0.0%

4.3%

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					-							-				
					F			(S & HE/	AVY VEH			ט		_		
			ain Street				ain Street				on Drive				Street	
		North	bound	-			bound	-			pound		_	West	bound	
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 Ma	ain Street			North Ma	ain Street			Scanlo	on Drive			Russ	Street	
		North	bound			South	bound			East	oound			West	bound	
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		North Ma	ain Street			North Ma	ain Street			Scanlo	n Drive			Russ	Street	
8:00 AM		North	bound			South	bound			East	oound			West	bound	
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	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%
									ļ							JJ
PM PEAK HOUR		North Ma	n Main Street North Main Street							Scanlo	n Drive			Russ	Street	
4:15 PM		North	bound	Southbound						East	oound			West	bound	
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right

10 575 34 141 1080 406 0 272 24 19 0 43 46 278 1 1 0.87 0.93 0.87 0.89

0.0%

3.7%

0.0%

0.0%

0.0%

2.3%

3.7%

0.0%

1.1%

Client: Vannesa Methoxha, EIT 1329\_1\_HSH Project #: BTD #: Location 7 Randolph, MA Location: North Main Street Street 1: Street 2: Scanlon Drive & Russ Street Count Date: 13/09/2023 Wednesday Day of Week: Mostly Cloudy, 70°F Weather:

PHF

0.79

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#### HEAVY VEHICLES

									LINCLLS	•						
		North Ma	ain Street			North Ma	in Street			Scanlo	n Drive			Russ	Street	
		North	bound			South	bound			Eastb	ound			West	bound	
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 Ma North					ain Street bound			Scanlo Eastb	n Drive oound		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			ain Street			North Ma				Scanlo			Russ Street				
8:00 AM		North	bound			South	bound			Eastb	ound		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	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		North Ma	ain Street			North Ma	in Street			Scanlo	n Drive		Russ Street				
4:15 PM		North	bound			South	bound		Eastbound				Westbound				
			These	Diadat	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
to	U-Turn	Left	Thru	Right	0-Tum	Leit	mu	Кіўні	0-Tulli	Leit	mu	Right	0-Tulli	Len	Thru	Right	

0.63

0.85

0.50

Client: Vannesa Methoxha, EIT Project #: 1329\_1\_HSH BTD #: Location 7 Randolph, MA Location: Street 1: North Main Street Scanlon Drive & Russ Street Street 2: Count Date: 13/09/2023 Day of Week: Wednesday Weather: Mostly Cloudy, 70°F

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**PEDESTRIANS & BICYCLES** 

		North Ma	ain Street		North Main Street					Scanlo	n Drive		Russ Street					
		North	bound		Southbound					Easth	bound			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		

			ain Street bound				ain Street bound				n Drive bound		Russ Street Westbound				
Start Time	Left	Thru	Right	PED	Left Thru Right PED				L off		1	PED	Left				
Start Time	Leit	Thiu	Right	PED	Leit	Thru	Right	PED	Left	Thru	Right	FED	Leit	Thiu	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 <sup>1</sup>		North Ma	in Street			North Ma	in Street			Scanlo	n Drive		Russ Street				
8:00 AM		North	bound			South	bound			Eastb	ound		Westbound				
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	
9:00 AM	0	0	0	4	0	0	0	0	0	0	0	5	0	0	0	0	

PM PEAK HOUR <sup>1</sup>		North Ma	ain Street			North Ma	ain Street			Scanlo	n Drive		Russ Street				
4:15 PM		North	bound			South	bound			Eastb	bound		Westbound				
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	
5:15 PM	0	0	0	3	0	0	1	0	0	0	0	3	0	0	0	4	

<sup>1</sup>NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.



Engineers + Planners

## **Appendix B**

MassDOT Seasonal Factors

RANDOLPH NORTH REDEVELOPMENT | TRAFFIC IMPACT STUDY

### Massachusetts Highway Department Statewide Traffic Data Collection 2019 Weekday Seasonal Factors

Factor Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	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

1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1113,1 114,1116,2196,2197 and 2198.



Engineers + Planners

## Appendix C

Crash Data and Worksheets

RANDOLPH NORTH REDEVELOPMENT | TRAFFIC IMPACT STUDY

City Texas Name	Grant Date: Crash Severity				Maxinjury Security Reported	Namber of Orbitalies	First Revealed Serve		LightConditions	Manner of Collision	Manufact Division Read Surface Condition	Intel Patellities	Tabel Rev Fabel Injuries	Traffic Caninal Device Type		Vehicle Jolians Prior to Couch (All Vehicles)	Weather Candilians	Restary
AMOCUM	06/06/0016 Property damage only (none in) areal	Cineral	933 PM	2016	An injury		2 Califyian with mater which in traffic			Edenation same direction	6 Dry			Datte central signal	Terrary divided positive median larvier	VS-Tarning left/VD-Tarning left	Cear	SCANGON DRIVE/NORTH MAIN STREET
AMOCUM	03/08/00265 Non-fatel injury	Claned	12-30 PM	2016	Non-fatal injury : Peoulitie		2 Califator with mater which in traffic			faur eni	6 Dry	-		Traffic central signal		VL Ensuing an shapped in InaBle / V2 Statelling shaight about	Ciew	SCINGON DRIVE/NORTH MAIN STREET
AMDOLPH AMDOLPH	03/06/0016 Assettated injury 03/03/0016 Assettated injury	Cinel	600 M	2016	New fatal injury - Peoulitie New fatal injury - Peoulitie		2 Callsian with maker which in buffs 2 Callsian with maker which in buffs	in the	Ewolight Exem	Amer end Andre	6 Dry 6 Dry			Datte cantrol signal Datte cantrol signal	Tax way, divided, positive median harrier	VS: Torontling straight about / V2: Simolog or stopped in India VS: Simolog or stopped in India / V2: Torontling straight about	Cear Cear	SCINGN DEVENORTH MAR CRIET SCINGN DEVENORTH MAR CRIET
and come		Canad	8.40.834	2016	Relation .		1. Calls insuch mater advide in halls			Englandidamak	6 87			No contrada	University of the second secon	Vi-Deniry or strength is inglis	Ger	SCHOOL DEVELOCIES MADE STREET
AMOCON	04/04/0225 Ann falid injury	Claned	11-00 MM	3016	Non-Satal Injury - Prevailing		2 Califolian with mater which in traffic		Englight	legie	6 linear			Traffic central signal	Terrary divided positive median larvier	VS: Travelling straight about / VD: Travelling viraight about		SCANGON DRIVE/NORTH MAIN STREET
AMOCUM		Cineral	838.00	2016	An injury		2 Califalowwith mater which in traffic			faur eni	6 Dry			Datte entral signal		VL: Eleasing or shopped in bullis / V2: Travelling should be	Clearly	SCANGON DRIVE/NORTH MARK STREET
AMDCLPH AMDCLPH	04/08/0016 Property damage and y (name injurnel) 04/05/00166 Property damage and y (name injurnel)	Cinel	153.M	2016	An injury An injury		2 Califatan with maker which in buffs 2 Califatan with earlied maker orbidin	Yes	Early-Tighted readwary Earlight	Jogie Schwalen same direction	6 Dry 5 Dry			Dalla carini signal Na carinda	Tearway, divided, positive median barrier Uninean	VS. Tweetingstraight about / VD. Making 2 twee VS. Parked / VD. Travelling visuality about	Cear Cear	SCANON DRIVE/NORTH MAIN STREET SCANON DRIVE/NORTH MAIN STREET
AURCORN.	05/06/0014 Property damage and y insert injured	Caned	B14 AM	2016	An injury		2 Collision with mater athlet in haffs		Design	Sarral	6 Bry			Ne controls		Vic Transfer, Vic Habiting Vice get alless Vic Transferences in the straight abread / Vic Transferences in the straight abread	Car	SCALOR DEVELOCITY MAIN CHIEF
NINDCOPH	05/00/0014 Property same processing	Cined	648.754	2016	Uningery Uningers		2 Callsian with mater athold in haffs		Exclusion	Sindrunhide such	6 87			No controls	Tax way, and divided	Vs. Tearting traget attent, var natering traget attent	Car	SCARON DEVENORTH MAIN CRIET
AMOCOPH	06/04/0016 Property damage only (name injurnel)	Classed	2.32 AM	2016	An injury		2 Califolian with mater which in traffic	Yes	Englight	Angle	6 Dry			No controls	Two way, not divided	VI: Turning right / VI: Travelling straight ahead	Cinar	SCINGON DRIVE/NORTH MAIN STREET
AMOCON		Claused	10-07 PM	2016			2 Califician with mater which in traffic	Yes		faur eni				bis controls				SCANGON DRIVE/NORTH MARK STREET
AMDCLPH AMDCLPH	10/01/0016 Property damage and y (name injurnel)	Cinel	3.50 PM	2016	An injury		2 Callsian with maker which in buffs 2 Callsian with maker which in buffs	Yes	Employee	Education control restore	5 Mar			No controls No controls	Tearway, not divided	VL: Turning right / V2: Travelling sinsight ahead	Rain Cear	SCINGN DEVENORTH MAR CRIET SCINGN DEVENORTH MAR CRIET
AMECUPA MINDOLPA	11,08,0215 Property damage and y (name injured) 01,05,0216 Association (injure)	Cined	230PM	2016	An injury Ann fatal injury : Pavaille		2 Collision with mater whide in traffic 2 Collision with other	in the	Early lighted readway Earlight	Education same direction.	6 Dry 6 Dry			<ul> <li>No controls</li> <li>Traffic control sized</li> </ul>	Tax way, divided, positive median harrier	VS: Travelling straight about / V2: Entering traffic lane VS: Eleming or stopped in institu / V2: Travelling straight about	Citer	SCINGN DRIVE/NORTH MAIN STREET
MADOLPH	13.01.0016 Ann feld inlary	Claned	621 <i>M</i>	2016	Ann fatal injury : Image listing		1 Callsian with mater which in haffs	1m	Even.	for mi	6 104			Datte entrel sized			Tein .	SCANON DRIVE NORTH MAIN STREET
AMOCUM	13/01/2016 New fatel injury	Claned	620 PM	2016	Non-fatal injury - Peoulitie		2 Califyian with mater which in traffic			Sear end	6 Dry			No controls		VS: Travelling straight about / V2: Ensuing or stopped in traffic	Cear	SCANGON DRIVE/NORTH MAIN STREET
AUROCUPH BURCCUPH	13/02/0016 Property damage and y (name injurnel)	Classed	15.12.MM	2016	An injury		2 Califician with mater which in traffic	Yes	Employee	Edenation, same direction	6 Dry			No controls	Tearway divided positive median larvier	VS: Travellingstraight about / VD: Changing Lanes	Clear	SCANGON DRIVE/NORTH MARK STREET
AUROCUPH AUROCUPH	05/06/0017 Property damage and y [name injured] 04/06/0018 Ann failed injury	Canal	8-40.5M	2017	An injury Ann fatal injury : Previller		2 Califician with mater which in traffic 1 Califician with antipolitan		Ewolight Exolution	Subscript, same direction	6 Wet	-		Na cartrals Draffs cartral sizes	Tearway, not divided Tearway, divided, unarytected median	VL:Tarning right / V2: Travelling situalph abread	Graw Rain	SCINGN DRVE/NORTH MAIN STREET SCINGN DRVE/NORTH MAIN STREET
AMECUPA MINDOLPA		Cined	628.00	2018	Ann fatal injury : Peoulitie An injury		<ol> <li>Collision with pedesistan</li> <li>Collision with mater ashids in baffs</li> </ol>		Exclusion	Engle sehiale assols	6 Dry			i Dalla satistisigal Dalla satistisigal	Tearway divided, unprotected median Tearway divided, easily median barrier	Vic Travellingshruight about Vic Traveling sinte (VIC Traveling sinte)	Rain Cinuty	SCARON DRIVE/NORTH MAIN STREET
NINDCOPY	01/81/2017 Preservic damage only instra internel	Cined	841.00	2017	An interv		2 Callaise with mater which in traffic	lin .	Deviate	Sear end	5 87			No corrigals	Income divided any type reduction in the	VI: Element or showed in itself a / VI: Travelling should be about	Cov	NUMBER OF VENERAL MARK STREET
AMOCOPH	03/52/0017 Property damage only (name injurnel)	Classed	2.31.PM	3017	An injury		2 Califolian with mater which in traffic			fear end	6 linew			Dalls central signal	Two way divided, unprotected median	VI: Densing or shapped in leaffin / VI: Ensuing or shapped in India	linese .	SCANON DRIVE/NORTH MAIN STREET
AMOCON	04/03/0017 Associated injury	Claused	9.52 AM	2017	<b>Son Salal Injury - Peoulitie</b>		2 Califician with mater which in traffic		Employee	Angle	6 Dry			No controls		VS: Turning Left / VD: Travelling straight alread		SCANGON DRIVE/NORTH MARK STREET
AMDCLPH AMDCLPH	03/07/0017 Property damage and y (name injurnel) 05/08/0017 Property damage and y (name injurnel)	Cinel	12-45 PM 200 PM	2017	An injury An injury		2 Callsian with maker which in buffs 2 Callsian with maker which in buffs	Yes	Early-Tighted readwary Earlight	Aner end Sciences on converting tion	6 Dry 5 Dry			Dalla carini signal Na carinda	Tearway, not divided	VL-Densing or stopped in traffic / V2-Dwardling straight about	Cear Cear	SCINGN DEVENORTH MAR CRIET SCINGN DEVENORTH MAR CRIET
AUROCUPA BURCCUPA	05/05/0517 Property damage and y (name injured) 13/05/2017 Resoluted (along	Canal	20096	2017	An injury Resoluted interest Resulting		2 Collision with maker which in traffic 1 Collision with utility only			Education same direction.	6 Dry 6 Dry			No controls	Tearway divided, positive median larvier	VL-Dertaking/passing/VD-Travelling shaight about VL-Dhen	Citer Citer	SCALOR DEVENORTH MARK CREET
AMECUPA MINDOLPA	13/08/0017 Ann fatal injury 08/08/0018 Ann fatal injury	Cined	12-45-M	2017	Ann fatal injury : Precility Ann fatal injury : Precility		Collision with utility pair     Collision with mater which in buffle			Englevehisle stack fear end	6 Dry 6 Dry			i his controls. Traffic control sized		VL-Diter VL-Develling straight about /VD-Dessing or showed in India	Citer	SCARON DRIVE/NORTH MAIN STREET
MADOLPH	06/35/2018 Property demography internal	Claned	12:00.MM	2018	An interv		2 Califation with matter which in traffic			for mi	6 87			Datte entrel sized		V3. Stealing or showed in itself a / V2. Stealing or showed in itself a	Ger	SCANON DRIVE NORTH MAIN STREET
AMOCON	04/08/0017 Associated injury	Claused	10.25 AM	2017	Ann fatal injury - Percilite		2 Califician with mater which in traffic			faur end	6 Dry			Datte cantral signal	Taxway, divided, positive median barrier	VL Ensuing an stopped in traffic / V2 Essaing an stopped in traffic		SCANGON DRIVE/NORTH MARK STREET
AMDCLPH AMDCLPH	06/06/0017 Property damage and y (name injurnel) 08/08/0017 Property damage and y (name injurnel)	Classed	8.38.PM	2017	An injury		2 Callsian with maker which in buffs 2 Callsian with maker which in buffs		Early-Tighted readwary		5 Mar			Datte caning signal Datte caning signal	Textury divided, unprotected median	VS. Travelling straight about / VD. Travelling viraight about VS. Douine or showed in itellin / VD. Douine or showed in traffic	Rain Cear	SCINGN DEVENORTH MAR CRIET SCINGN DEVENORTH MAR CRIET
AUROCUPA BURCCUPA	08/08/0017 Property damage only (none injured) 08/07/0017 Rem faild injury	Classed	6.56.00	2017	An injury Ann fatal injury : Pavaille		2 Califician with mater which in traffic 2 Califician with mater which in traffic			Amer end	6 Day 6 Day			Draffic control signal Draffic control signal		VL Densing an stepped in traffic / V2 (Densing an stepped in traffic VL (Densing on stepped in traffic / V2 (Densing on stepped in traffic	Ciever Cievely	SCALOR DRIVE/NORTH MAIN CRIET
AUDICUP/	08/08/0017 Presents demography Instructioned	Cined	0.01.750	2017	An interest of party in the state		2 California and and an and a state	100	Earth: Safety readeury		6 87			Daffe emtrel sized	The way not avoid	Vs. Toronti mentralahi ahmad / V2. Toronti mentralahi ahmad	Clearly	SCARGON DRIVE NORTH MARK CITERY
MADOLPH	10/08/0017 Preparity damage only (name injurnel)		9.26 PM	2017	An interv		1 Collision with utility poly		Early-Tighted readwary		6 Dry			Traffic central signal	Tax way divided, unprotected median		Cine	SCANON DRIVE NORTH MAIN STREET
AMOCUM			5-00 PM	205.7	An injury		2 Califyian with mater which in traffic			legie								SCINGON DRIVE/NORTH MAIN STREET
AMOCUM	11/05/0017 Property damage only (none injured)		34774	205.7	An injury		2 Califyian with mater which in traffic			logie	6 Dry			Datte central signal		VL-Eleasing or shapped in leaffin / V2-Eursing right	Clearly	SCANGON DRIVE/NORTH MAIN STREET
AMOCUM	11/05/0017 Property damage and y (name in juries)		2.30 JM	206.7	An injury		2 Califalan with parked mater sehicle			Angle	6 Dry			Datte central signal		VL: Elements or shopped in traffic / V2: Turning right	Clearly Clear	SCANGON DRIVE/NORTH MAIN STREET
AUROCUPH BURCCUPH	01/08/0018 Property damage only (name injurnel) 01/03/0018 Property damage only (name injurnel)	Cinel	9-20-MA	205.8	An injury An injury		2 Califican with mater whide in balls 2 Califican with mater whide in balls			logie Sau mi	6 Dry 6 Dry			Datts seried signal Datts seried signal		VS: Turning Joh / VD: Travelling virsight about VS: Turvelling virsight about / VD: Travelling virsight about	Citer Citer	SCANON DRIVE/NORTH MAIN STREET
AUDICUP/	10/30/2014 Property same processing the regarding	Cined	7:00 M	2018	An injury An injury		2 Callinian with mater athold in haffs			losis .	6 Dry			Draffic cantrol signal	Tax any stated, orprovide repairs	VS: Travellingstraight abead/VD: Travelling straight abead	Car	SCARGON DRIVE NOW IN MARK CITIEST
MADOLPH	11.03.0018 Ann feld inlary	Canad	10.12 PM	205.8	Ann fatal injury - New images lighting		2 Califation with matter which in traffic		Early lighted readency		6 87			Datte entrol sized	Tenness divided completion and as	Vs. Deputiling should be about (V2. Deputiling vitability about	Ger	SCANON DRIVE NORTH MAIN STREET
AMOCUM	03/05/0028 Property damage only (none injurnel)		5-67 AM	205.9	An injury		2 Califyian with mater which in traffic	Yes	Early-Sighted readwary	Sear end	6 West				Terrary divided, unprotected median	VL-Ensuing or shapped in traffic / V2-Ensuing or shapped in traffic	Cear	SCANGON DRIVE/NORTH MAIN STREET
AMOCUM	04/05/0028 Property damage only (none injurnel)		2.52.44	205.9	An injury		3 Califyian with mater which in traffic		Dark-Tighted readwary		6 Dry			Datte central signal	Terrary netalizated	VL-Densing or shapped in traffic / V2-Densing or shapped in traffic / V3-Decelling straight about	Cear	SCANGON DRIVE/NORTH MAIN STREET
AUROCUPH BURCCUPH	05,52,0028 Property damage and y have injured 07,02,0028 Property damage and y have injured	Canal	7.66.PM	205.9	An injury In injury		2 Collision with mater which in traffic 3 Collision with mater which in traffic		Dunk Daviste	Angle	6 Dry 6 Dry			Dalls satisf signal	Tearway, not divided	VS. Travelling straight about / VD. Traving left VS. Taming left / VD. Travelling straight about	Clear	SCANDON DRIVE/NORTH MAIN STREET
AMDCLP4 AMDCLP4	03/03/0228 Property damage only (none injured) 03/02/0288 Rem faild injury	Claned	9-22-30	202.8	An injury Ann falal injury : Pavaille		2 Califician with mater which in traffic 2 Califician with mater which in traffic		Davidght	Angle				<ul> <li>No controls</li> <li>Draffic control sized</li> </ul>	Tearway divided, unprotected median Tearway, divided, easily proved as herrier		Clear	SCANGIN DRIVE/NORTH MAIN STREET
AMECUPA MINDOLPA	03/04/0029 Ann fatal injury 03/05/0029 Presents demography instruction	Cined	9-30-JM	2018	Ann fatal injury : Peoulitie An injury		2 Collision with mater which in traffic 3 Collision with mater which in traffic	in the	Exclusion	logie Tour mi	6 Dry 5 Dry			Examination of the second seco	Tax way, divided, positive median harrier	VG: Turning left / VG: Turning left VG: Turnelling straight about / VG: Engineers stranged in Indillo / VG: Turnelling straight about	Citer	SCARON DRIVE/NORTH MAIN STREET
and come	OB 20 / 2018 And Remained	Canad	1.78.044	100.0	bet open and		1. Calls insuch mater advide in halls		Early lighted readency		6 87			Datte entrel sized				SCHOOL DEVELOCIES MADE STREET
AMOCON		Claned	7-33-44	305.0	An injury		6 Califolian with mater which in traffic	Yes	Explaint	fear end	6 Dry			No controls		VI-Denter or cleaned in leaffix / VI-Denter or cleaned in leaffix / VI-Denter or cleaned in leaffix / it	4 Clear	SCANGON DRIVE/NORTH MAIN STREET
AMOCUM	13/08/2019 Property damage only (none injured)	Cineral	12-30-MM	2018	An Apparent injury (0)		2 Califyian with mater which in traffic	Yes	Deplight	Edenation, same all restant	6 Dry			Datte central signal	Terrary divided positive median larvier	VS-Tarning left/VD-Tarning left	Cear	SCANGON DRIVE/NORTH MAIN STREET
AMDCLPH AMDCCLPH	13/52/0019 Property damage and y (name in jurnel)	Claused	8.50 AM	2018	An injury		2 Califician with mater which in traffic	Yes	Employee	Edenaips, apporticulization	6 Dry			No controls	Textury divided, unprotected median	VL Entering Indifficience/VD Travelling straight about	Clear	SCINGON DRIVE/NORTH MAIN STREET
AUROCUPH AUROCUPH	01,03,0000 Property damage and y (name injured) 03,03,0000 Associated injure	Canal	S SEPA	3030 2030	An injury Penaltic injury (C)		2 Callsian with maker which in buffs 1 Callsian with maker which in buffs		Early-Tighted readwary Earlight	Sear and Single unbid a such	6 Dry 5 Dry			Datte caninal signal Na caninals	Terrary divided, unprotected median Terrary not divided	VS-Enough or shapped in itedlity / V2-Travelling sharight about VS-Travelling straight about	Creatly Creat	SCANON DRIVE/NORTH MAIN STREET SCANON DRIVE/NORTH MAIN STREET
NINDCOPH	08/36/0020 Presents demage and sincer internel	Cined	830PM	2020	An interv		2 Callinian with mater athold in haffs	100	Earth: Safety readeury	Ling Print and Ling of	6 100			Daffs seried sized	Terrary and divided	Vs. Insuffing straight alteral (V2. Travelling vitalaht alteral	Tein	SCARON DEVELOCITY MARK CITIET
NINDCLPH	08/07/0020 Aventabliniary	Cined	620PM	2020	Ann fatal injury : New Imagenitating		2 Callsian with mater which in traffic	1m	Designed	Sear end	5 104			No controls	Terrary divided scenate tell median	VI: Element or showed in itself a / VI: Element or showed in itselfs	Rein .	SCINGN DEVENOR'S MAR STREET
AMOCON	11,01,0020 Associated inputy	Claned	60875	3020	Ann fatal injury : Percilite		1 Califalan with other light pole or other peak/support	Yes	Early lighted readwary		6 Wet			Traffic central signal	Terrary divided, unprotected median	Vi-Danging lanes	Rain	SCINGON DRIVE/NORTH MALE STREET
AMPOUNT	05/08/0017 Property damage only (name injurnel)	Classed	3.50.MM	2017	An injury		2 Califaber with matter schilds in traffic	Nex	Early-Tighted readwary	faur eni	6 West	4		Stepsign.	Terrary not divided	VS: Travelling straight about / VD: Staning or stopped in traffic	Rein	SCANGON DRIVE/HIGH/ETNET
AMDCLPH AMDCCLPH	08/08/0014 Property damage and y (name injured) 13/08/0014 Rest field injured	Canal	3.30 PM	2054	An injury Ann fatel initial Barrista		2 Califation with maker which in traffic 3. Califation with maker which is is fully	Yes	Exclusion Providence	faur eni	6 Dry	-		Datte cantrol signal	Tearway, not divided	VS. Tweeting straight about / VD. Environment stopped in traffic VD. Tweeting straight about / VD. Tweeting July	Cear	HIGH CRAFT / NEE-CTART
AUROCUPH AUROCUPH	13/08/0016 Ann fatel injury 13/03/0016 Preserve demography inservinteend	Cined	8.54 PM 2.20 M	2016	Non-fatal injury - Peoulitie Na injury		2 Collision with mater which in traffic 3 Collision with applied mater which a		Early-Sighted readway Early-Sahiel readway		6 West 6 Dry			Datts central signal Datts central signal		VS: Travelling straight about / VD: Turning laft VS: Turning rate / VD: Parlant / VD: Parlant	Rain Citer	MED CHIEF/ HIGH CHIEF MED CHIEF/ HIGH CHIEF
AURCORN.	05/05/0018 Property damage and y insert injured	Cined	B11AM	2018	An interv		2 Collision with mater athlet in haffs			Subselies second realize	6 Bry			Draffic central sized		Vo. Turning right / Vo. Narring right	Citat	AND CREET ACT THEY
NINDCOPY				2017														MED CREEVINGS CREET
AMOCON	01/08/0017 Annifeld injury	Claned	B-41.PM	2017	Non-fatal injury - Peoulitie		2 Califyian with mater which in traffic	Yes	Early lighted readwary	logie	6 Dry							AND CHURY HIGH COMPT
AMOCON	03/05/0017 Associated injury	Classed	5-11-AM	2017	Ann fatal injury - New Incapacitating		2 Califician with mater which in traffic	Yes	Early-Tighted readwary		6 local			Datte cantral signal	Tearway, not divided	VS: Travellingshraight about / VD: Simologue slapped in traffic	linear contract of the second se	AND CHIEV NON CONT
AMDCLPH AMDCCLPH	01/04/0017 Ann fahid injury 03/02/0018 Ann fahid injury	Claned	15-83-MM	2017	Sen fatal injury - Peoulitie		2 Califator with mater which in traffic			Head on	6 Dry	-		Datte central signal Datte central signal		VS: Tarving left / VD: Travelling straight about	Clearly	AND CHIEF/ Kick Chief
AMDCLP4	03/03/00LE Non-fatial injury 03/04/09/11 Resolution injury	Canal	12.11.04	2018	New fatal injury - Percelifie Resoluted interest Resolution		2 Collision with mater which in traffic 3 Collision with mater which in traffic	Nes .	Early-Sighted readway	Angle .	6 Dry 5 West			Daffe central signal Daffe central signal	Tearway, not divided Tearway, not divided	VS. Travelling straight about / VD. Traving left VS. Travelling straight about / VD. Unknown	Other Caruly	AND CHARTY HIGH COMPT
AMPCOP4	13/02/0017 Address injury 13/02/0017 Property damage only (none injured)	Cined	10-45 PM	2017	An interv		2 Collision with marine instant orbitale		Early lighted readway		6 Dry			Ne contrata		Vs: Travelling straight about / V3: Parted	Cine	NET CHEFY HER CHEF
		Cined																
AMOCUM	03/02/DDL8 Annotated injury	Claned		2018	Non-Satal Injury - Prevailing		3 Califolian with mater which in traffic							Flashing traffic control signal	Terrary net divided		Ent/Nall	AND CHAIN HIGH COMPT
AMOCON	03/07/0018 Associated injury	Classed	10-16 PM	2018	Ann fatal injury - New Incapacitating		2 Califyian with mater which in traffic	Yes	Parala - considerant and Task	Angle	6 Wet			Datte cantral signal	Tearway, not divided	VS: Travellingstraight about / VD: Travelling straight about	Rain	AND CHIEV NON CONT
AUROCUPH BURCCUPH		Canal	10-44 PM	2018	An injury		3 Califyian with mater schiole in traffic		Early-Tighted readwary		6 Wet	-		Dalls sated signal		VS: Develling straight about / V2: Develling straight about / V5: Develling straight about	Rain	AND CHIEF/ Kick Chief
AMDCLP4	10/07/0018 Associated injury 03/08/0019 Associated injury	Canal	15-20-MM	2018	Ann fated injury - New incapacitating New fated injury - Prevailting		2 Collision with mater which in traffic 3 Collision with mater which in traffic	Yes	Ewolight Exolution	Angle Angle	6 Wet 6 Dry			Datte canical signal Datte canical signal	Tearway divided, unprotected median Tearway, divided, unprotected median	VS: Tarwing Joh / V2: Travelling virwight alread VS: Travelling virwight alread / V2: Travelling virwight alread	Rain Cear	AND CHARTY HIGH COMPT
AUROCUPA BURCCUPA	03/08/0028 Assetatal injury 06/08/0028 Assetatal injury	Cined	627.M	2018	Non-fatal injury - Peoulitie Non-fatal injury - Peoulitie		2 Califician with mater which in traffic 2 Califican with mater which in traffic			Jungine Jungine I	6 Day 5 Mart			E Traffic control signal Traffic control signal	Tearway divided, unprotected median Tearway, divided, unprotected median	VE Travellingshraight ahead / VE Travelling straight ahead VE Travellingshraight ahead / VE Travelling straight ahead	Ciew Rein	All'S Chilly with Chill
NINDCLPH	08/08/0028 Property demography Insert Internet	Cined	12.00.MM	2018	An interest of party in the state		2 Callinian with mater athold in haffs	1m	Earlight Carlings	legis .	6 017			Daffe emtrel sized		Vs. Traveling straight annual, Vo. traveling straight annual VS. Traveling straight annual, VO. Traveling straight annual	Cear	NED CREEV KON CIVILI
NINDCLPH	03/07/2020 Aventabliniary	Cined	DOLEM	2020	Ann fatal injury : Percilite		2 Callsian with mater which in traffic		Designed	losis.	6 Pr				Terrary divided scenate tell median	Vi: Toronti investigated aboved / V2: Toronti investigated aboved	Cerr	AND CARLY AGE CARD
AMOCON		Claned	631 PM	3030			2 Califolian with mater which in traffic											AND CHIEFY HIGH COMIT
AMOCUM	03/08/0020 Non-fatel injury	Claned	13 40 MM	2020	Ann fatal injury : Non-Incapacitating		2 Califator with mater which in traffic		Early-Tighted readwary		6 Dry	-		Traffic central signal		VS: Travelling straight about / VD: Travelling straight about	Ciew	AND CHIEV HER CARE
AMDCLPH AMDCLPH	08,05,0000 Property damage and y name injurnel 05.05,0000 Property damage and y loane injurnel	Cinel	8.54.PM	2020 2020	An injury An injury		2 Callsian with maker which in buffs 3 Callsian with maker which in buffs	Yes	Early-Tighted readwary Earlight	Sar mi	6 Dry 5 Dry			Datte caning signal Datte caning signal	Tearway, divided, unprotected median Tearway, not divided	V3. Excessing or strangered in the Mite / V3. Traverting scheduling scheduling in teaching or scheduler in teaching of the Mite / V3. Excessing or scheduler in teaching	Citer Citer	ABD CRUP/ HGH CAUT ABD CRUP/ HGH CAUT
AMDCLP4 AMDCLP4	08/08/0820 Property damage only (none injured) 13/08/0820 Rem faild injury	Cinel	2127PM	2020	An injury Ann falal injury : Pavaille		3 Califician with mater which in traffic 2 Califican with mater which in traffic			Anar end	6 Dry 6 Dry			Draffic control signal Draffic control signal		VL Densing an stopped in traffic / V2 Densing an stopped in traffic / VL Densing an stopped in traffic - VL Denvelling structure about / V2 Densing on stopped in traffic	Citer Citer	MED CHIEF/ KICH CHIEF MED CHIEF/ KICH CHIEF
NINDCOPH	03/08/0020 Rentate Injury	Cined	222 PM	2020	Non-Salal Injury - Income		2 Callsian with mater which in haffs			losis .	6 87			Daffe emiral sized	Tax way, and divided	Vs. Dealer og tranget atteak) var telseniger verpper i frankt	Car	MED CHIEV HIGH CIVIET
MADOLPH	10/02/2016 Preserve democranity internal	Cined	9-00-AM	2016	Animiere		2 Califation with matter which in traffic			for mi	6 104			No series		VS: Travelling straight about / VD: Tarning left	Tein .	NONION DRIVE OR VEW IN



INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Randolph				COUNT DAT	E:	9/13/2023
DISTRICT : 6	UNSIGN	ALIZED :		SIGNA	LIZED :	X
		~ IN	TERSECTION	N DATA ~		
MAJOR STREET :	North Main S	treet				
MINOR STREET(S) :	Scanlon Drive	e				
INTERSECTION DIAGRAM (Label Approaches)	Russ Street	saine scante		N Main St	E C C C C C C C C C C C C C C C C C C C	RUSS St Beauty Beauty Store Beauty Store
APPROACH :	1	2	Peak Hou 3	r Volumes 4	5	Total Peak
DIRECTION :	EB	WB	NB	SB		Hourly Approach Volume
PEAK HOURLY VOLUMES (AM/ <b>PM</b> ) :	335	337	598	1,631		2,901
"K" FACTOR :	0.090	INTERS		( <b>V</b> ) = TOTAL I VOLUME :	DAILY	32,233
TOTAL # OF CRASHES :	59	# OF YEARS :	5		OF CRASHES AR ( <b>A</b> ) :	11.80
CRASH RATE CALCU	ILATION :	1.00	RATE =	<u>( A * 1,0</u> ( ADT	00,000 ) * 365 )	
Comments :						
Project Title & Date:	Randolph No	rth Redevelop	oment			



INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Randolph				COUNT DAT	E:	9/13/2023
DISTRICT : 6	UNSIGN	ALIZED :	X	SIGNA	LIZED :	
		~ IN	TERSECTION	N DATA ~		
MAJOR STREET :	Scanlon Drive	е				
MINOR STREET(S) :	High Street					
INTERSECTION DIAGRAM (Label Approaches)			Pack Hou	r Volumes	icanion Dr	Scanton Dr.
APPROACH :	1	2	3	4	5	Total Peak Hourly
DIRECTION :	EB	WB	NB	SB		Approach Volume
PEAK HOURLY VOLUMES (AM/ <b>PM</b> ) :		471	274	3		748
"K" FACTOR :	0.090	INTERS		( <b>V</b> ) = TOTAL H VOLUME :	DAILY	8,311
TOTAL # OF CRASHES :	1	# OF YEARS :	5		OF CRASHES AR ( <b>A</b> ) :	0.20
CRASH RATE CALCU	ILATION :	0.07	RATE =	<u>( A * 1,0</u> ( ADT	00,000) * 365)	
Comments :						
Project Title & Date:	Randolph No	rth Redevelop	oment			



INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Randolph				COUNT DAT	E:	9/13/2023
DISTRICT : 6	UNSIGN	ALIZED :		SIGNA	LIZED :	X
		~ IN	TERSECTION	N DATA ~		
MAJOR STREET :	Reed Street					
MINOR STREET(S) :	High Street					
INTERSECTION DIAGRAM (Label Approaches)	Reed St.	Reed St	High St Peak Hou	r Volumes	VILE Red C	
APPROACH :	1	2	3	4	5	Total Peak Hourly
DIRECTION :	EB	WB	NB	SB		Approach Volume
PEAK HOURLY VOLUMES (AM/ <b>PM</b> ) :	276	320	321	452		1,369
"K" FACTOR :	0.090	INTERS		( <b>V</b> ) = TOTAL H VOLUME :	DAILY	15,211
TOTAL # OF CRASHES :	25	# OF YEARS :	5		OF CRASHES AR ( <b>A</b> ) :	5.00
CRASH RATE CALCU	ILATION :	0.90	RATE =	<u>( A * 1,0</u> ( ADT	00,000) * 365)	
Comments :						
Project Title & Date:	Randolph No	rth Redevelop	oment			



Engineers + Planners



Trip Generation

RANDOLPH NORTH REDEVELOPMENT | TRAFFIC IMPACT STUDY

# 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 <sup>1</sup>	Unadjusted Person-Trips	Primary Person Trips	Transit Share <sup>2</sup>	Transit Person- Trips	Walk/Bike/ Other Share <sup>2</sup>	Walk/ Bike/ Other Trips		Auto Person- Trips	% Taxi/ TNC <sup>3</sup>	Taxi/TNC Person- Trips	Assumed Local Auto Occupancy Rate for Taxis <sup>5</sup>	Assumed Local Auto Occupancy Rate <sup>4</sup>	Taxi/TNC Auto Trips	Primary Non- Taxi Auto Trips	Primary AutoTrips
Daily																					
Hotel <sup>6</sup>	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 <sup>6</sup>	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 <sup>6</sup>	130.468	Total		0.59	77	2.10	162	162		12	1	4	1	146	1	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	1	4		147					0		70
		In			39		82	82		6		2		74					0		35
		Out			38		80	80		6		2		73					ő		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 <sup>1</sup>	Unadjusted Person-Trips	Primary Person Trips	Transit Share <sup>2</sup>	Transit Person- Trips	Walk/Bike/ Other Share <sup>2</sup>	Walk/ Bike/ Other Trips		Auto Person- Trips	% Taxi/ TNC <sup>3</sup>	Taxi/TNC Person- Trips	Assumed Local Auto Occupancy Rate for Taxis <sup>5</sup>	Assumed Local Auto Occupancy Rate <sup>4</sup>	Taxi/TNC Auto Trips	Primary Non- Taxi Auto Trips	Primary AutoTrips
Daily																					
Manufacturing <sup>6</sup>	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 <sup>7</sup>	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
0		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 Center9	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 <sup>8</sup>	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	1				16		976
AM Peak Hour								1			1		1								
Manufacturing <sup>6</sup>	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
7		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 <sup>7</sup>	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 Center9	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 <sup>8</sup>	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															0						
Manufacturing <sup>6</sup>	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 <sup>7</sup>	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 Center9	75	Total		0.980	74	1.18	87	87		6		1		80	1%	1	1.18	1.18	2	67	69
1	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
W		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 <sup>8</sup>	22	Total		0.18	4	1.82	7	7		0		0		7	0%	0	1.82	1.82	0	4	4
1	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
1		In			55		82	82		5		1		76					3		54
		Out			202		276	276		19		5		252	1				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



Engineers + Planners



Synchro Reports

RANDOLPH NORTH REDEVELOPMENT | TRAFFIC IMPACT STUDY

# Intersection Delay, s/veh 15.8 Intersection LOS C

Mayamant			NDT	NDD	CDI	CDT
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	- Y		ef 👘			- କି
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
Arrana					00	
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	В		С		А	

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
Сар	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	С	В	А
HCM 95th-tile Q	6	2.8	0

	-	-	t	Ļ
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.

# HCM Signalized Intersection Capacity Analysis 3: Reed Street & High Street

3: Reed Street & High S			5	,									10/04/2023
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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		002			000			012			000		
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			В			D			В		
Approach Delay (s)		24.3			14.4			54.0			13.9		
Approach LOS		С			В			D			В		
Intersection Summary													
HCM 2000 Control Delay			31.9	H	CM 2000 I	evel of Se	rvice		С				
HCM 2000 Volume to Capacity rat	tio		0.91		2.11 2000 2				Ū				
Actuated Cycle Length (s)			55.0	S	im of lost	time (s)			9.0				
Intersection Capacity Utilization			94.9%		U Level of				F				
Analysis Period (min)			15	10	0 20101 01	5017100							
c Critical Lane Group			.0										

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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 Summany									

Intersection Summary # 95th percentile volume exceeds capacity, queue may be longer.

#### HCM Signalized Intersection Capacity Analysis 9: N Main Street & Scanlon Drive/Russ Street

10/04/2023 ال ۰ 5 ŧ ∢ ۶ t ٠ ٩ ۴  $\mathbf{i}$ 4 -Movement EBL EBT EBR WBL WBT WBR NBL NBT NBR SBU SBL SBT SBR Lane Configurations × 4 ٦ Þ à 忭 à †† 7 421 91 276 Traffic Volume (vph) 64 11 47 37 15 919 43 2 650 233 64 43 2 650 Future Volume (vph) 421 37 91 15 919 276 233 11 47 1900 1900 1900 1900 1900 1900 900 1900 1900 1900 Ideal Flow (vphpl) 900 1900 1900 12 12 Lane Width 11 12 10 12 10 11 11 12 10 10 11 Total Lost time (s) 5.0 5.0 5.0 5.0 5.0 5.0 7.0 7.0 5.0 Lane Util. Factor 0.95 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 Frpb, ped/bikes 1.00 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 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 0.95 1.00 0.95 1.00 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 48 256 Adj. Flow (vph) 495 75 13 61 48 118 17 1021 2 303 714 2 RTOR Reduction (vph) 0 0 0 77 0 0 3 0 0 0 0 60 Lane Group Flow (vph) 292 289 0 61 89 17 1066 0 0 305 196 0 714 Confl. Peds. (#/hr) 4 4 5 5 9% Heavy Vehicles (%) 4% 6% 4% 0% 4% 7% 5% 7% 2% 3% 12% 6% Turn Type Split NA NA NA NA Split pm+pt custom pm+pt pt+ov Protected Phases 3 2 3 4 4 5 6 63 Permitted Phases 2 1 6 22.2 43.9 Actuated Green, G (s) 22.2 6.0 46.4 56.5 83.7 6.0 66.0 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 5.0 7.0 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 c0.05 v/s Ratio Prot c0.18 0.18 0.04 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 0.0 140.4 32.3 80.3 Delay (s) 69.1 61.7 70.3 18.3 16.8 3.5 Level of Service Е Е Е F В С F В А Approach Delay (s) 65.4 121.6 32.1 29.3 Approach LOS Е С С F 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 Е Analysis Period (min) 15

Intersection		
Intersection Delay, s/veh	15.3	
Intersection LOS	С	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		el el			<del>ا</del>
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	С		В		А	

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
Сар	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	В	С	А
HCM 95th-tile Q	2.1	5.6	0.1

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			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
Interpretion Cummon				

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

## HCM Signalized Intersection Capacity Analysis 3: Reed Street & High Street

3: Reed Street & High				. <b>j</b> - · -									10/04/2023
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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	Ũ	351	Ũ	0	369	Ũ	0	486	0	
Confl. Peds. (#/hr)	3	001	6	6	001	3	4	000	U	U	400	4	
Heavy Vehicles (%)	0%	1%	0%	0%	4%	0%	0%	2%	1%	0%	3%	2%	
Turn Type	Perm	NA	0,0	Perm	NA	0,0	Perm	NA	. /0	Perm	NA	2/0	
Protected Phases	1 Onn	4		1 Unit	8		1 01111	2		1 01111	6		
Permitted Phases	4	•		8	Ū		2	-		6	Ŭ		
Actuated Green, G (s)	•	18.0		, i i i i i i i i i i i i i i i i i i i	18.0		-	18.0		, i i i i i i i i i i i i i i i i i i i	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		031			570			715			102		
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		В			13.4 B			12.3 B			В		
Approach Delay (s)		11.9			15.4			12.9			16.7		
Approach LOS		B			13.4 B			12.5 B			B		
		D			D			D			D		
Intersection Summary													
HCM 2000 Control Delay			14.5	H	CM 2000 L	evel of Se	rvice		В				
HCM 2000 Volume to Capacity ra	atio		0.65										
Actuated Cycle Length (s)			45.0		im of lost				9.0				
Intersection Capacity Utilization			60.0%	IC	U Level of	f Service			В				
Analysis Period (min)			15										
c Critical Lane Group													

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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									

Intersection Summary # 95th percentile volume exceeds capacity, queue may be longer.

# HCM Signalized Intersection Capacity Analysis

9: N Main Street & Scanlon Drive/Russ Street

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations	ሻ	4		٦.	4			2	At≱			24	<u></u>	1
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
Fit 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)	40/	00/	00/	00/	00/	1	00/	00/	20/	00/	00/	00/	40/	20/
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		4	1	6	63
Permitted Phases	47.0	47.0		44.5	44.5		5	2	00 5		1	6	07.0	<u> </u>
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) Vehicle Extension (s)	5.0 3.0	5.0 3.0		5.0 3.0	5.0 3.0			7.0 3.0	5.0 2.0			7.0 3.0	5.0 2.0	
									-					4000
Lane Grp Cap (vph)	311	323		208	204 c0.09			114 0.00	1085			355	1346	1009
v/s Ratio Prot	c0.13	0.12		0.03	CU.U9			0.00	0.19			c0.05	c0.36	0.19
v/s Ratio Perm v/c Ratio	0.67	0.62		0.25	0.68			0.04	0.58			0.17 0.42	0.87	0.29
Uniform Delay, d1	34.0	33.6		0.25 36.0	38.1			20.9	0.56 25.7			13.6	24.4	6.3
Progression Factor	1.00	1.00		1.00	1.00			20.9	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	53.5 D	57.1 D		50.0 D	47.1 D			21.4 C	20.2 C			14.4 B	50.5 C	0.4 A
Approach Delay (s)	U	38.2		D	45.7			U	26.1			U	23.0	~
Approach LOS		00.2 D							20.1 C				20.0 C	
		U			U				U				U	
Intersection Summary														
HCM 2000 Control Delay			28.3	H	CM 2000 L	evel of S	ervice		С					
HCM 2000 Volume to Capacity	ratio		0.80	-										
Actuated Cycle Length (s)			91.2		um of lost t				22.0					
Intersection Capacity Utilization			79.9%	IC	U Level of	Service			D					
Analysis Period (min)			15											

c Critical Lane Group

10/04/2023

Intersection	
Intersection Delay, s/veh	13.2
Intersection LOS	В

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		4Î			ર્સ
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	В		В		А	

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
Сар	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	В	В	А
HCM 95th-tile Q	4.1	2.5	0

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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

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

## HCM Signalized Intersection Capacity Analysis 3: Reed Street & High Street

3: Reed Street & High S			,	,									10/04/2023
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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		010			017			0/1			000		
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			В			D			В		
Approach Delay (s)		22.4			13.3			48.7			14.1		
Approach LOS		С			В			D			В		
Intersection Summary													
HCM 2000 Control Delay			29.4	H	CM 2000 I	evel of Se	rvice		С				
HCM 2000 Volume to Capacity rat	tio		0.88		2.11 2000 2				U				
Actuated Cycle Length (s)			55.0	S	im of lost	time (s)			9.0				
Intersection Capacity Utilization			103.5%		U Level of				G				
Analysis Period (min)			100.070	10	0 20101 01				J				
c Critical Lane Group			10										

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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

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

#### HCM Signalized Intersection Capacity Analysis 9: N Main Street & Scanlon Drive/Russ Street

10/04/2023 ۰ L≱ 5 ŧ ∢ ۶ t ٠ ٩ ۴  $\mathbf{i}$ 4 -Movement EBL EBT EBR WBL WBT WBR NBL NBT NBR SBU SBL SBT SBR Lane Configurations × 4 Þ à ħÞ à †† 7 501 70 98 296 715 Traffic Volume (vph) 12 50 41 45 985 46 2 273 70 45 985 46 2 Future Volume (vph) 501 12 41 98 296 715 50 273 1900 1900 900 1900 1900 1900 900 1900 1900 1900 Ideal Flow (vphpl) 1900 1900 1900 12 12 Lane Width 11 12 10 12 10 11 11 12 10 10 11 Total Lost time (s) 5.0 5.0 5.0 5.0 5.0 5.0 7.0 7.0 5.0 Lane Util. Factor 0.95 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 Frpb, ped/bikes 1.00 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 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 0.95 1.00 0.95 1.00 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 13 107 50 2 322 297 Adj. Flow (vph) 545 76 54 45 49 1071 777 2 0 RTOR Reduction (vph) 0 0 75 0 0 3 0 0 0 0 77 Lane Group Flow (vph) 316 316 0 54 77 49 1118 0 0 324 220 0 777 Confl. Peds. (#/hr) 4 4 5 5 9% Heavy Vehicles (%) 4% 6% 4% 0% 4% 7% 5% 7% 2% 3% 12% 6% Turn Type Split NA NA NA NA Split pm+pt custom pm+pt pt+ov Protected Phases 3 2 3 4 4 5 6 63 Permitted Phases 2 1 6 23.1 42.8 64.9 Actuated Green, G (s) 6.0 48.1 52.6 80.7 23.1 6.0 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 5.0 7.0 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 0.19 v/s Ratio Prot c0.20 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 0.0 102.4 123.5 Delay (s) 75.1 67.4 61.5 17.8 36.4 19.9 4.4 Level of Service Е Е Е F В D F В А Approach Delay (s) 71.3 91.7 35.7 40.6 Approach LOS D D Е F 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 Е Analysis Period (min) 15

# Intersection Delay, s/veh 17.4 Intersection LOS C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	- M		ef 👘			र्च
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
Annroach	WB		NB		SB	
Approach	VVD					
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	С		В		А	

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
Сар	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	В	С	А
HCM 95th-tile Q	2.1	6.8	0

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			I	•
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
Internection Commony				

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

## HCM Signalized Intersection Capacity Analysis 3: Reed Street & High Street

	: Reed Street & High Street													
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		\$			\$			\$			4			
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		В			В			В			С			
Approach Delay (s)		12.4			16.7			13.0			20.3			
Approach LOS		В			В			В			С			
Intersection Summary														
HCM 2000 Control Delay			16.2	HC	CM 2000 L	evel of Se	rvice		В					
HCM 2000 Volume to Capacity ra	tio		0.72											
Actuated Cycle Length (s)	-		45.0	Su	im of lost	time (s)			9.0					
Intersection Capacity Utilization			65.0%		U Level of	~ /			C					
Analysis Period (min)			15											
c Critical Lane Group														

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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

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

# HCM Signalized Intersection Capacity Analysis 9: N Main Street & Scanlon Drive/Russ Street

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Lane Configurations	ሻ	4		ሻ	4Î			1	<b>↑</b> ĵ≽			1	<u>^</u>	1	
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	63	
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			С	С			В	D	A	
Approach Delay (s)		40.0			53.2				28.0				37.0		
Approach LOS		D			D				С				D		
Intersection Summary															
HCM 2000 Control Delay			37.4	H	CM 2000 L	evel of S.	ervice		D						
HCM 2000 Volume to Capaci	ty ratio		0.88												
Actuated Cycle Length (s)			94.7		um of lost i	( )			22.0						
Intersection Capacity Utilization	on		85.8%	IC	U Level of	Service			E						
Analysis Period (min)			15												
<ul> <li>Critical Lane Group</li> </ul>															

c Critical Lane Group

10/04/2023

Intersection		
Intersection Delay, s/veh	14.3	
Intersection LOS	В	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		el 🗧			<del>ا</del>
Traffic Vol, veh/h	297	4	3	504	1	Ō
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	В		В		А	

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
Сар	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	В	В	А
HCM 95th-tile Q	4.8	2.8	0

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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.

# HCM Signalized Intersection Capacity Analysis 3: Reed Street & High Street

3: Reed Street & High S	Street												11/09/2023
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		\$			4			\$			4		
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	551	17	17	200	46	12	007	4	4	551	12	
Heavy Vehicles (%)	1%	1%	0%	11%	3%	0%	0%	5%	2%	0%	7%	1%	
Turn Type		NA	0 /0	Perm	NA	0 /0		NA	2 /0	Perm	NA	1 /0	
Protected Phases	Perm	NA 4		Perm	NA 8		Perm	NA 2		Perm	NA 6		
Permitted Phases	4	4		8	0		2	2		6	0		
	4	23.5		0	23.5		2	22.5		0	22.5		
Actuated Green, G (s)		23.5			23.5			22.5			22.5		
Effective Green, g (s)		0.43			23.5 0.43			0.41			0.41		
Actuated g/C Ratio													
Clearance Time (s)		4.5			4.5			4.5			4.5		
Lane Grp Cap (vph)		674			617			676			695		
v/s Ratio Prot		0.04			0.40			0.40			0.40		
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		С			В			D			В		
Approach Delay (s)		22.7			13.3			55.0			14.3		
Approach LOS		С			В			D			В		
Intersection Summary													
HCM 2000 Control Delay			32.0	H	CM 2000 I	evel of Se	ervice		С				
HCM 2000 Volume to Capacity rat	tio		0.90										
Actuated Cycle Length (s)			55.0	Su	um of lost	time (s)			9.0				
Intersection Capacity Utilization			105.1%	IC	U Level o	f Service			G				
Analysis Period (min)			15										
c Critical Lane Group													

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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	

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

# HCM Signalized Intersection Capacity Analysis 9: N Main Street & Scanlon Drive/Russ Street

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Lane Configurations	ň	\$		1	f,		ă.	A⊅			ä	<b>^</b>	1	
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	
ane 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	
	579	0.92	22	0.92 54	0.92 51	107	0.92	1071	0.92	0.92	322	777	447	
Adj. Flow (vph)	0	2		0	51 66	0	0	3	0	0	0	0	117	
RTOR Reduction (vph)	336	340	0	54	92	0	85	1118	0	0	324		330	
ane Group Flow (vph)	330	340		54 4	92	0		1118	0	0	324	777		
Confl. Peds. (#/hr)	40/	00/	4		00/	40/	5	=0/	70/	00/	00/	400/	5	
leavy Vehicles (%)	4%	6%	9%	4%	0%	4%	7%	5%	7%	2%	3%	12%	6%	
urn Type	Split	NA		Split	NA		pm+pt	NA		custom	pm+pt	NA	pt+ov	
Protected Phases	3	3		4	4		5	2			1	6	63	
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		
/ehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	2.0			3.0	2.0		
ane Grp Cap (vph)	337	348		89	91		300	1296			289	1447	1088	
/s Ratio Prot	c0.21	0.21		0.03	c0.06		0.01	0.34			c0.15	0.26	0.22	
/s Ratio Perm							0.11				c0.51			
/c Ratio	1.00	0.98		0.61	1.01		0.28	0.86			1.12	0.54	0.30	
Jniform 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	
ncremental 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	
evel of Service	F	F		E	F		B	D			F	20.0 B	ч.5 А	
Approach Delay (s)		87.5		-	126.3		5	35.1				37.3	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
Approach LOS		67.5 F			F			D				D		
ntersection Summary														
HCM 2000 Control Delay			51.1	H	CM 2000 L	evel of S	ervice		D					
ICM 2000 Volume to Capacity ra	atio		1.12						_					
Actuated Cycle Length (s)			109.1	Si	um of lost t	ime (s)			22.0					
ntersection Capacity Utilization			89.3%		U Level of	( )			E					
Analysis Period (min)			15			0011100			-					
Critical Lane Group			10											

c Critical Lane Group

11/09/2023

#### Intersection Intersection Delay, s/veh 18.8 Inters С

Section	Delay,	S/VEIT	
section	LOS		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	- Y		ef 👘			स
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	С		В		А	

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
Сар	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	В	С	А
HCM 95th-tile Q	2.2	7.6	0

	<b>→</b>	-	Ť	Ŧ
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
Interspection Summary				

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

## HCM Signalized Intersection Capacity Analysis 3: Reed Street & High Street

3: Reed Street & High S	Street												11/09/202
	۶	-	$\mathbf{\hat{v}}$	4	←	×	1	Ť	1	1	Ļ	1	
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		4			4			\$			4		
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	0.92	0.92	280	97	0.92	403	159	
RTOR Reduction (vph)	95 0	0	0	0	240	0	0	200	97 0	0	403	0	
Lane Group Flow (vph)	0	324	0	0	372	0	0	382	0	0	570	0	
Confl. Peds. (#/hr)	3	324	6	6	312	3	4	302	U	U	570	4	
. ,	0%	1%	0%	0%	4%	0%	0%	2%	1%	0%	3%	2%	
Heavy Vehicles (%)			0 %			0 %			1 70	Perm		Ζ /0	
Turn Type	Perm	NA 4		Perm	NA		Perm	NA		Perm	NA 6		
Protected Phases	4	4		0	8		0	2		<u>_</u>	б		
Permitted Phases	4	40.0		8	40.0		2	40.0		6	40.0		
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		В			В			В			С		
Approach Delay (s)		12.4			16.7			13.1			21.9		
Approach LOS		В			В			В			С		
Intersection Summary													
HCM 2000 Control Delay			16.8	H	CM 2000 L	_evel of Se	rvice		В				
HCM 2000 Volume to Capacity rat	tio		0.73										
Actuated Cycle Length (s)			45.0	Sı	um of lost	time (s)			9.0				
Intersection Capacity Utilization			66.0%	IC	U Level of	f Service			С				
Analysis Period (min)			15										
c Critical Lane Group													

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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	

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

# HCM Signalized Intersection Capacity Analysis 9: N Main Street & Scanlon Drive/Russ Street

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations	ሻ	4		٦.	4î			A	At≱			Ľ,	- <b>†</b> †	1
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)	40/	00/	00/	00/	00/	1	00/	00/	20/	00/	00/	00/	40/	20/
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		4	1	6	63
Permitted Phases	00.4	00.4		40.0	40.0		5	2	00.0		1	6	07.5	64.6
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 0.22		13.8	13.8			33.2	29.8			47.9	37.5	64.6
Actuated g/C Ratio	0.22 5.0			0.14	0.14			0.34	0.30			0.48	0.38	0.65
Clearance Time (s) Vehicle Extension (s)	5.0 3.0	5.0 3.0		5.0 3.0	5.0 3.0			7.0 3.0	5.0 2.0			7.0 3.0	5.0 2.0	
									-					004
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 0.10	0.20			c0.06	c0.40	0.23
v/s Ratio Perm v/c Ratio	0.88	0.80		0.23	0.85			0.10	0.67			0.19 0.52	1.05	0.36
Uniform Delay, d1	0.00 37.1	36.3		37.8	41.5			0.33 25.5	30.2			16.9	30.6	0.36
Progression Factor	1.00	30.3 1.00		37.0 1.00	41.5			25.5	30.2 1.00			16.9	30.6 1.00	1.00
Incremental Delay, d2	21.7	11.8		0.5	24.3			1.00	1.00			1.00	39.7	0.1
Delay (s)	58.8	48.1		38.3	24.3 65.8			26.9	31.5			18.3	70.4	7.8
Level of Service	50.0 F	40.1 D		50.5 D	05.0 E			20.5 C	01.0 C			10.5 B	70.4 E	7.0 A
Approach Delay (s)	L	53.5		U	62.1			U	31.2			D	49.2	~
Approach LOS		00.0 D			E				C				43.2 D	
		D			L				U				U	
Intersection Summary														
HCM 2000 Control Delay			47.8	H	CM 2000 L	evel of S	ervice		D					
HCM 2000 Volume to Capacity	ratio		0.97	~	<u> </u>	• ()			00.0					
Actuated Cycle Length (s)			98.8		um of lost t	( )			22.0					
Intersection Capacity Utilization	1		90.3%	IC	U Level of	Service			E					
Analysis Period (min)			15											

c Critical Lane Group

11/09/2023

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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	

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

#### HCM Signalized Intersection Capacity Analysis 9: N Main Street & Scanlon Drive/Russ Street

11/09/2023 ۰. L≱ t 5 ŧ ۶ ٠ ٩ ┛ ۴  $\mathbf{i}$ 4 -Movement EBL EBT EBR WBL WBT WBR NBL NBT NBR SBU SBL SBT SBR Lane Configurations ٣ 4 Þ à ħÞ à †† 1 533 98 296 715 Traffic Volume (vph) 71 20 50 47 78 985 46 2 411 47 985 46 2 Future Volume (vph) 533 71 20 98 78 296 715 411 50 1900 1900 1900 900 1900 1900 1900 900 1900 1900 1900 Ideal Flow (vphpl) 1900 1900 12 12 Lane Width 11 12 10 12 10 11 11 12 10 10 11 Total Lost time (s) 5.0 5.0 5.0 5.0 5.0 5.0 7.0 7.0 5.0 Lane Util. Factor 0.95 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 Frpb, ped/bikes 1.00 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 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 3008 Satd. Flow (prot) 1594 1646 1620 1662 1572 3298 1636 1473 Flt Permitted 0.95 0.97 0.95 1.00 0.33 1.00 0.08 1.00 1.00 1646 Satd. Flow (perm) 1594 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 22 107 50 2 322 447 Adj. Flow (vph) 579 77 54 51 85 1071 777 0 0 RTOR Reduction (vph) 0 2 67 0 0 3 0 0 0 0 118 Lane Group Flow (vph) 336 340 0 54 91 85 1118 0 0 324 329 0 777 Confl. Peds. (#/hr) 4 4 5 5 9% Heavy Vehicles (%) 4% 6% 4% 0% 4% 7% 5% 7% 2% 3% 12% 6% Turn Type Split NA NA NA NA Split pm+pt custom pm+pt pt+ov Protected Phases 3 2 3 4 4 5 6 63 Permitted Phases 2 1 6 25.0 43.0 Actuated Green, G (s) 25.0 48.5 52.5 82.5 7.0 65.0 7.0 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 5.0 7.0 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 0.21 v/s Ratio Prot c0.21 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 56.3 106.1 39.5 138.1 Delay (s) 76.6 71.2 19.7 21.6 5.1 Level of Service Е Е Е F В D F С А Approach Delay (s) 73.9 93.4 38.1 41.2 Approach LOS Е 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 Е Analysis Period (min) 15



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